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Compilation of tRNA sequences and sequences of tRNA genes

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INTRODUCTION

This compilation contains 455 tRNA sequences and 981 sequences of tRNA genes published thus far covering the literature up to the end of 1988. A survey of published sequences is given in Table 1. The numbering system derived from yeast tRNA-Phe as adopted in the Cold Spring Harbour Symposium on tRNA in 1979 is used (Fig. 1, Ref. 1). Secondary structure of tRNAs are indicated by region-specific underlining of sequences. In the case of most mitochondrial tRNAs the alignment according to the accepted numbering system (Fig. 1) is not possible, therefore for D- and T-regions an arbitrary alignment was adopted. For the nomenclature of modified nucleosides see Table 2 and Fig. 2.

Each sequence is identified by one letter code for the particular amino acid depicting the specificity of tRNA, a three digit number, the anticodon sequence in unmodified form and the name of the organism from wich the tRNA originates. The numbers for tRNAs are used in such way that each biological species has the same number throughout the compilation. In the case of tRNA genes the nucleotide preceding nucleotide residue 1 and the nucleotide following residue 76, as well as the intervening sequences, have been excluded from the compilation. Some tRNA-His and tRNA-His genes possess a nucleoside in position -1. The CCA sequence is included in the gene sequence only if it is coded for in the gene. The occurence of intervening sequences after a particular nucleotide is indicated by an asterik and defined in the footnote.

Sequences of tRNA-precursors and tRNA-mutants are included in the compilation only when there are no mature and wild type tRNA-sequences, respectively, available. These cases are indicated in the footnote. The sequence originating from transformed or differentiated cells are considered as a separate entry only in the case of nucleoside replacement (i.e. different genes).

Footnotes are numbered according to the coordinates of the corresponding nucleoside and are indicated in the sequence by asteriks. The references and footnotes are listed at the end of the particular compilation with the corresponding sequence number. The references are restricted to one citation unless additional specific sequence information was obtained in a later work.

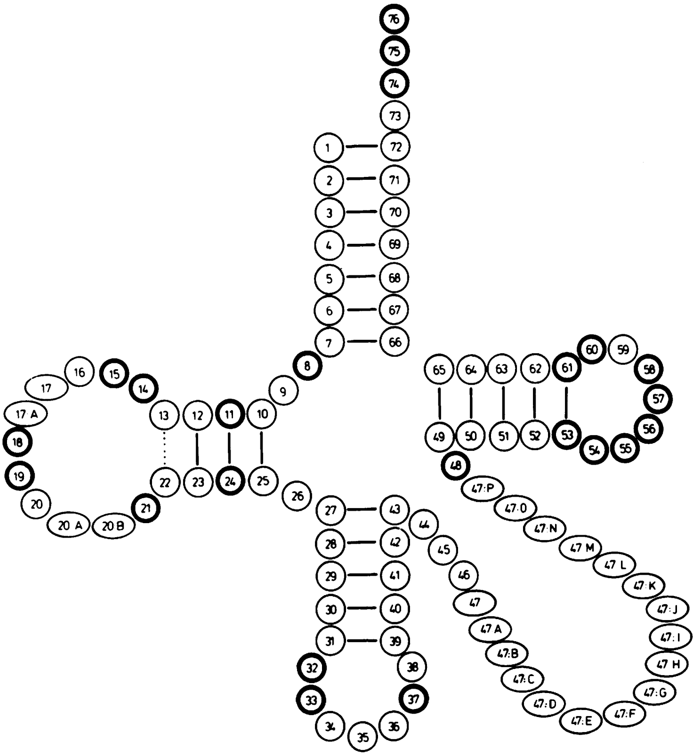


Fig. 1: Numbering of nucleotides in tRNAs. Circles represent nucleotides which are always present; among these, the thick-edged circles denote invariant or semiinvariant nucleotides. Ovals represent nucleotides which are not present in each sequence: these are the nucleotides before the two constant GMP residues (18,19) in the D-loop, the nucleotides after these GMP residues and the nucleotides in the variable loop which may be up to 17 nucleotides.
A nucleotide to be added at a given site is indicated by the number of the preceding nucleotide followed by a colon and a capital letter in alphabetical order. Thus, e.g. 20:A and 20:B mean the first and the second nucleotide after position 20. The absence of a nucleotide is indicated by the absence of a number, e.g. if no residue is found in position 17, the sequence then reads C16-C18. The numbering for the D-loop when one, two or three nucleotides are present, each between 15 and 18 or between 19 and 21, is then 16 and 16, 17 and 16, 17, 17:A or 20 and 20, 20:A and 20, 20:A, 20:B respectively. When the variable loop is five-membered, the numbering is 44, 45, 46, 47, 48. 47 is eliminated when the variable loop is four-membered. For large variable loops, capital letters are added onto 47, e.g. for thirteen nucleotides 44, 45, 46, 47, 47:A, 47:B, 47:C, 47:D, 47:E, 47:F, 47:G, 47:H, 47:I.

Table 1. Sequences included in the compilation

name (1)	numberrange	tRNA (2)	tRNA genes (2)
virus	000-099		
Avian Onco-Virus	010	M	
Chicken ASV/AMV/RSV	012	W	
Mouse M-Mulv.	013..014	P,P	
Phage T4	020	R,Q,G,I,L,P,S,T	R,Q,G,I,L,P,S,T
Phage T5	040..041	N,D,Q,H,L,P	A,D,Q,G,H,I,L,K,M,X,P,S,S,T,V
archaebacteria	100-199		
Archaeglobus fulg.	108		A
Halobacterium cut.	110..112	A,R,N,Q,G,H,X,S,T,V,V,V	A,C
Halobacterium hal.	113		A
Halobacterium med.	115		W
Halobacterium vol.	120..124	A,A,A,R,R,R,N,D,C,Q,E,E, G,G,G,G,H,I,I,L,L,L,L,L, K,K,M,X,F,P,P,P,S,S,S,T, T,W,Y,V,V	C,W
Halococcus morrhuae	130	X	
Methanobac.formi.	135		A
Methanobac.therm.	140	N,G	A
Methanococ.vani.	145..146		A,R,N,D,Q,E,H,I,L,K,F,P,T,T,Y,V
Ruminobacter amylo.	147		E
Methanococ.voltae	148		D,K,P,T,Y
Methanospir. hung.	149		A
Sulfolobus acido.	150	X	
Sulfolobus solfa.	160		G,L,X,F,S,V
Thermoplasma acido.	180	M,X	
Thermococcus celer.	185		A
Thermoprot. tenax	190..191		A,A,L,L,X
eubacteria	200-299		
Mycoplasma capric.	200..201	F,T,T	Q,L,L,K,T,W,W,Y
Mycoplasma mycoid.	203..204	A,G,I,X,P,S,T,V	A,R,R,N,D,E,G,I,M,X,F,P,S,T,V
Mycoplasma PG50	205		L,K
Spiroplasma melif.	206		A,R,D,C,I,M,X,F,P,S
Streptomyces gris.	215	X	
Streptomyces rim.	218..219		X,X
Staphylococ.epid.	220..221	G,G	
Mycobac. smeg.	227	X	
Bacillus stearo.	230	L,F,Y,V	
Lactobac. bulg.	232		S
Bacillus subtilis	235..238	A,R,G,L,K,K,M,X,F,P, T,Y,Y,V	A,A,A,A,R,N,N,D,C,Q,E,G,G,H,H,I,I,I,L, L,L,L,K,M,M,X,F,F,P,S,S,S,T,T,T,W,Y,V
Thermus thermophi.	240..241	I,X,X	G

Thiobacillus ferro.	243		A,I
E. coli	250..254	A,A,A,R,R,R,R,R,N,D,C,Q, Q,E,E,E,G,G,G,H,I,I,I, L,L,L,K,M,X,X,F,S,S,S, S,S,T,W,Y,Y,V,V,V	A,R,R,R,D,Q,Q,E,G,G,H,I,I, L,L,L,K,M,X,X,F,P,P,S,S,S, T,T,T,T,W,Y,Y,V
Salmonella typhi.	255..257	G,H,L,P,P,P	R,H,L,P
Photobact. phosph.	258		H,P
Aeromonas hydroph.	259		R,H,L,P
Pseudomonas aer.	260..261		A,G,I,T,T,Y
Campylobac.jejuni	270		A,I
Caulobacter cres.	272		A,I
Rhizobium meliloti	275		L
Bordetella pertus.	277		L
Rhodospiril.rub.	280	L,F	
Agmenellum quadr.	285	F	
Anacystis nidulans	290..291	L,L,X	A,I
Synechocystis sp.	293	E	
Cyanophora parad.	295		A,E,G,I,L,S
Pylaiella littora.	297		A,I
Chloroplasts	300-399		
Chlamydomo. reinh.	300		A,I
Chlorella elipso.	302		A,I
Euglena gracilis	304..306	F	A,A,R,N,D,C,Q,E,G,G,H,I,L,L,L, K,M,X,F,P,S,S,T,W,Y,V
Scenedesmus obliq.	308	M,X,Y	
Marchantia polym.	310..312		A,R,R,R,N,D,C,Q,E,G,G,H,I,I, L,L,L,K,M,X,F,P,P,S,S,S,T,T,W,Y,V,V
Hordeum vulgare	313..314	Q	G,G,M,X,S,T,V
Triticum aestivum	315..316	E	R,D,C,E,G,G,M,X,P,S,T,W,Y
Zea mays	320..322	I	A,R,N,C,H,I,L,L,M,F,P,S,S,S,T,W,V,V
Arabidopsis thal.	324		M
Brassica oleracea	325		L
Glycine max	327..329	L,L,L	A,I,M,V
Medicago sativa	333		H
Nicotiana tabacum	335..337		A,R,R,N,D,C,Q,E,G,G,H,I,I,I, L,L,L,K,M,X,F,P, S,S,S,T,T,W,Y,V,V
Nicotiana debneyi	340		H
Oenothera sp.	342		P,W
Pelargonium zonale	345		R
Pennisetum america.	347		I
Petunia hybrida	348		H
Phaseolus vulgaris	350..352	L,L,L,X,F,W	
Pisum sativum	355..356		R,R,N,D,E,G,H,L,K,X,P,S,T,W,Y,V
Sinapis alba	360		K,V
Spinacia oleracea	365..366	I,I,L,M,X,F,P,T,W,V	A,R,D,C,E,H,I,I,L,M,S,S,T,T,Y,V
Spirodelia oligorh.	370..371		R,R,N
Vicia faba	375..376		E,L,L,F,T,Y
Sorghum bicolor	378		L

mitochondria	400-499		
single cell organisms and fungi 400-429			
Chlamydomo. reinh.	402		W
Trypanosoma brucei	403..404		A,A
Paramecium prim.	405		X,Y
Paramecium tetra.	406		W,Y
Tetrahymena pyrif.	407	F,Y	H,L,X,F,W
Tetrahymena therm.	408		L,X,Y
Aspergillus nidul.	410..411		A,R,N,D,C,C,Q,E,G,G,H,I,L,L,K, M,M,X,F,P,S,S,T,W,Y,V
Neurospora crassa	412..413	A,L,L,X,T,W,Y,V	A,R,C
Podospora anserina	414		D,S,W,V
Saccharomyces cer.	417..419	R,R,G,I,L,K,M,M,F,P, S,S,S,T,W,Y	A,R,R,N,D,C,Q,E,G,H,I,K,M F,P,S,S,T,T,Y,Y,V,V
Schizosaccha. pom.	421		G,H,L
Torulopsis glab.	425..426		A,R,N,D,C,Q,E,G,H,I,L,K,M,X, F,P,S,S,T,T,W,Y,V
Yeast	428	H,X	L,X,W
plants 430-449			
Arabidopsis thal.	430		M
Glycine max	432		E,M,X
Lupinus luteus	434		N,G,X
Oenothera sp.	436		X,S,W
Phaseolus vulgaris	438..440	L,L,L,M,X,F,P,W,Y	S
Triticum aestivum	442..443		D,Q,X,P,S,S,W,Y
Zea mays	445		D,C,H,M,X,P,S,W
animals 450-499			
Ascaris suum	450..451		A,R,N,D,C,Q,E,G,H,I,L,L,K,X, F,P,S,S,T,W,Y,V
Caenorhabdi.eleg.	452		D,C,G,H,X,T
Artemia sp.	453		E,F
Locusta migratoria	454..455		D,G,L,L,K,S
Aedes albopictus	456	R,D,Q,E,G,I,K,X,S,V	A,R,N,E,G,L,F,S,V
Drosophila melano.	457		D,C,G,L,K,W,Y
Drosophila yakuba	459..460		A,R,N,D,C,Q,E,G,H,I,L,L,K,X, F,P,S,S,T,W,Y,V
Drosophila virilis	461		Q,I,X
Asterina pectini.	462..463		H,S,S
Paracentrotus liv.	464..465		A,R,N,D,C,Q,E,G,H,I,L,L,X, F,F,P,S,S,T,W,Y,V
Strongylocen.purp.	466..467		A,R,N,D,C,Q,E,G,H,I,L,L,K,X, F,P,S,S,T,W,Y,V
Xenopus laevis	468..469		A,R,N,D,C,Q,E,G,H,I,L,L,K,X, F,F,P,S,S,T,W,Y,V

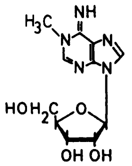
Rana catesbeiana	470		A,N,C,Q,I,L,X,F,P,T,W,Y
Cephalorhyn.com	471		F,P,T
Hamster	473	R,D,K,S	
Rat	474..476	R,D,D,L,L,L,K,F,W, V,V	A,R,N,N,N,D,D,C,C,Q,Q,E,G,H,I,L,L, K,K,X,X,F,P,P,S,S,S,T,T,W,W,Y,V
Mouse	477..478		A,R,N,D,C,Q,E,G,H,I,L,L,K,X, F,P,S,S,T,W,Y,V
Bovine	480..481	R,E,G,I,L,L,K,X,S,S,T,W,V,	A,R,N,D,C,Q,E,G,H,I,L,L,K,X, F,P,S,S,T,W,Y,V
Green Monkey	482		F
Macaca fuscata	483		H,L,S
Macaca mulatta	484		H,L,S
Macaca fascicula.	485		H,L,S
Macaca sylvanus	486		H,L,S
Saimiri sciureus	487		H,L,S
Tarsius syrichta	488		H,L,S
Lemur catta	489		H,L,S
Chimpanzee	490		H,L,S
Gibbon	491		H,L,S
Gorilla	492		H,L,S
Orang Utan	493		H,L,S
Human	494..495	S	A,R,N,D,C,Q,E,G,H,I,L,L,K,X, F,P,S,S,T,W,Y,V
eukaryotes	500-999		
single cell organisms and fungi 500-599			
Euglena gracilis	510	D,F	
Tetrahymena therm.	530..532	Q,Q,Q,X	Q
Scenedesmus obliq.	540	X,F,Y	
Dictyostelium dis.	555..556		E,W,V,V
Neurospora crassa	560	X,F	L,F
Podospora anserina	565..566		S,S
Saccharomyces cer.	570..572	G,G,H,H,I,L,L,K,M,X,P,P,S,W	A,R,R,R,D,C,Q,Q,E,E,G,H,I,L, K,K,M,X,X,P,S,S,W,Y,V
Schizosaccha.pom.	575..577	E,F,Y,	R,R,D,E,H,K,X,X,F,S,S,S
Torulopsis utilis	580	A,I,L,X,P,Y,V	
Yeast	590..592	A,R,R,R,N,D,C,E,K,F,F,S,S, T,T,Y,V,V,V	I,F,F,S,S,S
plants 600-699			
Arabidopsis thal.	615		Y
Hordeum vulgare	620..621	E,E,F	
Triticum aestivum	625..626	R,G,M,X,F,W,Y,Y	
Brassica napus	630	F	
Glycine max	635		D,M,X
Lupinus luteus	640	N,E,G,H,I,M,X,F,P,S,Y,V	
Phaseolus vulgare	645..647	L,L,L,X	L,P,P

Pisum sativum	650	F	
Nicotiana rustica	655..656	Y,Y	Y
Petunia sp.	660		N
Sorghum bicolor	665		G
Oryza sativa	670		G
animals 700-999			
Caenorhabdi eleg.	700	L	D,L,K,P,W
Asterina amurensis	750	X	
Bombyx mori	770..771	A,A,G,G,F,F	A,A,E,G,K
Drosophila melano.	780..782	E,H,K,K,X,F,S,S,S,Y,V,V,V	A,R,R,N,D,E,E,E,G,G,H,I,L, L,K,K,M,X,F,P,P,S,S,T,Y,V,V
Drosophila simul.	785		S
Euphausia sperba	790	X	
Xenopus laevis	830..831	D,X,F	A,N,L,K,X,X,F,Y,Y,V
Salmon	850	X	
Chicken	870	W	K,S,W
Mouse	950..952	R,R,Q,Q,E,I,K,K,M,X,F,F,F,S,V	A,D,E,G,H,I,L,K,K,X,P,P
Rat	955..957	N,N,D,D,Q,E,L,L,K,K,K,S, S,S,V,V	D,D,E,E,E,G,G,L,L,L,K,F,P,P
Rabbit	965..967	D,K,K,K,M,X,F,V	
Bovine	970..972	R,R,R,N,D,Q,L,F,F,S,S,T,W,Y	
Calf	974	F	
Cow	975..976	L,L	
Sheep	980	H,X	
Human	995..997	N,E,G,G,H,L,M,X,F,S,S,Y,Y,V	N,N,Q,E,G,G,L,L,K,X,X,P,S,S,S, T,Y,Y,V,V

(1) abbreviated names of organisms
(2) specifity of the tRNA is defined by amino acid one-letter-code

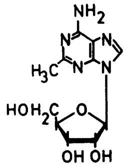
Table 2. ABBREVIATIONS FOR MODIFIED NUCLEOSIDES

A1 = M1A = 1-METHYLADENOSINE
A2 = M2A = 2-METHYLADENOSINE
A3 = M1AM = 2'-O-METHYL-1-METHYLADENOSINE
A4 = I6A = N6-ISOPENTENYLADENOSINE
A5 = MS2I6A = 2-METHYLTHIO-N6-ISOPENTENYLADENOSINE
A6 = M6A = N6-METHYLADENOSINE
A7 = T6A = N-((9-BETA-D-RIBOFURANOSYLPURINE-6-YL)CARBAMOYL)-THREONINE
A8 = MT6A = N-((9-BETA-D-RIBOFURANOSYLPURINE-6-YL)N-METHYL-CARBAMOYL)-THREONINE
A9 = MS2T6A = N-((9-BETA-D-RIBOFURANOSYL-2-METHYLTHIOPURINE-2-YL)-CARBAMOYL)THREONINE
C2 = S2C = 2-THIOCYTIDINE
C3 = CM = 2'-O-METHYLCYTIDINE
C4 = AC4C = N4-ACETYLCYTIDINE
C5 = M5C = 5-METHYLCYTIDINE
C6 = M3C = 3-METHYLCYTIDINE
C7 = ACP2C = N2-(5-AMINO-5-CARBOXYPENTYL)CYTIDINE
D = D = DIHYDROURIDINE
F = F = PSEUDOURIDINE
F1 = M1F = 1-METHYLPSEUDOURIDINE
F3 = FM = 2'-O-METHYLPSEUDOURIDINE
G1 = M1G = 1-METHYLGUANOSINE
G2 = M2G = N2-METHYLGUANOSINE
G3 = GM = 2'-O-METHYLGUANOSINE
G4 = M22G = N2,N2-DIMETHYLGUANOSINE
G5 = M22GM = 2'-O-METHYL-N2,N2-DIMETHYLGUANOSINE
G7 = M7G = 7-METHYLGUANOSINE
I = I = INOSINE
I1 = M1I = 1-METHYLINOSINE
Q = Q = QUEUOSINE
Q1 = MANQ = BETA,D-MANNOSYLQUEUOSINE
Q2 = GALQ = BETA,D-GALACTOSYLQUEUOSINE
T1 = T = 5-METHYLURIDINE
T2 = S2T = 5-METHYL-2-THIOURIDINE
T3 = TM = 2'-O-METHYL-5-METHYLURIDINE
U1 = MAM5U = 5-METHYLAMINOMETHYLURIDINE
U2 = S2U = 2-THIOURIDINE
U3 = UM = 2'-O-METHYLURIDINE
U4 = S4U = 4-THIOURIDINE
U6 = CM5U = 5-CARBAMOYLMETHYLURIDINE
U7 = MCM5U = 5-METHOXYCARBONYLMETHYLURIDINE
U8 = MAM5S2U = 5-METHYLAMINOMETHYL-2-THIOURIDINE
U9 = MCM5S2U = 5-METHOXYCARBONYLMETHYL-2-THIOURIDINE
V1 = O5U = URIDINE-5-OXYACETIC ACID
V2 = MO5U = 5-METHOXYURIDINE
V3 = MV = URIDINE-5-OXOACETIC ACID METHYL ESTER
V4 = CMNM5U = 5-CARBOXYMETHYLAMINOMETHYLURIDINE
V5 = CMNM5S2U = 5-CARBOXYMETHYLAMINOMETHYL-2-THIOURIDINE
V6 = CHM5U = 5-(CARBOXYHYDROXYMETHYL)URIDINE
V7 = ACP3U = 3-(3-AMINO-3-CARBOXYPROPYL)URIDINE
V8 = MCHM5U = 5-(CARBOXYHYDROXYMETHYL)URIDINE METHYL ESTER
Y1 = YW = WYBUTOSINE
Y2 = O2YW = WYBUTOXOSINE
Z1 = CZ = CIS-ZEATIN



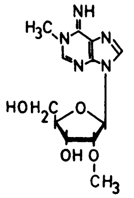
A1 = M1A

1-Methyladenosine



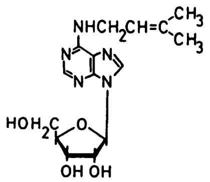
A2 = M2A

2-Methyladenosine



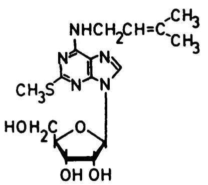
A3 = M1AM

2'-O-Methyl-1-methyladenosine



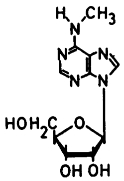
A4 = I6A

N6-Isopentenyladenosine



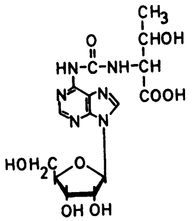
A5 = MS2I6A

2-Methylthio-N6-isopentenyl-
- adenosine



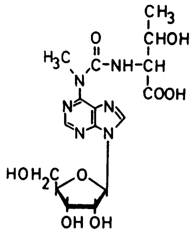
A6 = M6A

N6-Methyladenosine



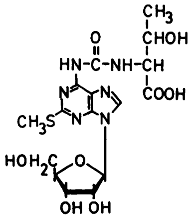
A7 = T6A

N-((9-β-D-Ribofuranosylpurine-6-YL)-
- carbamoyl)-threonine



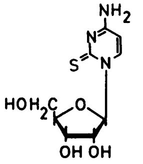
A8 = MT6A

N-((9-β-D-Ribofuranosylpurine-6-YL)-
- N-methyl-carbamoyl)threonine



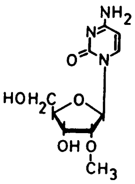
A9 = MS2T6A

N-((9-β-D-Ribofuranosyl-2-methylthio-
- purine-6-YL)carbamoyl)threonine



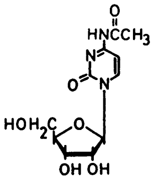
C2 = S2C

2-Thiocytidine



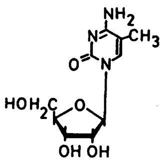
C3 = CM

2'-O-Methylcytidine



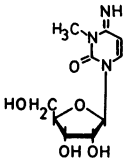
C4 = AC4C

N4-Acetylcytidine



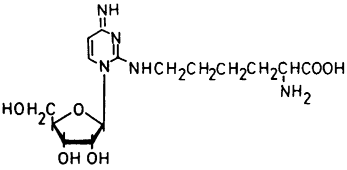
C5 = M5C

5-Methylcytidine



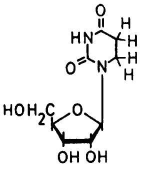
C6 = M3C

3-Methylcytidine



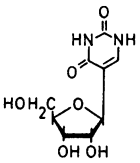
C7 = ACP2C

N2-(5-Amino-5-carboxypentyl)cytidine



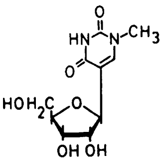
D = D

Dihydrouridine



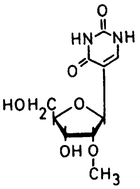
F = F

Pseudouridine



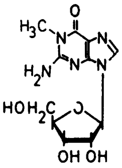
F1 = M1F

1-Methylpseudouridine



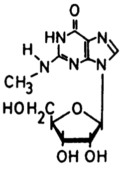
F3 = FM

2'-O-Methylpseudouridine



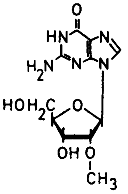
G1 = M1G

1-Methylguanosine



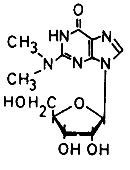
G2 = M2G

N2-Methylguanosine



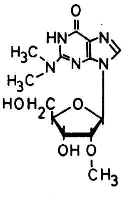
G3 = GM

2'-O-Methylguanosine



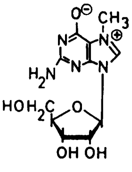
G4 = M22G

N2,N2-Dimethylguanosine



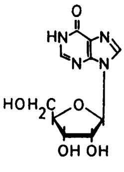
G5 = M22GM

2'-O-Methyl-N2,N2-
-dimethylguanosine



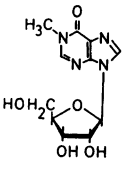
G7 = M7G

7-Methylguanosine



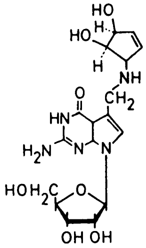
I = I

Inosine



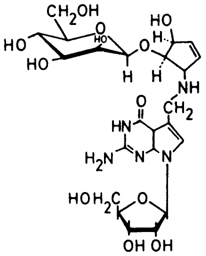
I1 = M1I

1-Methylinosine



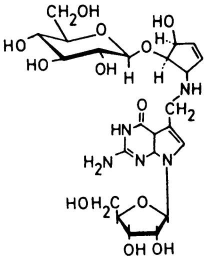
Q = Q

Queuosine



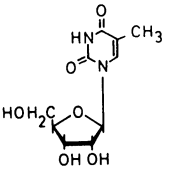
Q1 = ManQ

Beta, D-Mannosylqueuosine



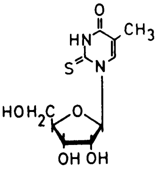
Q2 = GALQ

Beta, D-Galactosylqueuosine



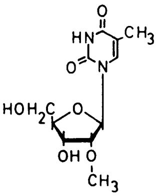
T1 = T

5-Methyluridine



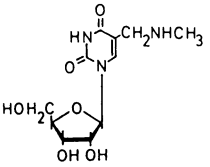
T2 = S2T

5-Methyl-2-thiouridine



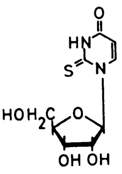
T3 = TM

2'-O-Methyl-5-methyluridine



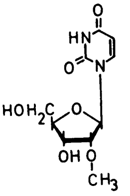
U1 = MAM5U

5-Methylaminomethyluridine



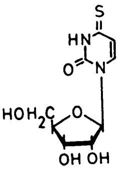
U2 = S2U

2-Thiouridine



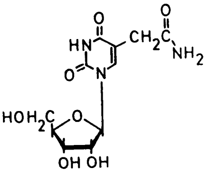
U3 = UM

2'-O-Methyluridine



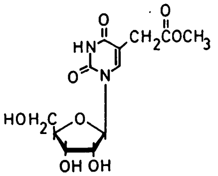
U4 = S4U

4-Thiouridine



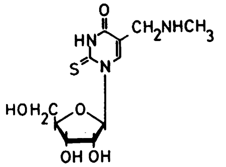
U6 = CM5U

5-Carbamoylmethyluridine



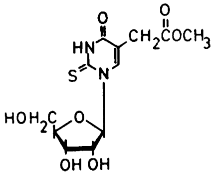
U7 = MCM5U

5-Methoxycarbonylmethyluridine



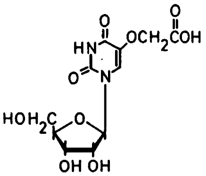
U8 = MAM5S2U

5-Methylaminomethyl-2-thiouridine



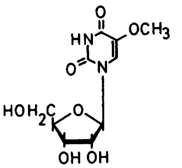
U9 = MCM5S2U

5-Methoxycarbonylmethyl-2-thiouridine



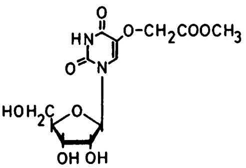
V1 = O5U

Uridine-5-oxyacetic acid



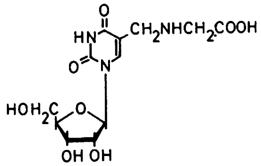
V2 = MO5U

5-Methoxyuridine



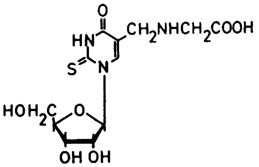
V3 = MV

Uridine-5-oxoacetic acid-methyl ester



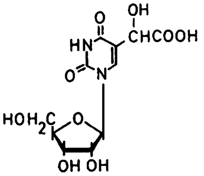
V4 = CMNM5U

5-Carboxymethylaminomethyluridine



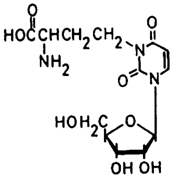
V5 = CMNM5S2U

5-Carboxymethylaminomethyl-2-thiouridine



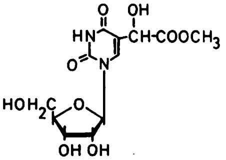
V6 = CHM5U

5-(Carboxyhydroxymethyl)uridine



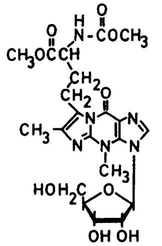
V7 = ACP3U

3-(3-Amino-3-carboxypropyl) uridine



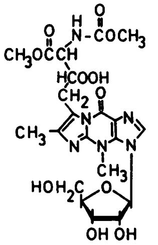
V8 = MCHM5U

5-(Carboxyhydroxymethyl)uridine-methyl ester



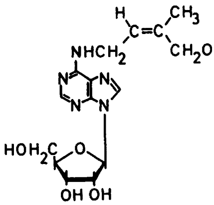
Y1 = YW

Wybutosine



Y2 = O2YW

Wybutoxosine



Z1 = CZ

Cis-Zeatin

Fig. 2: Structure of modified nucleosides found in tRNAs

Acknowledgements: The authors would like to thank many colleagues for sending new sequences or turning our attention to errors in the former compilations. We welcome any information regarding missing data or errornous presentation. We thank Fonds der Chemischen Industrie as well as Deutsche Forschungsgemeinschaft (SFB 213) for financial support.

Ref. 1: Transfer-RNA: Structure, Properties and Recognition. P.R.Schimmel, D.Soell, J.N.Abelson, Eds., 1979, Cold Spring Harbour Laboratory, N.Y., pp. 518-519

			AMINOACYL STEM		D STEM	D LOOP	D STEM		ANTIC.STEM	ANTIC.LOOP	ANTIC.STEM
			1 2 3 4 5 6 7	8 9	10 11 12 13	14 15 16 17 A 18 19 20 A B 21	22 23 24 25	26	27 28 29 30 31	32 33 34 35 36 37 38	39 40 41 42 43
		A L A N I N E									
A110	CGC	HALOBACTERIUM CUT.	G G G C U C G **** *********	U A	G A U C	A G C G G U A	G A U C	G4	C U U C C	U U C G C A A	G G A A G
A120	CGC	HALOBACTERIUM VOL.	G G G C U C G **** *********	U A	G A U C	A G U G G C A	G A U C	G4	C U U C C	U U C G C A A	G G A A G
A121	GGC	HALOBACTERIUM VOL.	G G G C U C G **** *********	U A	G A U C	A G G G G U A	G A U C	A	C U C C C	U U G G C A U	G G G A G
A122	UGC	HALOBACTERIUM VOL.	G G G C C C A **** *********	U A	G C U C	A G U G G U A	G A G U	G2	C C U C C	U U U G C A A	G G A G G
A203	UGC	MYCOPLASMA MYCOID.	G G G C C C U ***************	U A	G C U C	A G C D G G G A	G A G C	A	C C U G C	C U U G C A6C	G C A G G
A235	UGC	BACILLUS SUBTILIS	G G A G C C U ***************	U A	G C U C	A G C D G G G A	G A G C	G	C C U G C	U U V2G C A6C	G C A G G
A250	GGC	E.COLI	G G G G C U A **** *********	U* A	G C U C	A G C D G G G A	G A G C	G	C U U G C	A U G G C A U	G C A A G
A251	UGC	E.COLI	G G G G G C A ******* ****	U4* A	G C U C	A G C D G G G A	G A G C	G	C C U G C	U U V1G C A C	G C A G G
A252	UGC	E.COLI	G G G G C U A **** *********	U A	G C U C	A G C D G G G A	G A G C	G	C C U G C	U U V1G C A C	G C A G G
A412	UGC	NEUROSPORA CRASSA MITO	G G G G G U A **** ** ****	U A	G U A U	A A D U G G D A	G U A C	A	G C A A U	C U U G C U C	A N* U G C
A580	AGC	TORULOPSIS UTILIS	G G G C G U G **** **** **	U G1	G C G U	A G D D G G D A	G C G C	G4	F U C G C	U U I G C I1F	G C G A A
A590	AGC	YEAST	G G G C G U G **** **** **	U G1	G C G U	A G D C G G D A	G C G C	G4	C U C C C	U U I G C I1F	G G G A G
A770	AGC	BOMBYX MORI	G G G G G C G **** *********	U A	G2C U C	A G A D G G U A	G A G C	G4	C U C G C	U3U I G C I1F	G3F* G A G
A771	AGC	BOMBYX MORI	G G G G G C G **** *********	U A	G2C U C	A G A D G G U A	G A G C	G4	C U C G C	U3U I G C I1F	G3C G A G
		A R G I N I N E									
R020	UCU	PHAGE T4	G U C C C G C *************	U G	G U G U	A A U G3G A D A	G C A U	A	C G A U C	C U N* C U A A	G F U U G
R110	GCG	HALOBACTERIUM CUT.	G U C C G G A ***************	U A	G4G G F	A G U G G A C U A	U C C U	C	U U G G C	U U G C G G1A	G C C A G
R120	CCG	HALOBACTERIUM VOL.	G G G C C C G **** *********	U A	G C U C	A N* U G G A C A	G A G U	G4	C U U G G	U U C C G G1A	C C A A G
R121	GCG	HALOBACTERIUM VOL.	G U C C U G A ***************	U A	G4G G F	A G U G G A C U A	U C C U	C	C U G G C	U U G C G G1A	G C C A G
R122	UCG	HALOBACTERIUM VOL.	G G G C G C U ***************	U A	G C U C	A N* U C U G G A C A	G A G U	G2*	C U U G G	C U N* C G G1A	C C A A G
R235	ACG	BACILLUS SUBTILIS	G C G C C C G ***************	U A	G C U C	A A U G G A D A	G A G C	G	U U U G A	C U I C G G1A	U C A A A

	EXTRA ARM		TF STEM	TF LOOP	TF STEM	AMINOACYL STEM	
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A110	A G G C	C	C5U G G G	F1F C3I1A A U	C C C A G	C G A G U C C	A C C A
A120	A G G C	C5*	C5G G G G	F1F C3I1A A U	C C C C G	C G A G U C C	A C C A
A121	A G G C	C5*	C5C G G G	F1F C3I1A A U	C C C G G	C G A G U C C	A C C A
A122	A U G C	C5*	C5A G G G	F1F C3G A A U	C C C U G	U G G G U C C	A C C A
A203	G G G7U	C	G A C G G	U U C G A U C	C C G U U	A G G G U C C	A C C A
A235	A G G7U	C	A G C G G	T F C G A U C	C C G C U	A G G C U C C	A C C A
A250	A G G* U	C	A G C G G	T F C G A U C	C C G C U	U A G C U C C	A C C A
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A412	U U G	U	C5*A A G G	T F C A A A U	C C U U G	U A U C U C C	A C C A
A580	A G G D	C	U C C G G	T F C G A1C U	C C G G A	C U C G U C C	A C C A
A590	A G G D*	C	U C C G G	T F C G A U U	C C G G A	C U C G U C C	A C C A
A770	A G G7U	A	C5C G G G	A F C G A1U A	C C C G G	C G C C U C C	A C C A
A771	A G G7U	A	C5C G G G	A F C G A1U A	C C C G G	C G C C U C C	A C C A
	ARGININE						
R020	C G G	U	C C U G G	T F C G A U C	C C A G G	G C G G G A U	A C C A
R110	G G A	C	C G G C5G	F1F C3I1A A U	C G C C G	U C C G G A C	G C C A
R120	A U G C	C5	G C G G G	F1F C3I*1A A U	C C C G U	C G G G U C C	G C C A
R121	G G A	C	C5G G A G	F1F* C3I1A A U	C U C C G	U C A G G A C	G C C A
R122	U U G C	C5	A C G G G	F1F C3I1A A U	C C U G U	A G C G C C C	A C C A
R235	A G G7U	U	A G G G G	T F C G A C U	C C C C U	C G G G C G C	G C C A

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                                   1 2 3 4 5 6 7|8 9|10  12 |14  16  A   19  A   21  23  25 |27  29  31  33  35  37 |39  41  43
                                                |   |  11  13  15  17  18  20  B  |22  24 |26  28  30 |32  34  36  38  40  42
                                   --------------------------------------------------------------------------------------------
                                                                           *
R250   ACG E.COLI                  G C A U C C G|U4A|G C U C|A G C D   G G D     A|G A G U|A|C U C G G|C2U I C G A2A|C C G A G
                                   *************     .......                       .......   ---------               ---------
                                                                           *
R251   ACG E.COLI                  G C A U C C G|U4A|G C U C|A G C D   G G A D   A|G A G U|A|C U C G G|C U I C G A2A|C C G A G
                                   *************     .......                       .......   ---------               ---------
R252   CCU E.COLI                  G U C C U C U|U A|G U U A|A A U     G G A D   A|U A A C|G|A G C C C|C2U C C U A7A|G G G C U
                                   ********  ***     .......                       .......   ---------               ---------
                                                                                                           *
R253   UCU E.COLI                  G C G C C C U|U A|G C U C|A G U U   G G A U   A|G A G C|A|A C G A C|C2U N C U A7A|G F C G U
                                   *************     .......                       .......   ---------               ---------
R254   CCG E.COLI                  G C G C C C G|U A|G C U C|A G C D   G G A D   A|G A G C|G|C U G C C|C2U C C G G1A|G G C A G
                                   *************     .......                       .......   ---------               ---------
R417   ACG SACCHAROMYCES CER.      A U A U C U U|U A|A U U U|A A D     G G D     A|A A A U|A|F U A G A|A U A C G A A|F C U A A
           MITO                    *************     .......                       .......   ---------               ---------
                                                                                                           *
R418   UCU SACCHAROMYCES CER.      G C U C U C U|U A|G C U U|A A D     G G D U   A|A A G C|A|F A A U A|C U N C U A7A|F A U U A
           MITO                      ***********     .......                       .......   ---------               ---------
R456   UCG AEDES ALBOPICTUS        A A A U A U G|A A1G C G A|U U U               A|U U G C|A|A F U A G|F U U C G A C|C U A A U
           MITO                    *************     .......                       .......   ---------               ---------
R473   UCG HAMSTER                 U G G U G A U|U A1G U U U|A A C U             A|A A A U|U|A A U G A|F U U C G A C|F C A U U
           MITO                    *************     .......                       .......   ---------               ---------
R474   UCG RAT MORRIS HEPATOMA     U G G U A A U|U A1G U U U|A A A U             A|A A A U|U|A A U G A|F U U C G A C|F C A U U
           MITO                    *************     .......                       .......   ---------               ---------
R480   UCG BOVINE LIVER            U G G U A C U|U A1G U U U|A A A A U           A|A A A U|A|A A U G A|U U U C G A C|F C A U U
           MITO                    **********  *     .......                       .......   ---------               ---------
R590   ACG YEAST                   F U C C U C G|U G1G2C C C|A A D     G G D C   A|C G G C|G4F C U G G|C U I C G A A|C C A G A
                                   ********  ***     .......                       .......   ---------               ---------
R591   UCU YEAST                   G C U C G C G|U G1G2C G U|A A D     G G C     A|A C G C|G4F C U G A|C U U7C U A7A|F C A G A
                                     ******  ***     .......                       .......   ---------               ---------
R592   UCU YEAST                   G C U U G C G|U G1G2C G U|A A D     G G C     A|A C G C|G4F C U G A|C U U7C U A7A|F C A G A
                                     ****    ***     .......                       .......   ---------               ---------
R625   ACG TRITICUM AEST.          G A C U C C G|U G1G2C C C|A A D     G3G A V7  A|A G G C|G4C U G G U|C3U I C G A2A|A C C A G
                                   *************     .......                       .......   ---------               ---------
R950   ACG MOUSE LEUKEMIA          G G G C C A G|U G1G2C G C|A A D     G G A D   A|A C G C|G4F C U G A|C3U I C G G1A|F C A G A
                                   **  *********     .......                       .......   ---------               ---------
R951   ACG MOUSE LEUKEMIA          G G G C C A G|U G1G2C G C|A A D     G G A D   A|A C G C|G4F C U G A|C3U I C G G1A|F C A G A
                                   **  *********     .......                       .......   ---------               ---------
R970   CCG BOVINE LIVER            G A C C C A G|U G1G2C C U|A A D     G3G A D   A|A G G C|A|F C A G C|C3U C C G G1A|G C U G G
                                   *************     .......                       .......   ---------               ---------
                                                                                                                 *
R971   CCU BOVINE LIVER            G C C C C A G|U G1G2C C U|A A D     G G A D   A|A G G C|A|F U G G C|C6U C C U A7A|G C C A G
                                     ***********     .......                       .......   ---------               ---------
                                                                                                                 *
R972   UCU BOVINE LIVER            G G C U C C G|U G1G C G C|A A D     G G A D   A|G C G C|A|F F G G A|C6U U9C F A7A|U F C A A
                                   **  *********     .......                       .......   ------ --               --  -----
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          45    47    B     D     F     H     J     L     N     P     |49    51    53 |   55    57    59    |61    63    65 |   67    69    71    |73    75
       44    46    A     C     E     G     I     K     M     O     48 |   50    52    |54    56    58    60 |   62    64    |66    68    70    72 |   74    76
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
R250   C  G  G7 V7                                                 C  |G  G  A  G  G  |T  F  C  G  A  A  U  |C  C  U  C  C  |C  G  G  A  U  G  C  |A  C  C  A
                                                                      |===============|                     |===============|*********************|
R251   C  G  G7 V7                                                 C  |G  G  A  G  G  |T  F  C  G  A  A  U  |C  C  U  C  C  |C  G  G  A  U  G  C  |A  C  C  A
                                                                      |===============|                     |===============|*********************|
R252   A  A  U                                                     U  |G  C  A  G  G  |T  F  C  G  A  U  U  |C  C  U  G  C  |A  G  G  G  G  A  C  |A  C  C  A
                                                                      |===============|                     |===============|******   ************|
R253   G  G  G  C                                                  C  |G  C  A  G  G  |T  F  C  G  A  A  U  |C  C  U  G  C  |A  G  G  G  C  G  C  |G  C  C  A
                                                                      |===============|                     |===============|*********************|
R254   A  G  G7 U                                                  C  |U  C  A  G  G  |T  F  C  G  A  A  U  |C  C  U  G  U  |C  G  G  G  C  G  C  |G  C  C  A
                                                                      |   ============|                     |============   |*********************|
R417   U  U  A                                                     U  |A  U  A  G  G  |T  F  C  A  A  A  U  |C  C  U  A  U  |A  A  G  A  U  A  U  |U  C  C  A
                                                                      |===============|                     |===============|*********************|
R418   A  U  A  U                                                  U  |C  C  A  U  G  |T  F  C  A  A  A  U  |C  A  U  G  G  |A  G  A  G  A  G  U  |A  C  C  A
                                                                      |===============|                     |===============|******************   |
R456   C  U  U                                                     A  |G  G  U  G  A  |A  A  U              |U  C  A  C  C  |C  A  F  A  U  U  U  |U  C  C  A
                                                                      |===============|                     |===============|*********************|
R473   A  G  A                                                     U  |U  A  U  G  A  |C  A  U  A  U  C     |U  C  A  U  A  |A  U  C  A  C  C  A  |A  C  C  A
                                                                      |===============|                     |===============|*********************|
R474   A  G  A                                                     U  |U# A  U  G  A  |U  A  A  U  A  A     |U  C  A  U  A  |A  U  U  A  C  C  A  |A  C  C  A
                                                                      |===============|                     |===============|*********************|
R480   A  G  A                                                     U  |U  A  U  G  A  |U  U  U  A  A  U     |U  C  A  U  A  |A  U  U  A  C  C  A  |A  C  C  A
                                                                      |===============|                     |===============|***   ***************|
R590   A  G  A  D                                                  U  |C5 C  A  G  G  |T  F  C  A  A1 G  U  |C  C  U  G  G  |C  G  G  G  G  A  A  |G  C  C  A
                                                                      |===============|                     |===============|******   ************|
R591   A  G  A  D                                                  U  |A  U  G  G  G  |T  F  C  G  A1 C  C  |C  C  C  A  U  |C  G  U  G  A  G  U  |G  C  C  A
                                                                      |===============|                     |===============|******   *********   |
R592   A  G  A  D                                                  U  |A  U  G  G  G  |T  F  C  G  A1 C  C  |C  C  C  A  U  |C  G  U  G  A  G  U  |C  C  C  A
                                                                      |===============|                     |===============|******      ******   |
R625   A  G  A  D                                                  U  |C5 U  G  G  G  |T  F  C  G  A1 U  C  |C  C  C  A  G  |C  G  G  A  G  U  C  |G  C  C  A
                                                                      |===============|                     |===============|*********************|
R950   A  G  A  D                                                  U  |C5 F  A  G  G  |F  F  C  G  A1 C  U  |C  C  U  G  G  |C  U  G  G  C  U  C  |G  C  C  A
                                                                      |===   =========|                     |=========   ===|***************   ***|
R951   A  G  A  D                                                  U  |C5 C  A  G  G  |F  F  C  G  A1 C  U  |C  C  U  G  G  |C  U  G  G  C  U  C  |G  C  C  A
                                                                      |===============|                     |===============|***************   ***|
R970   G  G  A  D                                                  U  |G  F  G  G  G  |T  F  C  G  A1 G  U  |C  C  C  A  U  |C  U  G  G  G  U  C  |G  C  C  A
                                                                      |   ============|                     |============   |*********************|
R971   G  G  A  D                                                  U  |G  F  G  G  G  |T  F  C  G  A1 G  U  |C  C  C  A  U  |C  U  G  G  G  G  F  |C  C  C  A
                                                                      |   ============|                     |============   |******************   |
R972   A  G  G7 D                                                  U  |C5 C  G  G  G  |T# F  C  G  A1 G  U  |C  C  C  G  G  |C  G  G  A  G  U  C  |G  C  C  A
                                                                      |===============|                     |===============|***************   ***|
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			1 2 3 4 5 6 7	8 9	10 11 12 13	14 15 16 17 A 18 19 20 A B 21	22 23 24 25	26	27 28 29 30 31	32 33 34 35 36 37 38	39 40 41 42 43
		A S P A R A G I N E									
N040	GUU	PHAGE T5	G G U U C C U	U A	G C U C	U A A U G G U U A	G A G C	C	G C A C C	U U G U U N* A	G F U G A
N110	GUU	HALOBACTERIUM CUT.	G C C G C C A	U A	G C U C	A G U U G G U A	G A G C	A	C G U G G	U U G U U A7C	C C A C G
N120	GUU	HALOBACTERIUM VOL.	G C C G C C G	U A	G C U C	A G* U U G G U A	G A G C	A	C C U C G	C U G U U A7A	C G A G G
N140	GUU	METHANOBAC. THERM.	G C G C C G G	U G	G C U C	A V7C C U G G U U A	G A G C	U	C A C G G	C U N* U U A7A	C C G U G
N250	GUU	E.COLI	U C C U C U G	U4A	G U U C	A G D C G G D A	G A A C	G	G C G G A	C U Q U U A7A	F C C G U
N590	GUU	YEAST	G A C U C C A	U G	G2C C A	A G D D G G D D A	A G G C	G4	U G C G A	C U G U U A7A	F C G C A
N640	GUU	LUPINUS LUTEUS	G C C U C A G	U A	G2C U C	A G D G G D V7 A	G A G C	G4	G U C G G	C3U G* U U A7A	C C G A U
N955	GUU	RAT LIVER	G U C U C U G	U G1	G2C G C	A A D C G G D V7 A	G C G C		F F C G G	C U Q U U A7A	C C G A A
N956	GUU	RAT W. 256 SARCOMA	G U C U C U G	U G1	G2C G C	A A D C G G D V7 A	G C G C		F F C G G	C U G U U A7A	C C G A A
N970	GUU	BOVINE LIVER	G U C U C U G	U G1	G2C G C	A A D C G G D V7 A	G C G C		F F C G G	C U Q U U A7A	C C G A A
N995	GUU	HUMAN LIVER/PLAC.	G U C U C U G	U G1	G2C G C	A A D C G G D V7 A	G C G C		F F C G G	C U Q U U A7A	C C G A A
		A S P A R T I C A C I D									
D040	GUC	PHAGE T5	G C G A C C G	G G	G C U G	G C U U G G U A A	U G G U	A	C U C C C	C U G U C A C	G G G A G
D120	GUC	HALOBACTERIUM VOL.	G C C C G G G	U G	G4U G F	A G U G G C C C A	U C A U	A	C G A C C	C U G U C A C	G G U C G
D250	GUC	E.COLI	G G A G C G G	U4A	G U U C	A G D C G G D D A	G A A U	A	C C U G C	C U Q U C A2C	G C A G G
D456	GUC	AEDES ALBOPICTUS MITO	A A A A A A U	U A1	G U U U	A A U C A A	A A A C	C	F F A G U	A U G U C A7A	A C U A A
D473	GUC	HAMSTER MITO	A A G A U A U	U A1	G U A A	A A U C A	U U A C	A	F A A C U	U U G U C A G	A G U U A
D474	GUC	RAT LIVER MITO	G A G A U A U	U A1	G U A A	A A U A A	U U A C	A	F A A C C	U U Q U C A A	G G U U A
D475	GUC	RAT MORRIS HEPATOMA MITO	G A G A U A U	U A1	G U A A	A A U A A	U U A C	A	F A A C C	U U G U C A A	G G U U A
D510	GUC	EUGLENA GRACILIS	U C U U C G G	U A	G U A F	A G D G3G D A A	G U A U	G*	F C C G C	C U G U C A C*	G C G G A
D590	GUC	YEAST	U C C G U G A	U A	G U U F	A A D G G D C A	G A A U	G	G G C G C	F U G U C G1C	G U G C C
D830	GUC	XENOPUS LAEVIS	U C C U C G2U	U G1	G U A F	A G U G G D G A	G U A U	C	C C C G C	C U Q1U C A C5	G C G G G

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        45 47 B  D  F  H  J  L  N  P            |49  51  53|  55  57  59  |61  63  65| 67  69  71  |73  75
      44 46 A  C  E  G  I  K  M  O  48          | 50  52   |54  56  58  60| 62  64   |66  68  70  72| 74  76
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          A S P A R A G I N E

N040  G G G7U                                 U |G C U G G|T F C G A A U|C C A G C|A G G A A C C|G C C A
                                                |=========|             |=========|*************|
N110  U U G U                                 C5|C C A G G|F1F C3G G A C|C C U G G|U G G C G G C|G A A C
                                               *|=========|             |=========|*************|
N120  U U G U                                 C5|C5C A G G|F1F C3G A G U|C C U G G|C G G U G G C|G C C A
                                                |=========|             |=========|****** ******|
N140  A G G C                                 C |G C G G G|F F C3I1A A U|C C C G C|C C G G C G C|A C C A
                                                |=========|             |=========|*************|
N250  A U G7U                                 C |A C U G G|T F C G A G U|C C A G U|C A G A G G A|G C C A
                                                |=========|             |=========|*************|
N590  A G A D                                 C5|G U G A G|T F C A A1C C|C U C A C|U G G G G U C|G C C A
                                                |=========|             |=========|****** ******|
N640  A G G7D                                 C5|G U A G G|T F C G A1G C|C C U A C|U U G G G G C|G C C A
                                                |=========|*            |=========|  **** ******|
N955  A G G7D                                 U |G G U G G|N F C G A1G C|C C A C C|C A G G G A C|G C C A
                                                |=========|*            |=========|****** ******|
N956  A G G7D                                 U |G G U G G|N F C G A1G C|C C A C C|C A G G G A C|G C C A
                                                |=========|             |=========|****** ******|
N970  A G G7D                                 U |G G U G G|N F C G A1G C|C C A C C|C A G G G A C|G C C A
                                                |=========|             |=========|****** ******|
N995  A G G7D                                 U |G G U G G|N F C G A1G C|C C A C C|C A G G G A C|G C C A
                                                |=========|             |=========|****** ******|

          A S P A R T I C   A C I D
                                                |         |*            |        *|             |
D040  A G A A                                 U |G U G G G|T F C A A A U|C C C A F|C G G U C G C|G C C A
                                                |  =======|*            |======== |*************|
D120  U G A                                   C |G C G G G|F1F C3I1A A U|C C C G C|C U C G G G C|G C C A
                                                |=========|             |=========|**  *********|
D250  G G G7U                                 C |G C G G G|T F C G A G U|C C C G F|C C G U U C C|G C C A
                                                |  =======|             |======== |****** ******|
D456  A A A                                   A |A U U A G|A U C A U    |C U A A U|A F F U U U U|A C C A
                                                |=========|             |=========|*************|
D473  A A U                                   U |A U A G A|C U A A U C  |U C U A U|A U A U C U U|A C C A
                                                |=========|             |=========|*************|
D474  A G U                                   U |A U A G A|C U U A A A  |U C U A U|A U A U C U U|A C C A
                                                |=========|             |=========|***********  |
D475  A G U                                   U |A U A G A|C U U A A A  |U C U A U|A U A U C U U|A C C A
                                               *|*========|        *    |=========|***********  |
D510  A G A                                   C |C C G G G|T F C A A U U|C C C G G|C C G G A G A|G C C A
                                                |=========|             |=========|****** ******|
D590  A G A                                   U |C5G G G G|T F C A A U U|C C C C G|U C G C G G A|G C C A
                                                |=========|             |=========|****  *******|
D830  A G A                                   C5|C5G G G G|T F C A A U U|C C C C G|A C G G G G A|G C C A
                                                |=========|             |=========|****** ******|
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			1 2 3 4 5 6 7	8 9	10 11 12 13	14 15 16 17 A 18 19 20 A B 21	22 23 24 25	26	27 28 29 30 31	32 33 34 35 36 37 38	39 40 41 42 43
D955	GUC	RAT ASCIT. HEPATOMA	U C C U C G U	U A	G U A F	A G U G G D G A	G U A U	C	C C C G C	U C G U C A C5	G C G G G
D956	GUC	RAT LIVER	U C C U C G U	U A	G U A F	A G U G G D G A	G U A U	C	C C C G C	U C Q1U C A C5	G C G G G
D965	GUC	RABBIT LIVER	U C C C G U C	U A	G U A F	A G U G G D G A	G U A U	A	U C C G C	C U Q1U C A C	G C G G G
D970	GUC	BOVINE LIVER	G G U G C C G	U A	G2C G F	A G D G3G C A	N C G N	G	A C U C U	C3U Q1U C A A	A G A G U
		C Y S T E I N E									
C120	GCA	HALOBACTERIUM VOL.	G C C A A G G	U G	G C A G	A N* U U C G G C C C A	A C G C	A	U C C G C	C U G C A G1A	G C G G A
C250	GCA	E.COLI	G G C G C G U	U4A	A C A A	A G C G G D D	A U G U	A	G C G G A	F U G C A A5A	F C C G U
C590	GCA	YEAST	G C U C G U A	U G	G C G C	A G D G G D A	G C G C	A	G C A G A	F U G C A A4A	F C U G U
		G L U T A M I N E									
Q020	UUG	PHAGE T4	U G G G A A U	U4A	G C C A	A G D D G G D A	A G G C	A	U A G C A	C U N* U G A2C	F G C U A
Q040	UUG	PHAGE T5	U G G G G A U	U A	G C U U	A G C U U G G C C U A	A A G C	U	U C G G C	C U U U G A A	G F C G A
Q110	CUG	HALOBACTERIUM CUT.	A G U C C C G	U N*	G4G G F	A G U G G C C A A	U C C U	G	A A G C C	U U C U G G1G	G G C U U
Q120	CUG	HALOBACTERIUM VOL.	A G U C C C A	U G	G4G G F	A G U G G C C A A	U C C U	G	U U G C C	U U C4U* G G1G	G G C A A
Q250	CUG	E.COLI	U G G G G U A	U4C	G C C A	A G C G3G D A	A G G C	A	C C G G A	U3U C U G A2F	F C C G G
Q251	UUG	E.COLI	U G G G G U A	U4C	G C C A	A G C G3G D A	A G G C	A	C C G G U	U3U N* U G A2F	A C C G G
Q313	UUG	HORDEUM VULGARE CHLORO	U G G G G C G	U G	G C C A	A G U G3G* D A	A G G C	A	G C G G G	U U N* U G N* U	C C C G U
Q456	UUG	AEDES ALBOPICTUS MITO	U A U A U U U	U A1	G U G U	A U G A U	G C A C	A	A A A G F	U U U* U G A A	A C U U U
Q530	CUA	TETRAHYMENA THERM.	G G U U C U A	U A	G2U A F	A G C G C D D A	G U A C	U	G G G G A	N* U C U A A7A	F C C C U
Q531	UUA	TETRAHYMENA THERM.	G G U U C C A	U A	G2U A F	A G D G G D D A	G U A C	U	G G G G A	C3U U3U A A7A	F C C C U
Q532	UUG	TETRAHYMENA THERM.	G G U U G U A	U G1	G2U G F	A G C G G D D A	G C A C	C	G A G G A	C U U3U G A A	F C C U C
Q950	CUG	MOUSE LIVER	G G U U C C A	U G1	G U G F	A A D G3G D D A	G C A C	U	C F G G A	C3U C U G A A	F C C A G
Q951	UUG	MOUSE LIVER	G G U C C C A	U G1	G U G F	A A D G3G D D A	G C A C	U	C F G G A	C3U U3U G A A	F C C A G

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        45  47  B   D   F   H   J   L   N   P   |49  51  53|  55  57  59  |61  63  65|  67  69  71  |73  75
      44  46  A   C   E   G   I   K   M   O   48|  50  52  |54  56  58  60|  62  64  |66  68  70  72|  74  76
      ----------------------------------------------------------------------------------------------------

D955  A G A                                   C5|C5G G G G |T F C G A U U |C C C C G |A C G G G G A |G C C A
                                                |==========|              |==========|******  ******|
D956  A G A                                   C5|C5G G G G |T F C G A U U |C C C C G |A C G G G G A |G C C A
                                              * |==========|              |==========|******  ******|
D965  A G G A                                 C5|C5G G G G |T F C G A1A U |C C C C G |G A C G G G A |G C C A
                                                |==========|              |==========|**************|
D970  G G G7A                                 C5|N U G A G |T F C G A1U A |C U C A A |C G G C A C C |G C C A
                                                |  ========|              |========  |**************|

                C Y S T E I N E

C120  A C C C C                               C5|G C C G G |F1F C3I1A A U |C C G G C |C C U U G G C |U C C A
                                                |==========|              |==========|**************|
C250  C U A                                   G |U C C G G |T F C G A C U |C C G G A |A C G C G C C |U C C A
                                                |==========|              |==========|**************|
C590  U G G7D                                 C5|C U U A G |T F C G A1U C |C U G A G |U G C G A G C |U C C A
                                                |====  ====|              |====  ====|**  **********|

                G L U T A M I N E

Q020  G A U G                                 C |A A A G G |T F C G A G U |C C U U U |A U U C C C A |G C C A
                                                |==========|*             |==========|**************|
Q040  G A U                                   C |A U U G G |T F C A A A U |C C A A U |A U C C C C U |G C C A
                                                |==========|              |==========|************  |
Q110  C G A                                   C |G G A A G |F F C3G A A U |C U U C C |C G G G A C U |A C C A
                                                |==========|              |==========|**************|
Q120  C G A                                   C |C C A G G |F F C3G A A U |C C U G G |U G G G A C U |A C C A
                                                |==========|              |==========|**************|
Q250  C A U U                                 C |C G A G G |T F C G A A U |C C U C G |U A C C C C A |G C C A
                                                |==========|              |==========|**************|
Q251  C A U U                                 C |C C U G G |T F C G A A U |C C A G G |U A C C C C A |G C C A
                                                |==========|              |==========|**************|
Q313  U A U D                                 C |G G A G G |T F C G A A U |C C U U C |C G U C C C A |G C C A
                                                |==  ======|              |======  ==|****  ********|
Q456  U A G                                   A |A A U A G |U U U A A U U |C U A U U |A A A U A U A |A C C A
                                                |==========|              |==========|**************|
Q530  U G A                                   C |C5U G G G |U F C G A1A U |C C C A G |U A G G A C C |U C C A
                                                |==========|              |==========|******  ******|
Q531  U G A                                   C |C5U G G G |U F C G A1A U |C C C A G |U G G G A C C |U C C A
                                                |==========|              |==========|******  ******|
Q532  U G A                                   C |C5U G G G |U F C G A1A U |C C C A G |U A C G A C C |U C C A
                                                |==========|              |==========|******  ******|
Q950  C G A                                   U |C5C5G A G |F F C A A1A U |C U C G G |U G G A A C C |U C C A
                                                |==========|              |==========|**************|
Q951  C G A                                   U |C5C5G A G |F F C A A1A U |C U C G G |U G G G A C C |U C C A
                                                |==========|              |==========|**************|
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                              1 2 3 4 5 6 7|8 9 |10  12 |14  16  A   19  A   21|  23  25|  |27  29  31|  33  35  37  |39  41  43
                                           |    |  11  13|  15  17  18  20  B  |22  24  |26|  28  30  |32  34  36  38|  40  42
                              ---------------------------------------------------------------------------------------------
                                                             *
Q955   CUG RAT LIVER          G G U U C C A|U G1|G U G F|A A D     G3G D D   A|G C A C|U|C U G G A|C3U C U G A A|F C C A G
                              **************     ......                          ......  ----------              ----------
Q970   CUG BOVINE LIVER       G G U U C C A|U G1|G U G F|A A D     G3G D D   A|G C A C|U|C F G G A|C3U C U G A A|F C C A G
                              **************     ......                          ......  ----------              ----------

                   G L U T A M I C   A C I D
                                                                                                     *
E120   CUC HALOBACTERIUM VOL. G C U C U G U|U G |G4U G F|A G U C C G G C C A A|U C A U|A|U C A C C|C U C4U C A C|G G U G A
                              ********  ****       ....                          ....    ----------    *         ----------
E121   UUC HALOBACTERIUM VOL. G C U C G G U|U G |G4U G F|A G U C C G G C C A A|U C A U|C|U U G G C|C U N U C G1A|G C C G A
                              **************       ....                          ....    --  ------              ------  --
E250   UUC E.COLI             G U C C C C U|U C |G U C F|A G A     G G C C C A|G G A C|A|C C G C C|C U U8U C A2C|G G C G G
                              *************      ......                          ......  ----------              ----------
E251   UUC E.COLI             G U C C C C U|U C |G U C F|A G A     G G C C C A|G G A C|A|C C G C C|C U U8U C A2C|G G C G G
                              **************     ......                          ......  ----------              ----------
E252   UUC E.COLI             G U C C C C U|U C |G U C F|A G A     G G C C   A|G G A C|A|C C G C C|C U U8U C A2C|G G C G G
                            * **************     ......                          ......  ----------    *         ----------
E293   UUC SYNECHOCYSTIS SP.  G C C C C C A|U C |G U C U|A G A     G G C C D A|G G A C|A|C C U C C|C U N U C A C|G G A G G
                                ************     ......                          ......  ----------              ----------
E315   UUC TRITICUM AESTIVUM  G C C C C U A|U C |G U C4U|A G U     G G D D C A|G G A C|A|U C U C F|C U U8F C A A|G G A G G
           CHLORO               ********  **     ......                          ......    ------      *           ------
E456   UUC AEDES ALBOPICTUS   A U U U A U A|U A1|G U U U|A A A U             A|A A A C|A|F F A C A|U U U U C A7C|U G U A A
           MITO               **************     .........                     ........  ----------    *         ----------
E480   UUC BOVINE LIVER       G U U C U U G|U A1|G U U G|A A U G             A|C A A C|G2|A F G G U|U U U U C A U|A F C A U
           MITO                 **********       .........                     ........  ------  --              --  ------
E575   UUC SCHIZOSACCHA. POM. U C C G U U G|U G1|G U C C|A A C       G G C D   A|G G A U|U|C G U C G|C U U9U C A C|C G A C G
                              **************       ......                      ......    ----------              ----------
E590   UUC YEAST              U C C G A U A|U A |G U G F|A A C       G G C D   A|U C A C|A|F C A C G|C U U9U C A C|C G U G G
                              **************     ......                          ......    --------              --------
E620   UUC HORDEUM VULGARE    U C C G U C G|U A |G U C F|A G G D     G G D F   A|G G A U|A|C U C G G|C U U F C A C|C C G A G
                              **************       ....                          ....    ----------              ----------
E621   CUC HORDEUM VULGARE    U C C G U C G|U A |G U C F|A G G D     G G D F   A|G G A U|A|C U C G G|C U C F C A C|C C G A G
                              **************       ....                          ....    ----------              ----------
E640   CUC LUPINUS LUTEUS     U C C G U U G|U A |G U C F|A G D D     G G D C   A|G G A U|A|U U C G G|C U C U C A C|C C G A A
                              **************       ....                          ....    ----------*             ----------
E780   UUC DROSOPHILA MELANO. U C C C A U A|U G |G U C F|A G D       G G C D   A|G G A U|A|U C U G G|C3U U2U C A C|C C A G A
                              **************       ....                          ....    ----------              ----------
E950   CUC MOUSE              U C C C U G G|U G |G2U C F|A G U       G G D F   A|G G A U|U|C G G C G|C U C U C A C|C G C C G
                              ************         ....                          ....    ----------              ----------
E955   UUC RAT LIVER          U C C C A C A|U G1|G U C F|A G C       G G D D   A|G G A U|U|C C U G G|F U U9U C A C|C C A G G
                              **************       ....                          ....    ----------              ----------
E995   CUC HUMAN              U C C C U G G|U G |G2U C F|A G U       G G D F   A|G G A U|U|C G G C G|C U C U C A C|C G C C G
                              ************         ....                          ....    ----------              ----------
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          45 47 B   D   F   H   J   L   N   P  |49 51 53  |55 57 59      |61 63 65  |67 69 71      |73 75
        44 46  A   C   E   G   I   K   M   O  48| 50 52    |54 56 58 60   |62 64     |66 68 70 72   | 74 76
        ----------------------------------------------------------------------------------------------------
                                                   *
Q955    C G A                                 U |C5C5G A G |F F C A A1A U |C U C G G |U G G A A C C |U C C A
                                                |==========|              |==========|**************|
Q970    C G A                                 U |C5C G A G |F F C A A1A U |C U C G G |U G G A A C C |U C C A
                                                |==========|              |==========|**************|

             G L U T A M I C   A C I D
                                                            *
E120    U G A                                 C |C5A G G G |F1F C3G A A U |C C C U G |A C G G A G C |A C C A
                                                |==========|              |==========|****  ********|
                                                 *
E121    G G A                                 C |C5A G G G |F1F C3I1A A U |C C C U G |A C C G A G C |A C C A
                                                |==========|              |==========|**************|
E250    U A A                                 C |A G G G G |T F C G A A U |C C C C U |G G G G G A C |G C C A
                                                |==========|              |==========|  ************|
E251    U A A                                 C |A G G G G |T F C G A A U |C C C C U |A G G G G A C |G C C A
                                                |======  ==|              |==========|**************|
E252    U A A                                 C |A G G G G |T F C G A A U |C C C C U |A G G G G A C |G C C A
                                                |==========|              |==========|**************|
E293    C G A                                 C |A G G G A |T F C G A A U |U C C C U |U G G G G G U |A C C A
                                                |==========|              |==========|************  |
E315    C A G                                 C5|G G G G A |T F C G A C U |U C C C C |F G G G G G U |A C C A
                                                |==========|              |==========|**  ********  |
E456    A A A                                 U |A A A A A |U U U A       |U U U U U |F A U A A A U |A C C A
                                                |==========|              |==========|**************|
E480    U A G                                 U |C5A U G G |U F A G A U U |C C A U G |U A A G A A U |A C C A
                                                |==========|              |==========|  **********  |
E575    G G A                                 G |C5G G G G |T F C G A C U |C C C C G |C A A C G G A |G C C A
                                                |  ========|              |==========|**************|
E590    A G A                                 C |C5G G G G |T F C G A C U |C C C C G |U A U C G G A |G C C A
                                                |==========|              |==========|**************|
E620    A G A                                 C |C5C G G G |T F C A A1G U |C C C G G |C G A C G G A |A C C A
                                                |==========|              |==========|**************|
E621    A G A                                 C |C5C G G G |T F C G A1G U |C C C G G |C G A C G G A |A C C A
                                                |==========|              |==========|**************|
E640    A G A                                 C |C5C G G G |T F C A A1G U |C C C G G |C G A C G G A |A C C A
                                                |==========|              |==========|**************|
                                                 *
E780    A G G                                 C |C C G G G |T F C G A U U |C C C G G |U A U G G G A |A C C A
                                                |==========|              |==========|**************|
E950    C G G                                 C |C5C5G G G |T3F C G A U U |C C C G G |U C A G G G A |A C C A
                                                |==========|              |==========|  ************|
E955    C G G                                 C |C5C5G G G |T3F C G A C U |C C C G G |U G U G G G A |A C C A
                                                |==========|              |==========|**************|
E995    C G G                                 C |C5C5G G G |T3F C G A U U |C C C G G |U C A G G G A |A C C A
                                                |==========|              |==========|  ************|
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			1 2 3 4 5 6 7	8 9	10 11 12 13	14 15 16 17 A 18 19 20 A B 21	22 23 24 25	26	27 28 29 30 31	32 33 34 35 36 37 38	39 40 41 42 43
		G L Y C I N E									
G020	UCC	PHAGE T4	G C G G A U A	U C	G U A U	A A U G3G D A	U U A C	C	U C A G A	C U U* C C A A	F C U G A
G110	GCC	HALOBACTERIUM CUT.	G C G C U G G	U A	G2U G F	A G U G G U A	U C A C	G	U G A C C	U U G C C A U	G G U C A
G120	CCC	HALOBACTERIUM VOL.	G C G C C G A	U G	G2U C C	A G U G G U A	G G A C	A	C G A G C	U U C C C A A	G C U C G
G121	GCC	HALOBACTERIUM VOL.	G C G U C G G	U A	G2U G F	A G U G G U A	U C A C	G	U G A C C	U U G C C A U	G G U C A
G122	GCC	HALOBACTERIUM VOL.	G C G C U G G	U A	G2U G F	A G U G G U A	U C A C	G	U G A C C	U U G C C A U	G G U C A
G123	UCC	HALOBACTERIUM VOL.	G C A C C G G	U G	G2U C U	A A U G G U A	A G A C	A	U U G G C	C U N* C C A A	G C C A A
G140	GCC	METHANOBAC. THERM.	G C G G C G U	U A	G U C C	A V7C CCU G G U U A	A G A C	A	C U G G C	C U G C C A C	G C C A G
G203	UCC	MYCOPLASMA MYCOID.	G C A G G U G	U4A	G U U U	A A U G G C A	G A A C	U	U C A G C	C U U C C A6A	G C U G A
G220	UCC	STAPHYLOCOC. EPID.*	G C G G G A G	U4A	U U U C	A A C U U U D A	G A A U	A	C G U U C	C U U C C C G	G A A C G
G221	UCC	STAPHYLOCOC. EPID.*	G C G G G A G	U4A	G U U C	A A U U U D A	G A A C	A	C A U U C	C U U C C C G	G A A U G
G235	UCC	BACILLUS SUBTILIS	G C G G G U G	U A	G U U U	A G U G G D A	A A A C	C	U C A G C	C U V4C C A A	G C U G A
G250	CCC	E.COLI	G C G G G C G	U*4A	G U U C	A A U G G D A	G A A C	G	A G A G C	U U C C C A A	G C U C U
G251	GCC	E.COLI	G C G G G A A	U A	G C U C	A G D D G G D A	G A G C	A	C G A C C	U U G C C A A	G G U C G
G252	UCC	E.COLI	G C G G G C A	U C	G U A U	A A U G G C U A	U U A C	C	U C A G C	C U N* C C A A	G C U G A
G255	CCC	SALMONELLA TYPHI.	G C G G G C G	U A	G U U C	A A U G*3G D A	G A A C	G	A G A G C	U U C C C A A	G C U C U
G417	UCC	SACCHAROMYCES CER. MITO	A U A G A U A	U A	A G U U	A A U D G G D A	A A C U	G4	G A U G F	C U U* C C A4A	A C A U U
G456	UCC	AEDES ALBOPICTUS MITO	A U U U A U A	U A1	G U A U	A U A A U U	G U A U	A	F G U* G* A	C U U C C A A	F1C A C A
G480	UCC	BOVINE LIVER MITO	A U U C U U U	U A1	G2U A U	U A A C U A	G U A C	A	G C U G A	C U U C C A A	F C A G C
G570	GCC	SACCHAROMYCES CER.	G C G C*3A A G	U G1	G U U F	A G D G G D A	A A A U	C	C A A C G	F U G C C A F	C G U U G
G571	UCC	SACCHAROMYCES CER.	G G G C G G U	U A	G U G F	A G D G G D D A	U C A U	C	C C A C C	C U N* C C A A	G G U G G
G625	GCC	WHEAT GERM	G C A C3C A G	U G1	G U C F	A G D G G U A	G A A U	A	G U A C C	C U G C C A C5	G G U A C
G640	GCC	LUPINUS LUTEUS	G C A C3C A G	U G1	G U C F	A G D G G U A	G A A U	A	G U A C C	C U G C C A C5	G G U A C

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         45  47  B   D   F   H   J   L   N   P    49  51  53  55  57  59  61  63  65  67  69  71  73  75
       44  46  A   C   E   G   I   K   M   O   48   50  52  54  56  58  60  62  64  66  68  70  72  74  76
       --------------------------------------------------------------------------------------------------

             G L Y C I N E

G020   U G A                                   U |G U G A G|T F C G A U U|C U C A U|U A U C C G C|U C C A
                                                    =======               =======   *************
G110   C A A                                   C5|C5U G G G|F1F C3I1A A U|C C C A G|C C A G C G C|A C C A
                                                  =========               ========= *************
G120   G A G                                   C |C5C G G G|F1F C3I1A U U|C C C G G|U C G G C G C|A C C A
                                                  =========               ========= *************
G121   C A A                                   C |C5U G G G|F1F C3I1A A U|C C C A G|C C G A C G C|A C C A
                                                  =========               ========= *************
G122   C A A                                   C |C5U G G G|F1F C3I1A A U|C C C A G|C C A G C G C|A C C A
                                                  =========               ========= *************
G123   U U A                                   U |C5U G G G|F1F C3G A U U|C C C A G|C C G G U G C|A C C A
                                                  =========               ========= *************
G140   C G U                                   C |C C G G G|F F C3I1A A U|C C C G G|A C G C C G C|A C C A
                                                  =========               ========= *************
G203   U U G                                   U |G A G G G|U F C G A U U|C C C U U|C A C C U G C|U C C A
                                                    =======               =======   *************
G220   A G A                                   U |A U A G G|U G C A A A U|C C U A U|C U U C C G C|U C C A
                                                  =========               ========= ****  *******
G221   A G G                                   U |A U A G G|U G C A A G U|C C U A U|C U U C C G C|U C C A
                                                  =========               ========= ****  *******
G235   U G U                                   C |G U G A G|T F C G A U U|C U C A U|C A C C C G C|U C C A
                                                    =======               =======   *************
G250   A U A                                   C |G A G G G|T F C G A U U|C C C U U|C G C C C G C|U C C A
                                                    =======               =======   *************
G251   G G G7U                                 C |G C G A G|T F C G A G U|C U C G U|U U C C C G C|U C C A
                                                    =======               =======   *************
G252   U G A                                   U |G C G G G|T F C G A U U|C C C G C|U G C C C G C|U C C A
                                                  =========               ========= *************
G255   A U A                                   C |G A G G G|T F C G A U U|C C C U U|C G C C C G C|U C C A
                                                    =======               =======   *************
G417   G A A                                   U |G C G A G|T F C G A U U|C U C G C|U A U C U A U|A C C A
                                                  =========               ========= *************
G456   A G G                                   A |C U A A A|U A A       U|U U U A G|U A F A A A U|A C C A
                                                  =========               ========= *************
G480   U A G                                   U |U U C G G|U C U A G U  |C C G A A|A A A G A A U|A C C A
                                                  =========               ========= *************
G570   G G                                     C |C5C C G G|T F C G A U U|C C G G G|C U U G C G C|A C C A
                                                  =========               ========= *************
G571   G G A                                   C |A C G G G|T F C G A U U|C U C G U|A C C G C U C|A C C A
                                                  ====== ==               ==  ===== ********** **
G625   A G A                                   C5|C5C5G G G|U F C G A1U U|C C C G G|C U G G U G C|A C C A
                                               *  =========               ========= *************
G640   A G A                                   C5|C5C5G G G|U F C G A1U U|C C C G G|C U G G U G C|A C C A
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			1 2 3 4 5 6 7	8 9	10 11 12 13	14 15 16 17 A 18 19 20 A B 21	22 23 24 25	26	27 28 29 30 31	32 33 34 35 36 37 38	39 40 41 42 43
G770	GCC BOMBYX MORI		G C A U3C G G	U G1	G U U C	A G U G G D A	G A A U	G	C U C G C	C U G C C A C5	G C G G G
G771	UCC BOMBYX MORI		G C G U3U G G	U G1	G U G F	A A D G G D C A	G C A U	A	G F U G C	C U V8C C A A	G C A G U
G995	CCC HUMAN PLACENTA		G C G C*3C G*2C	U G	G U G F	A G U G G D A	U C A U	G	C A A G A	U*3U C C C A U	F3C U U G
G996	GCC HUMAN PLACENTA		G C A U3U G*2G	U G	G U U C	A G U G G D A	G A A U	U	C U C G C	C U G C C A C5	G C G G G
	H I S T I D I N E										
H040	GUG PHAGE T5	U	G U G G C U A	U A	U C A U	A A U U G G U U A	A U G G	U	C C U G A	U U G U G A A	F* C A G G
H110	GUG HALOBACTERIUM CUT.	G	U C C G G G C	U N*	G4G G F	A G U G G A C U A	U C C U	U	C A G C C	U U G U G G1A	G G C U G
H120	GUG HALOBACTERIUM VOL.	G	U C C G G G U	U G	G4G G F	A G U G G A C U A	U C C U	U	C A G C C	U U G U G G1A	G G C U G
H250	GUG E.COLI	G	G U G G C U A	U4A	G C U C	A G D D G G D A	G A G C	C	C U G G A	U U Q U G A2F	F C C A G
H255	GUG SALMONELLA TYPHI.	G	G U G G C U A	U4A	G C U C	A G D D G G D A	G A G C	C	C U G G A	U U Q U G A2F	F C C A G
H428	GUG YEAST MITO	G	G U G A A U A	U A	U U U C	A A D G G D A	G A A A	A	F A C G C	F U G U G G1F	G C G U U
H570	GUG SACCHAROMYCES CER.	G	G C C N* U C U	U A	G U A F	A G D G3G D D A	G U A C	A	C A A C A	F U G U G G1C	F G U U G
H571	GUG SACCHAROMYCES CER.	G	G C C N* U C U	U A	G U A F	A G D G3G D D A	G U A C	A	C A U C G	F U G U G G1C	C G A U G
H640	GUG LUPINUS LUTEUS		GGU G G C U G	U A	G U U F	A G D G G D D A	G A A C	A	C A A C G	F U G U G G1C	C G U U G
H780	GUG DROSOPHILA MELANO.	G	G C C G U G A	U C	G U C F	A G D G G D D A	G G A C	C	C C A C G	F U G U G G1C	C G U G G
H980	GUG SHEEP LIVER	G	G C C G U G2A	U C	G U A F	A G D* G G D D A	G U A C	U	C U G C G	F U Q U G G1C	C G C A G
H995	GUG HUMAN HELA CELLS*	G	G C C G U G A	U C	G U A F	A G D G G D D A	G U A C	U	C U G C G	F U G U G G C	C G C A G
	I S O L E U C I N E										
I020	NAU PHAGE T4		G G C C C U G	U A	G C U C	A A U G3G D D A G	C A G C	A	G U C C C	C U N A U N* A	G G G A A
I120	GAU HALOBACTERIUM VOL.		G G G C C A A	U A	G C U C	A G U C A G G U U	G A G C	G4	C F C G G	C U G A U A7A	C C5G G G
I121	UAU HALOBACTERIUM VOL.		G G G C C C C	U A	G C U C	A G* U C U G G U C A	G A G C	G4	C U C G G	C U N* A U A7A	C C G G G
I203	GAU MYCOPLASMA MYCOID.		C G G A A U A	U4A	G C U C	A G C D G G D D A	G A G C	A	U U C C G	C U G A U A7A	C G G A G

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          45  47  B   D   F   H   J   L   N   P   49  51  53  55  57  59  61  63  65  67  69  71  73  75
        44  46  A   C   E   G   I   K   M   O   48  50  52  54  56  58  60  62  64  66  68  70  72  74  76
        --------------------------------------------------------------------------------------------------
G770    C G G                                   C5C5C5G G G T F C G A1U U C C C G G C C G A U G C A C C A
                                                  ==========              ==========**************
G771    U G A                                   U C5C5G G G T F C G A1U U C C C G G C C A A C G C A C C A
                                                  ==========        *     ==========**************
G995    C G A                                   C C5C5G G G T F C G A1U U C C C G G G C G G C G C A C C A
                                                  ==========              ==========**************
G996    A G G                                   C5C5C5G G G T F C G A1U U C C C G G C C A A U G C A C C A
                                                  ==========              ==========**************

            H I S T I D I N E

H040    C C U A                                 U G U G G A T F C G A A U U C U A C U A G C C A C A C C A
                                                  ====  ====*             ====  ====****************
H110    A G A                                   C G C G G G F1F C3G A U U C U C G C G C C U G G A C C C A
                                                  ======  ==              ==  ======**************
H120    A G A                                   C G C G G G F F C3A A U U C U C G C A C C U G G A C C C A
                                                  ======  ==              ==  ======******  ******
H250    U U G7U                                 C G U G G G T F C G A A U C C C A U U A G C C A C C C C A
                                                    ========              ========  ****************
H255    U U G7U                                 C G U G G G T F C G A A U C C C A U U A G C C A C C C C A
                                                    ========              ========  ****************
H428    A A A                                   U C U G A G T F C G A U U C U C A G U A U U C A C C C C A
                                                  ==========              ==========****************
H570    A A A                                   C C5C U G G T F C G A U U C U A G G A G G U G G C A C C A
                                                  ======  ==              ==  ======****    ******
H571    A A A                                   C C5C U G G T F C G A U U C U A G G A G A U G G C A C C A
                                                  ======  ==              ==  ======******  ******
H640    A A A                                   C C5U G G G U F C G A1A U C C C A G C A G C C A C A C C A
                                                  ==========              ==========**************
H780    U A A                                   C C C5A G G U F C G A1A U C C U G G U C A C G G C5A C C A
                                                  ==========              ==========**************
H980    C A A                                   C C5U C G G U F C G A1A U C C G A G U C A C G G C5A C C A
                                                  ==========        *     ==========**************
H995    C A A                                   C5C5U C G G U F C G N A U C C G A G U C A C G G C A C C A
                                                  ==========              ==========**************

            I S O L E U C I N E

I020    A G G7U                                 U A C C A G T F C A A A U C U G G U C U G G G U C A C C A
                                                  ==========              ==========**  ******  **
I120    A G G C                                 C C5G C G G F1F C3I1A A U C C G C G U U G G C C C A C C A
                                                  ==========              ==========**************
I121    U G G U                                 C5A U G G G F1F C3G A A C C C C A U G G G G C C C A C C A
                                                  ==========              ==========**************
I203    A G G7U                                 C G U U G G U F C A A G U C C A A U U A U U C C G A C C A
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			1 2 3 4 5 6 7	8 9	10 11 12 13	14 15 16 17 A 18 19 20 A B 21	22 23 24 25	26	27 28 29 30 31	32 33 34 35 36 37 38	39 40 41 42 43
I240	GAU	THERMUS THERMOPHI.	G G G C G A U	U A	G C U C	A G C U G3G U D A	G A G C	G	C A C G C	C U G A U A7A	G C G U G
I250	GAU	E.COLI	A G G C U U G	U A	G C U C	A G G D G G D D A	G A G C	G	C A C C C	C U G A U A7A	G G G U G
I251	GAU	E.COLI	A G G C U U G	U A	G C U C	A G G U G G D D A	G A G C	G	C A C C C	C U G A U A7A	G G G U G
I252	CAU	E.COLI	G G C C C C U	U4A	G C U C	A G U G*3G D D A	G A G C	A	G G C G A	C U C7A U A7A	F C G C U
I320	GAU	ZEA MAYS CHLORO	G G G C U A U	U A	G C U C	A G U G3G D A	G A G C	G4	C G C C C	C U G A U A7A	G G G C G
I365	GAU	SPINACIA OLERACEA CHLORO	G G G C U A U	U A	G C U C	A G U G3G D A	G A G C	G4	C G C C C	C U G A U A7A	G G G C G
I366	NAU	SPINACIA OLERACEA CHLORO	G C A U C C A	U G	G C U G	A A U G3G D D A	A A G C	G4	C C C A A	C U N* A U A7A	F F G GCG
I417	GAU	SACCHAROMYCES CER. MITO	G A A A C U A	U A	A U U C	A A D D G G D U A	G A A U	A	G U A U F	U U G A U A7A	G G U A C
I456	GAU	AEDES ALBOPICTUS MITO	A A U G A A U	U G1	C C U G	A U A A A	A A G G	A	F F A C C	U U G A U A7G	G G U A A
I480	GAU	BOVINE LIVER MITO	A G A A A U A	U G1	U C U G	A C A A	A A G A	G	F U A C A	U U G A U A7G	U G U A A
I570	AAU	SACCHAROMYCES CER.	G G U C U C U	U G1	G2C C C	A G D D G G D D A	A G G C	A	C C G U G	C U I A U A7A	C G C G G
I580	AAU	TORULOPSIS UTILIS	G G U C C C U	U G	G2C C C	A G D D G G D D A	A G G C	G4	F G G U G	C U I A U A7A	C G C C A
I640	AAU	LUPINUS LUTEUS	G G C C C A U	U A	G2C C C	A G D D G G D D A	A G G C	G4	F G G U G	C U I A U A7A	C G C C G
I950	AAU	MOUSE	G G C C G G U	U A	G2C U C	A G D D G G D D A	G A G C	G4	F G G F G	C U I A U A7A	C G C C A
		L E U C I N E									
L020	UAA	PHAGE T4	G C G A G A A	U4G	G U C A	A A D U G2G D A A	A G G C	A	C A G C A	C U N* A A A5A	F G C U G
L040	UAG	PHAGE T5	G G G G C U A	U G	C U G G	A A C D G3G D A G	A C A A	U	A C G G C	C U U A G A6U	F C C G U
L120	CAA	HALOBACTERIUM VOL.	G C G A G G G	U A	G C U A	A N* U C A G G A A A	A A G C	G4	G C G G A	C U C A A G1A	F C C G C
L121	CAG	HALOBACTERIUM VOL.	G C A G G G A	U A	G C C A	A N* U C U G G C C A A	C G G C	G4	C A G C G	U U C A G G1G	C G C U G
L122	GAG	HALOBACTERIUM VOL.	G C G U G G G	U A	G C C A	A N* C C A G G C C A A	C G G C	G4	C A G C G	U U G A G G1G	C5G C U G
L123	UAA	HALOBACTERIUM VOL.	G C G G G G G	U G	G C U G	A N* C C A G G C C A A	A A G C	G2	G C G G A	C U U A A G1A	F C C G C
L124	NAG	HALOBACTERIUM VOL.	G C G C G G G	U A	G C C A	A N* U G G C C A A	A G G C	G4	C A G C G	C U N* A G G1A	C G C U G
L230	CAA	BACILLUS STEARO.	G C C G A U G	U* G	G C G G	A A U D G G C A G	A1C G C	G	C A C G A	C U C3A A A5A	F C G U G

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        45  47  B   D   F   H   J   L   N   P |49  51  53| 55  57  59 |61  63  65| 67  69  71 |73  75
      44  46  A   C   E   G   I   K   M   O  48| 50  52 |54  56  58  60| 62  64 |66  68  70  72| 74  76
-------------------------------------------------------------------------------------------------
                                                   *
I240    A G G7U                        C|G G U G G|T2F C A A1G U|C C A C C|A U C G C C C|A C C A
                                         =========                 ========= *************
I250    A G G7V7                       C|G G U G G|T F C A A G U|C C A C F|C A G G C C U|A C C A
                                           =======               =======   ****  *******
I251    A G G7V7                       C|G G U G G|T F C A A G U|C C A C F|C A G G C C U|A C C A
                                           =======               =======   ****  *******
I252    U G G7V7                       C|G C U G G|T F C A A G U|C C A G C|A G G G G C C|A C C A
                                         =========               ========= *************
I320    A G G7V7                       C|U C U G G|T F C A A G U|C C A G G|A U G G C C C|A C C A
                                           =======               =======   ****  *******
            *
I365    A G G7V7                       C|U C U G G|T F C A A G U|C C A G G|A U G G C C C|A C C A
                                         =========               ========= ****  *******
I366    A A U U                        C|G U A G G|T F C A A U U|C C U A C|U G G A U G C|A C C A
                                         =========               ========= *************
I417    A A A                          U|A U A G G|T F C A A U C|C C U G U|U A G U U U C|A C C A
                                         ==  =====               =====  == *************
I456    A U U A                        U|A A A G A|U U U A A U  |A C U U F|A F U C A U U|A C C A
                                         =======                   ======= *************
I480    A U A A                        U|A G A G G|U U C A A A C|C C U C U|U A U U U C U|A C C A
                                         =========               ========= *************
I570    G G A D                       C5|A G C G G|T F C G A1U C|C C G C U|A G A G A C C|A C C A
                                         =========                ========= *************
I580    A G A D                       C5|A G C A G|T F C G A1U C|C U G C U|A G G G A C C|A C C A
                                         =========                ========= *************
I640    A A G D                       C5|A G C A G|T F C G A1U C|C U G C U|A U G G G C C|A C C A
                                         =========                ========= *************
I950    A G G7D                       C5|G C G G G|T F C G A1U C|C C C G U|A C G G G C C|A C C A
                                           =======                =======   *************

             L E U C I N E

L020    C G G A A U G A U U U C C U    U|G U G G G|T F C G A G U|C C C A C|U U C U C G C|A C C A
          ::::::::        ::::::::       =========               ========= *************
L040    A G C U U A A A U G C G        U|G G G A G|T F C G A G U|C U C C C|U A G C C C C|A C C A
                                         =========               ========= *************
L120    U C C C G U A G G G G U C     C5|G U G G G|F1F C3I1A A U|C C C U C|C C C U C G C|A C C A
                                         ==  =====               =====  == *************
                                                         *
L121    U C U C A U A G G A G U C     C5|G C A G G|F1F C3I1A A U|C C U G C|U C C C U G C|A C C A
                                         =========               ========= *************
L122    U C C U G U A G A G G U C     C5|G C C G G|F1F C3I1A A U|C C G G U|C C C A C G C|A C C A
                                           =======               =======   *************
L123    U C C C G U A G G G G U U      C|G C G A G|F1F C3G A A U|C U C G U|C C C C C G C|A C C A
                                           =======               =======   *************
L124    U G G U G U A G A C C U U     C5|G C A G G|F1F C3G A A C|C C U G U|C C C G C G C|A C C A
                                           =======               =======   *************
L230    U G G G C U U U G C C C G      U|G U G G G|T F C G A C U|C C C A C|C A U C G G C|A C C A
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			1 2 3 4 5 6 7	8 9	10 11 12 13	14 15 16 17 A 18 19 20 A B 21	22 23 24 25	26	27 28 29 30 31	32 33 34 35 36 37 38	39 40 41 42 43
L235	CAG	BACILLUS SUBTILIS	G C G G G U G **************	U G	C G G G	A A U D G G D A G	A C C G	G	C U A G A	U U C A G G1A	F C U A G
L250	AAA	E.COLI	G C C C G G A ************	U4G	G U G G	A A D C G3G D A G	A C A C	A	A G G G A	F U N* A A A5A	F C C C U
L251	CAG	E.COLI	G C G A A G G ******** ****	U G	G C G G	A A D D G3G D A G	A C G C	G	C U A G C	U U C A G N* F	G F U A G
L252	GAG	E.COLI	G C C G A G G ************	U G	G U G G	A A D D G3G D A G	A C A C	G	C U A C C	U U G A G N* F	G G U A G
L255	CAG	SALMONELLA TYPHI.	G C G A A G G ******** ****	U G	G C G G	A A D D G3G D A G	A C G C	G	C U A G C	U U C A G N* F	G F U A G
L280	CAA	RHODOSPIRIL. RUB.	G C C U U U G **************	U A	G C G G	A A D G G D A	A C G C	G	G C A G A	C U C A A N* A	F C U G C
L290	CAA	ANACYSTIS NIDULANS	G G G C A A G **************	U G	G C G G	A A U D G G D A G	A C G C	A	G C A G A	C U C A A N* A	F C U G C
L291	CAG	ANACYSTIS NIDULANS	G C G G A A C **************	U G	G C G G	A A U D G G D A G	A C G C	G	C U A G A	U U C A G G1F	F C U A G
L327	CAA	GLYCINE MAX CHLORO	G C C U U G G ************	U G	G U G A	A A U G3G D A G	C C A C	G	C G A G A	C U C3A A N* A	F C U C G
L328	UAA	GLYCINE MAX CHLORO	G G G G A U A **************	U G	G C G A	A A U U G3G D A G	A C G C	F	A C G G A	C U U3A A N* A	F C C G U
L329	UAG	GLYCINE MAX CHLORO	G C C G C U A **************	U G	G U G A	A A U U G3G D A G	A C A C	G	C U G C U	C U U A G7G1A	A G C A G
L350	CAA	PHASEOLUS VULGARIS CHLORO	G G C U U G A ** ***********	U G	G U G A	A A U U G3G D A G	A C A C	G	C G A G A	C U C3A A N* A	U C U C G
L351	UAA	PHASEOLUS VULGARIS CHLORO	G G G G A U A **************	U G	G C G A	A A U U G3G D A G	A C G C	F	A C G G A	C U N* A A N* A	F C C G U
L352	UAG	PHASEOLUS VULGARIS CHLORO	G C C G C U A **************	U G	G U G A	A A U U G3G D A G	A C A C	G	C U G C U	C U U A G7G1A	A G C A G
L365	UAG	SPINACEA OLERACEA CHLORO	G C C G C U A **************	U G	G U G A	A A U U G3G D A G	A C A C	G	C U G C U	C U U A G7G1A	A G C A G
L412	UAA	NEUROSPORA CRASSA MITO	A U C C G A G ************	U G	A U G G	A A D G G D A G	A C A U	A	A C A U G	C U N* A A A A	C A U G U
L413	UAG	NEUROSPORA CRASSA MITO	A U A G G U G ******** ****	U G	C U G G	A A D U G G D A G	A C A G	G	U U C C G	F U U A G G1C	C G G A A
L417	UAA	SACCHAROMYCES CER. MITO	G C U A U U U **************	U G	G U G G	A A D U G G D A G	A C A C	G4	A U A C F	C U N* A A G1A	F G U A U
L438	CAA	PHASEOLUS VULGARIS* MITO	G U C A G G A ********** **	U G	G2C C5G	A G D G3G D C V7A	A G G C	G4	C C A G A	C U N* A A G1F	F C U G G
L439	CAA	PHASEOLUS VULGARIS* MITO	G U C A G G A ********** **	U G	G2C C5G	A G D G3G D C V7A	A G G C	G4	C C A G A	C U N* A A G1F	F C U G G
L440	NAG	PHASEOLUS VULGARIS* MITO	G A U A G U U **** **** **	U G	G2C C4G	A G D G3G D C V7A	A G G C	G4	C C A G A	F U N* A G G1C	F C U G G
L474	UAG	RAT LIVER MITO	A C U U U U A **************	U A1	G2G A U	A G A A G D A	A U C C	A	F U G G U	C U U A G G1A	A C C A A
L475	UAG	RAT MORRIS HEPATOMA MITO	A C U U U U A **************	U A1	G2G A U	A G A A G D A	A U C C	A	F U G G U	C U U A G G1A	A C C A A

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        45 47 B D F H J L N P |49 51 53| 55 57 59 |61 63 65| 67 69 71 |73 75
       44 46 A C E G I K M O 48| 50 52 |54 56 58 60| 62 64 |66 68 70 72| 74 76
       ---------------------------------------------------------------------------
L235   G G U C U U U A U G G A C C       U |G A G G G|T F C A A1G U|C C C U U|C A C C C G C|A C C A
L250   C G G C G U U C G C G C U G       U |G C G G G|T F C A A G U|C C C G C|U C C G G G U|A C C A
L251   U G U C C U U A C G G A C G       U |G G G G G|T F C A A G U|C C C C C|C C C U C G C|A C C A
L252   U G C C C A A U A G G G C U       U |A C G G G|T F C A A G U|C C C G U|C C U C G G U|A C C A
L255   U G U C C U U A C G G A C G       U |G G G G G|T F C A A G U|C C C C C|C C C U C G C|A C C A
L280   U U U G G U A A C C C A G G       U |G G U A G|T F C G A C U|C U C C C|C A A A G G C|A C C A
L290   C G C U A G C G A U A G U G       U |G U G G G|T F C G A G U|C C C A C|C U U G C C C|A C C A
L291   U G G U U U C A C G A C U G       U |C C G G G|T F C A A G U|C C C G G|G U U C C G C|A C C A
L327   U G C U A C A G A G C G           U |G G A G G|T F C G A G U|C C U C U|U C A A G G C|A C C A
L328   C G A C U U A A G A A A U C A     U |G A G G G|T F C A A G U|C C C U C|U A U C C C C|A C C A
L329   U G C U A G A G C A               U |C U C G G|T F C G A G U|C C G A G|U A G C G G C|A C C A
L350   U G C U A A A G A G C G           U |G G A G G|T F C G A G U|C C U C U|U C A A G U C|A C C A
L351   C G A C U U A A U A A A U C A     U |G A G G G|T F C A A G U|C C C U C|U A U C C C C|A C C A
L352   U G C U A G A G C A               U |C U C G G|T F C G A G U|C C G A G|U A G C G G C|A C C A
L365   U G C G A G A G C A               U |C U C G G|T F C G A G U|C C G A G|U A G C G G C|A C C A
L412   G G G C U U C A A G C U G         U |G A A G G|T F C A A G U|C C U U C|U U C G G A U|A C C A
L413   U G G U U U A A A A A C U G       U |A C A A G|T F C A A G U|C U U G U|C A U C U A U|A C C A
L417   U A C U U U A C A G U A           U |G A A G G|T F C A A G U|C C U U U|A A A U A G C|A C C A
L438   U3C U U C G A G A G A G G G      C5|G U G G G|T F C A A1A U|C C C A C|U U C U G A C|A C C A
L439   U3C U U C G A A A G A G G G      C5|G U G G G|T F C A A1A U|C C C A C|U U C U G A C|A C C A
L440   U3C C G* A A A N G G G           C5|G U G G G|T F C A A1A U|C C C A C|A G C U G U C|A C C A
L474   A A A                             C |C5U U G G|U G C A A C U|C C A A A|U A A A A G U|A C C A
L475   A A A                             C |C5U U G G|U G C A A C U|C C A A A|U A A A A G U|A C C A
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			1 2 3 4 5 6 7	8 9	10 11 12 13	14 15 16 17 A 18 19 20 A B 21	22 23 24 25	26	27 28 29 30 31	32 33 34 35 36 37 38	39 40 41 42 43
L476	UAG	RAT MORRIS HEPATOMA MITO	A C U U G U A ******** ****	U A1	G2G A U	A G A A G D A	A U C C	A	F U G G U	C U U A G G1A	A C C A A
L480	UAA	BOVINE LIVER MITO	G U U A A G G **************	U G1	G2C A G	A G C C C G G D A A	U U G C	A	F A A A A	C U N* A A A C	F U U U A
L481	UAG	BOVINE LIVER MITO	A C U U U U A **************	A A1	G2G A U	A G U A G D U U	A U C C	G2	F F G G F	C U U A G G1A	A C C A A
L570	CAA	SACCHAROMYCES CER.	G G U U G U U ********** **	U G	G2C C4G	A G C G3G D C D A	A G G C	G4	C C U G A	F U C5A A G1C	F C A G G
L571	UAG	SACCHAROMYCES CER.	G G G A G U U ** ****** **	U G	G2C C4G	A G D G3G D D D A	A G G C	G4	F C A G A	F U U A G G1C	F C U G A
L580	CAA	TORULOPSIS UTILIS	G G A U C U U ********** **	U G	G2C C4G	A G C G3G D D U A	A G G C	G4	C U C G A	C3U C3A A G1A	F C G A G
L645	CAA	PHASEOLUS VULGARIS	G U C A G G A ********** **	U G	G2C C5G	A G D G G D C V7A	A G G C	G4	C C A G A	C U N* A A G1F	F C U G G
L646	CAA	PHASEOLUS VULGARIS	G U C A G G A ********** **	U G	G2C C5G	A G D G G D C V7A	A G G C	G4	C C A G A	C U N* A A G1F	F C U G G
L647	NAG	PHASEOLUS VULGARIS	G A U A G U U **** **** **	U G	G2C C4G	A G D G G D C V7A	A G G C	G4	C C A G A	F U N* A G G1C	F C U G G
L700	AAG	CAENORHABDI. ELEG.	G G A G A G A ** **********	U G	G C C4G	A G C G G D C U A	A G G C	G	C U G G U	U U I A G G C	A C C A G
L955	CAA	RAT MORRIS HEPATOMA*	G U C A G G2A ********** **	U G	G2C C*4G	A G U G G D C F A	A G G C	G4	C C A G A	C U N* A A N* F	F C U G G
L956	CAA	RAT MORRIS HEPATOMA	G U C A G G2A ********** **	U G	G*2C C*4G	A G U G G D C F A	A G G C	G4	C C A G A	C U N* A A N* F	F C U G G
L970	AAG	BOVINE LIVER	G G U A G C G **** ********	U G	G2C C4G	A G C G G D C F A	A G G C	G4	C U G G A	F3U I A G G1C	F C C A G
L975	AAG	COW MAMMARY GLAND	G G U A G C G **** ********	U G	G2C C4G	A G C G G D C F A	A G G C	G4	C U G G A	F3U I A G G1C	F C C A G
L976	CAG	COW MAMMARY GLAND	G U C A G G2A ********** **	U G	G2C C4G	A G C G G D D C A	A G G C	G4	C U G C G	U3U C A G G1N	C G C A G
L995	NAA	HUMAN HELA-CELLS*	G U C A G G2A **************	U G	G2C C4G	A G U G G D C F A	A G G C	G4	C C A G A	C U N* A A G1F	F C U G G
		L Y S I N E									
K120	UUU	HALOBACTERIUM VOL.	G G G C U G G **************	U A	G C U C	A N* U U A G G C A	G A G C	G4	U C U G G	C3U N* U U A7A	C C A G A
K121	CUU	HALOBACTERIUM VOL.	G G G C C G G **************	U A	G C U C	A N* U U A G G C A	G A G C	G4	U C U G A	C3U C*4U U A7A	F* C A G A
K235	UUU	BACILLUS SUBTILIS	G A G C C A U **************	U A	G C U C	A G U D G G D A	G A G C	A	U C U G A	C U V5U U N* A	F C A G A
K236	UUU	BACILLUS SUBTILIS	G A G C C A U **************	U A	G C U C	A G U D G G D A	G A G C	A	U C U G A	N* U V5U U A9A	F C A G A
K250	UUU	E.COLI	G G G U C G U **************	U A	G C U C	A G D D G G D A	G A G C	A	G U U G A	C U U8U U A7A	F C A A U
K417	UUU	SACCHAROMYCES CER. MITO	G A G A A U A **************	U U	G U U U	A A D G G D A	A A A C	A	G F U G F	C U N* U U A7A	G C A A C

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        45  47  B   D   F   H   J   L   N   P   |49  51  53|  55  57  59  |61  63  65|  67  69  71  |73  75
      44  46  A   C   E   G   I   K   M   O   48|  50  52  |54  56  58  60|  62  64  |66  68  70  72|  74  76
      ------------------------------------------------------------------------------------------------------------
L476  A A A                                   C |C5U U G G |U G C A A C U |C C A A A |U A A A A G U |A C C A
                                                |  ========|              |======== |****  ********|
L480  U A U C                                 C5|A G A G A |U U C A A1A U |C C U C U |C C U U A A C |A C C A
                                                |==========|              |  ========|**************|
L481  A A                                     A |A U U G G |U G C A A C U |C C A A A |U A A A A G U |A C C A
                                                |  ========|              |======== |**************|
L570  U A U C G U A A G A U G                 C5|A A G A G |T F C G A A U |C U C U U |A G C A A C C |A C C A
        ::::::        ::::::                    |==========|              |==========|**  **********|
L571  U A U C U U C G G A U G                 C5|A A G G G |T F C G A1A U |C C C U U |A G C U C U C |A C C A
        ::::::        ::::::                    |==========|              |==========|**  ******  **|
L580  U A U C G U A A G A U G                 C5|A U G A G |T F C G A1A U |C U C A U |A G G A U C C |A C C A
        ::::::        ::::::                    |==========|              |==========|**  **********|
L645  U3C U U C G A G A G A G G G             C5|G U G G G |T F C A A1A U |C C C A C |U U C U G A C |A C C A
                                                |==========|              |==========|**  **********|
L646  U3C U U C G A A A G A G G G             C5|G U G G G |T F C A A1A U |C C C A C |U U C U G A C |A C C A
             *                                  |==========|              |==========|**  **********|
L647  U3C C G A A A N G G G                   C5|G U G G G |U F C A A1A U |C C C A C |A G C U G U C |A C C A
                                                |==========|              |==========|**  ****  ****|
L700  U C C C U U C G G G G G                 C |G U G G G |T U C G A A U |C C C A C |U C U C U U C |A C C A
      * *                                       |==========|              |==========|**********  **|
L955  N F C C G A A U G G A G                 C5|G U G G G |T F C G A1A U |C C C A C |U U C U G A C |A C C A
      * **::::        ::::::                    |==========|              |==========|**  **********|
L956  N F C C G U A U G G A G                 C5|G U G G G |T F C G A1A U |C C C A C |U U C U G A C |A C C A
        ::::::        ::::::                    |==========|              |==========|**  **********|
L970  U C F C F U C G G G G G                 C5|G U G G G |T F C G A1A U |C C C A C |C G C U G C C |A C C A
        ::  ::        ::  ::                    |    ======|              |==========|********  ****|
L975  U C F C F U C G G G G G                 C5|G U G G G |T F C G A1A U |C C C A C |C G C U G C C |A C C A
                                                |==========|              |==========|********  ****|
L976  U3C F C C C U G G A G G                 C5|G U G G G |T F C G A1A U |C C C A C |U U C U G A C |A C C A
        ::::::        ::::::                    |==========|              |==========|**  **********|
L995  U3C F C C G G A U G G A G               C5|G U G G G |T F C G A1A U |C C C A C |U U C U G A C |A C C A
                                                |==========|              |==========|**************|

          L Y S I N E

K120  C G G U                                 C5|G G G G G |F1F C3I1A G U |C C C U C |C C A G C C C |G C C A
                                                |==  ==*===|              |======  ==|**************|
K121  C G G U                                 C5|G C G F G |F1F C3I1A A U |C G C G U |C C G G C C C |A C C A
                                                |  ====  ==|              |==  ====  |**************|
K235  G G G7U                                 C |G A A G G |T F C G A G U |C C U U C |A U G G C U C |A C C A
                                                |==========|              |==========|**************|
K236  G G G7U                                 C |G A A G G |T F C G A G U |C C U U C |A U G G C U C |A C C A
                                                |==========|              |==========|**************|
K250  U G G7V7                                C |G C A G G |T F C G A A U |C C U G C |A C G A C C C |A C C A
                                                |==========|              |==========|**************|
K417  C C A                                   U |G C UUG G |T F C A A C U |C C A G C |U A U U C U C |A C C A
                                                |==========|              |==========|**************|
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			1 2 3 4 5 6 7	8 9	10 11 12 13	14 15 16 17 A 18 19 20 A B 21	22 23 24 25	26	27 28 29 30 31	32 33 34 35 36 37 38	39 40 41 42 43
K456	CUU	AEDES ALBOPICTUS MITO	C A U U A G A	U G1	A C U G	A A A G C	A A G U	A	A F G A U	C U C U U A7A	A U C A U
K473	UUU	HAMSTER MITO	C A C U A U G	A A1	G2C U C	A	G A G C	G2	F U A A C	C U N* U U A7A	G U U A A
K474	UUU	RAT LIVER MITO	C A U U G C G	A A1	G2C U U	A	G A G C	G2	F U A A C	C U N* U U A7A	G U U A A
K480	UUU	BOVINE LIVER MITO	C A C U A A G	A A1	G2C U A	U A	U A G C	A	C F A A C	C U N* U U N* A	G U U A G
K570	CUU	SACCHAROMYCES CER.*	G C C U U G U	U G*2	G2C G C	A A D C G G D A	G C G C	G4	F A U G A	C U C U U A7A	F C A U A
K590	UUU	YEAST	F C C U U G U	U A	G2C U C	A G D D G G D A	G A G C	G4	F F C G G	C U N* U U A7A	C C G A A
K780	CUU	DROSOPHILA MELANO.	G C C C G G C	U A	G2C U C	A G D C G G D A	G A G C	A	F G A G A	C U C U U A7A	F C U C A
K781	UUU	DROSOPHILA MELANO.	G C C C G G A	U A	G2C U C	A G D C G G D A	G A G C	A	F F G G A	C U N* U U A*7A	F C C A A
K950	CUU	MOUSE FIBROB. SV 40	G C C C G G C	U A	G2C U C	A G D C G G U A	G A G C	A	F* G A G A	C U C U U N* A	F C U C A
K951	CUU	MOUSE	G C C C G G2C	U A	G2C U C	A G D C G G D A	G A G C	A	F G G G A	C U C U N* N* A	F C C C A
K955	CUU	RAT LIVER	G C C C G G2C	U A	G2C U C	A G D C G G D A	G A G C	A	F G A G A	C U C U N* A7A	F C U C A
K956	CUU	RAT LIVER	G C C C G G2C	U A	G2C U C	A G D C G G D A	G A G C	A	F G G G A	C U C U N* A7A	F C C C A
K957	UUU	RAT LIVER	G C C C G G2A	U A	G2C U C	A G D C G G D A	G A G C	A	F C A G A	C U U9U U A9A	F C U G A
K965	CUU	RABBIT LIVER	G C C C G G C	U A	G2C U C	A G D C G G D A	G A G C	A	F G G G A	C U C U U A7A	F C C C A
K966	CUU	RABBIT LIVER	G C C C G G C	U A	G2C U C	A G D C G G D A	G A G C	A	F G A G A	C U C U U A7A	F C U C A
K967	UUU	RABBIT LIVER	G C C C G G A	U A	G2C U C	A G D C G G D A	G A G C	A	F C A G A	C U U9U U A9A	F C U G A
		METHIONINE									
M010	CAU	AVIAN ONCO.-VIRUS	G C C U C C U	U A	G2C G C	A G D A G G N* A	G C G C	G4	F C A G F	C U C3A U A7A	F C U G A
M120	CAU	HALOBACTERIUM VOL.	G C C C G G G	U G	G C U F	A N* C U G G A C A	F A G C	G	C C G C A	C U C3A U A7A	F G C G G
M180	CAU	THERMOPLASMA ACIDO.	G C C G G G G	U4G	G C U C	A N C U G G A G	G A G C	G4	C C G G A	C3U C A U A7A	U C C G G
M235	CAU	BACILLUS SUBTILIS	G G C G G U G	U A	G C U C	A G C G G C D A	G A G C	G	U A C G G	U U C A U A6C	C C G U G
M250	CAU	E.COLI	G G C U A C G	U4A	G C U C	A G D* D G*3G D D A	G A G C	A	C A U C A	C U C4A U A7A	F G A U G
M308	CAU	SCENEDESMUS OBLIQ. CHLORO	G C C U G C U	F A	G C U C	A G U D G3G C C A	G A G C	A	N* C C G F	F U C A U A2C	G C G G A

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          45  47  B   D   F   H   J   L   N   P   |49  51  53|  55  57  59  |61  63  65|  67  69  71  |73  75
        44  46  A   C   E   G   I   K   M   O   48|  50  52  |54  56  58  60|  62  64  |66  68  70  72|  74  76
        ------------------------------------------------------------------------------------------------------
K456    A A U A                                 U |A G U A A |A U U A G C AC|U U A C F |F C U A A U G |A C C A
                                                   ==========                ========== **************
K473    A A U                                   U |G A G A G |A C U U C U A |G U C U C |C A U G G U G |A C C A
                                                   ========                    ======== ******  ******
K474    A G U U                                 A |G A G A C |A A C A A     |A U C U C |C A C A A U G |A C C A
                                                   ========                    ======== **  **********
K480    A G A U                                 U |G A G A G |C C A U A1U A |C U C U C |C U U G G U G |A C C A
                                                   ==========                ========== ******  ******
                                                                      *
K570    A G G7U                                 U |A G G G G |T F C G A1G C |C C C C U |A C A G G G C |U C C A
                                                   ==========                ========== ******  ******
K590    A U G7D                                 C5|A G G G G |T F C G A1G C |C C C C U |A F G A G G A |G C C A
                                                   ==========                ========== **    ********
                                                              * *
K780    G G G7D                                 C |G U G G G |N F C G A1G C |C C C A C |G U U G G G C |G C C A
                                                   ==========                ========== **    ********
K781    G G G7D                                 C5|C A G G G |T3F C A A1G U |C C C U G |U U C G G G C |G C C A
                                                   ==========                ========== **  **********
                                                              *
K950    G G G7D                                 C5|G U G G G |T3F C G A1G C |C C C A C |G U U G G G C |G C C A
                                                   ==========                ========== **    ********
K951    G G G7D                                 C5|G U G G G |T3F C G A1G C |C C C A C |G U U G G G C |G C C A
                                                   ==========                ========== **************
K955    G G G7D                                 C5|G U G G G |T3F C G A1G C |C C C A C |G U U G G G C |G C C A
                                                   ==========                ========== **    ********
K956    G G G7D                                 C5|G U G G G |T3F C G A1G C |C C C A C |G U U G G G C |G C C A
                                                   ==========                ========== **    ********
K957    G G G7D                                 C5|C5A G G G |T3F C A A1G U |C C C U G |U U C G G G C |G C C A
                                                   ==========                ========== **  **********
K965    G G G7D                                 C5|G U G G G |T3F C G A1G C |C C C A C |G U U G G G C |G C C A
                                                   ==========                ========== **    ********
K966    G G G7D                                 C5|G U G G G |T3F C G A1G C |C C C A C |G U U G G G C |G C C A
                                                   ==========                ========== **    ********
K967    G G G7D                                 C5|C5A G G G |T3F C A A1G U |C C C U G |U U C G G G C |G C C A
                                                   ==========                ========== **  **********

                  M E T H I O N I N E
M010    A G G7D                                 C5|C5U G A G |T F C G A1A C |C U C A G |A G G G G G C |A C C A
                                                   ==========                ========== ******  ******
M120    A G A U                                 C5|G U G G G |F1F C3G G A G |C C C A C |C C C G G G C |A C C A
                                                   ==========                ========== **************
M180    A G G U                                 C |U C G G G |F F C3G A U C |C C C G A |U C C C G G C |A C C A
                                                   ==========                ==========   ************
            * *
M235    A G G7D                                 C |G G G G G |T F C G A U C |C C C U C |C G C C G C U |A C C A
                                                   ==  ======                ======  == **  ********
M250    G G G7V7                                C |A C A G G |T F C G A A U |C C C G U |C G U A G C C |A C C A
                                                   ====  ====                ====  ==== **************
M308    A A G7D                                 C |A C U A G |T F C G A A U |C U A G U |A G C A G G C |A C C A
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			1 2 3 4 5 6 7	8 9	10 11 12 13	14 15 16 17 A 18 19 20 A B 21	22 23 24 25	26	27 28 29 30 31	32 33 34 35 36 37 38	39 40 41 42 43
M365	CAU	SPINACIA OLERACEA CHLORO	A C C U A C U	U A	A C U C	A G C G3G D D A	G A G F	A	F F G C F	U U C A U A C	G G C G G
M417	CAU	SACCHAROMYCES CER. MITO	G C U U G U A	U A	G U U U	A A D D G G D U A	A A A C	A	U U U G F	C U C A U A7A	A U A A A
M418	CAU	SACCHAROMYCES CER. MITO	G C U U G U A	U A	G U U U	A A D D G G D U A	A A A C	A	U U U G F	C U C A U A7A	A U A A A
M438	CAU	PHASEOLUS VULG.* MITO	A C C U A C U	U G	A C U C	A G C G3G D D A	G A G U	A	F C G C F	U U C A U A6C	G G C G A
M570	CAU	SACCHAROMYCES CER.	G C U U C A G	U A	G2C U C	A G D A G G A A	G A G C	G4	F C A G F	C U C A U A7A	F C U G A
M625	CAU	WHEAT GERM	G G G G U G G	U G1	G2C G C	A G D D G G C V7 A	G C G C	G4	F A G G F	C U C3A U A8A	F C C U G
M640	CAU	LUPINUS LUTEUS	G G G G U G G	U G1	G2C G C	A G D D G G C V7 A	G C G C	G4	F A G G F	C U C3A U A8A	F C C U G
M950	CAU	MOUSE MYELOMA	G C C U C G2U	U A	G2C G C	A G D A G G D A	G C G C	G4	F C A G F	C U C3A U A7A	F C U G A
M965	CAU	RABBIT LIVER	G C C U C G2U	U A	G2C G C	A G D A G G D A	G C G C	G4	F C A G F	C U C3A* U A7A	F C U G A
M995	CAU	HUMAN HELA-CELLS	G C C U C G2U	U A	G2C G C	A G D A G G D A	G C G C	G4	F C A G F	C U C3A U A7A	F C U G A
		METHIONINE-INITIATOR									
X110	CAU	HALOBACTERIUM CUT.	A G C G G G A	U G	G G A F	A N* C U A G G A G A	U U C C	G	C C G G G	C U C A U A A	C C C G G
X120	CAU	HALOBACTERIUM VOL.	A G C G G G A	U G	G G A F	A N* C C A G G A G A	U U C C	G	C C G G G	C U C A U A A	C C C G G
X130	CAU	HALOCOCCUS MORRHUAE	A G C G G G A	U G	G G A F	A G C C A G G A G A	U U C C	G2	G C G G G	C U C A U A A	C C C G C
X150	CAU	SULFOLOBUS ACIDO.	A G C G G C G	U N*	G2G G A	A C U G G G A G U A	U C C C	N*	C A G3G G	C3U C A U A A	C C C U G
X180	CAU	THERMOPLASMA ACIDO.	A G C G G G G	U G	G G G F	A G U C A G G A A	A U C C	G2	A U G G G	C3U* C A U A A	C C C G U
X203	CAU	MYCOPLASMA MYCOID.	C G C G G G G	U4A	G A G C	A G U D* G G D A	G C U C	G	C C G G G	C U C A U A A	C C C G G
X215	CAU	STREPTOMYCES GRIS.	C G C G G G G	U G	G A G C	A G C U C G G D A	G C U C	G	C U G G G	C U C A U A A	C C C A G
X227	CAU	MYCOBAC. SMEG.	C G C G G G G	U G	G A G C	A G C U C G G D A	G C U C	G	C U G G G	C U C A U A A	C C C A G
X235	CAU	BACILLUS SUBTILIS	C G C G G G G	U G	G A G C	A G U U C G G D A	G C U C	G	U C G G G	C U C A U A A	C C C G A
X240	CAU	THERMUS THERMOPHI.	C G C G G G G	U4G	G A G C	A G C C U G3G D A	G C U C	G	U C G G G	C3U C A U A A	C C C G A
X241	CAU	THERMUS THERMOPHI.	C G C G G G G	U4G	G A G C	A G C C U G3G D A	G C U C	G	U C G G G	C3U C A U A A	C C C G A
X250	CAU	E.COLI	C G C G G G G	U4G	G A G C	A G C C U G G D A	G C U C	G	U C G G G	C3U C A U A A	C C C G A

	44 45 46 47 A B C D E F G H I J K L M N O P	48	49 50 51 52 53	54 55 56 57 58 59 60	61 62 63 64 65	66 67 68 69 70 71 72	73 74 75 76
M365	G A G7V7	C	A U U G G	T F C A A A U	C C A A U	A G U A G G U	A C C A
M417	U A A U	G	U A A G G	T F C A A U U	C C U U C	U A C A A G U	A C C A
M418	U A A	U	GUA A G G	T F C A A U U	C C U U C	U A C A A G U	A C C A
M438	G A G7V7	C	A U U G G	T F C A A A U	C C A A U	A G U A G G U	A C C A
M570	A G G7D*	C5	G A G A G	T F C G A1A C	C U C U C	C U G G A G C	A C C A
M625	A G G7D	C5	G A G A G	T F C G A1G C	C U C U C	U C A C C C C	A C C A
M640	A G G7D	C5	G A G A G	T F C G A1G C	C U C U C	U C A C C C C	A C C A
M950	A G G7D	C5	G U G A G	T F C G A1U C	C U C A C	A C G G G G C	A C C A
M965	A G G7D	C5	G U G A G	T F C G A1U C	C U C A C	A C G G G G C	A C C A
M995	A G G7D	C5	G U G A G	T F C G A1U C	C U C A C	A C G G G G C	A C C A
	METHIONINE-INITIATOR						
X110	A G A U	C	G G U A G	F1F C3I1A A U	C U A C C	U C C C G C U	A C C A
X120	A G A U	C	G G U A G	F1F C3I1A A U	C U A C C	U C C C G C U	A C C A
X130	A G A U	C	A G U A G	N F1C3I*1A A U	C U A C U	U C C C G C U	A C C A
X150	A G G U	C5	C C U G G	U3U C3I*1A1A U	C C A G G	C G C C G C U	A C C A
X180	A G A U	C	G A U G G	F F C3N* A1A U	C C A U C	C C C C G C U	A C C A
X203	A G G C	C	G C A G G	U F C G A G U	C C U G C	C C C C G C A	A C C A
X215	A G G U	C	G C A G G	U F C A A1A U	C C U G U	C C C C G C U	A C C A
X227	A G G7U	C	G C A G G	U F C G A1A U	C C U G U	C C C C G C U	A C C A
X235	A G G U	C	G C A G G	T F C A A A U	C C U G C	C C C C G C A	A C C A
X240	A G G7U	C	G C C G G	T2F C A A1A U	C C G G C	C C C C G C A	A C C A
X241	A G G7U	C	G C G G G	T2F C A A1A U	C C C G C	C C C C G C A	A C C A
X250	A G A U	C	G U C G G	T F C A A A U	C C G G C	C C C C G C A	A C C A

			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	A	18	19	20	A	B	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
X251	CAU	E.COLI	C	G	C	G	G	G	G	U4	G	G	A	G	C	A	G	C	C	U	G	G	D			A	G	C	U	C	G	U	C	G	G	G	C3	U	C	A	U	A	A	C	C	C	G	A
X290	CAU	ANACYSTIS NIDULANS	C	G	C	G	G	G	G	U	A	G	A	G	C	A	G	C	C	U	G	G	D			A	G	C	U	C	G	U	C	G	G	G	C3	U	C	A	U	A	A	C	C	C	G	A
X308	CAU	SCENEDESMUS OBLIQ. CHLORO	C	G	C	A	G	G	A	U	A	G	A	G	C	A	G	U	C	U	G3	G	D			A	G	C	U	C	G4	F	G	G	G	G	C	U	C	A	U	A	A	F	C	C	C	A
X355	CAU	PHASEOLUS VULGARIS CHLORO	C	G	C	G	G	A	G	U	A	G	A	G	C	A	A	C	U	U	G3	G	D			A	G	C	U	C	G	C	A	A	G	G	C	U	C	A	U	A	A	C	C	U	U	G
X365	CAU	SPINACIA OLERACEA CHLORO	C	G	C	G	G	G	G	U	A	G	A	G	C	A	G	U	U	U	G3	G	D			A	G	C	U	C	G	C	A	A	G	G	C	U	C	A	U	A	A	C	C	U	U	G
X412	CAU	NEUROSPORA CRASSA MITO	U	G	C	G	G	A	U	U	A	U	U	G	U	A	A	D	A			G	D			A	A	C	A	U	A	U	U	U	G	G	C	U	C	A	U	G1	N*	C	C	G	A	A
X428	CAU	YEAST MITO	U	G	C	A	A	U	A	U	G	A	U	G	U	A	A	D	U		G	G	D	U		A	A	C	A	U	U	U	U	A	G	G	G	U	C	A	U	G1	A	C	C	U	A	A
X438	CAU	PHASEOLUS VULG.* MITO	A	G	C	G	G	G	G	U	A	G	A	G	U	A	G	U	D		G3	G	U	D		A	A	C	U	C	A	F	C	A	G	G	C	U	C	A	U	A	A	F	C	U	G	A
X456	CAU	AEDES ALBOPICTUS* MITO	A	A	A	A	A	G	A	U	A1	A	G	C	U	A	A	U	U							A	A	G	C	U	A	F	F	G	G	G	U	U	C	A	U	A7	C	C	C	C	A	C
X480	CAU	BOVINE LIVER* MITO	A	G	U	A	A	G	G	U	C	A	G	C	U	A	A	U	U							A	A	G	C	U	A	F	C	G	G	G	C	C	C	A	U	A	C	C	C	C	G	A
X530	CAU	TETRAHYMENA THERM.	A	G	C	A	G	G	G	U	G1	G	C	G	A	A	A	D			G3	G	A			A	U	C	G	C	G	U	F	G	G	G	C	U	C	A	U	A7	A	C	F	C	A	A
X540	CAU	SCENEDESMUS OBLIQ.	A	G	C	U	G	A	G	U	G1	G2	C	G	C	A	G	D			G	G	A			A	G	C	G	F	G2	A	F	G	G	G	C	U	C	A	U	A7	A	C	C	C	A	U
X560	CAU	NEUROSPORA CRASSA	A	G	C	U	G	C	A	U	G1	G	C	G	C	A	G	C			G	G	A			A	G	C	G	C	G4	C	N*	G	G	G	C	U	C	A	U	A7	A	C	C	C	G	G
X570	CAU	SACCHAROMYCES CER.	A	G	C	G	C	C	G	U	G1	G2	C	G	C	A	G	D			G	G	A			A	G	C	G	C	G4	C	A	G	G	G	C	U	C	A	U	A7	A	C	C	C	U	G
X580	CAU	TORULOPSIS UTILIS	A	G	C	G	U	C	U	U	G1	G2	C	G	C	A	G	D			G	G	A			A	G	C	G	C	G4	C	A	G	G	G	C	U	C	A	U	A7	A	C	C	C	U	G
X625	CAU	WHEAT GERM	A	U	C	A	G	A	G	U	G1	G2	C	G	C	A	G	C			G	G	A			A	G	C	G	U	G2	G	F	G	G	G	C	C	C	A	U	A7	A	C	C	C	A	C
X640	CAU	LUPINUS LUTEUS	A	U	C	A	G	A	G	U	G1	G2	C	G	C	A	G	C			G	G	A			A	G	C	G	C	G4	G	F*	G	G	G	C	C	C	A	U	A7	A	C	C	C	A	C
X645	CAU	PHASEOLUS VULGARIS	A	U	C	A	G	A	G	U	G1	G2	C	G	C	A	G	C			G	G	A			A	G	C	G	U	G2	G	U	G	G	G	C	C	C	A	U	A7	A	C	C	C	A	C
X750	CAU	ASTERINA AMURENSIS	A	G	C	A	G	A	G	U	G1	G2	C	G	C	A	G	U			G	G	A			A	G	C	G	U	G	C	U	G	G	G	C	C	C	A	U	A7	A	C	C	C	A	G
X780	CAU	DROSOPHILA MELANO.	A	G	C	A	G	A	G	U	G1	G2	C	G	C	A	G	U			G	G	A			A	G	C	G	U	G2	C	U	G	G	G	C	C	C	A	U	A7	A	C	C	C	A	G
X790	CAU	EUPHAUSIA SPERBA	A	G	C	A	G	A	G	U	G1	G2	C	G	C	A	G	U			G	G	A			A	G	C	G	U	G2	C	U	G	G	G	C	C	C	A	U	A7	A	C	C	C	A	G
X830	CAU	XENOPUS LAEVIS	A	G	C	A	G	A	G	U	G1	G2	C	G	C	A	G	C			G	G	A			A	G	C	G	U	G2	C	U	G	G	G	C	C	C	A	U	A7	A	C	C	C	A	G
X850	CAU	SALMON LIVER	A	G	C	A	G	A	G	U	G1	G2	C	G	C	A	G	C			G	G	A			A	G	C	G	U	G4*	C	U	G	G	G	C	C	C	A	U	A7	A	C	C	C	A	G

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          45 47  B  D  F  H  J  L  N  P  49 51 53  55 57 59  61 63 65  67 69 71  73 75
        44 46  A  C  E  G  I  K  M  O  48  50 52  54 56 58 60  62 64  66 68 70 72  74 76
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X251     A G G7U                        C  G U C G G T F C A A A U C C G G C C C C C G C A A C C A
                                           ==   =====              =====   ==*************
X290     A G G7U                        C  A G A G G T F C A A A U C C U C U C C C C G C C A C C A
                                           ==========              ==========*************
X308     A U G7D                        C  G C A G G T F C A A A U C C U G C U C C U G C A A C C A
                                           ==========              ==========*************
X355     A A G7V7                       U  A C G G G T F C A A A U C C C G U C U C C G C A A C C A
                                           ==========              ==========*************
X365     A G G7U                        C  A C G G G T F C A A A U C C U G U C U C C G C A A C C A
                                           ====  ====              ====  ====**  ********
X412     U G A                          C  A U A G G U G C A A A U C C U G U A U C C G C A U C C A
                                           ==   =====              =====   ==**************
X428     U U A                          U  A U A C G T F C A A A U C G U A U U A U U G C F*A C C A
                                           ==========              ==========*************
X438     A G A U                        D  G C A G G T F C G A A U C C U G C C C C C G C C A C C A
                                           ==========              ==========*************
X456     U U A                          U  A A A G G U A A U A A U C C U U F F C U U U U U A C C A
                                           ==========              ==========**************
X480     A A A                          U  G U U G G U U U A U A U C C U U C C C G U A C U A C C A
                                           ==    ====              ====    ==****  ********
X530     A A G7U                        C5 A G A G G A F C G A1A A C C U C U C U C U G C U A C C A
                                           ==========              ==========**  **********
X540     A G G7D                        C5 A C A G G A U C G A1A A C C U N*U C U C A G C U A C C A
                                           ==========              ======  ==**************
X560     A G G7D*                       C  A C U C G A U C G A1A A C G A N*U U G C A G C U A C C A
                                           ==========              ==========**************
X570     A U G7D                        C5 C5U C G G A U C G A1A A C C G N*N*C G G C G C U A C C A
                                           ==========              ==========**************
X580     A U G7D                        C5 C5C U G G A U C G A1A A C C A N*G A G A C G C U A C C A
                                           ==========              ==========**************
X625     A G G7D                        C5 C5C A G G A F C G A1A A C C U N*G C U C U G A U A C C A
                                           ==========              =====   ==**************
X640     A G G7D                        C5 N*C A G G A F C G A1A A C C U N G C U C U G A U A C C A
                                           ==   =====              =====   ==**************
X645     A G G7D                        C5 C C A G G A F C G A1A A C C U G3G C U C U G A U A C C A
                                           ==========              ==========**************
X750     A G G7D                        C5 C G A G G A F C G A1A A C C U C G C U C U G C U A C C A
                                           ==========              ==========**************
X780     A G G7D                        C5 C G A G G A U C G A1A A C C U U G C U C U G C U A C C A
                                           ==   =====              =====   ==**************
X790     A G G7U                        C  G G U A G A F C G A1A A C U A C U C U C U G C U A C C A
                                             ========              ========  **************
X830     A G G7D                        C5*G A U G G A U C G A1A A C C A U C C U C U G C U A C C A
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X850     A G G7D                        C5 G A U G G A U C G A1A A C C A U C C U C U G C U A C C A
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                                           |    |  11  13|  15  17  18  20  B    |22  24  |26 |  28  30  |32  34  36  38|  40  42
                              -------------|----|--------|-----------------------|--------|---|----------|--------------|----------

X950  CAU MOUSE MYELOMA       A G C A G A G|U G1|G2C G C |A G C     G G A     A  |G C G U |G2 |C U G G G |C C C A U A7A |C C C A G
                              **************       ......                          ......        ----------                ---------
X955  CAU RABBIT LIVER        A G C A G A G|U G1|G2C G C |A G C     G G A     A  |G C G U |G2 |C U G G G |C C C A U A7A |C C C A G
                              **************       ......                          ......        ----------                ---------
X980  CAU SHEEP MAMMARY GLAND A G C A G A G|U G1|G2C G C |A G C     G G A     A  |G C G U |G2 |C U G G G |C C C A U A7A |C C C A G
                              **************       ......                          ......        ----------                ---------
X995  CAU HUMAN PLACENTA      A G C A G A G|U G1|G2C G C |A G C     G G A     A  |G C G U |G2*|C U G G G |C C C A U A7A |C C C A G
                              **************       ......                          ......        ----------                ---------

         P H E N Y L A L A N I N E

F120  GAA HALOBACTERIUM VOL.  G C C G C C U|U A |G C U C |A N*A C U G G G     A  |G A G C |A  |C U C G A |C U G A A G1A |F C G A G
                              **************     ........                          ........      ----------                ---------
F200  GAA MYCOPLASMA CAPRIC.  G G U C G U G|U A |G C U C |A G U C   G G D     A  |G A G C |A  |G C A G A |C U G A A G1C |F C U G C
                              **************     ........                          ........      ----------                ---------
F230  GAA BACILLUS STEARO.    G G C U C G G|U4A |G C U C |A G U C   G G D     A  |G A G C |A  |A A G G A |C U G3A A A5A |F C C U U
                              **************     ........                          ........      ----------                ---------
F235  GAA BACILLUS SUBTILIS   G G C U C G G|U A |G C U C |A G U D   G G D     A  |G A G C |A  |A C G G A |C U G3A A A5A |F C C G U
                              **************     ........                          ........      ----------                ---------
F250  GAA E.COLI              G C C C G G A|U4A |G C U C |A G D C   G G D     A  |G A G C |A  |G G G G A |F U G A A A5A |F C C C C
                              **************     ........                          ........      ----------                ---------
F280  GAA RHODOSPIRIL. RUB.   G C C C G G G|U A |G C U C |A G C D   G G D     A  |G A G C |A  |C G U G A |C U G A A A5A |F C A C G
                              **************     ........                          ........      ----------                ---------
F285  GAA AGMENELLUM QUADR.   G C C A G G A|U A |G C N*C |A G U D   G3G D     A  |G A G C |A  |G A G G A |C U G A A A5A |F C C U C
                              ******  ******     ....  ..                          ........      ----------                ---------
F304  GAA EUGLENA GRACILIS    G C U G G G A|U A |G C U C |A G D U   G G3D     A  |G A G C |G  |G A G G A |C U G A A N*A |F C C U U
          CHLORO              ******  ******     ........                          ........        --------                --------
F350  GAA PHASEOLUS VULGARIS  G U C G G G A|U A |G C U C |A G U D   G3G D     A  |G A G C |A  |G A G G A |C U G A A A5A |F C C U C
          CHLORO              **  **  ******     ........                          ........      ----------                ---------
F365  GAA SPINACIA OLERACEA   G U C G G G A|U A |G C U C |A G C U   G3G D     A  |G A G C |A  |G A G G A |C U G A A A5A |U C C U C
          CHLORO              **  **  ******     ........                          ........      ----------                ---------
F407  GAA TETRAHYMENA PYRIF.U G C U U A A G|U A |G2C U C |A G U     G G D     A  |G A G C |G4 |U C A G G |C U G A A N*A |C C F G A
          MITO                ****  ********     ........                          ........      ----------                ---------
F417  GAA SACCHAROMYCES CER.  G C U U U U A|U A |G C U U |A G D     G G D     A  |A A G C |G4 |A U A A A |F U G A A G1A |F U U A U
          MITO                ****    ******     ........                          ........      ----------                ---------
F438  GAA PHASEOLUS VULGARIS  G U U U A G G|U A |G C U C |A G C D   G3G D     A  |G A G C |A  |A A G G A |C U G A A N*A |F C C U U
          MITO                **  ********       ........                          ........      ----------                ---------
F474  GAA RAT MORRIS HEPATOMA G U U A A U G|U A1|G C U U |A U A A U           A  |A A G C |A  |A A G C A |C U G A A A5A |F G C U U
          MITO                ******  ******     ........                          ........      ----------                ---------
F510  GAA EUGLENA GRACILIS    G C C G A C U|U A |G2C U C3|A G D D   G G G     A  |G A G C |G4 |F F A G A |C3U G3A A Y1A |F C U A A
                              **************     ........                          ........      ----------                ---------
F540  GAA SCENEDESMUS OBLIQ.  G G C U U G A|U A |G2C U C |A G C D   G3G G     A  |G A G C |G4 |F F A G A |C3U G A A G1A |F C U A C
                              ******  ******     ........                          ........        --------                --------
F560  GAA NEUROSPORA CRASSA   G C G G G U U|U A |G2C U C |N*G D D   G G G     A  |G A G C |G4 |F C A G A |C3U G3A A N*A |F C5U G A
                              ********  ****     ........                          ........      ----------                ---------
F575  GAA SCHIZOSACCHA. POM.  G U C G C A A|U N*|N*U G F |A G D D   G G G     A  |G C A F |N* |A C A G A |C3U G3A A Y1A |F C5U G U
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          45 47  B  D  F  H  J  L  N  P  |49  51  53| 55 57 59  |61  63  65| 67  69  71  |73 75
        44 46  A  C  E  G  I  K  M  O  48|  50  52  |54 56 58 60|  62  64  |66  68  70  72| 74 76
        -----------------------------------------------------------------------------------------
X950    A G G7D                        C5|G A U G G|A U C G A1A A|C C A U C|C U C U G C U|A C C A
                                         ==========              ==========**************
X955    A G G7D                        C5|G A U G G|A U C G A1A A|C C A U C|C U C U G C U|A C C A
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X980    A G G7D                        C5|G A U G G|A U C G A1A A|C C A U C|C U C U G C U|A C C A
                                         ==========              ==========**************
X995    A G G7D                        C5|G A U G G|A U C G A1A A|C C A U C|C U C U G C U|A C C A
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           P H E N Y L A L A N I N E

F120    C U G U                        C5|C C C G G|F1F C3I1A A U|C C G G G|A G G C G G C|A C C A
                                         ==========              ==========**************
F200    G U G7U                        C |G G C G G|U F C A A U U|C C G U C|C A C G A C C|A C C A
                                         ==  ======              ======  ==**************
F230    G U G7U                        C |G G C G G|T F C G A U U|C C G U C|C C G A G C C|A C C A
                                         ==  ======              ======  ==**************
F235    G U G7U                        C |G G C G G|T F C G A U U|C C G U C|C C G A G C C|A C C A
                                         ==  ======              ======  ==**************
F250    G U G7V7                       C |C U U G G|T F C G A U U|C C G A G|U C C G G G C|A C C A
                                         ====  ====              ====  ====**************
F280    G U G7U                        C |G G U G G|T F C G A C U|C C G C C|C C C G G G C|A C C A
                                         ====  ====              ==========**************
F285    G U G7U                        C |G G C G G|T F C A A U U|C C G C C|U C C C G G C|A C C A
                                         ==========              ==========******  ******
F304    G U G7N*                       C |A C C A G|T F C A A A U|C U G G U|U C C U A G C|A C C A
                                         ==========              ==========******  ******
F350    G U G7V7                       C |A C C A G|T F C A A A U|C U G G U|U C C U G G C|A C C A
                                         ==========              ==========******  **  **
F365    G U G7V7                       C |A C C A G|T F C A A A U|C U G G U|U C C U G G C|A C C A
                                         ==========              ==========******  **  **
F407    A G G U                        C |A U U G G|U C C G A U U|C C A U U|C U U A G G C|A C C A
                                         ==  ======              ======  ==********  ****
F417    U U A                          C |A U GUA G|U F C G A U U|C U C A U|U A A G G G C|A C C A
                                         ==========              ==========******    ****
F438    G U G7V7                       C |A G U G G|T F C G A A U|C C A C U|U C U A A G C|G C C A
                                         ==========              ==========  ********  **
F474    A G A                          U |G G A U U|C A A A      |A A U C C|C A U A A A C|A C C A
                                         ==========              ==========******  ******
F510    A G G7U                        C |N*C U G G|T F C G A1U C|C C G G G|A G F C G G C|A C C A
                                           ==  ====              ====  ==  **************
F540    A G G7N*                       C5|C C C A G|T F C G A1U C5|C3U G G G|U C A G G C C|A C C A
                                         ==========              ==========******  ******
F560    A G G7D                        C5|G U G U G|T F C G A1U C|C A C A C|A A A C C G C|A C C A
                                         ==========              ==========****  ********
F575    U G G7N*                       C |A U C G G|T F C G A U C|C C G G U|U U G U G A C|A C C A
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                              1 2 3 4 5 6 7 8 9 10  12  14  16  A   19  A   21  23  25  27  29  31  33  35  37  39  41  43
                                                  11  13  15  17  18  20  B   22  24  26  28  30  32  34  36  38  40  42
                              ----------------------------------------------------------------------------------------------
F590  GAA YEAST               G C G G A U U U A G2C U C A G D D   G G G     A G A G C G4C C A G A C3U G3A A Y1A F C5U G G
                              ******  ******
F591  GAA YEAST               G C G G A C U U A G2C U C A G D D   G G G     A G A G C G4C C A G A C3U G3A A Y1A F C5U G G
                              ******  ******
F620  GAA HORDEUM VULGARE     G C G G G G A U A G2C U C A G D D   G G G     A G A G C G4F C A G A C3U G3A A Y2A F C U G A
                              ********  ****
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F625  GAA WHEAT GERM          G C G G G G A U A G2C U C A G D D   G G G     A G A G C G4F C A G A C3U G3A A N A F C U G A
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                                                                                                              *
F630  GAA BRASSICA NAPUS      G C G G G G A U A G2C U C A G D D   G G G     A G A G C G4F C A G A C3U G3A A N A F C U G A
                              ********  ****
F640  GAA LUPINUS LUTEUS      G C G G G G A U A G2C U C A G D D   G G G     A G A G C G4F C A G A C3U G3A A Y2A F C U G A
                              ********  ****
                                                                                                              *
F650  GAA PISUM SATIVUM       G C G G G G A U A G2C U C A G D D   G G G     A G A G C G4F C A G A C3U G3A A N A F C U G A
                              ********  ****
                                                                                                  *
F770  GAA BOMBYX MORI         G C C G A A A U A G2C U C A G D D   G G G     A G A G C G4F F A G A C3U G3A A G1A F C U A A
                              **************
                                                                                                  *
F771  GAA BOMBYX MORI         G C C G A A A U A G2C U C A G D D   G G G     A G A G C G4F F A G A C3U G3A A G1A F C U A A
                              **************
                                                                                                  *
F780  GAA DROSOPHILA MELANO.  G C C G A A A U A G2C U C A G D D   G G G     A G A G C G4F F A G A C3U G3A A G1A F C U A A
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                                                                                                              *
F830  GAA XENOPUS LAEVIS      G C C G A A A U A G2C U C A1G D D   G G G     A G A G C G4F F A G A C3U G3A A N A F C U A A
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                                                                                                  *   *       *
F950  GAA MOUSE E. ASC. TUM.  G C C G A A A U A G2C U C A1G D D   G G G     A G A G C G4F F A G A C3U G3A A N A F C U A A
                              **************
F951  GAA MOUSE LIVER         G C C G A A A U A G2C U C A1G D D   G G G     A G A G C G4F F A G A C3U G3A A Y1A F C U A A
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F952  GAA MOUSE NEUROBLASTOMA G C C G A A A U A G2C U C A1G D D   G G G     A G A G C G4F F A G A C U G A A G1A F C U A A
                              **************
F965  GAA RABBIT LIVER        G C C G A A A U A G2C U C A1G D D   G G G     A G A G C G4F F A G A C3U G3A A Y2A F C U A A
                              **************
F970  GAA BOVINE LENS         G C C G A A A U A G2C U C A1G D D   G G G     A G A G C G4F F A G A C3U G3A A Y2A F C U A A
                              **************
F971  GAA BOVINE LENS         G C C G A A A U A G2C U C A1G D D   G G G     A G A G C G4F F A G A C3U G3A A Y2A F C U A A
                              **************
F974  GAA CALF LIVER          G C C G A A A U A G2C U C A1G D D   G G G     A G A G C G4F F A G A C3U G3A A Y2A F C U A A
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F995  GAA HUMAN PLACENTA      G C C G A A A U A G2C U C A1G D D   G G G     A G A G C G4F F A G A C3U G3A A Y2A F C U A A
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            P R O L I N E

P013  AGG MOUSE M-MULV        G G C U3C G2U U G1G U C F A G G     G G D     A U G A U U C U C G C U3U I G G G1F G C G A G
                              **************
                                                                                                        *
P014  UGG MOUSE M-MULV        G G C U3C G2U U G1G U C F A G G     G G D     A U G A U U C U C G C F U N G G G1F G C G A G
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                                            *                                                       *
P020  UGG PHAGE T4            C U C C G U G U4A G C U C A G U U U G G D     A G A G C G C C U G A U3U N G G G1A F C A G G
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          45  47  B   D   F   H   J   L   N   P   49  51  53  55  57  59  61  63  65  67  69  71  73  75
        44  46  A   C   E   G   I   K   M   O   48  50  52  54  56  58  60  62  64  66  68  70  72  74  76
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F590    A G G7U                                 C C5U G U G T F C G A1U C C A C A G A A U U C G C A C C A
                                                  ==========              ==========******  ******
F591    A G G7U                                 C C5U G U G T F C G A1U C C A C A G A G U U C G C A C C A
                                                  ==========              ==========******  ******
F620    A G G7D                                 C G C G U G T F C G A1U C C A C G C U C A C C G C A C C A
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F625    A G G7D                                 C G C G U G T F C G A1U C C A C G C U C A C C G C A C C A
                                                  ==========              ==========****  ********
F630    A G G7D                                 C G C G U G T F C G A1U C C A C G C U C A C C G C A C C A
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F640    A G G7D                                 C A C G U G T F C G A1U C C A C G U U C A C C G C A C C A
                                                  ==========              ==========****  ********
F650    A G G7D                                 C G C G U G T F C G A1U C C A C G C U C A C C G C A C C A
                                                * ==========              ==========****  ********
F770    A G G7D*                                C5C C U G G T F C A A1U C C C G G G U U U C G G C A C C A
                                                * ====  ====              ====  ====**************
F771    A G G7D*                                C5C C U G G T F C G A1U C C C G G G U U U C G G C A C C A
                                                  ====  ====              ====  ====**************
F780    A G G7D*                                C C C C G G T F C A A1U C C C G G G U U U C G G C A C C A
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F830    A G G7D                                 C C5C U G G T F C G A1U C C C G G G U U U C G G C A C C A
                                                  ====  ====              ====  ====**************
F950    A G G7U                                 C C5C U G G T F C G A1U C C C G G G U U U C G G C A C C A
                                                  ====  ====              ====  ====**************
F951    A G G7U                                 C C5C U G G T F C G A1U C C C G G G U U U C G G C A C C A
                                                  ====  ====              ====  ====**************
F952    A G G7U                                 C C5C U G G T F C G A1U C C C G G G U U U C G G C A C C A
                                                  ====  ====              ====  ====**************
F965    A G G7D*                                C C5C U G G T*F C G A1U C C C G G G U U U C G G C A C C A
                                                  ====  ====              ====  ====**************
F970    A G G7D                                 C C5C U G G T F C G A1U C C C G G G U U U C G G C A C C A
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F971    A G G7D                                 C C5C U G G T F C A A1U C C C G G G U U U C G G C A C C A
                                                  ====  ====              ====  ====**************
F974    A G G7D                                 C C5C U G G T F C G A1U C C C G G G U U U C G G C A C C A
                                                  ====  ====              ====  ====**************
F995    A G G7D*                                C C5C U G G T F C G A1U C C C G G G U U U C G G C A C C A
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              P R O L I N E

P013    A G G7D                                 C5C5C G G G F F C A A1A U C C C G G A C G A G C C C C C A
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P014    A G G7D                                 C5C5C G G G F F C A A1A U C C C G G A C G A G C C C C C A
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P020    A G G7U                                 C C A A G G T F C A A A U C C U U G U A U G G A G A C C A
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		1 2 3 4 5 6 7	8 9	10 12 11 13	14 16 A 19 A 21 15 17 18 20 B	23 25 22 24	26	27 29 31 28 30	33 35 37 32 34 36 38	39 41 43 40 42
P040	UGG PHAGE T5	C U C C G A U	U A	G C U C	A A U U G G C D A	G A G U	A	C A C C G	U U U G G G1G	C G G U G
P120	CGG HALOBACTERIUM VOL.	G G G C C G G	U G	G4G G F	A N* C U U G G U A	U C C U	U	C G G C C	U U C*4G G G1F*	G G C C G
P121	GGG HALOBACTERIUM VOL.	G G G A C C G	U G	G4G G F	A G U G G U A	U C C U	C	U G C C G	A U G G G G1U	C G G U A
P122	UGG HALOBACTERIUM VOL.	G G G A C C G	U G	G4G U F	A G* C C U G G U A	U A C U	U	C G G G C	C U U G G G1U	G C C C G
P203	UGG MYCOPLASMA MYCOID.	C G G G A A G	U G	G C U C	A G U U U G G D A	G A G C	A	U U C G G	U U U G G G1A	C C G A A
P235	UGG BACILLUS SUBTILIS	C G G G A A G	U A	G C U C	A G C U U G G D A	G A G C	A	C A U G G	F U V2G G G1A	C C A U G
P255	CGG SALMONELLA TYPHI.	C G G U G A U	U4G	G C G C	A G C C U G G D A	G C G C	A	C U U C G	U*3U C G G G1A	C G A A G
P256	GGG SALMONELLA TYPHI.	C G G C A C G	U4A	G C G C	A G C C U G G D A	G C G C	A	C C G U C	C3U G G G G1U	F G C G G
P257	UGG SALMONELLA TYPHI.	C G G C G A G	U4A	G C G C	A G C U U G G D A	G C G C	A	A C U G G	U*3U V1G G G1A	C C A G U
P365	UGG SPINACIA OLERACEA CHLORO	A G G G A U G	U A	N* C G C	A G C U U G3G D A	G C G C	F	F U U G U	F U N* G G N* F	A C A A A
P417	UGG SACCHAROMYCES CER. MITO	C A G A U A G	A A	G C C A	A A A G G D C	A G G C	G2	C U U U C	F U U G G G1A	G A A A G
P438	UGG PHASEOLUS VULGARIS MITO	C G A G G U G	U A	G C G C	A G U C D G3G D C A	G C G C	A	U C U G U	U U U G G G1F	A C A G A
P570	UGG SACCHAROMYCES CER.	G G G C3G U G	U G1	G U C F	A G D G G D A	U G A U	U	C U C G C	F U N* G G G1F	G C G A G
P571	UGG SACCHAROMYCES CER.	G G G C3G U G	U G	G U C F	A G D G G D A	U G A U	U	N* U N* G C	F U N* G G G1F	G C G A G
P580	UGG TORULOPSIS UTILIS	G G C C3G C G	U G1	G U C F	A G D G G D A	U G A U	A	C U C G C	U U * G G G1F	G F G A G
P640	AGG LUPINUS LUTEUS	G G G A C A U	U G1	G U C F	A G D G G D A	U G A U	U	C U C G C	U U I G G G1F	G C G A G
	S E R I N E									
S020	UGA PHAGE T4	G G A G G C G	U4G	G C A G	A G U G3G D D U A	A U G C	A	C C G G U	C3U N* G A A5A	A C C G G
S110	CGA HALOBACTERIUM CUT.	G C C G A G G	U A	G C A F	A N* C U U G G C C A	A U G C	G4	G U U G C	U U C4G A G1A	G C A A C
S120	GCU HALOBACTERIUM VOL.	G U U G C G G	U A	G C C A	A N* C C U G G C C C A	A G G C	G4	C U G G G	U U G C U A7A	C U C A G
S121	CGA HALOBACTERIUM VOL.	G C C G A G G	U A	G C C F	A N* C C C G G C C A	A G G C	G4	G U A G A	U U C*4G A A A	F C U A C
S122	GGA HALOBACTERIUM VOL.	G C C A G G A	U G	G C C G	A N* C G G U A	A G G C	G4	C A C G C	C U G G A A A	G C G U G
S203	UGA MYCOPLASMA MYCOID.	G G A A G A U	U A	C C C A	A G U C C G G C D G A	N* G G G	A	U C G G U	C U U G A A6A	A C C G A

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          45  47  B   D   F   H   J   L   N   P   49  51  53  55  57  59  61  63  65  67  69  71  73  75
        44  46  A   C   E   G   I   K   M   O   48  50  52  54  56  58  60  62  64  66  68  70  72  74  76
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P040    G G G7U                                 U|G A A G G|T F C G A G U|C C U U C|A U U G G A G|A C C A
                                                  ==========              ==========****  ********
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P120    U A A                                  C5|C5U C A G|F1F C3G A A U|C U G A G|C C G G C C C|A C C A
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P121    G G A                                   C|C5U G A G|F1F C3G A C U|C U C A G|C G G U C C C|A C C A
                                                  ==========              ==========**************
                                               *  *
P122    U G A                                  C5|C5C C G G|F1F C3I1A A U|C C G G G|C G G U C C C|A C C A
                                                  ==========              ==========**************
P203    G G G U                                 C|G C A G G|U U C A A A U|C C U G U|C U U C C C G|A C C A
                                                  ==========              ==========**************
P235    G G G7U                                 C|G C A G G|T F C G A A U|C C U G U|C U U C C C G|A C C A
                                                    ========              ========  **************
P255    G G G7U                                 C|G G A G G|T F C G A A U|C C U C U|A U C A C C G|A C C A
                                                    ========              ========  **************
P256    G G G7U                                 C|G G A G G|T F C A A A U|C C U C U|C G U G C C G|A C C A
                                                    ========              ========  **************
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P257    G G G7U                                 C|G G A G G|T F C G A A U|C C U C F|C U C G C C G|A C C A
                                                    ========              ========  **************
P365    A U G7U                                 C|A C G G G|T F C A A A U|C C U G U|C A U C C C U|A C C A
                                                  ====  ====              ====  ====**************
P417    A C C U                                 A|G U U A G|T F C G A G U|C U A U C|C U A U C U G|A C C A
                                                  ==  ======              ======  ==**************
P438    G G G7C                                 C|A U A G G|T F C G A A U|C C U G U|C A C C U U G|A C C A
                                                  ==========              ==========**************
P570    A G G7C                                 C|C U G G G|T F C A A1U U|C C C A G|C U C G C C C|C C C A
                                                  ==========              ==========**  **********
                                                * *
P571    A G G7C                                 N|N U G G G|T F C A A1U U|C C C A G|C U C G C C C|C C C A
                                                  ==========              ==========**  **********
P580    U G G7D                                C5|C5A G G G|T F C A A1U U|C C C U G|C U C G G C C|C C C A
                                                  ==========              ==========**  **********
P640    A G G7D                                C5|C C G A G|T F C G A1U U|C U C G G|A U G U C C C|C C C A
                                                  ==========              ==========**************

             S E R I N E

S020    C A G U C G C U C C G G C G A C U       C|A U A G G|T F C A A A U|C C U A U|C G C C U C C|G C C A
          ::::::::::::        ::::::::::::        ==========              ==========**************
S110    G U U C C A C A C G G A C U            C5|A G G A G|F1F C3I1A A U|C U C C U|C C U C G G C|G C C A
                                                  ==========              ==========**************
S120    U G G C G U C A A G C C C              C5|C5G G G G|F1F C3G A A U|C C C C G|C C G C A A C|G C C A
                                                  ==========              ==========**************
S121    U G U C C A U U C G G A C A            C5|G U G A G|F1F C3I1A A U|C U C A C|C C U C G G C|G C C A
                                                  ==========              ==========**************
S122    U U C C C U C U G G G A U              C5|G G G G G|F1F C3I1A A U|C C C U C|U C C U G G C|G C C A
                                                  ==  ======              ======  ==**************
S203    G A G U C G G G G A A A C C C G A G     C|G G G G G|U U C G A A U|C C C U C|A U C U U C C|G C C A
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			1 2 3 4 5 6 7	8 9	10 11 12 13	14 15 16 17 A 18 19 20 A B 21	22 23 24 25	26	27 28 29 30 31	32 33 34 35 36 37 38	39 40 41 42 43
S250	CGA	E.COLI	G G A G A G A	U G	C C G G	A G C G3G C D G A	A C G G	A	C C G G U	C U C G A A5A	A C C G G
S251	GCU	E.COLI	G G U G A G G	U4G	G C C G	A G A G G C D G A	A G G C	G	C U C C C	C2U G C U A7A	G G G A G
S252	GGA	E.COLI	G G U G A G G	U G	U C C G	A G U G3G C D G A	A G G A	G	C A C G C	C U G G A A A	G F G U G
S253	GGA	E.COLI	G G U G A G G	U4G	U C C G	A G U G3G D D G A	A G G A	G	C A C G C	C U G G A A A	G F G U G
S254	UGA	E.COLI	G G A A G U G	U4G	G C C G	A G C G3G D D G A	A G G C	A	C C G G U	C*3U V1G A A5A	A C C G G
S417	GCU	SACCHAROMYCES CER. MITO	G G A A A A U	U A	A C U A	D A G G D A	A A G U	GG	A U U A F	F U G C U A A	G U A A U
S418	UGA	SACCHAROMYCES CER. MITO	G G A U G G U	U G	A C U G	A G D G G D U U A	A A G U	G2	F G A U A	F U U G A G1C	F A U C A
S419	UGA	SACCHAROMYCES CER. MITO	G G A U G G U	U G	A C U G	A G D G G D U U A	A A G U	G2	U G A U A	F U U G A G1C	F A U C A
S456	GCU	AEDES ALBOPICTUS MITO	G A A A U A U	G	U U G A		U C A A	G	A A A A G	C U G C U A7A	C3U F U U
S473	GCU	HAMSTER MITO	G A G A A U G	U A	U		G	C	A A G A G	C U G C U A7A	C U C C U
S480	GCU	BOVINE HEART MITO	G A A A A A G	U A	U		G	C	A A G A A	C U G C U A7A	U U C U A
S481	GCU	BOVINE LIVER MITO	G A A A A A G	U A	U		G	C	A A G A A	C U G C U A7A	U U C U A
S494	GCU	HUMAN MITO	G A G A A A G	C U	C		A	C	A A G A A	C U G C U A7A	C U C A U
S570	UGA	SACCHAROMYCES CER.	G G C A C U A	U G	G C C4G	A G D G3G D D A	A G G C	G4	A C A G A	N* U N* G A A4A	F C U G U
S590	AGA	YEAST	G G C A A C U	U G	G C C4G	A G D G3G D D A	A G G C	G4	A A A G A	F U I G A A4A	F C U U U
S591	AGA	YEAST	G G C A A C U	U G	G C C4G	A G D G3G D D A	A G G C	G4	A A A G A	F U I G A A4A	F C U U U
S640	CGA	LUPINUS LUTEUS	G U C A G U A	U G	G C C4G	A G D G3G D D A	A G G C	G4	A C A G A	C6U C G A Z1A	F C U G U
S780	GCU	DROSOPHILA MELANO.	G A C G A G G	U G	G C C4G	A G D G3G D D A	A G G C	G4	F F G G A	C6U G C U A8A	F C C A A
S781	AGA	DROSOPHILA MELANO.	G C A G3U C G	U G	G C C4G	A G C G3G D D A	A G G C	G4	U C U G A	C6U I G A A4A	F C A G A
S782	CGA	DROSOPHILA MELANO.	G C A G3U C G	U G	G C C4G	A G D G3G D D A	A G G C	G4	U C U G A	C6U C G A A4A	F C A G A
S950	UCA	MOUSE LIVER	G C C C G G A	U G	A U C C	U C A G U G G U C U G	G G G U		G C A G G	C U N* C A A4A	C C U G U
S955	AGA	RAT LIVER	G U A G U C G	U G	G C C4G	A G D G3G D D A	A G G C	G4	A F G G A	C6U I G A A4A	F3C C A U
S956	GCU	RAT LIVER	G A C G A G G	U G	G C C4G	A G D G3G D D A	A G G C	G4	A F G G A	C6U G C U A8A	F C C A U

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            45      47      B       D       F       H       J       L       N       P       49      51      53      55      57      59      61      63      65      67      69      71      73      75
        44      46      A       C       E       G       I       K       M       O       48      50      52      54      56      58      60      62      64      66      68      70      72      74      76
        -------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

S250    A   G   U   A   G   G   G   G   C   A   A   C   U   C   U   A   C               C   G   G   G   G   G   T   F   C   A   A   A   U   C   C   C   C   C   U   C   U   C   U   C   C   G   C   C   A
                                                                                            ====================                            ====================****************************
S251    U   A   U   G   C   G   G   U   C   A   A   A   A   G   C   U   G   C   A   U   C   C   G   G   G   G   T   F   C   G   A   A   U   C   C   C   C   G   C   C   U   C   A   C   C   G   C   C   A
   •        ::::::::::::::::    ::::                            ::::    ::::::::::::::::    ====================                            ====================****************************
S252    U   A   U   A   C   G   G   C   A   A   C   G   U   A   U                       C   G   G   G   G   G   T   F   C   G   A   A   U   C   C   C   C   C   C   C   U   C   A   C   C   G   C   C   A
                                                                                            ====================                            ====================****************************
S253    U   A   U   A   C   G   G   C   A   A   C   G   U   A   U                       C   G   G   G   G   G   T   F   C   G   A   A   U   C   C   C   C   C   C   C   U   C   A   C   C   G   C   C   A
                                                                                            ====================                            ====================****************************
S254    C   G   A   C   C   C   G   A   A   A   G   G   G   U   U                       C   C   A   G   A   G   T   F   C   G   A   A   U   C   U   C   U   G   C   G   C   U   U   C   C   G   C   C   A
                ::::::::::::::::                ::::::::::::::::                            ====================                            ====================****    ********************
S417    U   G   A   A   U   U   G   U   A   A   A   U   U   C   U                       U   A   U   G   A   G   T   F   C   G   A   A   U   C   U   C   A   U   A   U   U   U   U   C   C   G   C   C   A
            ::::::::::::::::::::            ::::::::::::::::::::                            ====================                            ====================****************************
S418    U   U   A   G   U   C   U   U   U   A   U   U   G   G   C   U   A               C   G   U   A   G   G   T   F   C   A   A   A   U   C   C   U   A   C   A   U   C   A   U   C   C   G   C   C   A
            ::::::::::::    ::::                        ::::    ::::::::::::                ====================                            ====================****    ********************
S419    U   U   A   G   U   C   U   U   U   A   U   U   G   G   C   U   A               C   G   U   A   G   G   T   F   C   A   A   A   U   C   C   U   A   C   A   U   C   A   U   C   C   G   C   C   A
            ::::::::::::::::::::                        ::::::::::::::::::::                ====================                            ====================****    ********************
S456    U   C   U   U                                                                   U   A   A   U   G   G   U   U   U   A   A   U   U   C   C   A   U   F   A   U   A   U   U   U   C   U   C   C   A
                                                                                            ====================                            ====================****************************
S473    G   C   U                                                                       A   C   C   A   U   G   U   A   U   A   A   U   AA  C   A   U   G   G   C   U   U   U   C   U   U   A   C   C   A
                                                                                            ====================                            ====================****    ****************
S480    U   G   C   U                                                                   C   C   C   A   U   A   U   C   U   A   A   U   AG  U   A   U   G   G   C   U   U   U   U   U   C   G   C   C   A
                                                                                            ====================                            ====================****************************
S481    U   G   C   U                                                                   C   C5  C   A   U   A   U   C   U   A   A   U   AG  U   A   U   G   G   C   U   U   U   U   U   C   G   C   C   A
                                                                                            ====================                            ====================****************************
S494    G   C   C                                                                       C   C   C   A   U   G   U   C   U   A   A   C   AA  C   A   U   G   G   C   U   U   U   C   U   C   A   C   C   A
                                                                                            ====================                            ====================****************************
S570    U3  G   G   G   C   U   C   U   G   C   C   C   G                               C5  G   C   U   G   G   T   F   C   A   A   A   U   C   C   U   G   C   U   G   G   U   G   U   C   G   C   C   A
            ::::::::::::::::            ::::::::::::::::                                    ========    ========                            ========    ========****    ************    ****
S590    U3  G   G   G   C   U   C   U   G   C   C   C   G                               C5  G   C   A   G   G   T   F   C   A   A   A   U   C   C   U   G   C   A   G   U   U   G   U   C   G   C   C   A
            ::::::::::::::::            ::::::::::::::::                                    ====================                            ====================********************    ****
S591    U3  G   G   G   C   U   U   U   G   C   C   C   G                               C5  G   C   A   G   G   T   F   C   G   A   G   U   C   C   U   G   C   A   G   U   U   G   U   C   G   C   C   A
            ::::::::::::::::            ::::::::::::::::                                    ====================                            ====================********************    ****
S640    U3  G   A   G   A   U   U   U   G   C   C   U   G   G                           C5  A   G   C   G   G   T   F   C   G   A1  A   U   C   C   G   C   U   U   A   C   U   G   A   C   G   C   C   A
                                                                                            ====================                            ====================****************************
S780    U3  G   U   G   C   U   C6  U   G   C   A   C   G                               C5  G   U   G   G   G   T   F   C   G   A1  A   U   C   C   C   A   U   C   C   U   C   G   U   C   G   C   C   A
                                                                                            ====================                            ====================****************************
S781    U3  U   C   C   C   U   C6  U   G   G   G   A   G                               C5  G   U   A   G   G   T   F   C   G   A1  A   U   C   C   U   A   C   C   G   A   C   U   G   C   G   C   C   A
                                                                                            ====================                            ====================****************************
S782    U3  U   C   C   C   U   C6  U   G   G   G   A   G                               C5  G   U   A   G   G   T   F   C   G   A1  A   U   C   C   U   A   C   C   G   G   C   U   G   C   G   C   C   A
                                                                                            ====================                            ====================********    ****************
S950    A   G   C   U   G   U   U   U   A   G   C   G   A   C   A                       G   A   G   U   G   G   U   F   C   A   A1  U   U   C   C   A   CCU     U   U   C   G   G   G   C   G   C   C   A
                                                                                            ====================                            ====================****    ********************
S955    U3  G   G   G   G   U   C6  U   C   C   C   C   G                               C5  G   C   A   G   G   T   F   C   G   A1  A   U   C   C   U   G   C   C   G   A   C   U   A   C   G   C   C   A
            ::::::::::::::::            ::::::::::::::::                                    ====================                            ====================****************************
S956    U3  G   F   G   C   U   C6  U   G   C   A   C   G                               C5  G   U   G   G   G   T   F   C   G   A1  A   U   C   C   C   A   U   C   C   U   C   G   U   C   G   C   C   A
            ::::::::::::::::            ::::::::::::::::                                    ====================                            ====================****************************
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                                    1 2 3 4 5 6 7|8 9|10  12  |14  16  A   19  A   21|  23  25|  |27  29  31|  33  35  37  |39  41  43
                                                 |   |  11  13|  15  17  18  20  B   |22  24  |26|  28  30  |32  34  36  38|  40  42
                                    -------------|---|--------|----------------------|--------|--|----------|--------------|----------

S957  AGA RAT MORRIS HEPATOMA      G U A G U C G|U G|G C C4G |A G D     G G D D   A |A G G C |G4|A F G G A |C6U I G A A4A |F3C C A U
                                   ***************
S970  CCA BOVINE LIVER*            G C C C G G2A|U G|A U C C |U C A G U G G U C   C |G G G U |  |G D A G G |C U C3C A A4A |C C U G U
                                   *********** **
S971  NCA BOVINE LIVER*            G C C C G G A|U G|A U C C |C U A G U G G U C   U |G G G U |  |G C A G G |C U N C A A4A  |C C U G U
                                   *********** **                                                           *
S995  UCA HUMAN HELA CELLS         G C C C G G A|U G|A U C C |U C A G U G G U C U G |G G G U |  |G C A G G |C U N C A A4A  |C C U G U
                                   *********** **
S996  UGA HUMAN                    G U A G U C G|U G|G C C4G |A G D     G3G D D   A |A G G C |G |A F G G A |C U U G A A A  |F C C A U
                                   ***************

                 T H R E O N I N E
                                                                                                            *       *
T020  UGU PHAGE T4                 G C U G A U U|U A|G C U C |A G D A   G G D     A |G A G C |A |C C U C A |C U N G U N A  |F G A G G
                                   ***************
T110  GGU HALOBACTERIUM CUT.       G C C U G G G|U A|G C U F |A G C     G G U     A |A A G C |G4|C G U C C |U U G G U A7A  |G G A C G
                                   *********  ****
                                                          *
T120  CGU HALOBACTERIUM VOL.       G C C G G U G|U A|G C U C |A N U U   G G C     A |G A G C |G4|A U U C C |U U C G U A7A  |G G A A U
                                   ***************
                                                          *
T121  GGU HALOBACTERIUM VOL.       G C C U G G G|U A|G C U F |A G C     G G U     A |A A G C |G4|C G U C C |U U G G U A7A  |G G A C G
                                   *********  ****
                                                 *
T200  AGU MYCOPLASMA CAPRIC.       G C U G A C U|N A|G C U C |A G U D   G G D     A |G A G C |A |A U U G A |C U A G U A7A  |F C A A U
                                   ***************
                                                 *
T201  UGU MYCOPLASMA CAPRIC.       G C U G A C U|N A|G C U C |A G C A   G G C     A |G A G C |A |A C U G A |C U U G U A7A  |F C A G U
                                   ***************                                                                  *
T203  UGU MYCOPLASMA MYCOID.       G C U G A C U|U A|G C U C |A G C A   G G C     A |G A G C |A |A C U G A |C U U G U N A  |F C A G U
                                   ***************                         *
T235  UGU BACILLUS SUBTILIS        G C C G G U G|U A|G C U C |A A U D   G G D     A |G A G C |A |A C U G A |C U V2G U A7A  |F C A G U
                                   ***********
T250  GGU E.COLI                   G C U G A U A|U A|G C U C |A G D D   G G D     A |G A G C |G |C A C C C |U U G G U A8A  |G G G U G
                                   ***************
T365  GGU SPINACIA OLERACEA        G C C C C U U|U A|A C U C |A G U     G3G D     A |G A G U |A |A C G C C |A U G G U A8A  |G G C G U
          CHLORO                   ***************
T412  UGU NEUROSPORA CRASSA        G C C U G G U|U A|G C A U |A A A A     G D     A |A U G C |A |A U U G F |U U U G U A7A  |F C A A U
          MITO                     ******    ****
T417  UAG SACCHAROMYCES CER.       G U A A A U A|U A|A U U U |A A D     G G D     A |A A A U |G2|F A U G F |UUU U A G G1F  |G C A U A
          MITO                     ***************
T480  UGU BOVINE LIVER             G U C U U U G|U A1|G U A C|A U C U             A |A U A U |A |C U G G U |C6U U G U A7A  |A C C A G
          MITO                     *********** **
T590  AGU YEAST                    G C U U C U A|U G|G2C C A |A G D D   G G D     A |A G G C |G4|C C A C A |C6U I G U A7A  |F G U G G
                                   *********** **
T591  AGU YEAST                    G C U U C U A|U G|G2C C A |A G D D   G G D     A |A G G C |G4|C C A C A |C6U I G U A7A  |F G U G G
                                   *********** **
T970  AGU BOVINE LIVER             G G C C C U G|U G1|G2C U A|G C D     G G D C   A |A A G C |G4|C C U G U |C6U I G U A7A  |A C A G G
                                   *********** **
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        45  47  B   D   F   H   J   L   N   P   49  51  53  55  57  59  61  63  65  67  69  71  73  75
      44  46  A   C   E   G   I   K   M   O   48  50  52  54  56  58  60  62  64  66  68  70  72  74  76
      - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

S957  U3G G G G U C6U C C C C G               C5G C A G G T F C G A1A U C C U G C C G A C U A C G C C A
        ::::::::      ::::::::                  ==========              ==========**************
S970  A G C U G U C U A G C G A C A           G A G U G G U F C A A1U U C C A CCU U U C G G G C G C C A
          ::::::::::        ::::::::          ::==========              ==========**  **********
S971  A G C U G U C U A G C G A C A           G A G U G G U F C A A1U U C C A CCU U U C G G G C G C C A
          ::::::::::        ::::::::          ::==========              ==========**  **********
S995  A G C U G U C U A G C G A C A           G A G U G G U F C A A1U U C C A CCU U U C G G G C G C C A
                                                ==========              ==========**  **********
S996  U3G G G G U C6U C C C C G               C5G C A G G T F C G A1A U C C U G C C G A C U A C G C C A
                                                ==========              ==========**************

          T H R E O N I N E

T020  A U G7U                                 C G G C G G T F C G A U U C C G U C A A U C A G C A C C A
                                                ==  ======              ======  ==**************
T110  A G A C                                 C C5C5G G A F1F C3I1A A U U C C G G C C U A G G C U C C A
                                                ==========              ==========****  ********
T120  A G G C                                 C5G A G G G F1F C3I1A A U C C C U C C A C C G G C U C C A
                                                ==========              ==========**************
T121  A G A C                                 C5C5C G G G F1F C3I1A A U C C C G G C C U A G G C U C C A
                                                ==========              ==========****  ********
T200  A G G7U                                 C G A A G G U F C A A A U C C U U U A G U C A G C A C C A
                                                  ========              ========  **************
T201  A G G7U                                 C G U A G G U F C G A U U C C U A U A G U C A G C A C C A
                                                  ========              ========  **************
T203  A G G7U                                 C G U A G G U U C G A U U C C U A U A G U C A G C A C C A
                                                ==========              ==========**************
T235  A G G7U                                 U G G G G G T F C A A G U C C U C U U G C C G G C A C C A
                                                  ==  ====              ====  ==      **********
T250  A G G7U                                 C G G C A G T F C G A A U C U G C C U A U C A G C A C C A
                                                ==========              ==========**************
T365  A A G7D                                 C A U C G G T F C A A A U C C G A U A A G G G G C U C C A
                                                ==========              ==========**************
T412  A G A                                   A G C A A G T G C G A U A C U U G C A C U G G G C U C C A
                                                ==========              ==========****    ******
T417  U U A                                   U C U A A G T F C A A A U C U U A G U A U U U A C A C C A
                                                ==========              ==========**************
T480  A G A                                   A G G A G A A C A A C U AAC C U C C C F A A G A C U C C A
                                              * ========                  ========**  **********
T590  A G A D                                 C5A U C G G T F C A A1A U C C G A U U G G A A G C A C C A
                                              * ==========              ==========**  **********
T591  A G A D                                 C5G U C G G T F C A A1A U C C G A C U G G A A G C A C C A
                                                ==========              ==========**  **********
T970  A G A D                                 C5C U G G G U F C G A1A U C C C A G C G G G G C C5U C C A
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			1 2 3 4 5 6 7	8 9	10 11 12 13	14 15 16 17 A 18 19 20 A B 21	22 23 24 25	26	27 28 29 30 31	32 33 34 35 36 37 38	39 40 41 42 43
		T R Y P T O P H A N									
W012	CCA	CHICKEN ASV/AMV/RSV	G A C C U C G	U G1	G2C G C	A A C G3G D A	G C G C	G4	F C U G A	C3U C3C A G1A	F3C A G A
W120	CCA	HALOBACTERIUM VOL.	G G G G C U G	U G	G C C A	A N* C C C G G C A	U G G C	G4	A C U G A	C3U C3C A G1A	U3C A G U
W250	CCA	E.COLI	A G G G G C G	U4A	G U U C	A A D D G G D A	G A G C	A	C C G G U	C3U C C A A5A	A C C G G
W350	CCA	PHASEOLUS VULGARIS CHLORO	A C G C U C U	U A	G U U C	A G U U C G3G C A	G A A C	G	F G G G F	C U C3C A N* A	A C C C G
W365	CCA	SPINACIA OLERACEA CHLORO	G C G C U C U	U A	G U U C	A G U U C G3G D A	G A A C	G2	F G G G F	C U C C A N* A	A C C C G
W412	UCA	NEUROSPORA CRASSA MITO	A A G A G U A	U A	G U U U	A A U G G D A	A A A C	A	G A A A G	C U N* C A N* C	C U U U A
W417	UCA	SACCHAROMYCES CER. MITO	A A G G A U A	U A	G U U U	A A D G G D A	A A A C	A	G U U G A	F U N* C A N* A	F C A A U
W438	CCA	PHASEOLUS VULGARIS MITO	G C G C U C U	U A	G U U C	A G U U C G3G D A	G A A C	G4	C G G G F	C U C3C A N* A	A C C C G
W474	UCA	RAT MORRIS HEPATOMA MITO	A G A A G U U	U A1	G G A U	A U A C A	G U C C	A	A G A G C	C U N* C A A5A	G C C C U
W480	UCA	BOVINE LIVER MITO	A G G A A U U	U A1	G2G U U	A A A C A	G A C C	A	A G A G C	C U N* C A A5A	G C C C U
W570	CCA	SACCHAROMYCES CER.	G A A G C G G	U G1	G2C U C	A A D G3G D A	G A G C	F	F F C G A	C3U C3C A A A	F C G A A
W625	CCA	WHEAT GERM	G G A N* C C G	U G1	G2C G C	A A D D G3G D A	G C G C	G4	F C U G A	C3U C3C A G1A	F3C A G A
W870	CCA	CHICKEN	G A C C U C G	U G1	G2C G C	A A C G3G D A	G C G C	G4	F C U G A	C3U C3C A G1A	F3C A G A
W970	CCA	BOVINE LIVER	G A C C U C G*2	U G1	G2C G C	A A D* G3G D A	G C G C	G4	F C U G A	C3U C*3C A G1A	F3C A G A
		T Y R O S I N E									
Y120	GUA	HALOBACTERIUM VOL.	C C G C U C U	U A	G C U C	A N* C C U G G C A	G A G C	A	G C C G A	C*3U G U A G1A	F C G G C
Y230	GUA	BACILLUS STEARO.	G G A G G G G	U4A	G C G A	A G U G3G C U A A A	A1C G C	G	G C G G A	C U Q U A A5A	F C C G C
Y235	GUA	BACILLUS SUBTILIS	G G A G G G G	U4A	G C G A	A G U G G C U A A A	A1C G C	G	G C G G A	C U Q U A A4A	F C C G C
Y236	GUA	BACILLUS SUBTILIS	G G A G G G G	U4A	G C G A	A G U G G C U A A A	A1C G C	G	G C G G A	C U Q U A A5A	F C C G C
Y250	GUA	E.COLI	G G U G G G G	U4U	C C C G	A G C G3G C C A A A	A G G G	A	G C A G A	C U Q U A A5A	F C U G C
Y251	GUA	E.COLI	G G U G G G G	U4U	C C C G	A G C G3G C C A A A	A G G G	A	G C A G A	C U Q U A A5A	F C U G C
Y308	GUA	SCENEDESMUS OBLIQ. CHLORO	G G G C C G A	U G	C C G A	A G U N* G3G D U A	A U G G	G	G C G G A	F U G U A A*4A	F C C G C

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         45  47  B   D   F   H   J   L   N   P  |49  51  53|55  57  59  |61  63  65|67  69  71  |73  75
       44  46  A   C   E   G   I   K   M   O   48| 50  52  |54  56  58 60| 62  64  |66  68  70 72| 74  76
-------------------------------------------------------------------------------------------------------

           T R Y P T O P H A N

W012   A G G7C                 U   |G C G U G|F F C G A1A U |C A C G U|C G G G G U C|A C C A
                                      =======                ========  ****  *******
W120   C G A U                 C5  |G G G G G|F1F C3I1A A U |C C C U C|C G G C C C C|A C C A
                                    ==  =====                ======  = **  *********
W250   G U G7U                 U   |G G G A G|T F C G A G U |C U C U C|C G C C C C U|G C C A
                                    ==  =====                ======  = *************
W350   A U G7U                 C   |G U A G G|T F C A A A U |C C U A C|A G A G C G U|G C C A
                                    =========                ========= *************
W365   A U G N                 C   |G U A G G|T F C A A G U |C C U A C|A G A G C G U|G C C A
                                    =========                ========= ***********
W412   A A U                   U   |C U U A G|T F C G A G U |C U A A G|U A C U C U U|G C C A
                                    =========                ========= *************
W417   C A U                   U   |A G G A G|T F C G A A U |C U C U U|U A U C C U U|G C C A
                                    ==  =====                ======  = *************
W438   A U G7N*                C   |G U A G G|T F C A A A U |C C U A C|A G A G C G U|G C C A
                                    =========                ========= ***********
W474   U A G                   A   |A A A C A|A A C A       |A G U U U|A A C U U C U|G C C A
                                    =======                    ======= *************
W480   A A G                   C   |A A G U A|C A A U U     |U A C U U|A A U U C C U|G C C A
                                    =========                ========= *************
W570   G G G7D                 U   |G C A G G|T F C A A1U U |C C U G F*|C C G U U U C|A C C A
                                      =======                ========  ******  *****
                                                      *
W625   A G G D                 U   |G C G U G|T F C G A1U U |C A C G F|C G G G U C C|A C C A
                                      =======                ========  ******  *****
W870   A G G7C                 U   |G C G U G|F F C G A1A U |C A C G U|C G G G G U C|A C C A
                                      =======                ========  ****  *******
           *                                        *
W970   A G G7D*                U   |G C G U G|F F C G A1A U |C A C G U|C G G G G U C|A C C A
                                      =======                ========  ****  *******

           T Y R O S I N E

Y120   U U G U                 C5  |C C C C G|F1F C3I1A A U |C G G G G|A G A G C G G|A C C A
                                    =========                ========= *************
Y230   U C C C U U U G G G U U C   |G G C G G|T F C G A A U |C C G U C|C C C C U C C|A C C A
         :::::       :::::          ==  =====                ======  = *************
Y235   U C C C U C A G G G U U C   |G G C A G|T F C G A A U |C U G C C|C C C C U C C|A C C A
         :::::       :::::          =========                ========= *************
Y236   U C C C U C A G G G U U C   |G G C A G|T F C G A A U |C U G C C|C C C C U C C|A C C A
         :::::       :::::          =========                ========= *************
Y250   C G U C A U C G A C U U C   |G A A G G|T F C G A A U |C C U U C|C C C C A C C|A C C A
         :::::       :::::          =========                ========= *************
Y251   C G U C A C A G A C U U C   |G A A G G|T F C G A A U |C C U U C|C C C C A C C|A C C A
         :::::       :::::          =========                ========= *************
Y308   U G G U U A C G C C U A C   |G U U G G|T F C G A A U |C C G A C|U C G G C C C|A C C A
                                    ====  ===                ====  === *************
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			1 2 3 4 5 6 7	8 9	10 11 12 13	14 15 16 17 A 18 19 20 A B 21	22 23 24 25	26	27 28 29 30 31	32 33 34 35 36 37 38	39 40 41 42 43
Y407	GUA	TETRAHYMENA PYRIF. MITO	G A G A U G G	U G	G2C U G	A G U G G D D A	A A G C	G4	G F A G A	C U Q U A N* A	F C F A U
Y412	GUA	NEUROSPORA CRASSA MITO	A G G A G G G	U U	C C G U	U U G U U G G D A U G	A C G G	G4	F U A A G	C U G U A N* A	C U U A A
Y417	GUA	SACCHAROMYCES CER. MITO	G G A G G G A	U U	U U C A	A U G U* D G G D A G U	U G G A	G2	F U G A G	C U G U A A4A	C U C A A
Y438	NUA	PHASEOLUS VULG. MITO	G G G A G A G	U G	G C C G	A G D G3G* D C A A	A A G C	G2	A C A G A	C U N* U A N* A	F C U G U
Y540	GUA	SCENEDESMUS OBLIQ.	C C C C U U G	U A	G C U C	A G D D G3G C A	G A G C	G4	G G A G A	C U G F A G1A	F C U C U
Y575	GUA	SCHIZOSACCHA. POM.	C U C C U G A	U G1	G U G F	A G D D G G D D A	U C A C	A	C* C C G G	C U G F A A4A	C C G G U
Y580	GUA	TORULOPSIS UTILIS	C U C U C G G	U G1	G2C C A	A G D D G3G D D D A	A G G C	G4	F C A G A	C U G F A A4A	F C U G A
Y590	GUA	YEAST	C U C U C G G	U A	G2C C A	A G D D G3G D D D A	A G G C	G4	C A A G A	C U G F A A4A	F C U U G
Y625	GUA	WHEAT GERM	C C G A C C U	U A	G2C U C	A G D D G3G U A	G A G C	G4	G A G G A	C U Q* F A G1A	F C C U U
Y626	GUA	WHEAT LEAVES	C C G A C C U	U A	G2C U C	A G D D G3G U A	G A G C	G4	G A G G A	C U G F A G1A	F C C U U
Y640	GUA	LUPINUS LUTEUS	C C G A C C U	U A	G2C U C	A G D D G3G U A	G A G C	G4	G A G G A	C U G F A G1A	F C C U U
Y655	GUA	NICOTIANA RUSTICA	C C G A C C U	U A	G C U C	A G D D G3G U A	G A G C	G4	G A G G A	C U G F A G1A	F C C U U
Y656	GUA	NICOTIANA RUSTICA	C C G A C C U	U A	G2C U C	A G D D G3G U A	G A G C	G4	G A G G A	C U G F A G1A	F C C U U
Y780	GUA	DROSOPHILA MELANO.	C C U U C G A	U A	G2C U C	A G D D G G V7 A	G A G C	G4	G F G G A	C U Q* F A G1A	U3C C A U
Y970	GUA	BOVINE LIVER	C C U U C G2A	U A	G2C U C	A G D D G G V7U A	G A G C	G4	G4A G G A	C U Q2F A G1A	F3C C U U
Y995	GUA	HUMAN PLACENTA	C C U U C G2A	U A	G2C U C	A G C D* G G U1 A	G A G C	G4	G4A G G A	C U Q2F A G1A	F1C C U U
Y996	GUA	HUMAN PLACENTA	C C U U C G2A	U A	G2C U C	A G D D G G V7 A	G A G C	G4	G4A G G A	C U Q2F A G1A	F1C C U U
		V A L I N E									
V110	CAC	HALOBACTERIUM CUT.	G G G U C G G	U G	G U C F	A G U C C G G U U A	U G A C	G	G C U C C	U U C A C A C	G G A G C
V111	CAC	HALOBACTERIUM CUT.	G G G U U G G	U G1	G U C F	A G U C A G G C U A	U G A C	A	C C U C C	U U C A C A U	G G A G G
V112	GAC	HALOBACTERIUM CUT.	G G G U U G G	U G	G U C F	A G U C A G G C U A	U G A C	A	C C U C C	U U G A C A U	G G A G G
V120	CAC	HALOBACTERIUM VOL.	G G G U U G G	U G	G U C F	A N* C C A G G U U A	U G A C	G	G C U C C	U U C A C A C	G G A G C
V121	GAC	HALOBACTERIUM VOL.	G G G U U G G	U G	G U C F	A G U C U G G U U A	U G A C	A	C C U C C	U U G A C A U	G G A G G

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          45  47  B   D   F   H   J   L   N   P  |49 51 53|55 57 59    |61 63 65|67 69 71    |73 75
        44  46  A   C   E   G   I   K   M   O  48| 50 52  |54 56 58 60 | 62 64  |66 68 70 72 | 74 76
---------------------------------------------------------------------------------------------------------
Y407    U3G G G U A U C C G U           C |G U C G G|T F C G A G U|C C G A U|C C A U C U C|A C C A
                                          |  =======|             |=======  |*************|
Y412    U G A C*U A A U U A G U C5G U   C*|G A A G G|T F C A A U U|C C U U U|C U C U C C U|A C C A
          :::::::         :::::::::       |  =======|             |=======  |*   *********|
Y417    U G A C U U A G G U C U U       C |A U A G G|T F C A A U U|C C U A U|U C C C U U C|A C C A
          :::::         :::::             |=========|             |=========|*********   *|
Y438    U G A A G U U U U U C U A       C |G U A G G|T F C G A A U|C C U G C|C U C U C C C|A C C A
                                          |=   =====|             |=====   =|*************|
Y540    A G G7N*                        C |A C U G G|T F C G A1A U|C C G G U|C G A G G G G|A C C A
                                          |===   ===|             |===   ===|*   *********|
Y575    U G G7U                         C5|G C U A G|T F C G A1U U|C U G G C|U C A G G A G|A C C A
                                          |===   ===|             |===   ===|*************|
Y580    A C A D                         C5|G G G C G|T F C G A1A U|C G C C C|C C G A G A G|A C C A
                                          |=========|             |=========|*************|
Y590    A G A D                         C5|G G G C G|T F C G A1C U|C G C C C|C C G G G A G|A C C A
                                          |=========|             |=========|*****   *****|
Y625    A G G7U*                        C |A C U G G|U F C G A1A U|C C G G U|A G G U C G G|A C C A
                                          |===   ===|             |===   ===|*************|
Y626    A G G7U*                        C |A C U G G|U F C G A1A U|C C G G U|A G G U C G G|A C C A
                                          |===   ===|             |===   ===|*************|
Y640    A G G7V7                        C |A C U G G|U F C G A1A U|C C G G U|A G G U C G G|A C C A
                                          |===   ===|             |===   ===|*************|
Y655    A G G7U*                        C |A C U G G|U F C G A1A U|C C G G U|A G G U C G G|A C C A
                                          |===   ===|             |===   ===|*************|
Y656    A G G7U*                        C |G C U G G|U F C G A1A U|C C G G C|A G G U C G G|A C C A
                                          |===   ===|             |===   ===|*************|
Y780    A G G7D                         C |G C U G G|T*F C A A1A U|C C G G C|U C G A A G G|A C C A
                                          |===   ===|             |===   ===|*************|
Y970    A G G7D                         C5|G C U G G|T F C G A1U U|C C G G C|U C G A A G G|A C C A
                                          |===   ===|             |===   ===|*************|
Y995    A G G7D                         C5|G C U G G|T F C G A1U U|C C G G C|U C G A A G G|A C C A
                                          |=========|             |=========|*************|
Y996    A G G7D                         C5|G C U G G|T F C G A1U U|C C G G C|U C G A A G G|A C C A
                                          |=========|             |=========|*************|

            V A L I N E

V110    A G G U                         C |G G C G G|F1F G3I1A C U|C C G C C|C C G A C C C|A C C A
                                          |=========|             |=========|*************|
V111    A G G U                         C |G G C5G G|F1F C3I1A A U|C C G C C|C C A A C C C|A C C A
                                          |=========|             |=========|*************|
V112    A G G U                         C |G G C5G G|F1F C3I1A A U|C C G C C|C C A A C C C|A C C A
                                          |=========|             |=========|*************|
V120    A G G C                         C5|G G C G G|F1F C3G A A U|C C G C C|C C A A C C C|A C C A
                                          |=========|             |=========|*************|
V121    A G G C                         C5|G G C A G|F1F*C3I1A A U|C U G C C|C C A A C C C|A C C A
                                          |=========|             |=========|*************|
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			1 2 3 4 5 6 7	8 9	10 11 12 13	14 15 16 17 A 18 19 20 A B 21	22 23 24 25	26	27 28 29 30 31	32 33 34 35 36 37 38	39 40 41 42 43
V203	UAC	MYCOPLASMA MYCOID.	G G A G U G U	U* A	G C U C	A G C D G G G A	G A G C	U	C C U G C	C U U A C A6A	G C A G G
V230	GAC	BACILLUS STEARO.	G A U U C C G	U A	G C U C	A G C D G G G A	G A G C	G	C C A C C	U U G A C A6G	G G U G G
V235	UAC	BACILLUS SUBTILIS	G G A G G A U	U A	G C U C	A G C D G G G A	G A G C	A	U C U G C	C U V2A C A6A	G C A G A
V250	GAC	E.COLI	G C G U C C G	U4A	G C U C	A G D D G G D D A	G A G C	A	C C A C C	U U G A C A U	G G U G G
V251	GAC	E.COLI	G C G U U C A	U4A	G C U C	A G D D G G D D A	G A G C	A	C C A C C	U U G A C A U	G G U G G
V252	UAC	E.COLI	G G G U G A U	U4A	G C U C	A G C D G G G A	G A G C	A	C C U C C	C U V1A C A6A	G G A G G
V365	UAC	SPINACIA OLERACEA CHLORO	A G G G C U A	U A	G C U C	A G U U A G3G D A	G A G C	A	C C U C G	U U N* A C A C	C G A G A
V412	UAC	NEUROSPORA CRASSA MITO	G A G A G A U	U A	G C U C	A G U U G G D A	G A G C	A	A C C G U	U U U A C A C	A C G G A
V456	UAC	AEDES ALBOPICTUS MITO	C A A U U U A	A A1	G2C U U	A A U U A G U A	A A G U	A	F F U C A	U U U A C A*7F	F G A A A
V474	UAC	RAT LIVER MITO	C A U A G U G	U A1	G2C U U	A A U C A C A	A A G C	A	F C U G G	C C U A C A C	C C A G A
V475	UAC	RAT MORRIS HEPATOMA MITO	C A G A U U G	U A1	G2C U U	A A U C A C A	A A G C	A	F C U G G	C C U A C A C	C C A G A
V480	UAC	BOVINE LIVER MITO	C A A G A U A	U A1	G2C U U	A A A C A	A A G C	A	F C C A G	U U U A C A C	C U A G A
V580	AAC	TORULOPSIS UTILIS	G G U U U C G	U G1	G U C F	A G D D G G D C A	U G G C	A	F C U G C	F U I A C A C	G C A G A
V590	AAC	YEAST	G G U U U C G	U G1	G U C F	A G D C G G D D A	U G G C	A	F C U G C	F U I A C A C	G C A G A
V591	CAC	YEAST	G U U C C A A	U A	G*2U G F	A G C G G C D A	U C A C	G2	F F G C C	F U C A C A C	G G C A A
V592	UAC	YEAST	G G U C C A A	U G	G2U C C	A G D G G D D C A	A G A C	G4	F C G C C	F U * A C A C	G G C G A
V640	AAC	LUPINUS LUTEUS	G G U U U C G	U G1	G U G F	A G D G G D D A	U C A C	G4	F C A G U	C U I A C A C	A C U G A
V780	AAC	DROSOPHILA MELANO.	G U U U3C C G	U G1	G U G F	A G C G G D* V7 A	U C A C	A	F C U G C	C3U I A C A C5	G C A G A
V781	CAC	DROSOPHILA MELANO.	G U U U C C G	U A	G U G F	A G C G G D V7 A	U C A C	G	F G U G C	U U C A C A C	G C A C A
V782	UAC	DROSOPHILA MELANO.	G G U U3C C A	U A	G U G F	A G C G G D* N A	U C A C	*	F C U G C	F U N* A C A C	G C A G A
V950	AAC	MOUSE MYELOMA	G U U U C C G	U A	G U G F	A G D G G D D A	U C A C	G2	F* U C G C	C*3U I A C A C*5	G C G A A*
V955	AAC	RAT ASCIT. HEPATOMA	G U U U C C G	U A	G U G F	A G D G G D D A	U C A C	G2	F U C G C	C3U I A C A C5	G C G A A
V956	NAC	RAT LIVER	G U U U C C G	U A	G U G F	A G D G3G D D A	U C A C	G2	F U C G C	C U N A C A C5	G C G A A

	44 45 46 47	A B C D E F G H I J K L M N O P	48	49 50 51 52 53	54 55 56 57 58 59 60	61 62 63 64 65	66 67 68 69 70 71 72	73 74 75 76
V203	C G G U		C	A U A G G	U U C A A G U	C C U A U	A C A C U C C	A C C A
V230	A G G7U		C	G C U G G	T F C G A G C	C C A G U	C G G A A U C	A C C A
V235	G G G7U		C	G G C G G	T F C G A G C	C C G U C	A U C C U C C	A C C A
V250	G G G7V7		C	G G U G G	T F C G A G U	C C A C U	C G G A C G C	A C C A
V251	G G G7V7		C	G U U G G	T F C G A G U	C C A A U	U G A A C G C	A C C A
V252	G G G7U		C	G G C G G	T F C G A U C	C C G U C	A U C A C C C	A C C A
V365	A A G7N		C	U A C G G	T F C G A G U	C C G U A	U A G C C C U	A C C A
V412	A G G U		U	G G G U G	T F C G A A U	C A C C C	A U U U C U C	A C C A
V456	A G A		A	A U U U G	U G C A A A U	C A A U F	F A A A U U G	A C C A
V474	A G A		A	U U C A U	A A A A	A U G A A	C A C U U U G	A C C A
V475	A G A		A	U U C A U	A A A A	A U G A A	C A C U U U G	A C C A
V480	A G A		C	U U C A U	U C A U U	A U G A A	U A U C U U G	A C C A
V580	A C G7D		C	C5C C A G	T F C G A1U C	C U G G G	C G A A A U C	A C C A
V590	A C G7D		C	C5C C A G	T F C G A1U C	C U G G G	C G A A A U C	A C C A
V591	A G G7D		C	C5C G A G	T F C G A1U C	C U C G G	U U G G A A C	A C C A
V592	A G A D		C	C5C G A G	T F C G A1A C	C U C G G	U U G G A U C	A C C A
V640	A G G7D		C	U C C G G	T F C G A1G U	C C G G G	C G A A G C C	A C C A
V780	A G G7C		C	C* C C G G	T F C G A1U C	C C G G G	C G G A A A C	A C C A
V781	A G G7D		C	C C C G G	T F C G A1A C	C C G G G	C G G G A A C	A C C A
V782	A G G7D		*	U C C G G	T F C G A1U C	C C G G A	U G G A A C C	A C C A
V950	A G G7D		C5	C5C C G G	U F C G A1A A	C C G G G	C G G A A A C	A C C A
V955	A G G7D		C5	C5C C G G	U F C G A1A A	C C G G G	C G G A A A C	A C C A
V956	A G G7D		C5	C5C C G G	U F C G A1A A	C C G G G	C G G A A A C	A C C A

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                            1 2 3 4 5 6 7|8 9|10  12 |14  16  A   19  A   21|  23  25|  |27  29  31|  33  35  37 |39  41  43
                                         |   |  11  13|  15  17  18  20  B   |22  24  |26|  28  30  |32  34  36  38|  40  42
                            -------------|---|--------|----------------------|--------|--|----------|--------------|----------
                                                                                                    *          *
V965   AAC RABBIT LIVER     G U U U C C G|U A|G U G F |A G D     G G D D    A|U C A C |G2|F U C G C |C3U I A C A C5|G C G A A
                            **************       ......                                ----------               ----------
                                                                                              *
V995   NAC HUMAN PLACENTA   G U U U C C G|U A|G U G F |A G D     G G D D    A|U C A C |G2|F U C G C |C U N A C A C |G C G A A
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         45  47  B   D   F   H   J   L   N   P   49  51  53  55  57  59  61  63  65  67  69  71  73  75
       44  46  A   C   E   G   I   K   M   O   48  50  52  54  56  58  60  62  64  66  68  70  72  74  76
       --------------------------------------------------------------------------------------------------
                                               * *
V965   A G G7D                                 C5C5C C G G U F C G A1A A C C G G G C G G A A A C A C C A
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V995   A G G7D                                 C5C5C C G G U F C G A1A A C C G G G C G G A A A C A C C A
                                                 ============          ==========================
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FOOTNOTES

A120/48	PARTIALLY C
A121/48	PARTIALLY C
A122/48	PARTIALLY C
A250/8	PARTIALLY MODIFIED
A250/46	PARTIALLY G7
A251/8	PARTIALLY MODIFIED
A412/40	N IS A MODIFIED U
A412/49	PARTIALLY MODIFIED
A590/47	PARTIALLY MODIFIED
A770/40	PARTIALLY MODIFIED
R020/34	N IS A DERIVATIVE OF U
R120/15	N IS A MODIFIED G
R120/57	PARTIALLY A
R121/55	PARTIALLY U
R122/15	N IS A MODIFIED G
R122/26	PARTIALLY G
R122/34	N IS A MODIFIED U
R250/20	PARTIALLY U
R251/20	A PARTIALLY U
R253/34	N IS A MODIFIED U
R418/34	N IS A MODIFIED U
R474/49	PARTIALLY G
R971/37	G.KEITH (1984) NUCL. ACIDS RES. 12, 6358
R972/37	G.KEITH (1984) NUCL. ACIDS RES. 12, 6358
R972/54	PARTIALLY F
N040/37	N IS A DERIVATIVE OF A
N120/15	PARTIALLY MODIFIED
N120/48	PARTIALLY C
N140/34	N IS A MODIFIED G
N640/34	PARTIALLY MODIFIED
N955/54	N IS AN UNKNOWN MODIFIED NUCLEOTIDE
N956/54	N IS AN UNKNOWN MODIFIED NUCLEOTIDE
D040/54	PARTIALLY U
D040/65	PARTIALLY MODIFIED
D120/54	PARTIALLY F
D510/26	PROBABLY MODIFIED
D510/38	PROBABLY MODIFIED
D510/48	PROBABLY MODIFIED
D510/49	PROBABLY MODIFIED
D510/58	PROBABLY MODIFIED
D965/58	PARTIALLY A
C120/15	N IS A MODIFIED G
Q020/34	N IS A MODIFIED U
Q040/54	PARTIALLY U
Q110/9	N IS A MODIFIED NUCLEOTIDE
Q120/34	PARTIALLY A MODIFIED C
Q251/34	N IS PROBABLY U2
Q313/18	PARTIALLY MODIFIED
Q313/34	N IS PROBABLY CMNM5U
Q313/37	N IS MS2I6A OR I6A
Q456/34	PROBABLY MODIFIED
Q530/32	N IS PROBABLY A DERIVATIVE OF C
Q955/16	PARTIALLY U
Q955/50	PARTIALLY C
E120/34	PARTIALLY C
E120/54	PARTIALLY F
E121/34	N IS A MODIFIED U
E121/49	PARTIALLY C
E293/0	PARTICIPATES IN THE CHLOROPHYLL BIOSYNTHESIS
E293/34	N IS A MODIFIED U
E456/34	PROBABLY MODIFIED
E480/34	PROBABLY MODIFIED
E780/32	PARTIALLY C
E780/49	C IS C5 IN POS. 49 AND/OR 50
G020/34	PROBABLY MODIFIED
G123/34	N IS A UNIDENTIFIED MODIFIED U
G220/0	PROBABLY NOT ACTIVE IN PROTEIN SYNTHESIS
G221/0	PROBABLY NOT ACTIVE IN PROTEIN SYNTHESIS
G250/8	PROBABLY MODIFIED
G252/34	N IS A MODIFIED U
G255/18	PARTIALLY G
G417/34	PARTIALLY MODIFIED, PROBABLY TO V4
G456/29	PARTIALLY MODIFIED
G456/30	PARTIALLY MODIFIED
G570/4	TENTATIVELY IDENTIFIED
G571/34	N IS A MODIFIED NUCLEOTIDE
G640/48	PARTIALLY MODIFIED
G995/4	PARTIALLY C
G995/6	PARTIALLY G
G995/32	PARTIALLY U
G995/58	PARTIALLY A
G996/6	PARTIALLY G
H040/39	PARTIALLY U
H110/9	N IS A MODIFIED NUCLEOTIDE
H110/54	PARTIALLY F
H570/4	N IS A MODIFIED A
H571/4	N IS A MODIFIED A
H980/16	PARTIALLY U
H995/0	5'TERMINAL NUCLEOTIDE IS A METHYLATED G
H995/58	N IS PROBABLY A1
I020/37	N IS A MODIFIED A
I121/15	PARTIALLY MODIFIED
I121/34	N IS A MODIFIED U
I240/54	PARTIALLY T
I252/18	PARTIALLY G
I365/46	PARTIALLY G

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I366/34 N IS PROBABLY A MODIFIED C
L020/34 N IS A MODIFIED U
L120/15 N IS A MODIFIED G
L121/15 N IS A MODIFIED G
L121/57 PARTIALLY A
L122/15 N IS A MODIFIED G
L123/15 N IS A MODIFIED G
L124/15 N IS A MODIFIED G
L124/34 N IS PROBABLY V2
L230/8  PROBABLY U4
L250/34 N IS A MODIFIED A
L251/37 N IS A MODIFIED G
L252/37 N IS A MODIFIED G
L255/37 N IS A DERIVATIVE OF G
L280/37 N IS A MODIFIED A
L290/37 N IS A MODIFIED A
L327/37 N IS A MODIFIED A
L328/37 N IS A MODIFIED A
L350/37 N IS A4 OR A5
L351/34 N IS A MODIFIED U
L351/37 N IS A4 OR ZEATIN
L412/34 N IS A MODIFIED U
L417/34 N IS A MODIFIED U
L438/0  IMPORTED FROM CYTOPLASMA
L438/34 N IS AN MODIFIED NUCLEOTIDE
L439/0  IMPORTED FROM CYTOPLASMA
L439/34 N IS AN MODIFIED NUCLEOTIDE
L440/0  IMPORTED FROM CYTOPLASM
L440/34 N IS A MODIFIED NUCLEOTIDE
L440/47 N IS A MODIFIED NUCLEOTIDE
L480/34 N IS A MODIFIED U
L645/34 N IS A MODIFIED NUCLEOTIDE
L646/34 N IS A MODIFIED NUCLEOTIDE
L647/34 N IS A MODIFIED NUCLEOTIDE
L647/47 N IS A MODIFIED NUCLEOTIDE
L955/10 PARTIALLY G
L955/12 PARTIALLY C
L955/34 N IS A MODIFIED C
L955/37 N IS A MODIFIED G
L955/44 N IS A MODIFIED U
L955/45 PARTIALLY U
L956/10 PARTIALLY G
L956/12 PARTIALLY C
L956/34 N IS A MODIFIED C
L956/37 N IS A MODIFIED G
L956/44 N IS A MODIFIED U
L956/45 PARTIALLY U
L995/0  PRECURSOR
L995/34 N IS A MODIFIED NUCLEOTIDE
K120/15 N IS A MODIFIED G
K120/34 N IS A MODIFIED U
K121/15 N IS A MODIFIED G
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K121/34 PARTIALLY C
K121/39 PARTIALLY U
K121/52 PARTIALLY U
K235/37 N IS A7 OR A9
K236/32 N IS A MODIFIED C
K417/34 N IS A MODIFIED U
K473/34 N IS A DERIVATIVE OF U
K474/34 N IS A DERIVATIVE OF U
K480/34 N IS A MODIFIED U
K480/37 N IS A MODIFIED A
K570/0  HAPLOID
K570/9  PARTIALLY G
K570/58 PARTIALLY A
K590/34 N IS A DERIVATIVE OF U9
K780/54 N IS PROBABLY T3
K780/55 PARTIALLY U
K781/34 N IS PROBABLY U9
K781/37 PARTIALLY MODIFIED
K950/27 PARTIALLY U
K950/37 N IS PROBABLY A PRECURSOR OF A7
K950/54 PARTIALLY U,T1,F
K951/36 N IS A MODIFIED U
K951/37 N IS EITHER A7 OR A DERIVATIVE OF A7
K955/36 N IS PROBABLY A MODIFIED U
K956/36 N IS PROBABLY A MODIFIED U
M010/20 N IS PROBABLY A MODIFIED U
M120/15 N IS A MODIFIED G
M235/46 PARTIALLY G
M235/47 PARTIALLY U
M250/16 PARTIALLY U
M250/18 PARTIALLY G
M308/27 N IS PROBABLY U
M438/0  ELONGATION- AND INITIATION-tRNA MAY ORIGINATE
M570/47 PARTIALLY U
M965/34 PARTIALLY MODIFIED
X110/15 N IS A MODIFIED G
X120/15 N IS A MODIFIED G
X130/57 Z.YAMAIZUMI ET AL. (1982) NUCL. ACIDS SYMP. SE
X150/9  N IS A MODIFIED NUCLEOTIDE
X150/26 N IS PROBABLY G5
X150/57 Z.YAMAIZUMI ET AL. (1982) NUCL. ACIDS SYMP. SE
X180/32 PARTIALLY C
X180/57 N IS PROBABLY I
X203/17 PARTIALLY U
X412/38 N IS PROBABLY F
X428/72 PARTIALLY U
X438/0  ELONGATION- AND INITIATION-tRNA MAY ORIGINATE
X456/0  ELONGATION- AND INITIATION-tRNA MAY ORIGINATE
X480/0  ELONGATION- AND INITIATION-tRNA MAY ORIGINATE
X540/64 N IS PROBABLY G3
X560/28 N IS A MODIFIED PYRIMIDINE
X560/47 PARTIALLY U
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X560/64 N IS A MODIFIED G
X570/64 N IS A MODIFIED A
X570/65 N IS A MODIFIED G
X580/64 N IS A DERIVATIVE OF G
X625/64 N IS A MODIFIED G
X640/28 PARTIALLY U
X640/49 N IS A MODIFIED C
X830/48 R.A.KOSKI ET AL. ONLY FIND C
X850/26 PARTIALLY G2
X995/26 PARTIALLY DEFICIENT
F120/15 N IS A MODIFIED G
F285/12 N IS A MODIFIED U
F304/37 N IS PROBABLY A5
F304/47 N IS PROBABLY A DERIVATIVE OF X
F407/37 N IS A MODIFIED A
F438/37 N IS A4 OR A5
F510/49 N IS A MODIFIED C
F540/47 N IS A MODIFIED NUCLEOTIDE
F560/14 N IS A MODIFIED A
F560/37 N IS A DERIVATIVE OF Y
F575/9  N IS A MODIFIED G
F575/10 N IS PROBABLY G2
F575/26 N IS PROBABLY G2
F575/47 N IS PROBABLY A MODIFIED U
F625/37 N IS PROBABLY Y2
F630/37 N IS Y1 OR Y2
F650/37 N IS PROBABLY Y2
F770/32 PARTIALLY C
F770/47 PARTIALLY U
F770/48 MODIFICATION EITHER IN POSITION 48 OR 49
F771/32 PARTIALLY C
F771/47 PARTIALLY U
F771/48 MODIFICATION EITHER IN POSITION 48 OR 49
F780/32 PARTIALLY C
F780/47 PARTIALLY U
F830/37 N IS PROBABLY Y2
F950/32 PARTIALLY C
F950/34 PARTIALLY G
F950/37 N IS A UNDERMODIFIED WYBUTOSINE
F952/32 PARTIALLY C
F952/34 PARTIALLY G
F965/47 PARTIALLY U
F965/54 PARTIALLY U
F995/47 PARTIALLY MODIFIED
P014/34 N IS A MODIFIED U
P020/8  PARTIALLY U
P020/34 N IS A MODIFIED U
P120/15 N IS A MODIFIED G
P120/34 PARTIALLY C
P120/38 PARTIALLY U
P120/48 PARTIALLY C
P120/55 PARTIALLY U
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P121/55 PARTIALLY U
P122/15 PARTIALLY MODIFIED
P122/48 PARTIALLY C
P122/49 PARTIALLY C
P255/32 PARTIALLY U
P257/32 PARTIALLY U
P257/65 PARTIALLY U
P365/10 N IS PROBABLY A MODIFIED G
P365/34 N IS A MODIFIED U
P365/37 N IS A MODIFIED A
P570/34 N IS PROBABLY A MODIFIED U
P571/27 N IS C OR C5
P571/29 N IS C OR C5
P571/34 N IS A MODIFIED U
P571/48 N IS C OR C5
P571/49 N IS C OR C5
P580/34 K.OGAWA, T.KONDO, M.KAWAKAMI, S.TAKEMURA (1983
        NUCL. ACIDS SYMP. SER. 12, 131-132
S020/34 N IS A MODIFIED U
S110/15 N IS A MODIFIED G
S120/15 N IS A MODIFIED G
S121/15 N IS A MODIFIED G
S121/34 PARTIALLY C
S122/15 N IS A MODIFIED G
S203/22 N IS A MODIFIED A
S254/32 Y.YAMADA, H.ISHIKURA (1975) BIOCHIM. BIOPHYS.
S481/49 PARTIALLY MODIFIED
S570/32 N IS PROBABLY C6
S570/34 N IS A MODIFIED U
S950/34 N IS PROBABLY A MODIFIED U
S970/0  CAN BE PHOSPHORYLATED TO PHOSPHOSERYL-TRNA; UG
S971/0  CAN BE PHOSPHORYLATED TO PHOSPHOSERYL-TRNA; UG
S995/34 N IS PROBABLY A MODIFIED U
T020/34 N IS A MODIFIED U
T020/37 N IS A MODIFIED A
T120/15 N IS A MODIFIED G
T121/15 PARTIALLY MODIFIED
T200/8  N IS A MODIFIED U
T201/8  N IS A MODIFIED U
T203/37 N IS A MODIFIED A
T235/20 PARTIALLY U
T590/48 PARTIALLY C
T591/48 PARTIALLY C
W120/15 N IS A MODIFIED G
W350/37 N IS A4 OR A5
W365/37 N IS A4 OR A5
W412/34 N IS A MODIFIED U
W412/37 N IS A MODIFIED A
W417/34 N IS A MODIFIED U
W417/37 N IS A4 OR A5
W438/37 N IS A4 OR A5
W438/47 N IS A MODIFIED NUCLEOTIDE
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W474/34 N IS A MODIFIED U
W480/34 N IS A MODIFIED U
W570/65 PARTIALLY U
W625/4  N IS A MODIFIED U
W625/58 PARTIALLY A
W970/7  PARTIALLY G
W970/16 PARTIALLY C
W970/34 PARTIALLY C
W970/46 PARTIALLY G
W970/47 PARTIALLY C
W970/57 PARTIALLY A
Y120/15 N IS A MODIFIED G
Y120/32 PARTIALLY C
Y308/17 N IS A MODIFIED U
Y308/37 PARTIALLY A5
Y407/37 N IS A MODIFIED A
Y412/37 N IS PROBABLY A4
Y412/47 PROBABLY MODIFIED
Y412/48 PROBABLY MODIFIED
Y417/17 A PARTIALLY U
Y438/18 PARTIALLY MODIFIED
Y438/34 N IS A MODIFIED NUCLEOTIDE
Y438/37 N IS A4 OR A5
Y540/47 N IS A MODIFIED NUCLEOTIDE
Y575/27 PARTIALLY F
Y625/34 PARTIALLY G
Y625/47 PROBABLY X
Y626/47 PROBABLY X
Y655/47 PROBABLY X
Y656/47 PROBABLY X
Y780/34 PARTIALLY MODIFIED
Y780/54 PARTIALLY MODIFIED
Y995/17 PARTIALLY MODIFIED
V120/15 N IS A MODIFIED G
V121/55 PARTIALLY U
V203/8  PROBABLY U4
V365/34 N IS A MODIFIED U
V456/37 PARTIALLY A
V591/10 PARTIALLY G
V592/34 N.YAMAMOTO ET AL. (1985) J. BIOCHEM. 97, 361-364
V780/20 PARTIALLY MODIFIED
V780/49 PROBABLY C5
V782/20  N IS A MODIFIED U
V782/26 PARTIALLY MODIFIED
V782/34 N IS A MODIFIED U
V782/48 PARTIALLY MODIFIED
V950/27 PARTIALLY C
V950/32 PARTIALLY C
V950/38 PARTIALLY C
V950/43 PARTIALLY G
V965/32 PARTIALLY C
V965/38 PARTIALLY C
V965/48 PARTIALLY C
V965/49 PARTIALLY C
V995/34 N IS I OR C
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R E F E R E N C E S

A110 X.-R.GU, K.NICOGHOSIAN, R.J.CEDERGREN, J.T.-F.WONG (1983) NUCL. ACIDS RES. 11, 5433-5442

A120 R.GUPTA (1984) J. BIOL. CHEM. 259, 9461-9471

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A203 T.SAMUELSSON ET AL. (1987) PROC. NATL. ACAD. SCI. USA 84, 3166-3170

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A250 B.H.MIMS, N.E.PRATHER, E.J.MURGOLA (1985) J. BACT. 162, 837-839

A251 R.J.WILLIAMS, W.NAGEL, B.ROE, B.DUDOCK (1974) BIOCHEM. BIOPHYS. RES. COMM. 60, 1215-1221

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A770 K.U.SPRAGUE, O.HAGENBUECHLE, M.C.ZUNIGA (1977) CELL 11, 561-570

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R121 R.GUPTA (1984) J. BIOL. CHEM. 259, 9461-9471

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R252 S.KIESEWETTER, W.FISCHER, M.SPRINZL (1987) NUCL. ACIDS RES. 15, 3184-3184

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R417 A.-P.SIBLER, G.DIRHEIMER, R.P.MARTIN (1986) FEBS LETTERS 194, 131-138

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R480 B.A.ROE, J.F.H.WONG, E.Y.CHEN, P.A.ARMSTRONG (1981) PROC. THIRD CLEVELAND SYMP. A.G.WALTON (ED.) ELSEVIER AMSTERDAM

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R625 M.Z.BARCISZEWSKA, G.KEITH, E.KUBLI, J.BARCISZEWS (1986) BIOCHIMIE 68, 319-323

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N590 G.KEITH, G.PIXA (1984) BIOCHIMIE 66, 639-643

N640 M.Z.BARCISZEWSKA, D.S.JONES (1988) NUCL.ACIDS RE

N955 E.Y.CHEN, B.A.ROE (1978) BIOCHEM. BIOPHYS. RES.

N956 B.A.ROE ET AL. (1979) NUCL. ACIDS RES. 6, 673-68

N970 E.Y.CHEN, B.A.ROE (1980) BIOCHIM. BIOPHYS. ACTA

N995 E.Y.CHEN, B.A.ROE (1980) BIOCHIM. BIOPHYS. ACTA

D040 M.G.SHLYAPNIKOV, V.N.KSENZENKO, V.M.KRYUKOV, A.A EUR. J. BIOCHEM. 156, 285-289

D120 R.GUPTA (1984) J. BIOL. CHEM. 259, 9461-9471

D250 T.SEKIYA, M.MORI, N.TAKAHASHI, S.NISHIMURA (1980 NUCL. ACIDS RES. 8, 3809-3827

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D473 C.-C.HSUCHEN, G.R.CLEAVES, D.T.DUBIN (1983) PLAS

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D830 E.HAUMONT, K.NICOGHOSIAN, H.GROSJEAN, R.J.CEDERG BIOCHIMIE 66, 579-582

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C590 N.J.HOLNESS, G.ATFIELD (1976) BIOCHEM. J. 153, 4

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Q120	R.GUPTA (1984) J. BIOL. CHEM. 259, 9461-9471
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            A L A N I N E

A040    UGC PHAGE T5            G G G C G A A T A G T G T C A G C   G G G     A G C A C A C C A G A C T T G C A A T C T G G
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A108    UGC ARCHAEGLOBUS FULG.  G G G C T C G T A G C T C A G C     G G G     A G A G C G C C G C C T T T G C G A G G C G G
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A110    UGC HALOBACTERIUM CUT.  G G G C C C A T A G C T C A G T     G G T     A G A G T G C C T C C T T T G C A A G G A G G
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A113    UGC HALOBACTERIUM HAL.  G G G C C C A T A G C T C A G T     G G T     A G A G T G C C T C C T T T G C A A G G A G G
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A135    UGC METHANOBAC.FORMI.   G G G C C C G T A G C T C A G A C T G G G     A G A G C G C C G C C C T T G C A A G G C G G
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A140    UGC METHANOBAC.THERM.   G G G C C C G T A G C T C A G A C T G G G     A G A G C G C C G C C C T T G C A A G G C G G
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A145    UGC METHANOCOC.VANI.    G G G C C C G T A G C T C A G T T   G G G     A G A G C G C T G C C C T T G C A A G G C A G
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A149    UGC METHANOSPIR. HUNG.  G G G C T C G T A G C T C A G C T   G G A     A G A G C G C G G C G T T T G C A A C G C C G
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A185    UGC THERMOCOCCUS CELER  G G G C C G G T A G C T C A G C C T G G G     A G A G C G T C G G C T T T G C A A G C C G A
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A190    UGC THERMOPROT. TENAX   G G G C C G G T A G T C T A G C     G G A     A G G A C G C C C G C C T T G C G C G C G G G
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A191    CGC THERMOPROT. TENAX   G G G C C G G T A G T C T A G C     G G A     A G G A C G C C C G C C T C G C G C G C G G G
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A203    UGC MYCOPLASMA MYCOID.  G G G C C C T T A G C T C A G C T   G G G     A G A G C A C C T G C C T T G C A C G C A G G
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A206    UGC SPIROPLASMA MELIF.  G G G C C C G T A G C T C A G C T   G G G     A G A G C A C C T G C C T T G C A C G C A G G
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A235    UGC BACILLUS SUBTILIS   G G G G C C T T A G C T C A G C T   G G G     A G A G C G C C T G C T T T G C A C G C A G G
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A236    UGC BACILLUS SUBTILIS   G G G G C C T T A G C T C A G C T   G G G     A G A G C G C C T G C T T T G C A C G C A G G
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A238    UGC BACILLUS SUBTILIS   G G G G C C T T A G C T C A G C T   G G G     A G A G C G C C T G C T T T G C A C G C A G G
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A243    UGC THIOBACILLUS FERRO. G G G G C T G T A G C T C A G T T   G G G     A G A G C A C C T G C T T T G C A A G C A G G
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A250    UGC E.COLI              G G G G C T A T A G C T C A G C T   G G G     A G A G C G C C T G C T T T G C A C G C A G G
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A260    UGC PSEUDOMONAS AER.    G G G G C C A T A G C T C A G C T   G G G     A G A G C G C C T G C T T T G C A C G C A G G
                                ****  ********
A270    UGC CAMPYLOBAC.JEJUNI   G G G G C A T T A G C T C A G C T   G G G     A G A G C G C C T G C T T T G C A C G C A G G
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                         EXTRA ARM                |  TF STEM |   TF LOOP    |  TF STEM |AMINOACYL STEM|
        45  47  B   D   F   H   J   L   N   P   |49  51  53|  55  57  59  |61  63  65|  67  69  71  |73  75
      44  46  A   C   E   G   I   K   M   O   48|  50  52  |54  56  58  60|  62  64  |66  68  70  72|  74  76
      -----------------------------------------------------------------------------------------------------

          A L A N I N E
A040  T A G                                   G |G A G G G |T T C G A G T |C C C T C |T T T G T C C |A C C A
                                                 ==========               ========== ****  **  ****
A108  A G G C                                 C |G C G G G |T T C A A A T |C C C G C |C G A G T C C |A
                                                 ==========               ========== ********  ****
A110  A T G C                                 C |C T G G G |T T C G A A T |C C C A G |T G G G T C C |A
                                                 ==========               ========== ********  ****
A113  A T G C                                 C |C T G G G |T T G G A A T |C C C A G |T G G G T C C |A
                                                 ==========               ========== ********  ****
A135  A G G C                                 C |C C G G G |T T C A A A T |C C C G G |T G G G T C C |A
                                                 ==========               ==========   ******  ****
A140  A G G C                                 C |C C G G G |T T C A A A T |C C C G G |T G G G T C C |A
                                                 ==========               ==========   ******  ****
A145  A G G C                                 C |G T G G G |T T C A A A T |C C C G C |C G G G T C C |A
                                                 ==  ======               ======  == ********  ****
A149  A G G C                                 C |T G G G G |T T C A A A T |C C C C A |C G G G T C C |A
                                                 ==========               ========== ****  **  ****
A185  A G G C                                 C |C C G G G |T T C G A A T |C C C G G |C C G G T C C |A C C A
                                                 ==========               ========== ********  ****
A190  A G A T                                 C |C C G G G |T T C G A A T |C C C G G |C C G G T C C |A
                                                 ==========               ========== ********  ****
A191  A G A T                                 C |C C G G G |T T C G A A T |C C C G G |C C G G T C C |A
                                                 ==========               ========== ********  ****
A203  G G G T                                 C |G A C G G |T T C G A T C |C C G T T |A G G G T C C |A C C A
                                                   ========               ========   ********  ****
A206  G G G T                                 C |G A C G G |T T C G A T C |C C G T T |C G G G T C C |A C C A
                                                   ========               ========   ********  ****
A235  A G G T                                 C |A G C G G |T T C G A T C |C C G C T |A G G C T C C |A
                                                 ==========               ========== ********  ****
A236  A G G T                                 C |A G C G G |T T C G A T C |C C G C T |A G G C T C C |A C C A
                                                 ==========               ========== ********  ****
A237  A G G T                                 C |A G C G G |T T C G A T C |C C G C T |A G G C T C C |A
                                                 ==========               ========== ********  ****
A238  A G G T                                 C |A G C G G |T   C G A   C |C C G C T |A G G C T C C |A C C A
                                                 ==========               ========== ********  ****
A243  G G G T                                 C |A T C G G |T T C G A G A |C C G G T |C A G C T C C |A C C A
                                                 ==  ======               ======  == ********  ****
A250  A G G T                                 C |T G C G G |T T C G A T C |C C G C A |T A G C T C C |A C C A
                                                 ==========               ========== ********  ****
A260  A G G T                                 C |A G G A G |T T C G A T C |C T C C T |T G G C T C C |A C C A
                                                 ==========               ========== ********  ****
A270  A G G T                                 C |A G C G G |T T C G A T C |C C G C T |A T T C T C C |A C C A
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                                 1 2 3 4 5 6 7|8 9|10  12 |14  16  A   19  A   21  23  25 |27  29  31  33  35  37 |39  41  43
                                              |   |  11  13  15  17  18  20  B  |22  24 |26  28  30  32  34  36  38  40  42
                                 -------------------------------------------------------------------------------------------
A272     UGC CAULOBACTER CRES.   G G G G C C A|T A|G C T C|A G T T   G G T     A|G A G C|G|C C T G C|T T T G C A A|G C A G G
                                 ****  ********    .......                       .......   ---------               ---------
A290     UGC ANACYSTIS NIDULANS  G G G G G T T|T A|G C T C|A G T T   G G T     A|G A G C|G|C C T G C|T T T G C A A|G C A G G
                                 ****  ********    .......                       .......   ---------               ---------
A295     UGC CYANOPHORA PARAD.*  G G G G G T A|T A|G C T C|A G T T   G G T     A|G A G C|G|C T G C C|T T T G C A A|G G C A G
                                 ****  ********    .......                       .......   ---------               ---------
A297     UGC PYLAIELLA LITTORA.* G G G G G T A|T A|G C T C|A G T T   G G T     A|G A G C|G|T T G C T|T T T G C A T|A G C A G
                                 ****  **  ****    .......                       .......     -------               -------
A300     UGC CHLAMYDOMONAS REINH.G G G G A T A|T A|G C T C|A G T T   G G T     A|G A G C|G|C T G C C|T T T G C A A|G G C A G
             CHLORO              ****  ********    .......                       .......   ---------               ---------
A302     UGC CHLORELLA ELLIPSO.  G G G A G T A|T A|G C T C|A G T T   G G T     A|G A G C|G|C T G C C|T T T G C A A|G G C A G
             CHLORO              ****  ********    .......                       .......   ---------               ---------
A304     UGC EUGLENA GRACILIS    G G G G G T A|T A|G C T C|A G T T   G G T     A|G A G C|G|C T G C C|T T T G C A A|G G C A G
             CHLORO              ****  **  ****    .......                       .......   ---------               ---------
A305     UGC EUGLENA GRACILIS    G G G G G T A|T A|G C T C|A G T T   G G T     A|G A G C|G|C T G C C|T T T G C A A|G G C A G
             CHLORO              ****  **  ****    .......                       .......   ---------               ---------
A310     UGC MARCHANTIA POLYM.   G G G G A T A|T A|G C T C|A G T T   G G T     A|G A G C|G|C C G C C|C T T G C A A*G G C G G
             CHLORO              ****  ********    .......                       .......   ---------               ---------
A320     UGC ZEA MAYS            G G G G A T A|T A|G C T C|A G T T   G G T     A|G A G C|T|C C G C T|C T T G C*A T|G G C G G
             CHLORO              ****  ********    .......                       .......   -------                   -------
A327     UGC GLYCINE MAX         G G G G A T A|T A|G C T C|A G T T   G G T     A|G A G C|T|C C G C T|C T T G C A A*G G C G G
             CHLORO              ****  ********    .......                       .......   -------                   -------
A335     UGC NICOTIANA TABACUM   G G G G A T A|T A|G C T C|A G T T   G G T     A|G A G C|T|C C G C T|C T T G C A*C|G G C G G
             CHLORO              ****  ********    .......                       .......   -------                   -------
A365     UGC SPINACIA OLERACEA   G G G G A T A|T A|G C T C|A G T T   G G T     A|G A G C|G|C C G C T|C T T G C A*T|G G C G G
             CHLORO              ****  ********    .......                       .......   -------                   -------
A403     UGC TRYPANOSOMA BRUCEI* A A A A T T A|T A|T A T T|T T C T             A|G T G C|A|T C G A A|A A T G C T T|T T C G A
             MITO                **************                                            ---------               ---------
A404     UGC TRYPANOSOMA BRUCEI* A A A A T T A|T A|T A T T|T T C T A           G|T T T G|A|T C G A A|A A T G C T T|T T C G A
             MITO                **************      ..                              ..    ---------               ---------
A410     UGC ASPERGILLUS NIDUL.  G G G G C T A|T A|G T T T|A A C T   G G T     A|A A A C|G|G C G A T|T T T G C A T|A T C G T
             MITO                ****  **  ****    .......                       .......     -------               -------
A412     UGC NEUROSPORA CRASSA   G G G G G T A|T A|G T A T|A A T T   G G T     A|G T A C|A|G C A A T|C T T G C T C|A T T G C
             MITO                ****  **  ****    .....                           .....   ---------               ---------
A417     UGC SACCHAROMYCES CER.  G G G G T T A|T A|G T T A|A A T T T G G T     A|G A A C|G|A C T G C|G T T G C A T|G C A T T
             MITO                ****  ********    .....                           .....   ---------               ---------
A425     UGC TORULOPSIS GLAB.    G G G G T T A|T A|G T T A|A A T T   G G T     A|G A A C|A|A T T G T|G T T G C A T|G C A A T
             MITO                ****  ********    .....                           .....   -------                   -------
A450     UGC ASCARIS SUUM        G G G G C T G|T A|T T T T|A A G T T T         A|A A A T|A|T G C G C|T T T G C A A|G C G G A
             MITO                  **  ****          .....                       .....     --  -----               -----  --
A456     UGC AEDES ALBOPICTUS    A G G G T A A|T A|G T T A|A T T               A|T A A C|A|T T T A A|T T T G C A C|T T A A A
             MITO                **  **********    .......                       .......   ---------               ---------
A459     UGC DROSOPHILA YAKUBA   A G G G T T G|T A|G T T A|A T T               A|T A A C|A|T T T G A|T T T G C A T|T C A A A
             MITO                **  ******  **    .......                       .......   ---------               ---------
A464     UGC PARACENTROTUS LIV.  G T G G T T C|T A|G T T T|A G T G A           A|A A A C|G|T T T G C|T T T G C A A|G C A G A
             MITO                ****  ********    .......                       .......   --  -----               -----  --
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          45  47  B   D   F   H   J   L   N   P   |49  51  53|  55  57  59  |61  63  65|  67  69  71  |73  75
        44  46  A   C   E   G   I   K   M   O   48|  50  52  |54  56  58  60|  62  64  |66  68  70  72|  74  76
        ------------------------------------------|----------|--------------|----------|--------------|--------
A272    T G T                                   C |G T C G G |T T C G A A T |C C G T C |T G G C T C C |A C C A
                                                  |==  ======|              |======  ==|********  ****|
A290    A T G T                                 C |A G C G G |T T C G A G T |C C G C T |A A C C T C C |A C C A
                                                  |==========|              |==========|********  ****|
A295    A T G T                                 C |A G C G G |T T C G A G T |C C G C T |T A C C T C C |A
                                                  |==========|              |==========|********  ****|
A297    A C G T                                 C |A G C A G |T T C G A G T |C T G C T |T A T C T C C |A
                                                  |==========|              |==========|****  **  ****|
A300    A T G T                                 C |A G C G G |T T C G A A T |C C G C T |T A T C T C C |A
                                                  |==========|              |==========|********  ****|
A302    A T G T                                 C |A G C G G |T T C G A G T |C C G C T |T A C T T C C |A C C A
                                                  |==========|              |==========|********  ****|
A304    A T G T                                 C |A G C G G |T T C G A G T |C C G C T |T A T C T C C |A
                                                  |==========|              |==========|****  **  ****|
A305    A T G T                                 C |A G C G G |T T C G A G T |C C G C TT|T A T C T C C |A
                                                  |==========|              |==========|****  **  ****|
A310    A T G T                                 C |A G C G G |T T C G A G T |C C G C T |T A T C T C C |A
                                                  |==========|              |==========|********  ****|
A320    A T G T                                 C |A G C G G |T T C G A G T |C C G C T |T A T C T C C |A
                                                  |==========|              |==========|********  ****|
A327    A T G T                                 C |A G C G G |T T C G A G T |C C G C T |T A T C T C C |A
                                                  |==========|              |==========|********  ****|
A335    A T G T                                 C |A G C G G |T T C G A G T |C C G C T |T A T C T C C |A
                                                  |==========|              |==========|********  ****|
A365    A T G T                                 C |A G C G G |T T C G A G T |C C G C T |T A T C T C C |A
                                                  |==========|              |==========|********  ****|
A403    T T T G A A A A T                         |T T A A A |T T A A A T T |T A A G T |TTA A T T T T |C
                                                  |        ==|              |==        |**************|
A404    T T T G A A A A T                         |T T A A A |T T A A A T T |T A A G T |TTA A T T T T |C
                                                  |        ==|              |==        |**************|
A410    T A T                                   T |T C A G G |A T C G A G T |C C T G A |T A A C T C C |A
                                                  |==========|              |==========|****  **  ****|
A412    T T G                                   T |C A A G G |T T C A A A T |C C T T G |T A T C T C C |A
                                                  |==========|              |==========|****  **  ****|
A417    T A A                                   T |A T G A G |T T C A A G T |C T C A T |T A A C T C C |A
                                                  |==========|              |==========|********  ****|
A425    A G A                                   T |A T G A G |T T C A A T T |C T C A T |T A A C T C C |A
                                                  |==========|              |==========|********  ****|
A450    T G A T T C                               |          |              |          |T G G C T C T |A
                                                  |          |              |          |    ****  **  |
A456    A A G                                   T |A T T G A |A T T T A A T |T C A A T |T T A C C T T |A
                                                  |==========|              |==========|**********  **|
A459    A A G                                   T |A T T G A |A T A       T |T C A A T |C T A C C T T |A
                                                  |==========|              |==========|**  ******  **|
A464    A A T                                   C |C T A A G |T T A A A T T |C T T A G |G A A C T A C |A
                                                  |==========|              |==========|********  ****|
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			1 2 3 4 5 6 7	8 9	10 11 12 13	14	15	16	17	A	18	19	20	A	B	21	22 23 24 25	26	27 28 29 30 31	32 33 34 35 36 37 38	39 40 41 42 43
A466	UGC	STRONGYLOCEN.PURP. MITO	G T G G T T T	T A	G T T T	A	A	T	T	G	A					A	A A A C	G	T T T G C	T T T G C A A	G C A A A
A468	UGC	XENOPUS LAEVIS MITO	A A G G C T T	T A	G C T T	A	A	T	T							A	A A G T	G	T T T T A	G T T G C A T	T C A A T
A470	UGC	RANA CATESBEIANA MITO	A G G G C T T	T A	T C T T	A	A	T	T	T						A	A A G G	G	C C T G A	G T T G C A T	T C A G G
A474	UGC	RAT MITO	G A G G A T T	T A	G C T T	A	A	T	T							A	A A G C	A	G T T G A	T T T G C A T	T T A A C
A477	UGC	MOUSE MITO	G A G G T C T	T A	G C T T	A	A	T	T							A	A A G C	A	A T T G A	T T T G C A T	T C A A T
A480	UGC	BOVINE MITO	G A G G A T T	T A	G C T T	A	A	T	T							A	A A G T	G	G T T G A	T T T G C A T	T C A A T
A494	UGC	HUMAN MITO	A A G G G C T	T A	G C T T	A	A	T	T							A	A A G T	G	G C T G A	T T T G C G T	T C A G T
A570	UGC	SACCHAROMYCES CER.	G G G C A C A	T G	G C G C	A	G	T	T		G	G	T			A	G C G C	G	C T T C C	C T T G C A A	G G A A G
A770	AGC	BOMBYX MORI	G G G G G C G	T A	G C T C	A	G	A	T		G	G	T			A	G A G C	G	C T C G C	T T A G C A T	G C G A G
A771	AGC	BOMBYX MORI	G G G G G C G	T A	G C T C	A	G	A	T		G	G	T			A	G A G C	G	C T C G C	T T A G C A T	G T G A G
A780	AGC	DROSOPHILA MELANO.	G G G G A T G	T A	G C T C	A	G	A	T		G	G	T			A	G A G C	G	C T C G C	T T A G C A T	G T G A G
A830	UGC	XENOPUS LAEVIS	G G G G G T G	T A	G C T C	A	G	T			G	G	T			A	G A G C	G	C A T G C	T T T G C A T	G T A T G
A950	CGC	MOUSE	G G G G A T G	T A	G C T C	A	G	T			G	G	T			A	G A G C	G	C A T G C	T T C G C A T	G T A T G
		A R G I N I N E																			
R020	UCU	PHAGE T4	G T C C C G C	T G	G T G T	A	A	T			G	G	A	T		A	G C A T	A	C G A T C	C T T C T A A	G T T T G
R145	UCU	METHANOCOC.VANI.	G G G C C C G	T G	G C C T	A	G	T	C	T	G	G	A	T		A	C G G C	A	C C G G C	C T T C T A A	G C C G G
R203	ACG	MYCOPLASMA MYCOID.	G C G C C C G	T A	G A T C	A	A	T	T		G	G	A	T		A	G A T C	G	C T T G A	C T A C G G A	T C A A A
R204	UCU	MYCOPLASMA MYCOID.	G C C C A T G	T A	G C T C	A	G	T	A		G	G	A	T		A	G A G C	A	C G C G C	C T T C T A A	G C G T G
R206	ACG	SPIROPLASMA MELIF.	G C G C C C A	T A	G A T C	A	A	T	T		G	G	A	T		A	G A T C	G	T T T G A	C T A C G G A	T C A A A
R235	ACG	BACILLUS SUBTILIS	G C G C C C G	T A	G C T C	A	A	T	T		G	G	A	T		A	G A G C	G	T T T G A	C T A C G G A	T C A A A
R250	CCG	E.COLI	G C G C C C G	T A	G C T C	A	G	C	T		G	G	A	T		A	G A G C	G	C T G C C	C T C C G G A	G G C A G
R251	UCU	E.COLI	G C G C C C T	T A	G C T C	A	G	T	T		G	G	A	T		A	G A G C	A	A C G A C	C T T C T A A	G T C G T
R252	UCU	E.COLI*	G C G C C C T	T A	G C T C	A	G	T	T		G	G	A	T		A	G A G C	A	A C G A C	C T T C T A A	G T C G T

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        45  47  B   D   F   H   J   L   N   P   49  51  53  55  57  59  61  63  65  67  69  71  73  75
      44  46  A   C   E   G   I   K   M   O   48  50  52  54  56  58  60  62  64  66  68  70  72  74  76
      --------------------------------------------------------------------------------------------------

A466  A G T                                   T C T A A G T T A A A G T C T T A G A A G C T A C A
                                                ==========              ==========****  **  ****
A468  T G A                                   T G T T G G A T A A A A T C C T G C A A G C C T T A
                                                ==    ====              ====    ==**************
A470  A G A                                   T G T A G G T T A A T A T C C T G C A A G T C C T A
                                                ==  ======              ======  ==******  ******
A474  A G A                                   T G T A A G A T A T A G T C T T A C A G T C C T T A
                                                ==========              ==========**  **********
A477  A G A                                   T G T A G G A T G A A G T C T T A C A G T C C T T A
                                                ======  ==              ==  ======****  ******  
A480  T G A                                   T G T A A G G T G T A G T C T T G C A A T C C T T A
                                                ==  ======              ==========************  
A494  T G A                                   T G C A G A G T G G G G T T T T G C A G T C C T T A
                                                ======  ==              ==  ======****  ********
A570  A G G T                                 C A T C G G T T C G A T T C C G G T T G C G T C C A
                                                ==  ======              ======  ==****  **  ****
A770  A G G T                                 A C C G G G A T C G A T A C C C G G C G C C T C C A
                                                ==========              ==========********  ****
A771  A G G T                                 A C C G G G A T C G A T A C C C G G C G C C T C C A
                                                ==========              ==========********  ****
A780  A G G T                                 A C G G G G A T C G A T G C C C C G C A T C T C C A
                                                ==========              ==========********  ****
A830  A G G T                                 C T T G G G T T C A A T C C C C A G C A T C T C C A
                                                  ========              ========  ****  **  ****
A950  A G G C                                 C C C G G G T T C G A T C C C C G G C A T C T C C A
                                                ==========              ==========********  ****

              A R G I N I N E

R020  C G G                                   T C C T G G T T C G A T C C C A G G G C G G G A T A C C A
                                                ==========              ==========************  
R145  G G A T                                 C G G G G G T T C A A A T C C C T C C G G G T C C G
                                                ==  ======              ======  ==********  ****
R203  A G G T                                 T G G G G G T T C G A G T C C C T C C G G G C G C A C C A
                                                ==  ======              ======  ==**************
R204  A G G T                                 C G G A A G T T C G A G C C T T C T C G T G G G C A C C A
                                                  ========              ========  **  **********
R206  A G G T                                 T G A G G G T T C G A T T C C T T C T G G G C G C G C C A
                                                ====  ====              ====  ====**************
R235  A G G T                                 T A G G G G T T C G A C T C C T C T C G G G C G C G C C A
                                                ====  ====              ====  ====**************
R250  A G G T                                 C T C A G G T T C G A A T C C T G T C G G G C G C G C C A
                                                  ========              ========  **************
R251  G G G C                                 C G C A G G T T C G A A T C C T G C A G G G C G C G C C A
                                                ==========              ==========**************
R252  G G G C                                 C G C A G G T T C G A A T C C T G C A G G G C G C G C C A
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                               1 2 3 4 5 6 7|8 9|10  12  |14  16  A   19  A   21|  23  25|  |27  29  31|  33  35  37  |39  41  43
                                            |   |  11  13|  15  17  18  20  B   |22  24  |26|  28  30  |32  34  36  38|  40  42
                               ------------------------------------------------------------------------------------------------
R255   CCG SALMONELLA TYPHI.   G C G C C C G|T A|G C T C |A G C T   G G A T   A|G A G C |G |C T G C C |C T C C G G A |G G C A G
                                ************
R259   CCG AEROMONAS HYDROPH.  G C G C C C G|T A|G C T C |A G C T   G G A T   A|G A G C |G |C T G C C |C T C C G G A |G G C A G
                               *************
R304   ACG EUGLENA GRACILIS    G G G C T T G|T A|G C T C |A G T     G G A C T A|G A G C |A |C G T G G |C T A C G A A |C T A C G
           CHLORO              ********   **
R310   ACG MARCHANTIA POLYM.   G G G T T T G|T A|G C T C |A G A     G G A T T A|G A G C |A |C G T G G |C T A C G A A |C C A C G
           CHLORO              ******     **
R311   CCG MARCHANTIA POLYM.   G G G T T T G|T A|G C T C |A G T     G G A T T A|G A G C |T |C A T G G |T T C C G A A |T C A T G
           CHLORO              ********** **
R312   UCU MARCHANTIA POLYM.   G C G T C C A|T C|G T C T |A A A     G G A T   A|G G A C |A |G A G G T |T T T C T A A |A C C T C
           CHLORO               ************
R315   UCU TRITICUM AESTIVUM   G C G T C C A|T T|G T C T |A A T     G G A T   A|G G A C |A |G A G G T |C T T C T A A |A C C T T
           CHLORO              *************
R320   ACG ZEA MAYS            G G G C C T G|T A|G C T C |A G A     G G A T T A|G A G C |A |C G T G G |C T A C G A A |C C A C G
           CHLORO              ********   **
R335   ACG NICOTIANA TABACUM   G G G C C T G|T A|G C T C |A G A     G G A T T A|G A G C |A |C G T G G |C T A C G A A |C C A C G
           CHLORO              ********   **
R336   UCU NICOTIANA TABACUM   G C G T C C A|T T|G T C T |A A T     G G A T   A|G G A C |A |G A G G T |C T T C T A A |A C C T T
           CHLORO              *************
R345   ACG PELARGONIUM ZONALE  G G G C C T G|T A|G C T C |A G A     G G A T T A|G A G C |A |C G T G G |C T A C G A A |C C A C G
           CHLORO              ********   **
R355   ACG PISUM SATIVUM       G G G C T C G|T A|G C T C |A G A     G G A T T A|G A G C |A |C G C G G |C T A C G A A |C C A C G
           CHLORO              ********   **
R356   UCU PISUM SATIVUM       G C G T C C A|T T|G T C T |A A T     G G A T   A|G G A C |A |G A G G T |C T T C T A A |A C C T T
           CHLORO              *************
R365   UCU SPINACIA OLERACEA   G C G T C C A|T A|G T C T |A A T     G G A T   A|G G A C |A |T A G G T |C T T C T A A |A C C T T
           CHLORO              *************
R370   ACG SPIRODELA OLIGORH.  G G G C C T G|T A|G C T C |A G A     G G A T T A|G A G C |A |C G T G G |C T A C G A A |C C A C G
           CHLORO              ********   **
R371   UCU SPIRODELA OLIGORH.  G C G T C C A|T T|G T C T |A A T     G G A T   A|G G A C |A |G A G G T |C T T C T A A |A C C T T
           CHLORO              *************
R410   UCU ASPERGILLUS NIDUL.  T T C T T A T|T A|G C T C |A A T     G G T     A|G A G C |A |A A A T A |C T T C T A A |T A T T T
           MITO                *************
R412   UCU NEUROSPORA CRASSA   T T C T C A T|T A|G C T C |A A A     G G A     A|G A G C |A |G G A T A |C T T C T A A |T A T T C
           MITO                *************
R417   UCU SACCHAROMYCES CER.  G C T C T C T|T A|G C T T |A A T     G G T T   A|A A G C |A |T A A T A |C T T C T A A |T A T T A
           MITO                 ************
R418   ACG SACCHAROMYCES CER.  A T A T C T T|T A|A T T T |A A T     G G T     A|A A A T |A |T T A G A |A T A C G A A |T C T A A
           MITO                *************
R425   UCU TORULOPSIS GLAB.    G C T C T C T|T A|G C T T |A A T     G G T T   A|A A G C |A |T A A T A |C T T C T A A |T A T T A
           MITO                 ************
R450   ACG ASCARIS SUUM        A G G A C G T|T A|A A T A |G A T A A           G|C T A T |G |C C T A G |T T A C G G T |C T G G G
           MITO                **  ********
R456   UCG AEDES ALBOPICTUS    A A A T A T G|A A|G C G A |T T T               A|T T G C |A |A T T A G |T T T C G A C |C T A A T
           MITO                *************
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          45    47    B     D     F     H     J     L     N     P     |49    51    53 |   55    57    59    |61    63    65 |   67    69    71    |73    75
       44    46    A     C     E     G     I     K     M     O     48 |   50    52    |54    56    58    60 |   62    64    |66    68    70    72 |   74    76
       --------------------------------------------------------------------------------------------------------------------------------------------------------
R255   A  G  G  T                                                  C  |T  C  A  G  G  |T  T  C  G  A  A  T  |C  C  T  G  T  |C  G  G  G  C  G  T  |A  C  C  A
                                                                      |   ============|                     |============   |******************   |
R259   A  G  G  T                                                  C  |A  C  A  G  G  |T  T  C  G  A  A  T  |C  C  T  G  T  |C  G  G  G  C  G  C  |A  C  C  A
                                                                      |===============|                     |===============|*********************|
R304   G  A  G  T                                                  C  |A  G  G  G  G  |T  T  C  G  A  A  T  |C  C  C  T  T  |C  T  T  G  C  C  C  |G
                                                                      |===   =========|                     |=========   ===|***      ************|
R310   G  T  G  T                                                  C  |G  G  G  G  G  |T  T  C  G  A  A  T  |C  C  C  T  C  |C  T  T  G  C  C  C  |A
                                                                      |===   =========|                     |=========   ===|***         *********|
R311   A  A  G  T                                                  C  |A  A  G  G  G  |T  T  C  G  A  A  T  |C  C  C  T  T  |C  T  A  A  C  C  C  |T
                                                                      |===============|                     |===============|***   ***************|
R312   C  A  G                                                     T  |A  T  A  G  G  |T  T  C  G  A  A  T  |C  C  T  A  T  |T  G  G  A  C  G  T  |A
                                                                      |===============|                     |===============|******************   |
R315   T  G  G                                                     T  |A  T  A  G  G  |T  T  C  A  A  A  T  |C  C  T  A  T  |T  G  G  A  C  G  C  |A
                                                                      |===============|                     |===============|*********************|
R320   G  T  G  T                                                  C  |G  G  G  G  G  |T  T  C  G  A  A  T  |C  C  C  T  C  |C  T  C  G  C  C  C  |A
                                                                      |===   =========|                     |=========   ===|***      ************|
R335   G  T  G  T                                                  C  |G  G  G  G  G  |T  T  C  G  A  A  T  |C  C  C  T  C  |C  T  C  G  C  C  C  |A
                                                                      |===   =========|                     |=========   ===|***      ************|
R336   T  G  G                                                     T  |A  T  A  G  G  |T  T  C  A  A  A  T  |C  C  T  A  T  |T  G  G  A  C  G  C  |A
                                                                      |===============|                     |===============|*********************|
R345   A  T  G  T                                                  C  |G  G  G  G  G  |T  T  C  G  A  A  T  |C  C  C  T  C  |C  T  A  G  C  C  C  |A
                                                                      |===   =========|                     |=========   ===|***      ************|
R355   G  T  G  T                                                  C  |G  G  G  G  G  |T  T  C  G  A  A  T  |C  C  C  T  C  |C  T  C  G  C  C  C  |A
                                                                      |===   =========|                     |=========   ===|***      ************|
R356   T  G  G                                                     T  |A  T  A  G  G  |T  T  C  A  A  A  T  |C  C  T  A  T  |T  G  G  A  C  G  C  |A
                                                                      |===============|                     |===============|*********************|
R365   T  G  G                                                     T  |A  T  A  G  G  |T  T  C  A  A  A  A  |C  C  T  A  T  |T  G  G  A  C  G  C  |A
                                                                      |===============|                     |===============|*********************|
R370   G  T  G  T                                                  C  |G  G  G  G  G  |T  T  C  G  A  A  T  |C  C  C  T  C  |C  T  C  G  C  C  C  |A
                                                                      |===   =========|                     |=========   ===|***      ************|
R371   T  G  G                                                     T  |A  T  A  G  G  |T  T  C  A  A  G  T  |C  C  T  A  T  |T  G  G  A  C  G  C  |A
                                                                      |===============|                     |===============|*********************|
R410   T  G  A                                                     T  |C  T  A  A  G  |T  T  C  G  A  G  T  |C  T  T  A  G  |A  T  A  A  G  A  A  |G
                                                                      |===============|                     |===============|*********************|
R412   C  G  A                                                     T  |T  T  T  A  G  |T  T  C  G  A  A  T  |C  T  A  A  A  |A  T  G  A  G  A  A  |T
                                                                      |===============|                     |===============|*********************|
R417   A  T  A  T                                                  T  |C  C  A  T  G  |T  T  C  A  A  A  T  |C  A  T  G  G  |A  G  A  G  A  G  T  |A
                                                                      |===============|                     |===============|******************   |
R418   T  T  A                                                     T  |A  T  A  G  G  |T  T  C  A  A  A  T  |C  C  T  A  T  |A  A  G  A  T  A  T  |T
                                                                      |===============|                     |===============|*********************|
R425   A  T  A  T                                                  T  |C  C  A  T  G  |T  T  C  A  A  A  T  |C  A  T  G  G  |A  G  A  G  A  G  T  |A
                                                                      |===============|                     |===============|******************   |
R450   A  A  G  A  G  A  G                                            |               |                     |               |T  C  G  T  C  T  T  |T
                                                                      |               |                     |               |   ************   ***|
R456   C  T  T                                                     A  |G  G  T  G  A  |A  A  T           T  |C  A  C  C  C  |C  A  T  A  T  T  T  |T
                                                                      |======         |                     |         ===   |*********************|
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                                1 2 3 4 5 6 7 |8 9 |10  12  |14  16  A   19  A   21|  23  25|  |27  29  31|  33  35  37  |39  41  43
                                              |    |  11  13|  15  17  18  20  B   |22  24  |26|  28  30  |32  34  36  38|  40  42
                                --------------|----|--------|----------------------|--------|--|----------|--------------|----------
R459  UCG DROSOPHILA YAKUBA     G A A T A T G |A A |G C G A |T T A               A |T T G C |A |G T T A G |T T T C G A C |C T A A C
          MITO                    ********  **|    |....  ..|                      |..  ....|  |----------|              |----------
R464  UCG PARACENTROTUS LIV.    T G A G A G T |T A |G T T T |A A G A             A |G A A C |C |C C T G A |T T T C G G C |T C A G A
          MITO                      **********|    |......  |                      |  ......|  |  --------|              |--------
R466  UCG STRONGYLOCEN.PURP.    A A G A G T T |A   |G T T T |A A G G A             |G A A C |C |T C T G A |T T T C G G C |T C A G A
          MITO                  **************|    |......  |                      |  ......|  |----------|              |----------
R468  UCG XENOPUS LAEVIS        G A G T T G T |T A |G T C T |A A A C             A |A G A C |A |G T T G T |T T T C G G C |A C A A C
          MITO                  **********  **|    |........|                      |........|  |----------|              |----------
R474  UCG RAT                   T G G T A A T |T A |G T T T |A A A T             A |A A A T |T |A A T G A |T T T C G A C |T C A T T
          MITO                  **************|    |    ....|                      |......  |  |----------|              |----------
R477  UCG MOUSE                 T G G T A A T |T A |G T T T |A A A A             A |A A A T |T |A A T G A |T T T C G A C |T C A T T
          MITO                  **************|    |  ......|                      |......  |  |----------|              |----------
R480  UCG BOVINE                T G G T A C T |T A |G T T T |A A A A T           A |A A A T |A |A A T G A |T T T C G A C |T C A T T
          MITO                  **********  **|    |  ......|                      |......  |  |----------|              |----------
R494  UCG HUMAN                 T G G T A T A |T A |G T T T |A A A C             A |A A A C |G |A A T G A |T T T C G A C |T C A T T
          MITO                  **********  **|    |........|                      |........|  |----------|              |----------
R570  ACG SACCHAROMYCES CER.    T T C C T C G |T G |G C C C |A A T     G G T C   A |C G G C |G |T C T G G |C T A C G A A |C C A G A
                                *********  ***|    |......  |                      |  ......|  |----------|              |----------
R571  UCU SACCHAROMYCES CER.    G C T C G C G |T G |G C G T |A A T     G G C     A |A C G C |G |T C T G A |C T T C T A A |T C A G A
                                  ******  ****|    |........|                      |........|  |----------|              |----------
R572  CCU SACCHAROMYCES CER.    G T T C C G T |T G |G C G T |A A T     G G T     A |A C G C |G |T C T C C |C T C C T A A |G G A G A
                                **************|    |........|                      |........|  |----------|              |----------
R575  ACG SCHIZOSACCHA.POM.     G G T C T C G |T G |G C C C |A A T     G G T T   A |A G G C |G |C T T G A |C T A C G A A |T C A A G
                                **  ****  ****|    |......  |                      |  ......|  |----------|              |----------
R576  ACG SCHIZOSACCHA.POM.     G G T C T C G |T G |G C C C |A A T     G G T T   A |A G G C |G |C T T G A |C T A C G G A |T C A A G
                                **  ****  ****|    |......  |                      |  ......|  |----------|              |----------
R780  ACG DROSOPHILA MELANO.    G G T C C T G |T G |G C G C |A A T     G G A T   A |A C G C |G |T C T G A |C T A C G G A |T C A G A
                                **  **********|    |......  |                      |  ......|  |--------  |              |----------
R781  UCG DROSOPHILA MELANO.    G A C C G T G |T G |G C C T |A A T     G G A T   A |A G G C |G |T C G G A |C T T C G G A |T C C G A
                                **************|    |........|                      |........|  |----------|              |----------

             A S P A R A G I N E

N145  GUU METHANOCOC.VANI.      G C C T C C T |T A |G C T C |A G T A   G G T A   G |C A G C |G |A T G G A |C T G T T A A |T C C A T
                                **************|    |......  |                      |  ......|  |----------|              |----------
N203  GUU MYCOPLASMA MYCOID.    G G C T T T T |T A |G C T C |A G C A   G G T     A |G A G C |A |A C C G G |C T G T T A A |C C G G T
                                **************|    |........|                      |........|  |----------|              |----------
N235  GUU BACILLUS SUBTILIS     T C C A C A G |T A |G C T C |A G T     G G T     A |G A G C |T |A T C G G |C T G T T A A |C C G A T
                                **************|    |........|                      |........|  |----------|              |----------
N236  GUU BACILLUS SUBTILIS     T C C G C A G |T A |G C T C |A G T     G G T     A |G A G C |T |A T C G G |C T G T T A A |C C G A T
                                **************|    |........|                      |........|  |----------|              |----------
N304  GUU EUGLENA GRACILIS      T C C T T A A |T A |G C T C |A G T     G G T     A |G A G C |A |A T C G G |C T G T T A A |C C G A T
          CHLORO                **************|    |........|                      |........|  |----------|              |----------
N310  GUU MARCHANTIA POLYM.     T C C T T A G |T A |G C T C |A G T     G G T     A |G A G C |G |G T C G G |C T G T T A A |C C G A T
          CHLORO                *********  ***|    |........|                      |........|  |  --------|              |--------
N320  GUU ZEA MAYS              T C C T C A G |T A |G C T C |A G T     G G T     A |G A G C |G |G T C G G |C T G T T A A |C T G A C
          CHLORO                ******  ****  |    |........|                      |........|  |------  --|              |--  ------
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          45  47  B   D   F   H   J   L   N   P   49  51  53  55  57  59  61  63  65  67  69  71  73  75
        44  46  A   C   E   G   I   K   M   O   48  50  52  54  56  58  60  62  64  66  68  70  72  74  76
        - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
R459    C T T                                   A|G G T A T|T A         T|A T A C C|C T T A T T T|T
                                                 |=========|             |=========|**  ******** |
R464    A G G                                   C|T T T G G|T T A A A G T|C C A A A|A C T C T T T|A
                                                 |=========|             |=========|**********   |
R466    G G G                                   T|T T T G G|T T C A A C C|C C A A  |A A C T C T T|G
                                                 |  =======|             |======== |*************|
R468    A A A                                   T|T A T G G|T T A A A C C|C C A T A|A T A A C T C|T
                                                 |=========|             |=========|**  *********|
R474    A G A                                   T|T A T G A|T A A T A   A|T C A T A|A T T A C C A|A
                                                 |=========|             |=========|*************|
R477    A G A                                   T|T A T G A|T G C T G   T|T C A T A|A T T A C C A|A
                                                 |=========|             |=========|*************|
R480    A G A                                   T|T A T G A|T T T A A   T|T C A T A|A T T A C C A|A
                                                 |=========|             |=========|**  *********|
R494    A A A                                   T|T A T G A|T A         A|T C A T A|T T T A C C A|A
                                                 |=========|             |=========|**  *********|
R570    A G A T                                 T|C C A G G|T T C A A G T|C C T G G|C G G G G A A|G
                                                 |=========|             |=========|****  *******|
R571    A G A T                                 T|A T G G G|T T C G A C C|C C C A T|C G T G A G T|G
                                                 |=========|             |=========|****  ****** |
R572    A G A C                                 T|G C G G G|T T C G A G T|C C C G T|A C G G A A C|G
                                                 |  =======|             |======== |*************|
R575    A G A T                                 T|C C A G G|T T C G A C T|C T T G G|C G G G A T C|G
                                                 |======  =|             |==  =====|****  ****  *|
R576    A G A T                                 T|C C A G G|T T C G A C T|C C T G G|C G G G A T C|G
                                                 |=========|             |=========|****  ****  *|
R780    A G A T                                 T|C C A G G|T T C G A C T|C C T G G|C A G G A T C|G
                                                 |=========|             |=========|**********  *|
R781    A G A T                                 T|G C A G G|T T C G A A T|C C T G T|C A C G G T C|G
                                                 |  =======|             |======== |*************|

            A S P A R A G I N E
N145    A G G T                                 C|G C A G G|T T C G A G C|C C T G C|A G G A G G C|G C C A
                                                 |=========|             |=========|*************|
N203    T T G T                                 C|A C A G G|T T C G A G C|C C T G T|A A A A G C C|G C C A
                                                 |=========|             |=========|*************|
N235    C G G T                                 C|G C A G G|T T C G A A T|C C T G C|C T G T G G A|G C C A
                                                 |=========|             |=========|*************|
N236    C G G T                                 C|G T A G G|T T C G A A T|C C T A C|C T G C G G A|G
                                                 |=========|             |=========|*************|
N304    C G G T                                 C|G T A G G|T T C G A A T|C C T A C|T T A A G G A|G
                                                 |=========|             |=========|*************|
N310    T G G T                                 C|G T A G G|T T C A A A T|C C T A C|C T G A G G A|G
                                                 |=========|             |=========|****  *******|
N320    T G G                                   C|G T A G G|T T C G A A T|C C T A C|T T G G G G A|G
                                                 |=========|             |=========|  ****  *****|
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                              1 2 3 4 5 6 7 8 9 10  12  14  16  A   19  A   21  23  25  27  29  31  33  35  37  39  41  43
                                                  11  13  15  17  18  20  B   22  24  26  28  30  32  34  36  38  40  42
                              -------------------------------------------------------------------------------------------
N335  GUU NICOTIANA TABACUM   T C C T C A G T A G C T C A G T     G G T     A G A G C G G T C G G C T G T T A A C C G A T
          CHLORO              ******  ****
N355  GUU PISUM SATIVUM       T C C C C A G T A G C T C A G T     G G T     A G A G C G G T C G G C T G T T A A C C G A T
          CHLORO              *************
N370  GUU SPIRODELA OLIGORH.  T C C T C A G T A G C T C A G T     G G T     A G A G C G G T C G G C T G T T A A C T G T A
          CHLORO              ******  ****
N410  GUU ASPERGILLUS NIDUL.  G C C T T T A T A G C T C A A C     G G T     A G A G C G G A A T A C T G T T A A T A T T T
          MITO                ******  ******
N417  GUU SACCHAROMYCES CER.  G T C C T T A T A G C T T A T C     G G T T   A A A G C A T C T C A C T G T T A A T G A G A
          MITO                **************
N425  GUU TORULOPSIS GLAB.    G T C T T T A T G G C T T A G T     G G T T   A A A G C A T C T C A C T G T T A A T G A G A
          MITO                **********  **
N434  GUU LUPINUS LUTEUS      T C C T C A G T A G C T C A G T     G G T     A G A G C G G T C G G C T G T T A A C T G A C
          MITO                ******  ****
N450  GUU ASCARIS SUUM        T A A G A G T T A G T T T A A T A T T         A G A A T T G T T G A C T G T T G A T C A A T
          MITO                *************
N456  GUU AEDES ALBOPICTUS    T T A A T T G A A A C C A A A A A             G A G G T A T A T C A C T G T T A A T G A T A
          MITO                **************
N459  GUU DROSOPHILA YAKUBA   T T A A T T G A A G C C A A A A A             G A G G C G T A T C A C T G T T A A T G A T A
          MITO                **************
N464  GUU PARACENTROTUS LIV.  T G G G T T G T A G C T A A A T G T A         A A G G C G C T T G G C C G T T A A C C A A G
          MITO                **  ****    **
N466  GUU STRONGYLOCEN.PURP.  T G G G C T G T A G C T A A A T G T A A       A A A G C G C T T G G C C G T T A A C C A A G
          MITO                ********    **
N468  GUU XENOPUS LAEVIS      T A G A A T G A A G C T C G T T     G G       A T T G A G T T T A G C T G T T A A C T A A A
          MITO                **********  **
N470  GUU RANA CATESBEIANA    T A G A A T G A A G C T C G C T     G G A T   A G A G T G T T T A G C T G T T A A C T A A A
          MITO                **************
N474  GUU RAT                 T A G A T T G A A G C C A G T A A G T         A G G G T A T T T A G C T G T T A A C T A A A
          MITO                **************
N475  GUU RAT                 T A G A T T G A A G C C A G T A A G T         A G G G T A T T T A G T T G T T A A C T A A A
          MITO                **************
N476  GUU RAT                 T A G A T T G A A G C C A G T A A G T         A G G G T A T T T A G C T G T T A A C T A A A
          MITO                **************
N477  GUU MOUSE               T A G A T T G A A G C C A G T A A T           A G G G T A T T T A G C T G T T A A C T A A A
          MITO                **************
N480  GUU BOVINE              T A G A T T G A A G C C A G T T A G C T       A G G G T G T T T A G C T G T T A A C T A A A
          MITO                ********  ****
N494  GUU HUMAN               T A G A T T G A A G C C A G T T G A T T       A G G G T G C T T A G C T G T T A A C T A A G
          MITO                ********
N660  GUU PETUNIA SP.         T C C T C A G T A G C T C A G T     G G T     A G A G C G G T C G G C T G T T A A C C G A T
                              ******  ******
N780  GUU DROSOPHILA MELANO.  G C C T C C G T G G C G C A A T T   G G T T   A G C G C G T T C G G C T G T T A A C C G A A
                              ******  ******
N830  GUU XENOPUS LAEVIS      G T C T C T G T G G C G C A A T C   G G T T   A G C G C G T T C G G C T G T T A A C C G A A
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        45  47  B   D   F   H   J   L   N   P    49  51  53  55  57  59  61  63  65  67  69  71  73  75
      44  46  A   C   E   G   I   K   M   O   48   50  52  54  56  58  60  62  64  66  68  70  72  74  76
      ---------------------------------------------------------------------------------------------------
N335  T G G T                                 C |G T A G G|T T C G T A A|C C T A C|T T G G G G A|G
                                                 =========               =========   ***   *****
N355  T G G T                                 C |G T A G G|T T C A A A T|C C T A T|T T G G G G A|G
                                                   =======               =======     ***********
N370  T G G T                                 C |G T A G G|T T C G A A T|C C T A C|T T G G G G A|G
                                                 =========               =========   ***   *****
N410  T G A                                   T |A G A T G|T T C A A T T|C A T C T|T A A G G G C|T
                                                 =========               ========= *****   *****
N417  A T A                                   G |A T G G G|T T C A A T T|C C T A T|T A A G G A C|G
                                                 ===   ===               ===   === *************
N425  A T A                                   C |A T A G G|T T C A A T T|C C T A T|T G A A G A C|G
                                                 =========               ========= *   *********
N434  T G G T                                 C |G T A G G|T T C G A A T|C C T A C|T T G G G G A|G
                                                 =========               =========   ***   *****
N450  G G G T G A T                             |         |             |         |T C T C T T A|G
                                                                                     ***********
N456  T A A T                                 T |G A A T A|T T A       T|T A T T C|C A A T T A A|G
                                                 =========               ========= *************
N459  T A A T                                 T |G A G T A|T           A|A A C T C|C A A T T A A|G
                                                 =======                   ======= *************
N464  A A A T                                 A |G T A G G|A T A A A A A|C C T A T|C T T C C G A|G
                                                   =======               =======   *     ***   *
N466  A A A T                                 A |A T A G G|A T A A A T A|C C T A T|C T T C C C A|G
                                                 =========               ========= *     *******
                                                                  *   *
N468  A T G T                                 T |G C G G G|A T C G N G N|C C C G T|C T T T C T A|G
                                                   =======               =======   *   *********
N470  A T A T                                 T |A C G G G|A T C G A G G|C C C G T|C A T T C T A|G
                                                 =========               ========= *************
N474  T T T T                                 C |G T A G G|AAT T T G A TT|C C T T C|C A A T C T A|G
                                                 =   =====               =====   =   ***********
N475  T T T T                                 C |G T A G G|T T T G A A T|C C T T C|C A A T C T A|C
                                                 =   =====               =====   = *************
N476  T T T T                                 C |G T A G G|T T T G A A T|C C T T C|C A A T C T A|G
                                                 =   =====               =====   = *************
N477  T T T T                                 C |G T A G G|T T T A A T T|C C T G C|C A A T C T A|G
                                                 =========               ========= ***************
N480  G T T T                                 C |G T G G G|G G T G G A G|C C C A C|C A G T C T A|G
                                                 =========               ========= ***   *******
N494  T G T T                                 T |G T G G G|T T T A A G T|C C C A T|T G G T C T A|G
                                                   =======               =======         *******
N660  T G G T                                 C |G T A G G|T T C G A A T|C C T A C|T T G G G G A|G
                                                 =========               =========   ***   *****
N780  A G G T                                 T |G G T G G|T T C G A G T|C C A C C|C G G G G G C|G
                                                 =========               ========= *****   *****
N830  A G G T                                 T |G G T G G|T T C G A G C|C C A C C|C A G G G A C|G
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			1 2 3 4 5 6 7	8 9	10 11 12 13	14 15 16 17 A 18 19 20 A B	21	22 23 24 25	26	27 28 29 30 31	32 33 34 35 36 37 38	39 40 41 42 43
N995	GUU	HUMAN	G T C T C T G	T G	G C G C	A A T G G G T T	A	G C G C	G	T T C G G	C T G T T A A	C C G A A
N996	GUU	HUMAN	G T C T C T G	T G	G C G C	A A T C G G T T	A	G C G C	G	T T C G G	C T G T T A A	C C G A A
		A S P A R T I C A C I D										
D040	GUC	PHAGE T5	G C G A C C G	G G	G C T G	G C T T G G T A	A	T G G T	A	C T C C C	C T G T C A C	G G G A G
D145	GUC	METHANOCOC.VANI.	G C C C T G G	T G	G T G T	A G C T C G G C C T	A	T C A T	A	C A G G A	C T G T C A C	T C C T G
D148	GUC	METHANOCOC.VOLTAE	G C C C T G G	T G	G T G T	A G C T C G G C C T	A	T C A T	A	C A G G A	C T G T C A C	T C C T G
D203	GUC	MYCOPLASMA MYCOID.	G G C C C C A	T A	G C G A	A C G T T G G T T	A	T C G C	G	C C T C C	C T G T C A C	G G A G G
D206	GUC	SPIROPLASMA MELIF.	G G T C T T G	T A	G T G A	A G T T G G T T	A	T C A T	G	C C T C T	C T G T C A C	A G A G G
D235	GUC	BACILLUS SUBTILIS	G G T C C G G	T A	G T T C	A G T T G G T T	A	G A A T	G	C C T G C	C T G T C A C	G C A G G
D250	GUC	E.COLI	G G A G C G G	T A	G T T C	A G T C G G T T	A	G A A T	A	C C T G C	C T G T C A C	G C A G G
D304	GUC	EUGLENA GRACILIS CHLORO	G G G A T T G	T A	G T T T	A A T G G T T	A	G A G C	A	C C G C C	C T G T C A C	G G C G G
D310	GUC	MARCHANTIA POLYM. CHLORO	G G G A T T G	T A	G T T C	A A T T G G T T	A	G A G T	A	C C G C C	C T G T C A A	G A C G G
D315	GUC	TRITICUM AESTIVUM CHLORO	G G G A T T G	T A	G T T C	A A T T G G T C	A	G A G C	A	C C G C C	C T G T C A A	G G C G G
D335	GUC	NICOTIANA TABACUM CHLORO	G G G A T T G	T A	G T T C	A A T T G G T C	A	G A G C	A	C C G C C	C T G T C A A	G G C G G
D355	GUC	PISUM SATIVUM CHLORO	G G G A T T G	T A	G T T C	A A T T G G T C	A	G A G C	A	C C G C C	C T G T C A A	G G C G G
D365	GUC	SPINACIA OLERACEA CHLORO	G G G A T T G	T A	G T T C	A A T T G G T T	A	G A G C	A	C C G C C	C T G T C A A	G G C G G
D410	GUC	ASPERGILLUS NIDUL. MITO	G G G T T A G	T A	G T T T	A A T A G G T	A	A A G C	G	C T T T T	T T G T C A A	G G A A G
D414	GUC	PODOSPORA ANSERINA MITO	G A A T T A G	T A	A C T T	A A T T G G T	A	G A G G	G	T T T C C	T T G T C A C	G G A A G
D417	GUC	SACCHAROMYCES CER. MITO	G G A T C T G	T A	G C T T	A A T A G T	A	A A G T	A	C C A T T	T T G T C A T	A A T G G
D425	GUC	TORULOPSIS GLAB. MITO	G G A T C C A	T A	G C T T	A A T A G T	A	A A G T	C	C T A T T	T T G T C A T	A A T A G
D442	GUC	TRITICUM AESTIVUM MITO	G G G G A A A	T A	G C T C	A G T T G G T T	A	G A G T	G	C T G G T	C T G T C A C	G C C A G
D445	GUC	ZEA MAYS MITO	G G G G A A A	T A	G C T C	A G T T G G T T	A	G A G T	G	C T G G T	C T G T C A C	G C C A G
D450	GUC	ASCARIS SUUM MITO	A A A A C T A	T A	G T A T	A A T T T T T T T	A	T T A T	A	C C T T A	T T G T C G A	T G G G G

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          45  47  B   D   F   H   J   L   N   P |49  51  53| 55  57  59  |61  63  65| 67  69  71  |73  75
        44  46  A   C   E   G   I   K   M   O  48| 50  52  |54  56  58  60| 62  64  |66  68  70  72| 74  76
        ---------------------------------------------------------------------------------------------------

N995    A G G T                                T|G G T G G|T T C G A G C|C C A T C|C A G G G A C|G
                                                |==  =====|             |======  =|****** ******|
N996    A G A T                                T|G G T G G|T T C G A G C|C C A C C|C A G G G A C|G
                                                |=========|             |=========|****** ******|

            A S P A R T I C   A C I D

D040    A G A A                                T|G T G G G|T T C A A A T|C C C A T|C G G T C G C|G C C A
                                                |  =======|             |=======  |*************|
D145    T G A                                  C|T C G G G|T T C A A A T|C C C G G|C C A G G G C|G
                                                |  =======|             |=======  |*************|
D148    T G A                                  C|T C G G G|T T C A A A T|C C C G G|C C A G G G C|G
                                                |  =======|             |=======  |*************|
D203    A G A T                                C|A C G G G|T T C G A G T|C C C G T|T G G G G T C|G C C A
                                                |=========|             |=========|**********  **|
D206    A G A T                                C|G C G G G|T T C A A G T|C C C G T|C A A G A C C|G C C A
                                                |  =======|             |=======  |*************|
D235    A G G T                                C|G C G G G|T T C G A G T|C C C G T|C C G G A C C|G
                                                |  =======|             |=======  |*************|
D250    G G G T                                C|G C G G G|T T C G A G T|C C C G T|C C G T T C C|G C C A
                                                |  =======|             |=======  |****** ******|
D304    A A G T                                T|G C G G G|T T C G A G T|C C C G T|C A G T C C C|G
                                                |  =======|             |=======  |****  *******|
D310    A A G T                                T|G C G G G|T T C G A G C|C C C G T|C A A T C C C|G
                                                |  =======|             |=======  |*************|
D315    A A G C                                T|G C G G G|T T C G A G C|C C C G T|C A G T C C C|G
                                                |  =======|             |=======  |****  *******|
D335    A A G C                                T|G C G G G|T T C G A G C|C C C G T|C A G T C C C|G
                                                |  =======|             |=======  |****  *******|
D355    A A G C                                T|G C G G G|T T C G A G T|C C C G T|C A G T C C C|G
                                                |  =======|             |=======  |****  *******|
D365    A A G C                                T|G C G G G|T T C G A G C|C C C G T|C A G T C C C|G
                                                |  =======|             |=======  |****  *******|
D410    T T T A                                T|G C C G G|T T C A A G T|C C G G C|C T A A C C C|G
                                                |=========|             |=========|*************|
D414    C A G A                                T|G C C G G|T T C G A T G|C C G G T|C T A G T T C|G
                                                |  =======|             |=======  |****** ******|
D417    A G G A                                T|G T C A G|T G C A A A T|C T G A T|T A G A T T C|G
                                                |  =======|             |=======  |  ********  **|
D425    A G G A                                T|G T C A G|T G C A A A T|C T G A T|T G G A T T C|G
                                                |  =======|             |=======  |**********  **|
D442    A A G T                                C|G C G G G|T T C G A A C|C C C G T|T T T C C C C|G
                                                |  =======|             |=======  |*************|
D445    A A G T                                C|G C G G G|T T C G A A C|C C C G T|T T T C C C C|G
                                                |  =======|             |=======  |*************|
D450    A G A A T T T T                         |         |             |         |T A G T T T T|A
                                                |         |             |         |*************|
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                               1 2 3 4 5 6 7|8 9|10  12 |14  16  A   19  A   21  23  25  27  29  31  33  35  37  39  41  43
                                                  11  13  15  17  18  20  B   22  24  26  28  30  32  34  36  38  40  42
                               -------------------------------------------------------------------------------------------
D452   GUC CAENORHABDI.ELEG.   A A A G T T T|T A|G T A T|A A A A A           A|G T A T|A|T T T T A|T T G T C A A|T A A A A
           MITO                **************      ....                          ....    ---------               ---------
D454   GUC LOCUSTA MIGRATORIA  A A G G A G T|T A|G T T A|A A A T             A|T A A C|A|T T A G A|A T G T C A A|T C T A A
           MITO                ********  ****    .......                       .......   ---------               ---------
D457   GUC DROSOPHILA MELANO.  A A A A A A T|T A|G T T A|A A A T C           A|T A A C|A|T T A G T|A T G T C A A|A C T A A
           MITO                **************    .......                       .......   ---------               ---------
D459   GUC DROSOPHILA YAKUBA   A A A A A A T|T A|G T T A|A A T T A T         A|T A A C|A|T T A G T|A T G T C A A|A C T A A
           MITO                **************    .......                       .......   ---------               ---------
D464   GUC PARACENTROTUS LIV.  A G A G G T C|T A|G T T A|A A A T             A|T A A C|T|T T G G G|T T G T C A G|G C C A A
           MITO                ******  **  **    .......                       .......   -------                   -------
D466   GUC STRONGYLOCEN.PURP.  A G A G G C C|T A|G T T A|A A C T T           A|T A A C|T|T T G G G|T T G T C A G|G C C A A
           MITO                ******  ******    .......                       .......   -------                   -------
D468   GUC XENOPUS LAEVIS      G A G A T G T|T A|G T A A|A A C A             A|T T A G|C|A C G C C|T T G T C A A|G G C G A
           MITO                **************      ....                          ....      -------               -------
D474   GUC RAT                 G A G A T A T|T A|G T A A|A A T A             A|T T A C|A|T A A C C|T T G T C A A|G G T T A
           MITO                  ************    .......                       .......   ---------               ---------
D475   GUC RAT                 G A G A T A T|T A|G T A A|A A T A             A|T T A C|A|T A A C C|T T G T C A A|G G T T A
           MITO                  ************    .......                       .......   ---------               ---------
D477   GUC MOUSE               A A G A T A T|T A|G T A A|A A T C A           A|T T A C|A|T A A C T|T T G T C A A|A G T T A
           MITO                **************    .......                       .......   ---------               ---------
D480   GUC BOVINE              G A G G T G T|T A|G T A A|A A C               A|T T A T|A|T A A T T|T T G T C A A|A G T T A
           MITO                **************      ....                          ....    -----  --               --  -----
D494   GUC HUMAN               A A G G T A T|T A|G A A A|A A C C             A|T T T C|A|T A A C T|T T G T C A A|A G T T A
           MITO                ******  ******    .......                       .......   ---------               ---------
D570   GUC SACCHAROMYCES CER.  T C C G T G A|T A|G T T T|A A T     G G T C   A|G A A T|G|G G C G C|T T G T C G C|G T G C C
                               ********  ****      ....                          ....    -----  --               --  -----
D575   GUC SCHIZOSACCHA.POM.   T C T C C T T|T A|G T A T|A G G     G G T     A|G T A C|A|C A A G C|C T G T C A C|G C T T G
                               **********  **      ....                          ....    ---------               ---------
D635   GUC GLYCINE MAX         G T C G T T G|T A|G T A T|A G T     G G T A   A|G T A T|T|C C C G C|C T G T C A C|G C G G G
                               **  **********      ....                          ....    ---------               ---------
D700   GUC CAENORHABDI. ELEG.  T C C T C G G|T A|G T A T|A G T     G G T G   A|G T A T|C|C G C G T|C T G T C A C|A T G C G
                               ******  ******      ....                          ....    -----  --               --  -----
D780   GUC DROSOPHILA MELANO.  T C C T C G A|T A|G T A T|A G T     G G T T   A|G T A T|C|C C C G C|C T G T C A C|G C G G G
                               ******  ******      ....                          ....    ---------               ---------
D950   GUC MOUSE               T C C T C G T|T A|G T A T|A G T     G G T G   A|G T A T|C|C C C G C|C T G T C A C|G C G G G
                               ******  ******      ....                          ....    ---------               ---------
D955   GUC RAT                 T C C T C G T|T A|G T A T|A G T     G G T G   A|G T A T|C|C C C G C|C T G T C A C|G C G G G
                               ******  ******      ....                          ....    ---------               ---------
D956   GUC RAT                 T C C T C G T|T A|G T A T|A G T     G G T G   A|G T A T|C|C C C G C|C T G T C A C|G C G G G
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        45  47  B   D   F   H   J   L   N   P   |49  51  53|  55  57  59  |61  63  65|  67  69  71  |73  75
      44  46  A   C   E   G   I   K   M   O   48|  50  52  |54  56  58  60|  62  64  |66  68  70  72|  74  76
      --------------------------------------------------------------------------------------------------------
D452  A G G T A A                               |          |              |          |A A A C T T T |A
                                                |          |              |          |**************|
D454  A A T                                   A |A C T A A |A A A         |  T A G T |A C A C C T T |G
                                                |========  |              |  ========|****  ********|
D457  A A T                                   T |A T T A A |A T A       A |T T A A T |A T T T T T T |A
                                                |==========|              |==========|**************|
D459  A A T                                   T |A T T A A |A T T       A |T T A A T |A T T T T T T |A
                                                |==========|              |==========|**************|
D464  A A T                                   T |G C T G G |T T A A A T T |C C A G C |G G C T T C T |G
                                                |==========|              |==========|**  **  ******|
D466  A A T                                   T |G C T G G |T T A A A C   |C C A G C |G G C T T C T |G
                                                |==========|              |==========|******  ******|
D468  A A T                                   A |G C T G G |T T A G A C T |C C G G C |A C A T C T C |A
                                                |====  ====|              |====  ====|**************|
D474  A G T                                   T |A T A G A |C T T A A A   |T C T A T |A T A T C T T |A
                                                |==========|          * * |==========|************  |
D475  A G T                                   T |A T A G A |C C T A A   A |T C T A T |A T A T C T T |A
                                                |==========|              |==========|************  |
D477  A A T                                   T |A T A G A |T C A A T A A |T C T A T |A T A T C T T |A
                                                |==========|              |==========|**************|
D480  A G T                                   T |A C A A G |T G A A A G T |C C T G T |A C A C C T C |A
                                                |======  ==|              |==  ======|**************|
D494  A A T                                   T |A T A G G |C T A A A   T |C C T A T |A T A T C T T |A
                                                |==========|              |==========|******  ******|
D570  A G A                                   T |C G G G G |T T C A A T T |C C C C G |T C G C G G A |G
                                                |==========|              |==========|****  ********|
D575  C A G                                   C |C C G G G |T T C G A A T |C C C G G |A G G G A G A |G
                                                |==========|              |==========|**  **********|
D635  T G A                                   C |C C G G G |T T C G A T C |C C C G G |C A A C G G C |G
                                                |==========|              |==========|**********  **|
D700  A G A                                   C |C C G G G |T T C A A T T |C C C G G |C C G G G G A |G
                                                |==========|              |==========|******  ******|
D780  A G A                                   C |C G G G G |T T C A A T T |C C C C G |T C G G G G A |G
                                                |==========|              |==========|******  ******|
D950  A G A                                   C |C G G G G |T T C G A T T |C C C C G |A C G G G G A |G
                                                |==========|              |==========|******  ******|
D955  A G A                                   C |C G G G G |T T C G A T T |C C C C G |A C G G G G A |G
                                                |==========|              |==========|******  ******|
D956  A G A                                   C |C G G G G |T T C G A T T |C C C C G |A C G G G G A |C
                                                |==========|              |==========|******  ******|
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CYSTEINE

			1 2 3 4 5 6 7	8 9	10 11 12 13	14 15 16 17	A	18 19 20	A	B	21	22 23 24 25	26	27 28 29 30 31	32 33 34 35 36 37 38	39 40 41 42 43
C110	GCA	HALOBACTERIUM CUT.	G C C A A G G	T G	G C A G	A G T T	C	G G C	C	T	A	A C G C	G	G C G G C	C T G C A G A	G C C G C
C120	GCA	HALOBACTERIUM VOL.	G C C A A G G	T G	G C A G	A G T T	C	G G C	C	C	A	A C G C	A	T C C G C	C T G C A G A	G C G G A
C206	GCA	SPIROPLASMA MELIF.	G G C A C T A	T A	G C C A	A G G T		G G C	T		A	A G G C	A	T G G G A	C T G C A A C	T C C C C
C235	GCA	BACILLUS SUBTILIS	G G C G G C A	T A	G C C A	A G T		G G T			A	A G G C	A	G A G G T	C T G C A A A	A C C T T
C304	GCA	EUGLENA GRACILIS CHLORO	G G C G G C A	T G	G C C A	A G C		G G T			A	A G G C	A	G A A G A	T T G C A A A	T C T T T
C310	GCA	MARCHANTIA POLYM. CHLORO	G G C G A C A	T G	G C C A	A G T		G G T			A	A G G C	A	G A G G A	C T G C A A A	T C C T T
C315	GCA	TRITICUM AESTIVUM CHLORO	G G C G G C A	T G	G C C A	A G C		G G T			A	A G G C	A	G G G G A	C T G C A A A	T C C T T
C320	GCA	ZEA MAYS CHLORO	G G C G G C A	T G	G C C A	A G T		G G T			A	A G G C	A	G G G G A	C T G C A A A	T C C T T
C335	GCA	NICOTIANA TABACUM CHLORO	G G C G A C A	T G	G C C G	A G T		G G T			A	A G G C	A	G A G G A	C T G C A A A	T C C T T
C365	GCA	SPINACIA OLERACEA CHLORO	G G C G G C A	T G	G C C G	A G T		G G T			A	A G G C	G	G A G G A	C T G C A A A	T C C T T
C410	GCA	ASPERGILLUS NIDUL. MITO	A G G A G C T	T G	A G C A	G A T		G G T	T		T	T G C G	T	T T T G A	T T G C A A A	T T G A A
C411	GCA	ASPERGILLUS NIDUL. MITO	A G G A G T T	T G	A G C A	A A T		G G T	T		T	T G C G	T	T T T G A	T T G C A A A	T T G A A
C412	GCA	NEUROSPORA CRASSA MITO	G A T T A C G	A T	G T A A	A T		G G T			T	T A C C	C	T T T G A	C T G C A A A	T C T T A
C417	GCA	SACCHAROMYCES CER. MITO	G G A G A T G	T T	G T T T	T A A		G G T			T	A A A C	T	ATT A G A	T T G C A A A	T C T A CT
C425	GCA	TORULOPSIS GLAB. MITO	G G A G G T G	T T	G T T T	A A A		G G T	T		A	A G C T	A	T T A G A	T T G C A G A	T C T A C
C445	GCA	ZEA MAYS MITO	G G C G G C A	T G	G C C A	A G C		G G T			A	A G G C	A	G G G G A	C T G C A A A	T C C T T
C450	GCA	ASCARIS SUUM MITO	G A G T C T T	T A	G T A T	A T T T	T	T			A	G T A T	G	C T T A A	T T G C A G A	T T A G G
C452	GCA	CAENORHABDI.ELEG. MITO	G A A A C C T	T A	G T A T	A A T T	T	T			A	G T A T	A	T T T A A	T T G C A A A	T T A A A
C457	GCA	DROSOPHILA MELANO. MITO	G G T C T T A	T A	G T C A	A T A					A	T G A T	A	T C A A A	C T G C A A T	T T T G A
C459	GCA	DROSOPHILA YAKUBA MITO	G G T C T T A	T A	G T C A	A T A					A	T G A T	A	T C A A A	C T G C A A T	T T T G A
C464	GCA	PARACENTROTUS LIV. MITO	G G C T T T G	T A	G T G T	A A A T					A	A C A T	T	T T G G A	T T G C A A A	T C C T T

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         45 47 B D F H J L N P  49 51 53  55 57 59  61 63 65  67 69 71  73 75
        44 46 A C E G I K M O 48  50 52  54 56 58 60  62 64  66 68 70 72  74 76
      ------------------------------------------------------------------------
          C Y S T E I N E
C110  T C A T          C|G C C G G|T T C A A A T|C C G G C|C C T T G G C|T
                         =========               ========= *************
C120  A C C C C        C|G C C G G|T T C A A A T|C C G G C|C C T T G G C|T C C A
                         =========               ========= *************
C206  G A T            C|G T C G G|T T C G A A T|C C G A C|T A G T G C C|T C C A
                         =========               ========= *************
C235  T A T            C|C C C G G|T T C G A A T|C C G G G|T G T C G C C|T C C A
                         =========               ========= ***   *******
C304  T A T T          C|C C C A G|T T C G A T T|C T G G G|T G T C G T C|T
                         =========               ========= ***   ***   *
C310  T A T            C|C C C A G|T T C A A A T|C T G G G|T G T C G C T|T
                         =========               ========= ***********
C315  T A T            C|C C C A G|T T C A A A T|C T G G G|T G C C G C C|T
                         =========               ========= *************
C320  T A C            C|C C C A G|T T C A A A T|C T G G G|T G C C G C C|T
                         =========               ========= *************
C335  T T T T          C|C C C A G|T T C A A A T|C C G G G|T G T C G C C|T
                         =====   =               =   ===== *************
C365  G T T            C|C C C A G|T T C A A A T|C C G G G|T G T C G C C|T
                         =====   =               =   ===== ***   *******
C410  A T A            T|A G G G A|T T C G A TTT |C C C C G|A G C T C C T|C
                           =====                   =====   *************
C411  A T A            T|A G G G A|T T C G A TTT |C C C C G|G A C T C C T|C
                           =====                   =====     ***********
C412  A G G A          T|T A G G  |T T C G A T T|  C C T A|C G T A A T C|C
                         =======                   ======= *************
C417  T A T            T|A A G A G|T T C G A T T|C T C T T|C A T C T C T|T
                         =========               ========= ***********
C425  T T A T          T|A A G A G|T T C G A T T|C T C T T|C A T C T C T|T
                         =========               ========= ***   *****
C445  T A T            C|C C C A G|T T C A A A T|C T G G G|T G T C G C C|T
                         =========               ========= ***   *******

C450  T G G A T T T G   |         |             |         |T G G G C T T|T
                                                               *   ***
C452  T G G T A T       |         |             |         |T G G T T T T|T
                                                             *********
C457  A G G            A|G T A A G|            T|T T T A C|T A A G G C T|T
                         =======                   ======= *******   *
C459  A G G            A|G T A A A|T           T|T T T A C|T A A G A C T|T
                         =========               ========= ***********
C464  A G A            T|G C A A T|T A G T T C  |A T T G C|C A A A G C T|T
                         =========               ========= ***********
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			1 2 3 4 5 6 7	8 9	10 11 12 13	14 15 16 A 17 18 19 20 A B	21	22 23 24 25	26	27 28 29 30 31	32 33 34 35 36 37 38	39 40 41 42 43
C466	GCA	STRONGYLOCEN.PURP.	G G T T T T G	T A	G T G T		A	T C A T	T	T C G G A	T T G C A A A	T C C T A
		MITO	** ********		...			....		-- -----		------- --
C468	GCA	XENOPUS LAEVIS	A A G C C T G	C G	G T G T	T	G	A C A T	G	C C A G A	T T G C A A A	T C T C G
		MITO	********** **		.....			......		-- -----		------- --
C470	GCA	RANA CATESBEIANA	G G C C T T G	G G	G T G T	C	A	A C A C	G	T G G G G	T T G C A A A	C C C C A
		MITO	****** **		.....			....		----------		----------
C474	GCA	RAT	A G C C T T A	A G	G T G A	T T	A	T C A T	G	T C G A A	T T G C A A G	T T C G A
		MITO	**************		.....			....		----------		----------
C475	GCA	RAT	A G C C T T A	A G	G T G A	T T	A	T C A T	G	T C G A A	T T G C A A A	T T C G A
		MITO	**************		.....			......		----------		----------
C477	GCA	MOUSE	G G T C T T A	A G	G T G A	T A	T	T C A T	G	T C G A A	T T G C A A A	T T C G A
		MITO	**************		.....			......		----------		----------
C480	GCA	BOVINE	A G C C C T G	T G	G T G A	A T T	T	A C A C	G	T T G A A	T T G C A A A	T T C A G
		MITO	********** **		...			....		--------		--------
C494	GCA	HUMAN	A G C T C C G	A G	G T G A	T T	T	T C A T	A	T T G A A	T T G C A A A	T T C G A
		MITO	****** *****		.....			....		-- -----		------- --
C570	GCA	SACCHAROMYCES CER.	G C T C G T A	T G	G C G C	A G T G G T	A	G C G C	A	G C A G A	T T G C A A A	T C T G T
			********** **		....			....		--------		--------
		G L U T A M I N E										
Q020	UUG	PHAGE T4	T G G G A A T	T A	G C C A	A G T T G G T	A	A G G C	A	T A G C A	C T T T G A C	T G C T A
			**************		......			.....		----------		----------
Q040	UUG	PHAGE T5	T G G G G A T	T A	G C T T	A G C T T G G C C T	A	A A G C	T	T C G G C	C T T T G A A	G T C G A
			************		....			....		------ --		-- ------
Q145	UUG	METHANOCOC.VANI.	A G C C C A G	T A	G T G T	A G T G G C C A	A	T C A T	C	T A G G T	C T T T G G A	A C C T G
			**************		....			....		--------		--------
Q200	UUG	MYCOPLASMA CAPRIC.	T G G G C T A	T A	G C C A	A G C G G T	A	A G G C	A	A G G G A	C T T T G A C	T C C C T
			**************		......			......		----------		----------
Q235	UUG	BACILLUS SUBTILIS	T G G G C T A	T A	G C C A	A G C G G T	A	A G G C	A	A C G G A	C T T T G A C	T C C G T
			**************		......			......		----------		----------
Q250	UUG	E.COLI	T G G G G T A	T C	G C C A	A G C G G T	A	A G G C	A	C C G G T	T T T T G A T	A C C G G
			**************		......			......		----------		----------
Q251	CUG	E.COLI	T G G G G T A	T C	G C C A	A G C G G T	A	A G G C	A	C C G G A	T T C T G A T	T C C G G
			**************		......			......		----------		----------
Q304	UUG	EUGLENA GRACILIS	T G A G G C G	T A	G C C A	A G T G G T	A	A G G C	A	A C G G G	T T T T G G C	C C T G T
		CHLORO	**************		......			......		---- ----		---- ----
Q310	UUG	MARCHANTIA POLYM.	T G G G G C G	T C	G C C A	A G T G G T	A	A G G C	T	G C A G G	T T T T G G T	C C T G T
		CHLORO	******** ****		......			......		--------		--------
Q335	UUG	NICOTIANA TABACUM	T G G G G C G	T G	G C C A	A G T G G T	A	A G G C	A	A C G G G	T T T T G G T	C C C G C
		CHLORO	******** ****		......			......		--------		--------
Q410	UUG	ASPERGILLUS NIDUL.	T A T G T T G	T C	G A C T	A A T C G G T	A	A G T C	A	T A A A T	T T T T G G T	A T T T A
		MITO	**************		....			....		----------		----------
Q417	UUG	SACCHAROMYCES CER.	T G A G T C G	T A	G A C A	A T A G G T	A	A G T T	A	C C A A A	A T T T G A G	T T T G G
		MITO	****** ******		....			....		----------		----------
Q425	UUG	TORULOPSIS GLAB.	T G A G T C G	T A	G A C T	A A T A G G T	A	A G T T	A	C C A A A	A T T T G A G	T T T G G
		MITO	****** ******		......			......		----------		----------

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        45  47  B   D   F   H   J   L   N   P   |49  51  53|  55  57  59  |61  63  65|  67  69  71  |73  75
      44  46  A   C   E   G   I   K   M   O   48|  50  52  |54  56  58  60|  62  64  |66  68  70  72|  74  76
      -----------------------------------------------------------------------------------------------------

C466  G A                                     T |G C A A C |T A G G A C   |G T T G C |C A A A G C T |T
                                                |==========|              |==========|********  **  |
C468  A G A                                   A |G C A A A |C G A A G   G |T T T G C |C G G G C T T |C
                                                |==========|              |==========|**  **********|
C470  A G A                                   T |G C A G T |A T A A T A   |C C T G C |C G G G G C T |T
                                                |========  |              |  ========|**    ******  |
C474  A G G                                   T |G T A G A |G A A T C T CC|T C T A C |T A A G G C T |T
                                                |==========|              |==========|**************|
C475  A G G                                   T |G T A G A |G A A T C T CC|T C T A C |T A A G G C T |T
                                                |==========|              |==========|**************|
C477  A G G                                   T |G T A G A |G A A A T   C |T C T A C |T A A G A C T |T
                                                |==========|              |==========|************  |
C480  A G A                                   A |G C A G C |T T C A A   T |T C T G C |C G G G G C T |T
                                                |========  |              |  ========|**  **********|
C494  A G A                                   A |G C A G C |T T C A A   A |C C T G C |C G G G G C T |T
                                                |========  |              |  ========|******  ******|
C570  T G G T                                 C |C T T A G |T T C G A T C |C T G A G |T G C G A G C |T
                                                |====  ====|              |====  ====|**  **********|

            G L U T A M I N E

Q020  G A T G                                 C |A A A G G |T T C G A G T |C C T T T |A T T C C C A |G
                                                |==========|              |==========|**************|
Q040  G A T                                   C |A T T G G |T T C A A A T |C C A A T |A T C C C C T |G C C A
                                                |==========|              |==========|************  |
Q145  G G A                                   C |C G C G G |T T C G A A T |C C G C G |C T G G G C T |A
                                                |==========|              |==========|**************|
Q200  C A T G                                 C |G C C G G |T T C G A A T |C C T G C |T A G C C C A |A C C A
                                                |====  ====|              |====  ====|**************|
Q235  C A T G                                 C |G T T G G |T T C G A A T |C C A G C |T A G C C C A |G
                                                |==  ======|              |======  ==|**************|
Q250  C A T T                                 C |C C T G G |T T C G A A T |C C A G G |T A C C C C A |G C C A
                                                |==========|              |==========|**************|
Q251  C A T T                                 C |C G A G G |T T C G A A T |C C T C G |T A C C C C A |G C C A
                                                |==========|              |==========|**************|
Q304  C A T T                                 C |G G A G G |T T C G A A T |C C T C C |C G C C T C A |G
                                                |==========|              |==========|**************|
Q310  T A T T                                 C |G G A G G |T T C G A A T |C C T T C |C G T C C C A |G
                                                |==  ======|              |======  ==|****  ********|
Q335  T A T T                                 C |G G A G G |T T C G A A T |C C T T C |C G T C C C A |G
                                                |==  ======|              |======  ==|****  ********|
Q410  T A T                                   T |G G G T G |T T C G A G T |C G C C C |C A A C A T A |A
                                                |======  ==|              |==  ======|**************|
Q417  A G T                                   T |C T T T G |T T C G A A T |C A A A G |C G A T T C A |A
                                                |==========|              |==========|******  ******|
Q425  A G T                                   T |G T T T G |T T C G A A T |C A A A C |C G A T T C A |A
                                                |==========|              |==========|******  ******|
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                               1 2 3 4 5 6 7 8 9 10  12  14  16  A   19  A   21  23  25   27  29  31  33  35  37  39  41  43
                                                   11  13  15  17  18  20  B   22  24  26   28  30  32  34  36  38  40  42
                               ----------------------------------------------------------------------------------------------

Q442  UUG TRITICUM AESTIVUM    T G G A G T A|T A|G C C A|A G T     G G T     A|A G G C|A |T C G G T|T T T T G G T|A T C G G
          MITO                 *************|   |.....  |                     |  .....|  |  ---   -|             |-   ---
Q450  UUG ASCARIS SUUM         T A T A C T T|T A|G T T T|A G G A             A|G A A T|A |T T T A T|T T T T G G T|G T A A A
          MITO                 ***********  |   |  ...  |                     |  ...  |  |-------  |             |  -------
Q459  UUG DROSOPHILA YAKUBA    T A T A T T T|T G|G T G T|A T G A             T|G C A C|A |A A A G T|T T T T G A T|A C T T T
          MITO                 *************|   |.....  |                     |  .....|  |---------|             |---------
Q461  UUG DROSOPHILA VIRILIS   T A T A T T T|T G|G T G T|A C G A             T|G C A C|A |A A A G T|T T T T G A T|A C T T T
          MITO                 *************|   |.....  |                     |  .....|  |---------|             |---------
Q464  UUG PARACENTROTUS LIV.   T A A G G A G|T A|G T T T|A A T G G A         A|A A A C|G |A G G A A|C T T T G A C|T T C C T
          MITO                 *************|   |.......|                     |.......|  |---------|             |---------
Q466  UUG STRONGYLOCEN.PURP.   T A A G G A T|T A|G T T T|A A T T   G G A     A|A A A C|G |A A G A G|C T T T G A C|T T C T T
          MITO                 ***********  |   |.......|                     |.......|  |-------  |             |  -------
Q468  UUG XENOPUS LAEVIS       T A G G A A G|T G|G T A T|A         G G G G   A|G T A C|G |G A G G G|T T T T G A T|C T C T C
          MITO                 ******  *****|   |.....  |                     |  .....|  |-----   -|             |-   -----
Q470  UUG RANA CATESBEIANA     T A A G G A G|T A|G T A T|A A A     G G A     A|G T A C|A |A A G G G|T T T T G A T|C T C T T
          MITO                 ******  *****|   |.....  |                     |  .....|  |-----   -|             |-   -----
Q474  UUG RAT                  T A G G A T A|G G|G T G T|A T T     G G T     A|G C A C|G |G A A A A|T T T T G A A|T T C T T
          MITO                 ********** **|   |.....  |                     |  .....|  |  -   ---|             |---   -
Q475  UUG RAT                  T A G G A T A|G G|G T G T|A T T     G G T     G|G C A C|G |G A G A A|T T T T G A A|T T C T T
          MITO                 ********** **|   |.....  |                     |  .....|  |  -------|             |-------
Q477  UUG MOUSE                T A G G A T A|A G|G T G T|T T A     G G T     G|C A C G|G |A G A A A|T T T T G A A|T T C T T
          MITO                 *************|   |.....  |                     |.....  |  |-     ---|             |---     -
Q480  UUG BOVINE               T A G A A T T|T G|G T G T|A A T T   G G G     A|G C A C|G |A A G A G|T T T T G G A|T T C T T
          MITO                 ********** **|   |.....  |                     |  .....|  |-------  |             |  -------
Q494  UUG HUMAN                T A G G A T G|G G|G T G T|G A T A   G G T     G|G C A C|G |G A G A A|T T T T G G A|T T C T C
          MITO                 ***********  |   |.....  |                     |  .....|  |---------|             |---------
Q530  UUA TETRAHYMENA THERM.   G G T T C C A|T A|G T A T|A G T     G G T T   A|G T A C|T |G G G G A|C T T T A A A|T C C C T
                               ******  *****|   |.....  |                     |  .....|  |  -------|             |-------
Q570  UUG SACCHAROMYCES CER.   G G T C C T A|T A|G T G T|A G T     G G T T   A|T C A C|T |T T C G G|T T T T G A T|C C G G A
                               *************|   |.....  |                     |  .....|  |-   -----|             |-----   -
Q571  CUG SACCHAROMYCES CER.   G G T C C T A|T A|G T G T|A G T     G G T T   A|T C A C|T |T T C G G|T T C T G A T|C C G A A
                               ********** **|   |.....  |                     |  .....|  |---------|             |---------
Q995  CUG HUMAN                G G T T C C A|T G|G T G T|A A T     G G T T   A|G C A C|T |C T G G A|C T C T G A A|T C C A G
                               *************|   |.....  |                     |  .....|  |---------|             |---------

          G L U T A M I C   A C I D

E145  UUC METHANOCOC.VANI.     G C T C C G G|T G|G T G T|A G T C C G G C C A A|T C A T|G |C T G G C|C T T T C G A|G C C A G
                               *************|   |  ...  |                     |  ...  |  |---------|             |---------
E147  CUC RUMINOBACTER AMYLO.  G T C C C T T|C G|T C T A|G T       G G T C T A|G G A C|A |T C G C C|C T C T C A C|G G C G G
                               ********** **|   |       |                     |       |  |  -------|             |-------
E203  UUC MYCOPLASMA MYCOID.   G G C C T G T|T G|G T G A|A G C     G G T T   A|A C A C|A |C A C G G|T T T T C A T|C C G T G
                                 ***********|   |.....  |                     |  .....|  |---------|             |---------
E235  UUC BACILLUS SUBTILIS    G G C C C G T|T G|G T C A|A G C     G G T T   A|A G A C|A |C C G C C|C T T T C A C|G G C G G
                               **  *********|   |.....  |                     |  .....|  |---------|             |---------
E250  UUC E.COLI               G T C C C C T|T C|G T C T|A G A     G G C C C A|G G A C|A |C C G C C|C T T T C A C|G G C G G
                               *************|   |.....  |                     |  .....|  |---------|             |---------
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        45  47  B   D   F   H   J   L   N   P    49  51  53  55  57  59  61  63  65  67  69  71  73  75
      44  46  A   C   E   G   I   K   M   O   48   50  52  54  56  58  60  62  64  66  68  70  72  74  76
      -----------------------------------------------------------------------------------------------------
Q442  C A T G                                 C |A A A G G|T T C G A A T|C C T T T|T A C T C C A|G
                                                |=========|             |=========|*************|
Q450  A G G G T T G                              |         |             |         |T A G T A T A|G
                                                |         |             |         |  ***********|
Q459  T A G                                   A |A A T A G|T T T A A T T|C T A T T|A A A T A T A|A
                                                |=========|             |=========|*************|
Q461  T A G                                   T |A A T A G|T T T A A T T|C T A T T|A A A T A T A|A
                                                |=========|             |=========|*************|
Q464  T G T                                   T |G T G G G|T T C A A T T|C C C A T|C T C C T T A|A
                                                |  =======|             |=======  |*************|
Q466  C T G                                   C |T T G G G|T C C A T T C|C C C A C|  T C C T T A|A
                                                |  =======|             |=======  |  ***********|
Q468  A G G                                   T |G C A G G|T T C A A T T|C C T G T|C T T T C T A|A
                                                |  =======|             |=======  |******  *****|
Q470  A A G                                   T |A T A G G|T T C A A T T|C C T A T|C T C T T T A|G
                                                |=========|             |=========|******  *****|
Q474  A G G                                   T |G T A G G|T T C A A T T|C C T A T|T G T C C T A|G
                                                |  =======|             |=======  |**  *********|
Q475  A G G                                   T |G T A G G|T T C A A T T|C C T A T|T G T C C T A|G
                                                |  =======|             |=======  |**  *********|
Q477  A A G                                   T |G T A G G|T T C A A T T|C C T A T|T G T C C T A|G
                                                |  =======|             |=======  |*************|
Q480  A G G                                   A |G T A G G|T T C G A T T|C C T A T|A G T T C T A|G
                                                |  =======|             |=======  |**  *********|
Q494  A G G                                   G |A T G G G|T T C G A T T|C T C A T|A G T C C T A|G
                                                |======  =|             |==  =====|    *********|
Q530  T G A                                   C |C T G G G|T T C G A A T|C C C A G|T G G G A C C|T
                                                |=========|             |=========|******  *****|
Q570  C A A                                   C |C C C G G|T T C G A A T|C C G G G|T A G G A C C|T
                                                |=========|             |=========|*************|
Q571  C A A                                   C |C C C A G|T T C G A A T|C C G G G|T G G G A C C|
                                                |======  =|             |==  =====|**  *********|
Q995  C G A                                   T |C C G A G|T T C A A A T|C T C G G|T G G A A C C|T
                                                |=========|             |=========|*************|

            G L U T A M I C   A C I D
E145  C G A                                   C |T C G G G|T T C A A A T|C C C G G|C C G G A G C|A
                                                |  =======|             |=======  |*************|
E147  T A A                                   C |A C G G G|T T C G A A C|C C C G T|A G G G G A C|G C C A
                                                |=========|             |=========|**  *********|
E203  G A C A                                 C |A C G G G|T T C G A A C|C C C G T|A C A G G C T|A C C A
                                                |=========|             |=========|***********  |
E235  T A A                                   C |A C G G G|T T C G A A T|C C C G T|A C G G G T C|A
                                                |=========|             |=========|*********   *|
E250  T A A                                   C |A G G G G|T T C G A A T|C C C C T|A G G G G A C|G C C A
                                                |=========|             |=========|*************|
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			1 2 3 4 5 6 7	8 9	10 11 12 13	14 15 16 17 A	18 19 20 A B	21	22 23 24 25	26	27 28 29 30 31	32 33 34 35 36 37 38	39 40 41 42 43
E295	UUC	CYANOPHORA PARAD.*	G C C C C A T	C G	T C T A	G A	G G C C T	A	G G A C	A	C C T C C	C T T T C A C	G G A G G
E304	UUC	EUGLENA GRACILIS CHLORO	G C C C C C A	T C	G T C T	A G A	G G C C T	A	G G A C	A	T C T C C	C T T T C A C	G G A G G
E310	UUC	MARCHANTIA POLYM. CHLORO	G C C C C C A	T C	G T C T	A G T	G G C C T	A	G G A C	A	C C T C T	C T T T C A A	G G A G G
E315	UUC	TRITICUM AESTIVUM CHLORO	G C C C C T A	T C	G T C T	A G T	G G T T C	A	G G A C	A	T C T C T	C T T T C A A	G G A G G
E335	UUC	NICOTIANA TABACUM CHLORO	G C C C C C A	T C	G T C T	A G T	G G T T T	A	G G A C	A	T C T C T	C T T T C A A	G G A G G
E355	UUC	PISUM SATIVUM CHLORO	G C C C C C A	T C	G T C T	A G C	G G T T T	A	G G A C	A	T C T C T	C T T T C A A	G G A G G
E365	UUC	SPINACIA OLERACEA CHLORO	G C C C C C A	T C	G T C T	A G C	G G T T C	A	G G A C	A	T C T C T	C T T T C A A	G G A G A
E375	UUC	VICIA FABA CHLORO	G C C C C C A	T C	G T C T	A G C	G G T T T	A	G G A C	A	T C T C T	C T T T C A A	G G A G G
E410	UUC	ASPERGILLUS NIDUL. MITO	G A C C C A A	T G	G T C A	A G A T	G G T T	A	A G A C	A	T A A C A	T T T T C A C	T G T T A
E417	UUC	SACCHAROMYCES CER. MITO	G A C C T T A	T C	G T C T	A A T	G G T T	A	C G A C	A	T C A C C	T C T T C A T	G T T G A
E425	UUC	TORULOPSIS GLAB. MITO	G A T C T T A	T C	G T C T	A A T	G G T T	A	C G A C	A	T C A A C	T T T T C A T	G T T G A
E432	UUC	GLYCINE MAX MITO	G T C C C T T	T C	G T C C	A G T	G G T T	A	G G A C	A	T C G T C	T T T T C A T	G T C G A
E450	UUC	ASCARIS SUUM MITO	G A G A T A T	T A	G T A T	A A A T T	T T T	T	G T A T	A	T T T C T	T T T T C G A	A G A A A
E453	UUC	ARTEMIA SP. MITO	A T T T A T A	T A	G T A T	T T		A	A T A C	A	A T G C A	T T T T C A A	T G C A T
E456	UUC	AEDES ALBOPICTUS MITO	A T T T A T A	T A	G T T T	A A A T		A	A A A C	A	T T A C A	T T T T C A C	T G T A A
E459	UUC	DROSOPHILA YAKUBA MITO	A T T T A T A	T A	G T T T	A A A A T		A	A A A C	C	T T A C A	T T T T C A T	T G T A A
E464	UUC	PARACENTROTUS LIV. MITO	G C T C C T A	T A	G T T G	A A C T		A	C A A C	A	A G A G C	T T T T C A C	G C T C T
E466	UUC	STRONGYLOCEN.PURP. MITO	G C C C C T A	T A	G T T G	A A A C A		C	A A C C	A	A G A G C	T T T T C A C	G C T C T
E468	UUC	XENOPUS LAEVIS MITO	G T T C C T A	T A	G T T G	A A T A		A	C A A C	G	G T G G T	T T T T C A G	A T C A C
E474	UUC	RAT MITO	G T T T C T A	T A	G T T G	A A T T		A	C A A C	G	A T G A T	T T T T C A T	G T C A T
E477	UUC	MOUSE MITO	G T T T C T G	T A	G T T G	A A T T		A	C A A C	G	A T G A T	T T T T C A T	G T C A T
E480	UUC	BOVINE MITO	G T T C T T G	T A	G T T G	A A T G		A	C A A C	G	A T G G T	T T T T C A T	A T C A T
E494	UUC	HUMAN MITO	G T T C T T G	T A	G T T G	A A A T		A	C A A C	G	A T G G T	T T T T C A T	A T C A T

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          45  47  B   D   F   H   J   L   N   P   |49  51  53|  55  57  59  |61  63  65|  67  69  71  |73  75
        44  46  A   C   E   G   I   K   M   O   48|  50  52  |54  56  58  60|  62  64  |66  68  70  72|  74  76
        -------------------------------------------------------------------------------------------------------

E295    C G A                                   C |G G G G A |T T C G A A T |T C C C C |T G G G G G T |A
                                                  |==========|              |==========|    ********  |
E304    C A A                                   C |G G G G A |T T C G A A T |T C C C C |T G G G G G T |A
                                                  |==========|              |==========|************  |
E310    C G A                                   C |G G G G A |T T C G A A T |T C C C C |T G G G G G T |A
                                                  |==========|              |==========|************  |
E315    C A G                                   C |G G G G A |T T C G A C T |T C C C C |T G G G G G T |A
                                                  |==========|              |==========|**  ********  |
E335    C A G                                   C |G G G G A |T T C G A A T |T C C C C |T G G G G G T |A
                                                  |==========|              |==========|************  |
E355    C A A                                   C |G G G G A |T T C G A C T |T C C C C |T G G G G G T |A
                                                  |==========|              |==========|************  |
E365    C A A                                   C |G G G G A |T T C G A C T |T C C C C |T G G G G G T |A
                                                  |==========|              |==========|************  |
E375    C A A                                   C |G G G G A |T T C G A C T |T C C C C |T G G G G G T |A
                                                  |==========|              |==========|************  |
E410    G T G                                   C |G G G A G |T T C A A T C |C T C C C |T T G G G T T |G
                                                  |==========|              |==========|************  |
E417    T A A                                   T |A T C G G |T T C G A T T |C C G A T |T A A G G T T |A
                                                  |==========|              |==========|************  |
E425    A A A                                   T |G T T G G |T T C A A T C |C C A A C |T A A G A T T |A
                                                  |==========|              |==========|************  |
E432    A G A                                   C |A C G G G |T T C G A T T |C C C G T |A A G G G A T |G
                                                  |==========|              |==========|************  |
E450    A G G T T T A                             |          |              |          |T T A T C T T |A
                                                  |          |              |          |  **********  |
E453    A A A                                   T |G G A T A |A A           |T A T C C |T T T A A A T |A
                                                  |==========|              |==========|**  **********|
E456    A A A                                   T |A A A A A |T T T       A |T T T T T |T A T A A A T |A
                                                  |==========|              |==========|**************|
E459    T A A                                   T |A A A A T |A A T T     T |A T T T T |T A T A A A T |T
                                                  |==========|              |==========|**************|
E464    A A G                                   T |T T G A G |T T A A A A T |C T C A A |T A G A A G C |T
                                                  |==========|              |==========|******  ******|
E466    T A A G                                 T |T T G A G |T T A A A A T |C T C A A |T A G G A G C |T
                                                  |==========|              |==========|********  ****|
E468    A A G                                   T |T C T G G |T T A G A G T |C C T G G |T G G G A A T |T
                                                  |  ==  ====|              |====  ==  |**  ********  |
E474    T A G                                   T |C A C A G |T T A A A T G |C C G T G |T A G A A A T |A
                                                  |======  ==|              |==  ======|************  |
E477    T G G                                   T |C G C A G |T T G A A T G |C T G T G |T A G A A A T |A
                                                  |==  ======|              |======  ==|  **********  |
E480    T A G                                   T |C A T G G |T T A G A T T |C C A T G |T A A G A A T |A
                                                  |==========|              |==========|  **********  |
E494    T G G                                   T |C G T G G |T T G T A G T |C C G T G |C G A G A A T |A
                                                  |==    ====|              |====    ==|**  ********  |
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		1 2 3 4 5 6 7	8 9	10 11 12 13	14 15 16 17 A 18 19 20 A B 21	22 23 24 25	26	27 28 29 30 31	32 33 34 35 36 37 38	39 40 41 42 43
E555	UUC DICTYOSTELIUM DIS.	T C C T C A T	T G	G T G T	A G T C G G T A	A C A C	T	C T A G T	C T T T C A C	A C T G G
E570	UUC SACCHAROMYCES CER.	T C C G A T A	T A	G T G T	A A C G G C T A	T C A C	A	T C A C G	C T T T C A C	C G T G G
E571	CUC SACCHAROMYCES CER.	T C C G A T G	T A	G T G T	A A C G G C T A	T C A C	A	T C A C G	T T C T C A C	C G T G G
E575	UUC SCHIZOSACCHA.POM.	T C C G T T G	T G	G T C C	A A C G G C T A	G G A T	T	C G T C G	C T T T C A C	C G A C G
E770	UUC BOMBYX MORI	T C C C G T A	T G	G T C T	A G T G G T T A	G G A T	A	C C T G G	C T T T C A C	C C A G G
E780	CUC DROSOPHILA MELANO.	T C C T A T A	T T	G T C T	A G T G G T T A	G G A T	A	T C C G G	C T C T C A C	C C G G A
E781	CUC DROSOPHILA MELANO.	T C C C A T A	T T	G T C T	A G T G G T T A	G G A T	A	T C C G G	C T C T C A C	C C G G A
E782	UUC DROSOPHILA MELANO.	T C C C A T A	T G	G T C T	A G T G G C T A	G G A T	A	T C T G G	C T T T C A C	C C A G A
E950	CUC MOUSE	T C C C T G G	T G	G T C T	A G T G G T T A	G G A T	T	C G G C G	C T C T C A C	C G C C G
E955	CUC RAT	T C C T T G G	T G	G T C T	A G T G G T T A	G G A T	T	C G G C G	C T C T C A C	C G C C G
E956	CUC RAT	T C C C T G G	T G	G T C T	A G T G G T T A	G G A T	T	C G G C G	C T C T C A C	C G C C G
E957	CUC RAT	T C G C T G G	T G	G T C T	A G T G G T T A	G G A T	T	C G G C G	C T C T C A C	C G C C G
E995	UUC HUMAN	T C C C T G G	T G	G T C T	A G T G G C T A	G G A T	T	C G G C G	C T T T C A C	C G C C G
	G L Y C I N E									
G020	UCC PHAGE T4	G C G G A T A	T C	G T A T	A A T G G T A	T T A C	C	T C A G A	C T T C C A A	T C T G A
G040	UCC PHAGE T5	G C G G T T A	A G	C A C A	C G G G T T G	T G T C	G	C A G G C	C T T C C A A	G C C T C
G160	CCC SULFOLOBUS SOLFA.	G C G G C C G	T C	G T C T	A G T C T G G A T T A	G G A C	G	C T G G C	C T C C C* A A	G C C A G
G203	UCC MYCOPLASMA MYCOID.	G C A G G T G	T A	G T T T	A A T G G C A	G A A C	T	T C A G C	C T T C C A A	G C T G A
G235	UCC BACILLUS SUBTILIS	G C G G G T G	T A	G T T T	A G T G G T A	A A A C	C	T C A G C	C T T C C A A	G C T G A
G236	GCC BACILLUS SUBTILIS	G C G G A A G	T A	G T T C	A G T G G N* A	G A A C	A	C C A C C	T T G C C A A	G G T G G
G240	GCC THERMUS THERMOPHI.	G C G G G A G	T A	G C T C	A G T C G G T A	G A G C	A	C G A C C	T T G C C A A	G G T C G
G250	UCC E.COLI	G C G G G C A	T C	G T A T	A A T G G C T A	T T A C	C	T C A G C	C T T C C A A	G C T G A
G251	GCC E.COLI	G C G G G A A	T A	G C T C	A G T T G G T A	G A G C	A	C G A C C	T T G C C A A	G G T C G

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         45  47  B   D   F   H   J   L   N   P   49  51  53  55  57  59  61  63  65  67  69  71  73  75
       44  46  A   C   E   G   I   K   M   O   48  50  52  54  56  58  60  62  64  66  68  70  72  74  76
       --------------------------------------------------------------------------------------------------

E555   T A C                                   C|T C G G G|T T C G A T T|C C C G A|A T G G G G A|G
                                                 =========               ========= *****   *****
E570   A G A                                   C|C G G G G|T T C G A C T|C C C C G|T A T C G G A|G
                                                 =========               ========= *************
E571   A G A                                   C|C G G G G|T T C G A C T|C C C C G|C T T C G G A|G
                                                 =========               ========= *   *********
E575   C G G                                   T|C G G G G|T T C G A C T|C C C C G|C A A C G G A|G
                                                 =========               ========= *************
E770   A G G                                   C|T C G G G|T T C G A T T|C C C G G|T A C G G G A|A
                                                   =======               =======   *************
E780   A G G                                   C|C C G G G|T T C A A T T|C C C G G|T A T G G G A|A
                                                 =========               ========= *************
E781   A G G                                   C|C C G G G|T T C A A T T|C C C G G|T A T G G G A|A
                                                 =========               ========= *************
E782   A G G                                   C|C C G G G|T T C G A T T|C C C G G|T A T G G G A|A
                                                 =========               ========= *************
E950   C G G                                   C|C C G G G|T T C G A T T|C T C G G|T C A G G G A|A
                                                 =====   =               =   =====   ***********
E955   C G G                                   C|C C G G G|T T C G A T T|C C C G G|T C A G G G A|A
                                                 =========               =========   ***   *****
E956   C G G                                   C|C C G G G|T T C G A T T|C C C G G|T C A G G G A|A
                                                 =========               =========   ***********
E957   C G G                                   C|C C G G G|T T C G A T T|C C C G G|T C A G G G A|A
                                                 =========               =========   *****   ***
E995   C G C                                   C|C C G G G|T T C G A T T|C C C G G|C C A G G A A|T
                                                 =========               ========= *********   *

                 G L Y C I N E

G020   T G A                                   T|G T G A G|T T C G A T T|C T C A T|T A T C C G C|T C C A
                                                   =======               =======   *************
G040   G C T G A                               G|T A G G G|T T C G A T T|C C C T C|T A G C C G C|T C C A
                                                   =======               =======   ***   *******
G160   C A A T                                 C|C C G G G|T T C G A A T|C C C G G|C G G C C G C|A
                                                 =========               ========= *************
G203   T T G                                   T|G A G G G|T T C G A T T|C C C T T|C A C C T G C|T C C A
                                                   =======               =======   *************
G235   T G T                                   C|G T G G G|T T C G A T T|C C C A T|C A C C C G C|T C C A
                                                   =======               =======   *************
G236   G G G T                                 C|G C G G G|T T C G A A T|C C C G T|C T T C C G C|T C C A
                                                   =======               =======   *************
G240   G G G T                                 C|G C G G G|T T C A A G T|C C C G T|C T C C C G C|T C C A
                                                   =======               =======   *************
G250   T G A                                   T|G C G G G|T T C G A T T|C C C G C|T G C C C G C|T C C A
                                                 =========               ========= *************
G251   G G G T                                 C|G C G A G|T T C G A G T|C T C G T|T T C C C G C|T C C A
                                                   =======               =======   *************
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			1 2 3 4 5 6 7	8 9	10 11 12 13	14	15	16	17	A	18	19	20	A	B	21	22 23 24 25	26	27 28 29 30 31	32 33 34 35 36 37 38	39 40 41 42 43
G260	UCC	PSEUDOMONAS AER.	G C G G G T A	T A	G T T C	A	G	T			G	G	T			A	G A A C	C	T C A G C	C T T C C A A	G C T G A
G295	GCC	CYANOPHORA PARAD.*	G C G G G T G	T A	G C T C	A	G	C	T		G	G	T			A	G A G C	G	C A A C C	T T G C C A A	G G T T G
G304	GCC	EUGLENA GRACILIS CHLORO	G C A G A T G	T A	G C T C	A	G	T			G	G	T			A	G A G C	G	C A A C C	T T G C C A A	G G T T G
G305	UCC	EUGLENA GRACILIS CHLORO	G C G G G T A	T A	G C T C	A	G	T	T		G	G	T			A	G A G C	G	T G G T C	C T T C C A A	G T C C A
G310	GCC	MARCHANTIA POLYM. CHLORO	G C G G G T A	T A	G T T T	A	A	T			G	G	T			A	A A A T	T	C C T C C	T T G C C A A	G G A G A
G311	UCC	MARCHANTIA POLYM. CHLORO	G C G G G T A	T A	G T T T	A	G	T			G	G	T			A	A A A* C	C	T T A G C	C T T C C A A	G C T A A
G313	GCC	HORDEUM VULGARE CHLORO	G C G A G C G	T A	G T T C	A	A	T			G	G	T			A	A A A C	A	T C T C C	T T G C C A A	G G A G A
G314	UCC	HORDEUM VULGARE CHLORO	G C G G G T A	T A	G T T T	A	G	T			G	G	T			A	A A A* C	C	C T A G C	C T T C C A A	G C T A A
G315	GCC	TRITICUM AESTIVUM CHLORO	G C G A G C G	T A	G T T C	A	A	T			G	G	T			A	A A A T	A	T C T C C	T T G C C A A	G G A G A
G316	UCC	TRITICUM AESTIVUM CHLORO	G C G G G T A	T A	G T T T	A	G	T			G	G	T			A	A A A* C	C	C T A G C	C T T C C A A	G C T A A
G335	UCC	NICOTIANA TABACUM CHLORO	G C G G G T A	T A	G T T T	A	G	T			G	G	T			A	A A A* C	C	C T A G C	C T T C C A A	G C T A A
G336	GCC	NICOTIANA TABACUM CHLORO	G C G G A T A	T G	G T C G	A	A	T			G	G	T			A	A A A T	T	T C T C T	T T G C C A A	G G A G A
G355	GCC	PISUM SATIVUM CHLORO	G C G G A T A	T A	G T T G	A	A	T			G	G	T			A	T A A T	T	T C T C T	T T G C C A A	G G A G A
G410	ACC	ASPERGILLUS NIDUL. MITO	A C G G C T A	T A	A G T T	A	A	T			G	G	T			A	G A C T	A	C T T A G	C T A C C A C	C T A A G
G411	UCC	ASPERGILLUS NIDUL. MITO	A T G A C T A	T A	A G T T	A	A	T	A		G	G	T			A	G A C T	G	T T C G T	C T T C C A A	A C G A A
G417	UCC	SACCHAROMYCES CER. MITO	A T A G A T A	T A	A G T T	A	A	T	T		G	G	T			A	A A C T	G	G A T G T	C T T C C A A	A C A T T
G421	UCC	SCHIZOSACCHA.POM. MITO	G C A G A T A	T A	A G T C	A	A	T	T		G	G	C			A	G A C C	T	T C T G A	T T T C C A C	T T A G A
G425	UCC	TORULOPSIS GLAB. MITO	A T A G A T A	T A	A G T T	A	A	G	T		G	G	T			A	A A C T	G	A A T G T	C T T C C A C	A C A T T
G434	GCC	LUPINUS LUTEUS MITO	G C G G A A A	T A	G C T T	A	A	T			G	G	T			A	G A G C	A	T A G C C	T T G C C A A	G G C T G
G450	UCC	ASCARIS SUUM MITO	G A T C T T T	T A	G T A T	A	T	T	T	T	T						G T A C	A	T T T G A	C T T C C A A	T C A G A
G452	UCC	CAENORHABDI.ELEG. MITO	G A T T C T T	T A	G T A T	A	A	T	T	C						A	G T A T	G	T T T G A	C T T C C A A	T C A A A
G454	UCC	LOCUSTA MIGRATORIA MITO	A T T T T T C	T A	G T A T	A	A	T	T							A	G T A C	A	T T T G A	C T T C C A A	T C A A A
G456	UCC	AEDES ALBOPICTUS MITO	A T T T A T A	T A	G T A T	A	T	A	A	T						T	G T A T	A	T G T G A	C T T C C A A	T C A C A

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        45  47  B   D   F   H   J   L   N   P    49  51  53  55  57  59  61  63  65  67  69  71  73  75
      44  46  A   C   E   G   I   K   M   O   48   50  52  54  56  58  60  62  64  66  68  70  72  74  76
      ---------------------------------------------------------------------------------------------------
G260  T G A                                   T |G C G G G|T T C G A T T|C C C G C|T A C C C G C|T C C A
                                                 =========               ========= *************
G295  A T G T                                 C |G C G C G|T T C G A A T|C G C G T|C A C C C G C|T
                                                   =======               =======   *************
G304  A T G C                                 C |A T G G G|T T C G A G T|C C C A T|T A T C T G C|T
                                                 =========               =========   ***********
G305  A T G T                                 T |G C G T G|T T C G A A T|C A C G T|T A C C C G C|T
                                                   =======               =======   *************
G310  A T A                                   T |G C G G G|T T C G A T T|C C C G C|T A C C C G C|C
                                                 =========               ========= *************
G311  C G A                                   T |G C G G G|T T C G A T T|C C C G C|T A C C C G C|T
                                                 =========               ========= *************
G313  A G A                                   T |A C G G G|T T C G A T T|C C C G C|C G C T C G C|C
                                                   =======               =======   *************
G314  C G A                                   T |G C G G G|T T C G A T T|C C C G C|T A C C C G C|T
                                                 =========               ========= *************
G315  A G A                                   T |A C G G G|T T C G A T T|C C C G C|C G C T C G C|C
                                                   =======               =======   *************
G316  C G A                                   T |G C G G G|T T C G A T T|C C C G C|T A C C C G C|T
                                                 =========               ========= *************
G335  C G A                                   T |G C G G G|T T C G A T T|C C C G C|T A C C C G C|T
                                                 =========               ========= *************
G336  A G A                                   T |G C G G G|T T C G A T T|C C C G C|T A T C C G C|C
                                                 =========               ========= *************
G355  A G A                                   C |G C G G G|T T C A A T T|C C C G C|T A T C C G C|C
                                                 =========               ========= *************
G410  A T G                                   T |G T C G A|T T C G A A T|T C G A C|T A G C C G T|A
                                                 =========               ========= *************
G411  G T G                                   T |G T C G A|T T C G A A T|T C G A C|T A G T C A T|A
                                                 =========               ========= *************
G417  G A A                                   T |G C G A G|T T C G A T T|C T C G C|T A T C T A T|A
                                                 =========               ========= *************
G421  T T A                                   T |G T T C G|T T C G A A T|C G G A C|T A T C T G C|A
                                                 ===   ===               ===   === *************
G425  G A T                                   T |G T G A G|T T C G A T T|C T C A C|T A T C T A G|A
                                                 =========               ========= ***********
G434  A G G T                                 T |G A G G G|T T C A A G T|C C C T C|C T T C C G C|T
                                                 =========               =========   ***********
G450  T A G T T T T                             |         |             |         |A A A G G T T|A
                                                                                   *******   *
G452  A G G T T T T                             |         |             |         |G A G G A T T|A
                                                                                     ***   ***
G454  A G A                                     |T T G A A|A T          |A T C A A|G A A A A A T|A
                                                 =======                   ======= *************
G456  A G G                                   A |C T A A A|T A A       T|T T T A G|T A T A A A T|A
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			1 2 3 4 5 6 7	8 9	10 11 12 13	14	15	16	17	A	18	19	20	A	B	21	22 23 24 25	26	27 28 29 30 31	32 33 34 35 36 37 38	39 40 41 42 43
G457	UCC	DROSOPHILA MELANO. MITO	A T C T A T A	T A	G T A T	A	A	A								A	G T A T	A	T T T G A	C T T C C A A	T C A T A
G459	UCC	DROSOPHILA YAKUBA MITO	A T C T A T A	T A	G T A T	A	A	A								A	G T A T	A	T T T G A	C T T C C A A	T C A T A
G464	UCC	PARACENTROTUS LIV. MITO	A C T C T A T	G A	G T A C	A	A	A								C	G T A C	C	T T T G A	C T T C C A A	T C A A A
G466	UCC	STRONGYLOCEN.PURP. MITO	G C T T T A T	G A	A T A C	A	A	C								A	G T A T	T	T T T G A	C T T C C A A	T C A G A
G468	UCC	XENOPUS LAEVIS MITO	A C T T T C T	T A	G T A T	T	A	A	C	C						A	G T A C	A	C G T G A	C T T C C A A	T C A C A
G474	UCC	RAT MITO	A C T C C C T	T A	G T A T	A	A	A	C							A	A T A C	A	A C T G A	C T T C C A A	T C A G T
G477	UCC	MOUSE MITO	A C T C C C T	T A	G T A T	A	A	T	T							A	A T A T	A	A C T G A	C T T C C A A	T T A G T
G480	UCC	BOVINE MITO	A T T C T T T	T A	G T A T	T	A	A	C	T						A	G T A C	A	G C T G A	C T T C C A A	T C A G C
G494	UCC	HUMAN MITO	A C T C T T T	T A	G T A T	A	A	A	T							A	G T A C	C	G T T A A	C T T C C A A	T T A A C
G570	GCC	SACCHAROMYCES CER.	G C G C A A G	T G	G T T T	A	G	T			G	G	T			A	A A A T	C	C A A C G	T T G C C A T	C G T T G
G665	GCC	SORGHUM BICOLOR	G C A C C A G	T G	G T C T	A	G	T			G	G	T			A	G A A T	A	G T A C C	C T G C C A C	G G T A C
G670	GCC	ORYZA SATIVA	G C A C C A G	T G	G T C T	A	G	T			G	G	T			A	G A A T	A	G T A C C	C T G C C A C	G G T A C
G770	GCC	BOMBYX MORI	G C A T C G G	T G	G T T C	A	G	T			G	G	T			A	G A A T	G	C T C G C	C T G C C A C	G C G G G
G780	GCC	DROSOPHILA MELANO.	G C A T C G G	T G	G T T C	A	G	T			G	G	T			A	G A A T	G	C T C G C	C T G C C A C	G C G G G
G781	GCC	DROSOPHILA MELANO.	G C A T C G G	T G	G T T C	A	G	T			G	G	T			A	G A A T	G	C T C G C	C T G C C A C	G C G G G
G950	UCC	MOUSE	G C G T T G G	T G	G T A T	A	G	T			G	G	T	G		A	G C A T	A	G C T G C	C T T C C A A	G C A G T
G955	UCC	RAT	G C G T T G G	T G	G T A T	A	G	T			G	G	T	G		A	G C A T	A	G C T G C	C T T C C A A	G C A G T
G956	UCC	RAT	G C G T T G G	T G	G T A T	A	G	T			G	G	T	G		A	A C A T	A	G C T G C	C T T C C A A	G C A G T
G995	GCC	HUMAN	G C A T T G G	T G	G T T C	A	G	T			G	G	T			A	G A A T	T	C T C G C	C T G C C A C	G C G G G
G996	CCC	HUMAN	G C A T T G G	T G	G T T C	A	G	T			G	G	T			A	G A A T	T	C T C G C	C T C C C A C	G C G G G
H040	GUG	PHAGE T5	G T G G C T A	T A	T C A T	A	A	T	T		G	G	T	T		A	A T G G	T	C C T G A	T T G T G A A	T C A G G

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          45  47  B   D   F   H   J   L   N   P   |49  51  53|  55  57  59  |61  63  65|  67  69  71  |73  75
        44  46  A   C   E   G   I   K   M   O   48|  50  52  |54  56  58  60|  62  64  |66  68  70  72|  74  76
        ------------------------------------------------------------------------------------------------------
G457    A G G                                   T |C T A T T |A A T T       |A A T A G |T A T A G A T |A
                                                  |==========|              |==========|**************|
G459    A G G                                   T |C T A T T |A A T       A |A A T A G |T A T A G A T |A
                                                  |==========|              |==========|**************|
G464    T A G C                                 T |C T T A G |G G A A A A T |C T A A G |A T A G A G T |A
                                                  |==========|              |==========|**************|
G466    C A G                                   T |C T T G G |T G A A A A T |T T A A G |A T A A A G C |A
                                                  |======    |              |    ======|**************|
G468    A A G                                   T |C T T A G |T A G A A   T |C T A A G |A G A A A G T |A
                                                  |==========|              |==========|**************|
G474    T A A                                   T |T C T G A |A A A A A   C |T C A G A |A G A G A G T |A
                                                  |==========|              |==========|****  ********|
G477    A G A                                   T |T C T G A |A T A A A   C |C C A G A |A G A G A G T |A
                                                  |========  |              |  ========|**************|
G480    T A G                                   T |T T C G G |T C T A G   T |C C G A A |A A A G A A T |A
                                                  |==========|              |==========|**************|
G494    T A G                                   T |T T T G A |C A A C A   T |T C A A A |A A A G A G T |A
                                                  |==========|              |==========|**************|
G570    G G C                                   C |C C C G G |T T C G A T T |C C G G G |C T T G C G C |A
                                                  |==========|              |==========|**************|
G665    A G A                                   C |C C G G G |T T C G A T T |C C C G G |C T G G T G C |A
                                                  |==========|              |==========|**************|
G670    A G A                                   C |C C G G G |T T C G A T T |C C C G G |C T G G T G C |A
                                                  |==========|              |==========|**************|
G770    C G G                                   C |C C G G G |T T C G A T T |C C C G G |C C G A T G C |A
                                                  |==========|              |==========|**************|
G780    C G G                                   C |C C G G G |T T C G A T T |C C C G G |C C G A T G C |A
                                                  |==========|              |==========|**************|
G781    C G G                                   C |C C G G G |T T C G A T T |C C C G A |C C G A T G C |A
                                                  |  ========|              |========  |**************|
G950    T G A                                   C |C C G G G |T T C G A T T |C C C G G |C C A A C G C |A
                                                  |==========|              |==========|**************|**
G955    T G A                                   C |C C G G G |T T C G A T T |C C C G G |C C A A C G C |A
                                                  |==========|              |==========|**************|
G956    T G A                                   C |C C G G G |T T C G A T T |C C C G G |C C A A C G C |A
                                                  |==========|              |==========|**************|
G995    A G G                                   C |C C G G G |T T C G A T T |C C C G G |C C A A T G C |A
                                                  |==========|              |==========|**************|
G996    A G A                                   C |C C G G G |T T C A A T T |C C C G G |C C A A T G C |A
                                                  |==========|              |==========|**************|
H040    C C T A                                 T |G T G G A |T T C G A A T |T C C A C |T A G C C A C |C C C A
                                                  |==========|              |==========|**************|
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                                 1 2 3 4 5 6 7|8 9|10  12 |14  16  A   19  A  21|  23 25| |27  29 31|  33  35  37 |39  41  43
                                              |   |  11 13|  15  17  18  20  B  |22  24 |26|  28  30 |32  34  36 38|  40  42
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            H I S T I D I N E

H145    GUG METHANOCOC.VANI.   G G C C G A G G|T A|G G G T|A G T     G G C T   A|T C C T|G|A A G G A|C T G T G G A|T C C T T
                                 *************
H235    GUG BACILLUS SUBTILIS  G G C G G T T G|T G|G C G A|A G T     G G T T   A|A C G C|A|C C A G A|T T G T G G C|T C T G G
                                 ******  ******
H236    GUG BACILLUS SUBTILIS  G G C G G T T G|T G|G C G A|A G T     G G T T   A|A C G C|A|C C A G A|T T G T G G C|T C T G G
                                 ******  ******
H250    GUG E.COLI             G G T G G C T A|T A|G C T C|A G T T   G G T     A|G A G C|C|C T G G A|T T G T G A T|T C C A G
                                 **************
H255    GUG SALMONELLA TYPHI.  G G T G G C T A|T A|G C T C|A G T T   G G T     A|G A G C|C|C T G G A|T T G T G A T|T C C A G
                                 **************
H258    GUG PHOTOBACT. PHOSPH. G G T G G C T A|T A|G C T C|A G T T   G G T     A|G A G T|C|C C G G A|T T G T G A T|T C C G G
                                 **************
H259    GUG AEROMONAS HYDROPH. G G T G G C T G|T A|G C T C|A G T T   G G T     A|G A G T|C|C C G G A|T T G T G A T|T C C G G
                                 **************
H304    GUG EUGLENA GRACILIS   G G T G G G T G|T A|G C C A|A G T     G G T     A|A G G C|A|A A G G A|C T G T G A C|T C C T T
            CHLORO               ******    ****
H310    GUG MARCHANTIA POLYM.  G G C G G A C G|T A|G C C A|A G T     G G A T T A|A G G C|A|G T G G A|T T G T G G A|T C C T C
            CHLORO               ******  ******
H320    GUG ZEA MAYS           G G C G G A T G|T A|G C C A|A G T     G G A T C A|A G G C|A|G T G G A|T T G T G A A|T C C A C
            CHLORO               ******  **  **
H333    GUG MEDICAGO SATIVA    G G C G G A T G|T A|G C C A|A G T     G G A T C A|A G G C|A|G T G G A|T T G T G A A|T C C A C
            CHLORO               ******  ******
H335    GUG NICOTIANA TABACUM  G G C G G A T G|T A|G C C A|A G T     G G A T C A|A G G C|A|G T G G A|T T G T G A A|T C C A C
            CHLORO               ******  **  **
H340    GUG NICOTIANA DEBNEYI  G G C G G A T G|T A|G C C A|A G T     G G A T C A|A G G C|A|G T G G A|T T G T G A A|T C C A C
            CHLORO               ******  **  **
H348    GUG PETUNIA HYBRIDA    G G C G G A T G|T A|G C C A|A G T     G G A T C A|A G G C|A|G T G G A|T T G T G A A|T C C A C
            CHLORO               ******  **  **
H355    GUG PISUM SATIVUM      G G C G G A T G|T A|G C C A|A G T     G G A T C A|A G G C|A|G T G G A|T T G T G A A|T C C A C
            CHLORO               ******  **  **
H365    GUG SPINACIA OLERACEA  G G C G G A T G|T A|G C C A|A G T     G G A T T A|A G G C|A|G T G G A|T T G T G A A|T C C A C
            CHLORO               ******  **  **
H407    GUG TETRAHYMENA PYRIF. G G T G G A T A|T A|G C T C|A A T C   G G T     A|G A G C|G|T T A G A|T T G T G G A|T C T A A
            MITO                 ****    ******
H410    GUG ASPERGILLUS NIDUL. G G T G G G T G|T A|G T T C|A A A     G G T     A|G A A C|A|G C T G T|A T G T G G C|A T A G T
            MITO                 ********  **
H417    GUG SACCHAROMYCES CER. G G T G A A T A|T A|T T T C|A A T     G G T     A|G A A A|A|T A C G C|T T G T G G T|G C G T T
            MITO                 **************
H421    GUG SCHIZOSACCHA.POM.  G G T G A T T G|T A|A T T C|A A T     G G T     A|G A A T|G|C T T A T|T T G T G G C|A T A A G
            MITO                 ************
H425    GUG TORULOPSIS GLAB.   G C T A A A T A|T A|T T T C|A A T     G G T T   A|GCA A A|A|T A C G C|T T G T G G T|G C G T T
            MITO                   ************
H445    GUG ZEA MAYS           G G C G G A T G|T A|G C C A|A G T     G G A T C A|A G G C|A|G T G G A|T T G T G A A|T C C A C
            MITO                 ******  **  **
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         45  47  B   D   F   H   J   L   N   P    49  51  53  55  57  59  61  63  65  67  69  71  73  75
       44  46  A   C   E   G   I   K   M   O   48   50  52  54  56  58  60  62  64  66  68  70  72  74  76
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               H I S T I D I N E

H145   C G A                                   C |C C G G G|T T C A A T T|C C C G G|T C T C G G C|C C C A
                                                  =========               =========   ***********
H235   C A C T                                 C |G T G G G|T T C G A T T|C C C A T|C A A T C G C|C C C A
                                                    =======               =======   *****   *****
H236   C A T T                                 C |G T G G G|T T C G A T T|C C C A T|C A A T C G C|C C C A
                                                    =======               =======   *****   *****
H250   T T G T                                 C |G T G G G|T T C G A A T|C C C A T|T A G C C A C|C C C A
                                                    =======               =======   *************
H255   T T G T                                 C |G T G G G|T T C G A A T|C C C A T|T A G C C A C|C C C A
                                                    =======               =======   *************
H258   T T G T                                 C |G C G A G|T T C A A G C|C T C G T|T A G C C A C|C C C A
                                                    =======               =======   *************
H259   T T G T                                 C |G T G G G|T T C G A G C|C C C A T|C A G C C A C|C C C A
                                                    =======               =======   *************
H304   C A T T                                 C |G C G G G|T T C G A T C|C C C G T|C A T T C A C|C
                                                    =======               =======   ***     *****
H310   T A C G                                 C |G C G G G|T T C A A T T|C C C G T|C G T T C G C|C
                                                    =======               =======   *****   *****
H320   C A T                                   G |C C G G G|T T C A A T T|C C C G T|C G T T C G C|C
                                                    =======               =======   *   *   *****
H333   C A T G                                 C |G C G G G|T T C A A T T|C C C G T|C A T T C G C|C C
                                                    =======               =======   *****   *****
H335   C A T G                                 C |G C G G G|T T C A A T T|C C C G T|C G T T C G C|C
                                                    =======               =======   *   *   *****
H340   C A T G                                 C |G C G G G|T T C A A T T|C C C G T|C G T T C G C|C C
                                                    =======               =======   *   *   *****
H348   C A T G                                 C |G C G G G|T T C A A T T|C C C G T|C G T T C G C|C C
                                                    =======               =======   *   *   *****
H355   C A T G                                 C |G C G G G|T T C A A T T|C C C G T|C G T T C G C|C
                                                    =======               =======   *   *   *****
H365   C A T T                                 C |G C G G G|T T C A A T T|C C C G T|C G T T C G C|C C
                                                    =======               =======   *   *   *****
H407   A G G T                                 C |G C G G G|T T C G A T T|C C T G C|T A T T T A C|C
                                                  ===   ===               ===   === *****     ***
H410   A T A                                   T |C C T A G|T T C A A T T|C T A G G|T A T C C A C|C
                                                  =========               =========   *   *******
H417   A A A                                   T |C T G A G|T T C G A T T|C T C A G|T A T T C A C|C
                                                  =========               ========= *************
H421   A A G T                                 T |C T T G G|T T C G A T T|C C A A G|T A A T C A C|C
                                                  =========               =========   ***********
H425   A A A                                   T |C T A A G|T T C G A T T|C T T A G|T A T T T A C|C
                                                  =========               ========= *******   *
H445   C A T G                                 C |G C G G G|T T C A A T T|C C C G T|C G T T C G C|C
                                                    =======               =======   *   *   *****
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                              1 2 3 4 5 6 7 |8 9|10  12  |14  16  A   19  A   21|  23  25|  |27  29  31|  33  35  37  |39  41  43
                                            |   |  11  13|  15  17  18  20  B   |22  24  |26|  28  30  |32  34  36  38|  40  42
                              --------------------------------------------------------------------------------------------------
H450  GUG ASCARIS SUUM        A G C T T T G |T A|G T T T |A T G T G           A |A A A T |G |C T T G T |T T G T G A T |A T G A G
          MITO                *********     |   |  ..... |                      |.....   |  |---     - |              |-     ---
H452  GUG CAENORHABDI.ELEG.   A G C T T A A |T A|G T T T |A T A T T           A |A A A T |G |T T T A C |T T G T G G T |G T A A G
          MITO                *********   **|   |  ..... |                      |.....   |  |  ------- |              |-------  
H459  GUG DROSOPHILA YAKUBA   A T T T A A A |T A|G T T T |A A A A             A |A A A T |A |C T A A T |T T G T G G T |G T T A G
          MITO                ****  ********|   |  ..... |                      |.....   |  |-------   |              |  -------
H462  GUG ASTERINA PECTINI.   A C C A A A G |T A|G T T T |A A A A             A |A A A C |A |T T A A T |T T G T G G C |A T T A G
          MITO                *********  ***|   |....... |                      |....... |  |  ------- |              |-------  
H464  GUG PARACENTROTUS LIV.  A C T A A A G |T A|G T T T |A T A               A |A A A C |A |C C A G C |C T G T G G A |A C T G G
          MITO                ******  ******|   |....... |                      |....... |  |-------   |              |  -------
H466  GUG STRONGYLOCEN.PURP.  G A T T A A A |G T|A G T T |T A A G A           A |A A G C |A |T C A G C |C T G T G G A |G C T G A
          MITO                *********  ***|   |    ... |                      |...     |  |--------- |              |---------
H468  GUG XENOPUS LAEVIS      G T A G A T A |T A|G T T T |A A T               A |A A A C |A |C T A G A |T T G T G A T |T C T A G
          MITO                ****  ********|   |....... |                      |....... |  |--------- |              |---------
H474  GUG RAT                 G T A G A T A |T A|G T T T |A C A A             A |A A A C |A |T T A G A |C T G T G A A |T C T A A
          MITO                ******  ******|   |....... |                      |....... |  |--------- |              |---------
H477  GUG MOUSE               G T G A A T A |T A|G T T T |A C A A             A |A A A C |A |T T A G A |C T G T G A A |T C T G A
          MITO                **************|   |....... |                      |....... |  |-   ----- |              |-----   -
H480  GUG BOVINE              G T A A A T A |T A|G T T T |A A C A             A |A A A C |A |T T A G A |T T G T G A A |T C T A A
          MITO                **************|   |....... |                      |....... |  |--------- |              |---------
H483  GUG MACACA FUSCATA      G T A G A T A |T A|G T T T |A A C T             A |A A A C |A |C T A G A |T T G T G A A |T C T A A
          MITO                ******  ******|   |....... |                      |....... |  |  ------- |              |-------  
H484  GUG MACACA MULATTA      G T A G A T A |T A|G T T T |A A C T             A |A A A C |A |T T A G A |T T G T G A A |T C T A A
          MITO                ******  ******|   |....... |                      |....... |  |--------- |              |---------
H485  GUG MACACA FASCICULA.   G T A A A T A |T A|G T T T |A A C T             A |A A A C |A |T T A G A |T T G T G A A |T C T A A
          MITO                **************|   |....... |                      |....... |  |--------- |              |---------
H486  GUG MACACA SYLVANUS     G T A A A T A |T A|G T T T |A A T T             A |A A A C |A |T T A G A |C T G T G A A |T C T A A
          MITO                **************|   |....... |                      |....... |  |--------- |              |---------
H487  GUG SAIMIRI SCIUREUS    G T A A T T A |T A|G T T T |A G C T             A |A A A C |A |T T A G A |T T G T G A A |T C T A A
          MITO                **************|   |....... |                      |....... |  |--------- |              |---------
H488  GUG TARSIUS SYRICHTA    G T A A A T A |T A|G T T T |A A A C             A |A A A C |A |T T A G A |T T G T G A G |T C T A A
          MITO                **************|   |....... |                      |....... |  |--------- |              |---------
H489  GUG LEMUR CATTA         G T A A A T A |T A|G T T T |A A A               A |A A A C |A |C T A G A |T T G T G A A |T C C A G
          MITO                **************|   |....... |                      |....... |  |---   --- |              |---   ---
H490  GUG CHIMPANZEE          G T A A A T A |T A|G T T T |A A C C             A |A A A C |A |T C A G A |T T G T G A A |T C T G A
          MITO                **************|   |....... |                      |....... |  |--------- |              |---------
H491  GUG GIBBON              G T A A A C A |T A|G T T T |A A T C             A |A A A C |A |T T A G A |T T G T G A A |T C T A A
          MITO                **************|   |....... |                      |....... |  |-     --- |              |---------
H492  GUG GORILLA             G T A A A T A |T A|G T T T |A A C C             A |A A A C |A |T C A G A |T T G T G A A |T C T G A
          MITO                **************|   |....... |                      |....... |  |--------- |              |---------
H493  GUG ORANG UTAN          G T A A A T A |T A|G T T T |A A C C             A |A A A C |A |T T A G A |T T G T G A A |T C T A A
          MITO                **************|   |....... |                      |....... |  |-     --- |              |---------
H494  GUG HUMAN               G T A A A T A |T A|G T T T |A A C C             A |A A A C |A |T C A G A |T T G T G A A |T C T G A
          MITO                **************|   |....... |                      |....... |  |--------- |              |---------
H570  GUG SACCHAROMYCES CER.  G C C A T C T |T A|G T A T |A G T     G G T T   A |G T A C |A |C A T C G |T T G T G G C |C G A T G
                              **************|   |......  |                      |  ..... |  |--------- |              |---------
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        45  47  B   D   F   H   J   L   N   P   49  51  53  55  57  59  61  63  65  67  69  71  73  75
      44  46  A   C   E   G   I   K   M   O   48  50  52  54  56  58  60  62  64  66  68  70  72  74  76
      --------------------------------------------------------------------------------------------------
H450  T G A A A T                                                                 T G G A G C T T
                                                                                        ********
H452  A G A A T A                                                                 T A G A G C T T
                                                                                  **    ********
H459  T G A                                   T A T G A A G T T       A T T C A T T T T A G A T C
                                                ==========              ====================  ****
H462  A A T                                   T A C C A G T T A A A A C C T G G T C T C T G G T C
                                                ==========              ==========****  ********
H464  A G T                                   A A C T G G T T A A A A C C C G G T C T T A A G T C
                                                ====  ====              ====  ====******  ******
H466  A G A                                   C G C C A G T A A A C T   C T G G C T T A A A T C C
                                                ==========              ==========****  ********
H468  A G T                                   C A G A G G T T A A A C C C C T C T T A T C A A C C
                                                ==========              ==========********  ****
H474  C A A                                   C A G G A A A T C A A   A T T C C T T A T T T A C C
                                                ==========              ==========******  ******
H477  C A A                                   C A G G A A A T A A A   C C T C C T T A T T C A C C
                                                ========                  ==========************** 
H480  C A A                                   T A G A A A C T C A T T ACC T T C T T A T T T A C C
                                                ========                  ==========**************
H483  C C A                                   T A G A G A C T C A C C A C T C C T T A T T T A C C
                                                ====                          ====******  ******
H484  C C A                                   T A G A G A C T T A C C A C C T C T T A T T T A C C
                                                ========                  ==========******  ******
H485  C T A                                   T A G A G G C C T A C C A C T T C T T A T T T A C C
                                                ======  ==              ==  ======**************
H486  C T A                                   T A G A A G C T T A C C A C T T C T T A T T T A C C
                                                ==========              ==========**************
H487  T A A                                   T A G A A G A A T A T A A C T T C T T A A T T A C C
                                                ==========              ==========**************
H488  T A A                                   T A G A A G C C C A A A C T T T C T T A T T T A C C
                                                ========                  ==========**************
H489  A A A                                   T A G A A G C T C A A A C C T T C T T A T T T A C C
                                                ==========              ==========**************
H490  C A A                                   C A G A G G C T C A C G A C C C C T T A T T T A C C
                                                ====  ====              ====  ====**************
H491  C A A                                   T A G A G G C T C G A A A C C T C T T G C T T A C C
                                                ==========              ==========**************
H492  T A A                                   C A G A G G C T C A C A A C C C C T T A T T T A C C
                                                ====  ====              ====  ====**************
H493  T A A                                   T A G G G C C C C A C A A C C C C T T A T T T A C C
                                                ========                  ==========**************
H494  C A A                                   C A G A G G C T T A C G A C C C C T T A T T T A C C
                                                ====  ====              ====  ====**************
H570  A A A                                   C C C T G G T T C G A T T C T A G G A G A T G G C A
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			1 2 3 4 5 6 7	8 9	10 11 12 13	14	15	16	17	A	18	19	20	A	B	21	22 23 24 25	26	27 28 29 30 31	32 33 34 35 36 37 38	39 40 41 42 43
H575	GUG	SCHIZOSACCHA.POM.	G C T C A C A **** *********	T G	G T C C	A	G	T			G	G	T	T		A	A G A C	T	C A T C G	T T G T G G C	C G A T G
H780	GUG	DROSOPHILA MELANO.	G C C G T G A ***************	T C	G T C T	A	G	T			G	G	T	T		A	G G A C	C	C C A C G	T T G T G G C	C G T G G
H950	GUG	MOUSE	G C C G T G A ***************	T C	G T A T	A	G	G			G	G	T	T		A	G T A C	T	C T G C G	T T G T G G C	C G C A G
		I S O L E U C I N E																			
I020	CAU	PHAGE T4	G G C C C T G ** ****** **	T A	G C T C	A	A	T			G	G	T	T	A	G	C A G C	A	G T C C C	C T C A T A A	G G G A A
I040	GAU	PHAGE T5	A C T T C G G ****** ******	T A	G C T T	A	G	C			G	A	T	C	T	A	A A G C	A	C T C G G	C T G A T A A	C C G A G
I145	CAU	METHANOCOC.VANI.*	G G G C T C G ********* ****	T A	G C T C	A	G	G	C	T	G	G	T	T		A	G A G T	G	C T C G G	C T C A T A A	C C G A G
I203	CAU	MYCOPLASMA MYCOID.	G G A C C T T ***************	T A	G C T C	A	G	T	T		G	G	T	T		A	G A G C	A	T C C G G	C T C A T A A	C C G G A
I206	CAU	SPIROPLASMA MELIF.	G G A C C C T ***************	T A	G C T C	A	G	T	T		G	G	T	T		A	G A G C	A	T C C G G	C T C A T A A	C C G G A
I235	GAU	BACILLUS SUBTILIS	G G G C C T G ***************	T A	G C T C	A	G	C	T		G	G	T	T		A	G A G C	G	C A C G C	C T G A T A A	G C G T G
I236	GAU	BACILLUS SUBTILIS	G G G C C T G ***************	T A	G C T C	A	G	C	T		G	G	T	T		A	G A G C	G	C A C G C	C T G A T A A	G C G T G
I237	CAU	BACILLUS SUBTILIS	G G A C C T T ***************	T A	G C T C	A	G	T	T		G	G	T	T		A	G A G C	A	G A C G G	C T C A T A A	C C G T C
I243	GAU	THIOBACILLUS FERRO.	G G G C C T A *********** **	T A	G C T C	A	G	C	T		G	G	C	T		A	G A G C	A	C A C G C	C T G A T A A	G C G T G
I250	GAU	E.COLI	A G G C T T G ********* ****	T A	G C T C	A	G	G	T		G	G	T	T		A	G A G C	G	C A C C C	C T G A T A A	G G G T G
I251	CAU	E.COLI	G G C C C C T ***************	T A	G C T C	A	G	T			G	G	T	T		A	G A G C	A	G G C G A	C T C A T A A	T C G C T
I260	GAU	PSEUDOMONAS AER.	G G G T C T G ***************	T A	G C T C	A	G	T	T		G	G	T	T		A	G A G C	G	C A C C C	C T G A T A A	G G G T G
I270	GAU	CAMPYLOBAC.JEJUNI	G G G C C T A ***************	T A	G C T C	A	G	C	T		G	G	T	T		A	G A G T	G	C A C C C	C T G A T A A	G G G T G
I272	GAU	CAULOBACTER CRES.	A G G C C T G *************	T A	G C T C	A	G	G	T		G	G	T	T		A	G A G C	G	T A C G C	C T G A T A A	G C G T A
I290	GAU	ANACYSTIS NIDULANS	G G G C T A T ********* ****	T A	G C T C	A	G	G	T		G	G	T	T		A	G A G C	G	C A C C C	C T G A T A A	G G G T G
I295	GAU	CYANOPHORA PARAD.*	G G G C T A T ********* ****	T A	G C T C	A	G	T	T		G	G	T	T		A	G A G C	G	C A C C C	C T G A T A A	G G G T G
I297	GAU	PYLAIELLA LITTORA.*	G G G C T A T ********* ****	T A	G C T C	A	G	T	T		G	G	T	T		A	G A G C	G	C A C C C	C T G A T A A	G G G T G
I300	GAU	CHLAMYDOMONAS REINH. CHLORO	G G G C T A T ***************	T A	G C T C	A	G	T	T		G	G	T	T		A	G A G C	G	T T G C T	T T G A T A A	G G C A A
I302	GAU	CHLORELLA ELLIPSO. CHLORO	G G G C T A T ***************	T A	G C T C	A	G	T	T		G	G	T	T		A	G A G C	G	C A C C C	C T G A T A A	G G G T G

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        45  47  B   D   F   H   J   L   N   P   49  51  53  55  57  59  61  63  65  67  69  71  73  75
      44  46  A   C   E   G   I   K   M   O   48  50  52  54  56  58  60  62  64  66  68  70  72  74  76
      --------------------------------------------------------------------------------------------------
H575  C G A                                   C|C C A G G|T T C G A T T|C C T G G|T G T G G G C|A
                                                ==========              ==========********  ****
H780  T A A                                   C|C C A G G|T T C G A A T|C C T G G|T C A C G G C|A
                                                ==========              ==========**************
H950  C A A                                   C|C T C G G|T T C G A A T|C C G A G|T C A C G G C|A
                                                ==========              ==========**************

            I S O L E U C I N E

1020  A G G T                                 T|A C C A G|T T C A A A T|C T G G T|C T G G G T C|A
                                                ==========              ==========**  ******  **
1040  A G A T                                 C|G G G G G|T T T A A A T|C C C T C|C C G G A G T|A C C A
                                                ==  ======              ======  ==******  ******
1145  T G G T                                 C|A T G G G|T T C A A A T|C C C A T|C G G G C C C|A
                                                ==========              ==========****  ********
1203  C G G T                                 C|A T T G G|T T C A A G T|C C A A T|A A G G T C C|A C C A
                                                ==========              ==========**************
1206  T G G T                                 C|A C T G G|T T C A A G T|C C A G T|A G G G T C C|A C C A
                                                ==========              ==========**************
1235  A G G T                                 C|G G T G G|T T C G A G T|C C A C T|C A G G C C C|A C C A
                                                  ========              ========  **************
1236  A G G T                                 C|G A T G G|T T C G A G T|C C A T T|C A G G C C C|A C C A
                                                  ========              ========  **************
1237  C G G T                                 C|G T A G G|T T C G A G T|C C T A C|A A G G T C C|A C C A
                                                ==========              ==========**************
1243  A G G T                                 C|A G T G G|T T C G A G T|C C A C T|T G G G C C C|A C C A
                                                ==========              ==========**  **********
1250  A G G T                                 C|G G T G G|T T C A A G T|C C A C T|C A G G C C T|A C C A
                                                  ========              ========  ****  ********
1251  T G G T                                 C|G C T G G|T T C A A G T|C C A G C|A G G G G C C|A C C A
                                                ==========              ==========**************
1260  A G G T                                 C|G G C A G|T T C G A A T|C T G C C|C A G A C C C|A C C A
                                                ==========              ==========**************
1270  A G G T                                 C|A C A A G|T T C A A G T|C T T G T|T A G G C C C|A C C A
                                                ==========              ==========**************
1272  A G G T                                 C|G G C A G|T T C G A G T|C T G C C|T A G G C C T|A C C A
                                                ==========              ==========  ************
1290  A G G T                                 C|C C T G G|T T C A A G T|C C A G G|A T G G C C C|A
                                                ==========              ==========**************
1295  A G G C                                 C|C C T G G|T T C G A A T|C C A G G|A T G G C C C|A
                                                ==========              ==========****  ********
1297  A G G G                                 C|C C T G G|T T C A A A T|C C A G G|A T G G C C C|A
                                                ==========              ==========****  ********
1300  A A G T                                 C|G A A A G|T T C A A A T|C T T T C|A T A G C C C|A
                                                ==========              ==========**************
1302  A G G T                                 C|G C T G A|T T C G A A T|T C A G C|A T A G C C C|A
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			1 2 3 4 5 6 7	8 9	10 11 12 13	14 15 16 17 A	18 19 20 A B	21	22 23 24 25	26	27 28 29 30 31	32 33 34 35 36 37 38	39 40 41 42 43
1304	GAU	EUGLENA GRACILIS CHLORO	G G G C T A T	T A	G C T C	A G T T	G G T T	A	G A G C	A	T A C C C	T T G A T A A	G G G T A
1310	CAU	MARCHANTIA POLYM. CHLORO	G C A T C C A	T G	G C T G	A A T	G G T T	A	A A G C	A	C C C A A	C T C A T A A	T T G G C
1311	GAU	MARCHANTIA POLYM. CHLORO	G G G C T A T	T A	G C T C	A G T	G G T	A	G A G C	G	C G C C C	C T G A T A A*	G G G C G
1320	GAU	ZEA MAYS CHLORO	G G G C T A T	T A	G C T C	A G T	G G T	A	G A G C	G	C G C C C	C T G A T A A*	G G G C G
1327	GAU	GLYCINE MAX CHLORO	G G G C T A T	T A	G C T C	A G T	G G T	A	G A G C	G	C G C C C	C T G A T A A*	G G G C G
1335	GAU	NICOTIANA TABACUM CHLORO	G G G C T A T	T A	G C T C	A G T	G G T	A	G A G C	G	C G C C C	C T G A T A* C	G G G C G
1336	CAU	NICOTIANA TABACUM CHLORO	G C A T C C A	T G	G C T G	A A T	G G T T	A	A A G C	G	C C C A A	C T C A T A A	T T G GCG
1337	CAU	NICOTIANA TABACUM CHLORO	G C A T C C A	T G	G C T G	A A T	G G T T	A	A A G C	G	C C C A A	C T C A T A A	T T G G C
1347	CAU	PENNISETUM AMERICA. CHLORO	G C A T C C A	T G	G C T G	A A T	G G T T	A	A A G C	G	C C C A A	C T C A T A A	T T G G T
1365	CAU	SPINACIA OLERACEA CHLORO	G C A T C C A	T G	G C T G	A A T	G G T T	A	A A G C	G	C C C A A	C T C A T A A	T T G GCG
1366	GAU	SPINACIA OLERACEA CHLORO	G G G C T A T	T A	G C T C	A G T	G G T	A	G A G C	G	C G C C C	C T G A T* A C	G G G C G
1410	GAU	ASPERGILLUS NIDUL. MITO	G G T T C T T	T A	A C T T	A A C C	G G T	A	A A G T	G	T G T T C	T T G A T A A	G G A T A
1417	GAU	SACCHAROMYCES CER. MITO	G A A A C T A	T A	A T T C	A A T T	G G T T	A	G A A T	A	G T A T T	T T G A T A A	G G T A C
1425	GAU	TORULOPSIS GLAB. MITO	G A A A C T A	T A	A T T C	A A T T	G G T T	A	G A A T	A	G T A T T	T T G A T A A	G G T A C
1450	GAU	ASCARIS SUUM MITO	A T T A T T T	T A	G T A A	A A T T T T		A	T T A T	G	T C G T C	T T G A T A A	G G C G G
1459	GAU	DROSOPHILA YAKUBA MITO	A A T G A A T	T G	C C T G	A T A A		A	A A G G	G	T T A C C	T T G A T A G	G G T A A
1461	GAU	DROSOPHILA VIRILIS MITO	A A T G A A T	T G	C C T G	A T A		A	A A G G	G	T T A T C	T T G A T A G	G G T A A
1464	GAU	PARACENTROTUS LIV. MITO	A G A G C T T	G C	T C C C	A A A G C T		T	G G G T	G	T C T A G	C T G A T A A	T T A G A
1466	GAU	STRONGYLOCEN.PURP. MITO	G A G C T T G	C	C C C T	A A A G T T		A	A G G T	G	T C T A G	C T G A T A A	T T A G A
1468	GAU	XENOPUS LAEVIS MITO	G G A A A T G	T G	C C C G	A A A G		T	A G G G	A	T C A C T	T T G A T A G	A G T G A
1470	GAU	RANA CATESBEIANA MITO	G G A A G C G	T G	C C T G	A A A G T T			A A G G	A	C C T C C	T T G A T A G	G G A G G
1474	GAU	RAT MITO	A G A A A T A	T G	T C T G	A C A		A	A A G A	G	T T A C T	T T G A T A G	A G T A A
1477	GAU	MOUSE MITO	A G A A A T A	T G	T C T G	A T A		A	A A G A	A	T T A C T	T T G A T A G	A G T A A

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         45  47  B   D   F   H   J   L   N   P   49  51  53  55  57  59  61  63  65  67  69  71  73  75
       44  46  A   C   E   G   I   K   M   O   48  50  52  54  56  58  60  62  64  66  68  70  72  74  76
       ------------------------------------------------------------------------------------------------
1304   A G G T                                 C|G C T A G|T T C A A G T|C T A G C|A T G G C C C|T
                                                 =========               ========= ****  *******
1310   G A A T T                               C|A C A G G|T T C A A T T|C C T G T|T G G A T G C|A
                                                 =========               ========= *************
1311   A G G T                                 C|T C T G G|T T C A A G T|C C A G G|A T A G C C C|A
                                                   =======               =======   *************
1320   A G G T                                 C|T C T G G|T T C A A G T|C C A G G|A T G G C C C|A
                                                   =======               =======   *************
1327   A G G T                                 C|T C T G G|T T C A A G T|C C A G G|A T G G C C C|A C C A
                                                   =======               =======   ****  *******
1335   A G G T                                 C|T C T G G|T T C A A G T|C C A G G|A T G G C C C|A
                                                   =======               =======   ****  *******
1336   A A T T                                 C|G T A G G|T T C A A T T|C C T A C|T G G A T G C|A
                                                 =========               ========= *************
1337   G A A T T                               C|G T A G G|T T C A A T T|C C T A C|T G G A T G C|A
                                                 =========               ========= *************
1347   A A A T T                               T|G C G G G|T T C A A T T|C C T G C|T G G A T G C|A
                                                 ===   ===               ===   === *************
1365   A A T T                                 C|G T A G G|T T C A A T T|C C T A C|T G G A T G C|A
                                                 =========               ========= *************
1366   A G G T                                 C|T C T G G|T T C A A G T|C C A G G|A T G G C C C|A
                                                   =======               =======   ****  *******
1410   T G T                                   T|C A G T G|T T C G A G T|C A C T G|A A G A A T C|A
                                                 =======                 ========= *********  **
1417   A A A                                   T|A T A G G|T T C A A T C|C C T G T|T A G T T T C|A
                                                 ==  =====               =====  == *************
1425   C A A                                   T|A T A G G|T T C G A T T|C C T G T|T A G T T T C|A
                                                 ==  =====               =====  == *************
1450   A G T T C T T T T T G                                                      |A A A T A A T|A
                                                                                   *************
1459   A T T A                                 T|G C A G T|T           T|T C T G C|A T T C A T T|G
                                                 =======                   ======= *************
1461   A T T A                                 T|G T A G G|A T          |T C T A C|A T T C A T T|G
                                                 =======                   ======= *************
1464   C T A T                                 C|A A G G G|T T A A A T T|C C C T TC|A A G C T C T|A
                                                 =========               ========= *************
1466   T T                                     T|A A G G G|T T A A A T T|C C C T T|C A A G C T C|T
                                                 =========               ========= *************
1468   A A T A                                 T|A T G G G|T T C A A A C|C C C A T|C A T C T C C|T
                                                 =========               ========= *****   *****
1470   C T T A                                 T|A G G G G|T T C A A A C|C C C C T|C A C T T C C|T
                                                 =========               ========= **  *********
1474   A T A A                                 T|A G A G G|T T T A A A T|C C T C T|T A T T T C T|A
                                                 =========               ========= *************
1477   A T T A                                 T|A G A G G|T T C A A G C|C C T C T|T A T T T C T|A
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			1 2 3 4 5 6 7	8 9	10 11 12 13	14	15	16	17	A	18	19	20	A	B	21	22 23 24 25	26	27 28 29 30 31	32 33 34 35 36 37 38	39 40 41 42 43
I480	GAU	BOVINE MITO	A G A A A T A	T G	T C T G	A	C	A								A	A A G A	G	T T A C T	T T G A T A G	A G T A A
I494	GAU	HUMAN MITO	A G A A A T A	T G	T C T G	A	T	A								A	A A G A	G	T T A C T	T T G A T A G	A G T A A
I570	AAU	SACCHAROMYCES CER.	G G T C T C T	T G	G C C C	A	G	T	T		G	G	T	T		A	A G G C	A	C C G T G	C T A A T A A	C G C G G
I590	UAU	YEAST	G C T C G T G	T A	G C T C	A	G	T			G	G	T	T		A	G A G C	T	T C G T G	C T T A T A* A	C G C G A
I780	AAU	DROSOPHILA MELANO.	G G C C C A T	T A	G C T C	A	G	T	T		G	G	T	T		A	G A G C	G	T C G T G	C T A A T A A	C G C G A
I950	AAU	MOUSE	G G C C G G T	T A	G C T C	A	G	T	T		G	G	T	T		A	G A G C	G	T G G T G	C T A A T A A	C G C C A
		L E U C I N E																			
L020	UAA	PHAGE T4	G C G A G A A	T G	G T C A	A	A	T	T		G	G	T	A		A	A G G C	A	C A G C A	C T T A A A A	T G C T G
L040	UAG	PHAGE T5	G G G G C T A	T G	C T G G	A	A	C	T		G	G	T	A		G	A C A A	T	A C G G C	C T T A G A T	T C C G T
L145	UAG	METHANOCOC.VANI.	G C A G G G G	T T	G T C G	A	G	C	C	T	G	G	C	C	A	A	A G A T	G	C A G G A	C T T A G A A	T C C T G
L160	CAG	SULFOLOBUS SOLFA.	G C G G G G G	T G	C C C G	A	G	C	A	A	G	G	T	C	A	A	A G G G	G	T C G G G	C T C A G G* C	C C C G A
L190	CAA	THERMOPROT. TENAX	G C G G G G G	T G	C C C G	A	G	C	C	A	G	G	T	A		A	A G G G	G	C A G G G	C T C A A G A	C C C T G
L191	CAG	THERMOPROT. TENAX	G C G G G G G	T G	C C C G	A	G	C	C	A	G	G	T	A		A	A G G G	G	C A G G G	T T C* A G G T	C C C T G
L200	UAA	MYCOPLASMA CAPRIC.	C C C C A A G	T G	G C G G	A	A	T	A		G	G	T	A		G	A C G C	A	T T G G A	C T T A A A A	T C C A A
L201	UAG	MYCOPLASMA CAPRIC.	G G G G A T T	G G	C G G A	A	T	T			G	G	C	A		G	A C G C	A	C T A G A	C T T A G G A	T C T A G
L205	UAG	MYCOPLASMA PG50	G G G G G A T	T G	G C G G	A	A	T	T		G	G	C	A		G	A C G C	A	C T A G A	C T T A G G A	T C T A G
L235	CAG	BACILLUS SUBTILIS	G C G G A T G	T G	G C G G	A	A	T	T		G	G	C	A		G	A C G C	G	C T A G A	A T C A G G C	T C T A G
L236	UAA	BACILLUS SUBTILIS	G C C G G G G	T G	G T G G	A	A	T	T		G	G	C	A		G	A C A C	A	C A G G A	C T T A A A A	T C C T G
L237	UAA	BACILLUS SUBTILIS	G C C G G G G	T G	G T G G	A	A	T	T		G	G	C	A		G	A C A C	A	C A G G A	C T T A A A A	T C C T G
L238	CAA	BACILLUS SUBTILIS	G C C G G T G	T G	G C G G	A	A	T	T		G	G	C	A		G	A C G C	G	C A C G A	C T C A A A A	T C G T G
L250	CAG	E.COLI	G C G A A G G	T G	G C G G	A	A	T	T		G	G	T	A		G	A C G C	G	C T A G C	T T C A G G T	G T T A G
L251	UAG	E.COLI	G C G G G A G	T G	G C G A	A	A	T	T		G	G	T	A		G	A C G C	A	C C A G A	T T T A G G T	T C T G G
L252	CAA	E.COLI	G C C G A A G	T G	G C G A	A	A	T	C		G	G	T	A		G	A C G C	A	G T T G A	T T C A A A A	T C A A C

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        45  47  B   D   F   H   J   L   N   P   |49  51  53  55  57  59 |61  63  65  67  69  71 |73  75
      44  46  A   C   E   G   I   K   M   O   48|  50  52  54  56  58  60  62  64  66  68  70  72  74  76
      -------------------------------------------------------------------------------------------------

I480  A T A A                                 T |A G A G C|T T C A A A C|C C T C T|T A T T T C T|A
                                                |=========|             |=========|*************|
I494  A T A A                                 T |A G G A G|C T T A A A C|C C C C T|T A T T T C T|A
                                                |======  =|             |==  =====|*************|
I570  G G A T                                 C |A G C G G|T T C G A T C|C C G C T|A G A G A C C|A
                                                |=========|             |=========|*************|
I590  C C G T                                 C |G T G G G|T T C A A T C|C C C A C|C T C G A G C|A
                                                |=========|             |=========|**  *********|
I780  A G G T                                 C |G C G G G|T T C G A T C|C C C T C|A T G G G C C|A
                                                |==  =====|             |=====  ==|*************|
I950  A G G T                                 C |G C G G G|T T C G A T C|C C C G T|A C G G G C C|A
                                                |  =======|             |=======  |****  *******|

          L E U C I N E

L020  C G G A A T G A T T T C C T             T |G T G G G|T T C G A G T|C C C A C|T T C T C G C|A C C A
        :::::::         :::::::                 |=========|             |=========|*************|
L040  A G C T T A A A T G C G                 T |G G G A G|T T C G A G T|C T C C C|T A G C C C C|A C C A
                                                |=========|             |=========|*************|
L145  T C C A G T A G T G G T T               C |C A G G G|T T C A A A T|C C C T G|C C C C T G C|A
                                                |=========|             |=========|*************|
L160  T G G T G T A G G C C T G               C |G T G G G|T T C A A A T|C C C A C|C C C C C G C|A
        :::             :::                     |=========|             |=========|*************|
L190  T G G C G T A G G C C T G               C |G T G G G|T T C G A A T|C C C A C|C C C C C G C|A
                                                |=========|             |=========|*************|
L191  T G G C G T A G G C C T G               C |G T G G G|T T C A A A T|C C C A C|C C C C C G C|A
                                                |=========|             |=========|*************|
L200  C G G G C T T A A T A T C C T G         T |G C C G G|T T C A A G T|C C G G C|C T T G G G G|A C C A
                                                |=========|             |=========|*************|
L201  C G T C T T T G A C G                   T |A A G G G|T T C A A G T|C C C T T|A T C C C C C|A C C A
                                                |=========|             |=========|**    *******|
L205  C G T C T T T G A C G                   T |A A G G G|T T C A A G T|C C C T T|A T C C C C C|A C C A
                                                |=========|             |=========|*************|
L235  T G T C T T T A C A G A C G             T |G G G G G|T T C A A G T|C C C T T|C A T C C G C|A C C A
      :::::::::         :::::::::               |    =====|             |=====    |*************|
L236  C G G T A G G T G A C T A C C G         T |G C C G G|T T C A A G T|C C G G C|C C T C G G C|A
      :::::::::::         :::::::::::           |=========|             |=========|****  *******|
L237  C G G T A G G T G A C T A C C G         T |G C C G G|T T C A A G T|C C G G C|C C T C G G C|A C C A
                                                |=========|             |=========|****  *******|
L238  T T C C T T C T G G A G                 T |G T C G G|T T C G A C C|C C G A C|C A C C G G T|A
                                                |=========|             |=========|***********  |
L250  T G T C C T T A C G G A C G             T |G G G G G|T T C A A G T|C C C C C|C C C T C G C|A C C A
        :::::::         :::::::                 |=========|             |=========|****  *******|
L251  C G C C G C A A G G T G                 T |G C G A G|T T C A A G T|C T C G C|C T C C C G C|A C C A
      :   :::         :::   :                   |=========|             |=========|*************|
L252  C G T A G A A A T A C G                 T |G C C G G|T T C G A G T|C C G G C|C T T C G G C|A C C A
                                                |=========|             |=========|*************|
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			1 2 3 4 5 6 7	8 9	10 11 12 13	14 15 16 17 A 18 19 20 A B	21	22 23 24 25	26	27 28 29 30 31	32 33 34 35 36 37 38	39 40 41 42 43
L255	CAG	SALMONELLA TYPHI.	G C G A A G G	T G	G C G G	A A T T G G T A	G	A C G C	G	C T A G C	T T C A G G T	G T T A G
L259	CAG	AEROMONAS HYDROPH.	G C G A A G G	T G	G C G G	A A T T G G T A	G	A C G C	G	C T A G C	T T C A G G T	G T T A G
L275	CAG	RHIZOBIUM MELILOTI	G C C C A G A	T G	G C G G	A A T T G G T A	G	A C G C	G	C C A G C	T T C A G G T	G C T G G
L277	CAG	BORDETELLA PERTUS.	G C C C A G G	T G	G C G G	A A T T G G T A	G	A C G C	G	C A T G G	T T C A G G T	C C A T G
L295	UAA	CYANOPHORA PARAD.*	G G G G A T G	T G	G T G G	A A T T G G T A	G	A C G C	A	A C G G A	C T T* A A A A	T C C G T
L304	UAG	EUGLENA GRACILIS CHLORO	G C A G G C A	T G	G C G G	A A T T T G G T A	G	A C G C	G	C A G G A	T T T A G G T	T C C T G
L305	UAA	EUGLENA GRACILIS CHLORO	G C C T T C G	T G	G T G A	A A T G G T A	G	A C A C	T	C A T G A	C T T A A A A	T C A T G
L306	CAA	EUGLENA GRACILIS CHLORO	T C C T T C G	T G	G T G A	A A T G G T A	A	A C A C	G	T G T G A	T T C A A A A	T C A C A
L310	CAA	MARCHANTIA POLYM. CHLORO	G C C T T G A	T G	G T G A	A A T G G T A	G	A C A C	G	C G A G A	T T C A A A A	T T T C G
L311	UAA	MARCHANTIA POLYM. CHLORO	G G G G G T A	T G	G C G A	A A T T G G T A	G	A C G C	T	G C G G A	C T T* A A A A	T C C G T
L312	UAG	MARCHANTIA POLYM. CHLORO	G C C G C T A	T G	G T G A	A A T T G G T A	G	A C A C	G	C T G C T	C T T A G G A	A G C A G
L320	UAA	ZEA MAYS CHLORO	G G G G A T A	T G	G C G A	A A T C G G T A	G	A C G C	T	A C G G A	C T T A A A* A	T C C G T
L321	CAA	ZEA MAYS CHLORO	G C C T T G A	T G	G T G A	A A T G G T A	G	A C A C	G	C G A G A	C T C A A A A	T C T C G
L325	CAA	BRASSICA OLERACEA CHLORO	G C C T T G G	T G	G T G A	A A T G G T A	G	A C A C	G	C G A G A	C T C A A A A	T C T C G
L335	UAG	NICOTIANA TABACUM CHLORO	G C C G C T A	T G	G T G A	A A T T G G T A	G	A C A C	G	C T G C T	C T T A G G A	A G C A G
L336	UAA	NICOTIANA TABACUM CHLORO	G G G G A T A	T G	G C G A	A A T C G G T A	G	A C G C	T	A C G G A	C T T* A A A A	T C C G T
L337	CAA	NICOTIANA TABACUM CHLORO	G C C T T G G	T G	G T G A	A A T G G T A	G	A C A C	G	C G A G A	C T C A A A A	T C T C G
L355	CAA	PISUM SATIVUM CHLORO	G C C T T G G	T G	G T G A	A A T G GTG G G T A	G	A C A C	G	C G A G A	C T C A A A A	T C T C G
L365	CAA	SPINACIA OLERACEA CHLORO	G C C T T G G	T G	G T G A	A A T G G T A	G	A C A C	G	C G A G A	C T C A A A A	T C T C G
L375	CAA	VICIA FABA CHLORO	G C C T T G G	T G	G T G A	A A T G G T A	G	A C A C	G	C G A G A	C T C A A A A	T C T C G
L376	UAA	VICIA FABA CHLORO	G G G G A T A	T G	G C G A	A A T T G G T A	G	A C G C	T	A C G G A	C T T* A A A A	T C C G T
L378	UAA	SORGHUM BICOLOR CHLORO	G G G G A T A	T G	G C G A	A A T C G G T A	G	A C G C	T	A C G G A	C T T* A A A A	T C C G T
L407	UAA	TETRAHYMENA PYRIF. MITO	A C T T A T G	T G	G C G G	A A C A G G T A	G	A C G C	G	T G G G A	C T T A A A A	T C T C A

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          45  47  B   D   F   H   J   L   N   P       49  51  53  55  57  59  61  63  65  67  69  71  73  75
        44  46  A   C   E   G   I   K   M   O   48   50  52  54  56  58  60  62  64  66  68  70  72  74  76
        ---------------------------------------------------------------------------------------------------
L255    T G T C C T T A C G G A C G             T |G G G G G|T T C A A G T|C C C C C|C C C T C G C|A C C A
                                                   =========               ========= ***   *******
L259    T G C C C C C C G G G T G               T |G A G G G|T T C G A G T|C C C T C|T C T T C G C|A C C A
                                                   =========               =========   ***********
L275    T A C T C G A A A G G G T G             T |G G A G G|T T C G A G T|C C T C T|T C T G G G C|A C C A
                                                   =========               ========= *************
L277    T G C C G C A A G G T G                 T |G G A G G|T T C G A G T|C C T C T|C C T G G G C|A C C A
                                                     =======               =======   *************
L295    C G A T T G T A T A G A T C G           T |G A G G G|T T C A A G T|C C C T C|C G T C C C C|A
                                                   =========               ========= *   *********
L304    T G T C T T T A T G A T G               T |G A G A G|T T C G A G T|C T C T C|T G C C T G T|A
            :::           :::                      =========               ========= ***********
L305    T G C T T A T A A A G C G               T |A C C G G|T T C A A C T|C C G G T|C G A A G G T|A
                                                   =========               ========= ***********
L306    T G C A T A A G C T                     T |G C C G G|T T C G A G T|C C G G T|C G A A G G T|A
                                                     =======               =======   ***********
L310    T G C T T A A A G C A                   T |G G A G G|T T C G A G T|C C T C T|T C A A G G C|A
                                                     =======               =======   *************
L311    T G G C T T T A A A G A C C G           T |G A G G G|T T C A A G T|C C C T C|T A C C C C C|A
                                                   =========               ========= *************
L312    T G C T A A G G C T                     T |C T C G G|T T C G A A T|C C G A G|T A G C G G C|A
                                                   =========               ========= *************
L320    C G A C T T T A T A A G T C G           T |G A G G G|T T C A A G T|C C C T C|T A T C C C C|A
        :::::::::::       :::::::::::              =========               ========= *************
L321    T G C T A A A G A G C G                 T |G G A G G|T T C G A G T|C C T C T|T C A A G G C|A
          :::::           :::::                      =======               =======   *************
L325    T G C T A A A A A G C G                 T |G G A G G|T T C G A G T|C C T C T|T C A A G G C|A
                                                     =======               =======     ***********
L335    T G C T A A T G C A                     T |C T C G G|T T C G A G T|C C G A G|T G G C G G C|A
                                                   =========               ========= *   *********
L336    C G A C T T T A A A A A T C G           T |G A G G G|T T C A A G T|C C C T C|T A T C C C C|A
                                                   =========               ========= *************
L337    T G C T A A A T A G C G                 T |G G A G G|T T C G A G T|C C T C T|T C A A G G C|A
                                                     =======               =======     ***********
L355    T G C T A A A C A G C G                 A |G G A G G|T T C G A G T|C C T C T|T C A A G G C|A
                                                     =======               =======     ***********
L365    T G C T A A A A A G C G                 T |G G A G G|T T C G A G T|C C T C T|T C A A G G C|A
                                                     =======               =======     ***********
L375    T G C T A A A C A G C G                 T |G G A G G|T T C G A G T|C C T C T|T C A A G G C|A
                                                     =======               =======     ***********
L376    C G A C T T T A A A A A T C G           T |G A G G G|T T C A A G T|C C C T C|T A T C C C C|A
                                                   =========               ========= *************
L378    C G A C T T T A T A A G T C G           T |G A G G G|T T C A A G T|C C C T C|T A T C C C C|A
                                                   =========               ========= *************
L407    T T C C A T A G G A G                   T |G C C G G|T T C G A T T|C C G G T|C A T A A G T|A
                                                     =======               =======   *************
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                              1 2 3 4 5 6 7|8 9|10  12 |14  16  A   19  A  21|  23 25| |27  29 31|  33  35  37 |39  41 43
                                           |   |  11 13|  15  17  18  20  B  |22  24 |26  28  30 |32  34  36 38|  40  42 
                              -------------------------------------------------------------------------------------------
L408  UAA TETRAHYMENA THERM.  A C T T A T G|T G|G C G G|A A T A   G G T A   G|A C G C|G|T G G G A|C T T A A A A|T C T C A
          MITO                *************|   |...... |                     |  .....| |---   ---|             |---   ---
L410  UAA ASPERGILLUS NIDUL.  A T C C G A G|T G|C T G G|A A T T   G G T A   G|A C A G|T|C T T A G|C T T A A G T|T T A A G
          MITO                *************|   |...... |                     |  .....| |-------  |             |  -------
L411  UAG ASPERGILLUS NIDUL.  A T G G G T A|T G|C T G A|A A T A A G G T A   A|A C A G|G|T T C C G|C T T A G G A|C G G A A
          MITO                **  *********|   |...... |                     |  .....| |---------|             |---------
L421  UAA SCHIZOSACCHA.POM.   G C C T A A A|T G|C T G G|A A T T T G G T A   G|A C A G|A|A C A A A|C T T A A G A|T T T G T
          MITO                  ***********|   |...... |                     |  .....| |---------|             |---------
L425  UAA TORULOPSIS GLAB.    G C T A T T T|T G|G T G G|A A T T   G G T A   G|A C A C|G|A T A C T|C T T A A G A|T G T A T
          MITO                *************|   |...... |                     |  .....| |-------  |             |  -------
L428  UAA YEAST               G C T A T T T|T G|G T G G|A A T T   G G T A   G|A C A C|G|A T A C T|C T T A A G A|T G T A T
          MITO                *************|   |...... |                     |  .....| |-------  |             |  -------
L450  UAG ASCARIS SUUM        G T A T A T A|T A|G T A T|A A A A             A|A T A T|G|A T A G A|T T T A G G T|T C T A T
          MITO                *********  **|   | ......|                     |  .....| |---------|             |---------
L451  UAA ASCARIS SUUM        G T T G T T A|T A|G C A T|A A G A             A|G T G C|A|T T T G T|T T T A A G C|G T A A A
          MITO                *********    |   |...... |                     |...... | |-----    |             |    -----
L454  UAG LOCUSTA MIGRATORIA  A C T A T T T|T G|G C A G|A T A               A|G T G C|A|A T G A A|T T T A G A A|T T C A T
          MITO                *************|   |...... |                     |  .....| |---------|             |---------
L455  UAA LOCUSTA MIGRATORIA  T C T A A T A|T G|G C A G|A T T               A|A T G C|A|T T A G A|T T T A A G C|T C T A A
          MITO                *************|   |...... |                     |  .....| |---------|             |---------
L456  UAG AEDES ALBOPICTUS    A C T A T T T|T G|G C A G|A T T               A|G T G C|A|G T A A A|T T T A G A A|T T T A T
          MITO                *************|   |...... |                     |  .....| |  -------|             |-------  
L457  UAA DROSOPHILA MELANO.  T C T A A T A|T G|G C A G|A T T               A|G T G C|A|A T A G A|T T T A A G C|T C T A T
          MITO                *************|   |...... |                     |  .....| |---   ---|             |---   ---
L459  UAA DROSOPHILA YAKUBA   T C T A A T A|T G|G C A G|A T T               A|G T G C|A|A T G G A|T T T A A G C|T C C A T
          MITO                *************|   |...... |                     |  .....| |---------|             |---------
L460  UAG DROSOPHILA YAKUBA   A C T A T T T|T G|G C A G|A T T               A|G T G C|A|A T A A A|T T T A G A A|T T T A T
          MITO                *************|   |.......|                     |.......| |---------|             |---------
L464  UAG PARACENTROTUS LIV.  G C T G A A A|T A|G C A A|G T       G G T T   A|A T G C|A|A A A G A|C T T A G G A|T T T T T
          MITO                *************|   |...... |                     |  .....| |-----  --|             |--  -----
L465  UAA PARACENTROTUS LIV.  G C T A A A A|T A|G C A A|A G T     G G T T   A|A T G C|A|G A A G G|C C T A A G A|C C T T C
          MITO                *************|   |...... |                     |  .....| |---------|             |---------
L466  UAG STRONGYLOCEN.PURP.  G C T G A A G|T A|G C A A|A A G T   G G T     T|A T G C|A|A A A G A|C T T A G G A|T C T T T
          MITO                ***********  |   |...... |                     |  .....| |---------|             |---------
L467  UAA STRONGYLOCEN.PURP.  C T A A A G T|A  |G C A A|A G T     G G T T   A|A T G C|A|G A A G G|C C T A A A A|C T T T C
          MITO                ***********  |   |...... |                     |  .....| |-----  --|             |--  -----
L468  UAA XENOPUS LAEVIS      G C T A G C G|T G|G C A G|A G C C T G G C T   A|A T G C|G|A A A G A|C C T A A G C|T C T T T
          MITO                **  *********|   |...... |                     |  .....| |---------|             |---------
L469  UAG XENOPUS LAEVIS      G C T T T T A|A A|G G A A|A A C A G T C       T|A T C C|G|C T G G T|C T T A G G A|A C C A G
          MITO                *************|   |...... |                     |  .....| |---------|             |---------
L470  UAG RANA CATESBEIANA    G C T T T T A|A A|G G A A|A A G A G C C        |C T C C|A|C T G G T|C T T A G G C|G C C A G
          MITO                *************|   |...... |                     |  .....| |-------  |             |  -------
L474  UAG RAT                 A C T T T T A|T A|G G A T|A G A A G T         A|A T C C|A|T T G G T|C T T A G G A|A C C A A
          MITO                *************|   |.......|                     |.......| |---------|             |---------
L475  UAA RAT                 A T T A G G G|T G|G C A G|A G C C A A G T A   A|T T G C|G|T A A G A|C T T A A A A|C C T T G
          MITO                *************|   |...... |                     |  .....| |  -----  |             |  -----  
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        45  47  B   D   F   H   J   L   N   P   |49  51  53|  55  57  59  |61  63  65|  67  69  71  |73  75
      44  46  A   C   E   G   I   K   M   O   48|  50  52  |54  56  58  60|  62  64  |66  68  70  72|  74  76
      -------------------------------------------------------------------------------------------------------

L408  T T C C T A C G G A G                   T |G C C G G |T T C G A C C |C C G G T |C A T A A G T |A
                                                   ========                ========   **************
L410  T G A C G C A A G T C G                 T |A A A C G |T T C G A A T |C G T T T |C T C G G A T |A
        : : :         : : :                      ==========                ==========  **************
L411  T A G T C A A A C T T                   T |G C A A G |T T C A A G T |C T T G T |T A C C C G T |A
        : : :       : : :                        ==========                ==========  **********  **
L421  C G C T T T C G A G C G                 T |G T T G G |T T C G A G T |C C A A C |T T T A G G T |A
                                                 ==========                ==========  ************
L425  T A C T T T A T A G T A                 T |G A A G G |T T C A A A T |C C T T C |A A A T A G C |A
                                                 ==========                ==========  **************
L428  T A C T T T A C A G T A                 T |G A A G G |T T C A A G T |C C T T T |A A A T A G C |A
      : : : :         : : : :                      ========                ========    **************
L450  A G A T G G T T                           |          |              |          |T G T A T A C |T
                                                                                       **  **********
L451                                            |A G A T A |T G           |          |G G A C A A C |T
                                                                                           **********
L454  T T A                                   T |G T A G A |T T T T T T   |T C T A C |A A A T A G T |A
                                                 ==========                ==========  **************
L455  A A A                                   T |A A A G T |T T G A C     |  C T T T |T A T T A G A |A
                                                 ========                    ========  **************
L456  T T A                                   T |A T A A T |T T A A T T A |A T T A T |A A A T A G T |A
                                                 ==========                ==========  **************
L457  A T A                                   T |A A A G T |A T T T     T |A C T T T |T A T T A G A |A
                                                 ==========                ==========  **************
L459  A T A                                   T |A A A G T |A T T T     T |A C T T T |T A T T A G A |A
                                                 ==========                ==========  **************
L460  A T A                                   T |G T A A T |T T T       T |A T T A C |A A A T A G T |A
                                                 ==========                ==========  **************
L464  C A T                                   C |G A A G G |T T C A A C T |C C T T C |T T T C A G C |T
                                                 ==========                ==========  **************
L465  C T A T                                 C |A A A G G |T T C A A C T |C C C T T |T T T T A G C |T
                                                 ====  ====                ====  ====  **************
L466  T A A                                   C |G A G G G |T T C A A C T |C C T T C |T T T C A G C |T
                                                 ====  ====                ====  ====    ************
L467  C T A T                                 C |A A G G G |T T C A A C   |T C C T T |T C T T T A G |C
                                                 ========                    ========    ************
L468  T T A T                                 C |A G G G G |T T C A A A T |C C C C T |C G C T A A C |T
                                                 ==========                ==========  **********  **
L469  A A A C                                 T |C T T G G |T G C A A A T |C C A A G |T A A A A G C |T
                                                 ==========                ==========  **************
L470  C A T C                                 T |C T T G G |T G C A A G T |C C A A G |T A A A A G C |T
                                                 ==========                ==========  **************
L474  A A A                                   C |C T T G G |T G C A A C T |C C A A A |T A A A A G T |A
                                                   ========                ========    **************
L475  T T C C                                 C |A G A G G |T T C A A A T |C C T C T |C C C T A A T |A
                                                 ==========                ==========  **************
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                                 1 2 3 4 5 6 7 8 9 10  12  14  16  A   19  A   21  23  25  27  29  31  33  35  37  39  41  43
                                                     11  13  15  17  18  20  B   22  24  26  28  30  32  34  36  38  40  42
                                 -------------------------------------------------------------------------------------------
L477   UAG MOUSE                 A C T T T T A|T A|G G A T|A A T A G T         A|A T C C|A|T T G G T|C T T A G G A|A C C A A
           MITO                  **************    .......                       .......   ---------               ---------
L478   UAA MOUSE                 A T T A G G G|T G|G C A G|A G C C A G G A A   A|T T G C|G|T A A G A|C T T A A A A|C C T T G
           MITO                  **************    .....                           .....     -----                   -----
L480   UAA BOVINE                G T T A A G G|T G|G C A G|A G C C C G G T A   A|T T G C|A|T A A A A|C T T A A A C|T T T T A
           MITO                  **************    .....                           .....   ---------               ---------
L481   UAG BOVINE                A C T T T T A|A A|G G A T|A G T A G T T       T|A T C C|G|T T G G T|C T T A G G A|A C C A A
           MITO                  **************    .......                       .......   ---------               ---------
L483   UAG MACACA FUSCATA        A C T T T T A|A A|G G A T|A A C A G C         T|A T C C|A|T T G A C|C T T A G G A|G T C A A
           MITO                  **************    .......                       .......   ---------               ---------
L484   UAG MACACA MULATTA        A C T T T T A|A A|G G A T|A A C A G C         T|A T C C|A|T T G A C|C T T A G G A|G T C A A
           MITO                  **************    .......                       .......   ---------               ---------
L485   UAG MACACA FASCICULA.     A C T T T T A|A A|G G A T|A A C A G C         T|A T C C|A|T T G A C|C T T A G G A|G T C A A
           MITO                  **************    .......                       .......   ---------               ---------
L486   UAG MACACA SYLVANUS       A C T T T T A|A A|G G A T|A A C A G C         T|A T C C|A|T T G G C|C T T A G G A|G T C A A
           MITO                  **************    .......                       .......   -----   -               -   -----
L487   UAG SAIMIRI SCIUREUS      A C T T T T A|A A|G G A T|A G T A G T         T|A T C C|A|T T G G T|C T T A G G A|G C C A A
           MITO                  **************    .......                       .......   -------                   -------
L488   UAG TARSIUS SYRICHTA      A C T T T T A|A A|G G A T|A G A A G T         A|A T C C|A|T C G G T|C T T A G G A|A C C G A
           MITO                  **************    .......                       .......   ---------               ---------
L489   UAG LEMUR CATTA           A C T T T T A|A A|G G A T|A G A A G T         A|A T C C|A|T T G G C|C T T A G G A|G C C A A
           MITO                  **************    .......                       .......   ---------               ---------
L490   UAG CHIMPANZEE            A C T T T T A|A A|G G A T|A A C A G C         C|A T C C|G|T T G G T|C T T A G G C|C C C A A
           MITO                  **************    .......                       .......   -------                   -------
L491   UAG GIBBON                A C T T T T A|A A|G G A T|A A C A G C         T|A T C C|A|T T G G T|C T T A G G A|C C C A A
           MITO                  **************    .......                       .......   -------                   -------
L492   UAG GORILLA               A C T T T T A|A A|G G A T|A A C A G C         T|A T C C|A|T T G G T|C T T A G G A|C C C A A
           MITO                  **************    .......                       .......   -------                   -------
L493   UAG ORANG UTAN            G C T T T T A|A A|G G A T|A A C A G C         T|A T C C|C|T T G G T|C T T A G G A|T C C A A
           MITO                    ************    .......                       .......   -------                   -------
L494   UAG HUMAN                 A C T T T T A|A A|G G A T|A A C A G C         T|A T C C|A|T T G G T|C T T A G G C|C C C A A
           MITO                  **************    .......                       .......   -------                   -------
L495   UAA HUMAN                 A C T T T T A|A A|G G A T|A A C A G C         T|A T C C|A|T T G G T|C T T A G G C|C C C A A
           MITO                  **************    .......                       .......   -------             *     -------
L560   AAG NEUROSPORA CRASSA     G G C A A G A|T G|G C C G|A G C     G G T C T A|A G G C|G|C C A C G|T T A A G G C|C G T G G
                                 **  **********    .....                           .....   ---------           *   ---------
L570   CAA SACCHAROMYCES CER.    G G T T G T T|T G|G C C G|A G C     G G T C T A|A G G C|G|C C T G A|T T C A A G C|T C A G G
                                 **********  **    .....                           .....   ---------               ---------
L645   CAA PHASEOLUS VULGARIS    G T C A G G A|T G|G C C G|A G T     G G T C T A|A G G C|G|C C A G A|C T C A A G T|T C T G G
                                 **********  **    .....                           .....   ---------               ---------
L700   AAG CAENORHABDI. ELEG.    G G A G A G A|T G|G C C G|A G C     G G T C T A|A G G C|G|C T G G T|T T A A G G C|A C C A G
                                 **  **********    .....                           .....   ---------           *   ---------
L780   CAA DROSOPHILA MELANO.    G T C A G G A|T G|G C C G|A G C     G G T C T A|A G G C|G|C C A G A|C T C A A G T|T C T G G
                                 **********  **    .....                           .....   ---------               ---------
L781   CAG DROSOPHILA MELANO.    G T C A G G A|T G|G C C G|A G T     G G T C T A|A G G C|G|C T G C G|T T C A G G T|C G C A G
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        45  47  B   D   F   H   J   L   N   P   49  51  53  55  57  59  61  63  65  67  69  71  73  75
      44  46  A   C   E   G   I   K   M   O   48  50  52  54  56  58  60  62  64  66  68  70  72  74  76
      --------------------------------------------------------------------------------------------------
L477  A A A                                   C C T T G G T G C A A A T C C A A A T A A A A G T A
                                                  ========              ========  **************
L478  T T C C                                 C A G A G G T T C A A A T C C T C T C C C T A A T A
                                                ==========              ==========**************
L480  T A T C                                 C A G A G A T T C A A A T C C T C T C C T T A A C A
                                                ========                  ========**************
L481  A A                                     A A T T G G T G C A A C T C C A A A T A A A A G T A
                                                  ========              ========  **************
L483  A A A                                   C A T T G G T G C A A C T C C A A A T A A A A G T A
                                                  ========              ========  **************
L484  A A A                                   T A T T G G T G C A A C T C C A A A T A A A A G T A
                                                  ========              ========  **************
L485  A A A                                   C A T T G G T G C A A C T C C A A A T A A A A G T A
                                                  ========              ========  **************
L486  A A A                                   T A T T G G T G C A A C T C C A A A T A A A A G T A
                                                  ========              ========  **************
L487  A A A                                   C A T T G G T G C A A C T C C A A A T A A A A G T A
                                                  ========              ========  **************
L488  A A A                                     A T T G G T G C A A C T C C A A A T A A A A G T A
                                                  ========              ========  **************
L489  A A A                                     A T T G G T G C A A C T C C A A A T A A A A G T A
                                                  ========              ========  **************
L490  A A A                                   T T T T G G T G C A A C T C C A A A T A A A A G T A
                                                ==========              ==========**************
L491  A A A                                   T T T T G G T G C A A C T C C A A A T A A A A G T A
                                                ==========              ==========**************
L492  A A A                                   T T T T G G T G C A A C T C C A A A T A A A A G T A
                                                ==========              ==========**************
L493  A A A                                   T T T T G G T G C A A C T C C A A A T A A A A G T A
                                                ==========              ==========************
L494  A A A                                   T T T T G G T G C A A C T C C A A A T A A A A G T A
                                                ==========              ==========**************
L495  A A A                                   T T T T G G T G C A A C T C C A A A T A A A A G T A
                                                ==========              ==========**************
L560  T C C G A A A G G G                     C G T G G G T T C G A A T C C C A C T C T T G T C A
                                                ==========              ==========**********  **
L570  T A T C G T A A G A T G                 C A A G A G T T C G A A T C T C T T A G C A A C C A
        ::::::        ::::::                    ==========              ==========**  **********
L645  T C T T C G A G A G A G G G             C G T G G G T T C A A A T C C C A C T T C T G A C A
                                                ==========              ==========**  **********
L700  T C C C T T C G G G G G                 C G T G G G T T C G A A T C C C A C T C T C T T C A
        ::::::          ::::::                  ==========              ==========**********  **
L780  T C C T C T C T G A G G G               C G T G G G T T C G A A T C C C A C T T C T G A C A
        ::::::::      ::::::::                  ==========              ==========**  **********
L781  T C T A C T C T G T A G G               C G T G G G T T C G A A T C C C A C T T C T G A C A
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                              1 2 3 4 5 6 7 |8 9 |10  12  |14  16  A   19  A   21|  23  25|  |27  29  31|  33  35  37  |39  41  43
                                            |    |  11  13|  15  17  18  20  B   |22  24  |26|  28  30  |32  34  36  38|  40  42
                              ----------------------------------------------------------------------------------------------------
L830  CAG XENOPUS LAEVIS      G T C A G G A |T G |G C C G |A G C     G G T C T A |A G G C |G |C T G C G |T T C A G G T |C G C A G
                              **********  **|    |........|                      |........|  |----------|              |----------
L950  CAG MOUSE               G T C A G G A |T G |G C C G |A G C     G G T C T A |A G G C |G |C T G C G |T T C A G G T |C G C A G
                              **************|    |........|                      |........|  |----------|              |----------
L955  CAG RAT                 G T C A G G A |T G |G C C G |A G C     G G T C T A |A G G C |G |C T G C G |T T C A G G T |C G C A G
                              **************|    |........|                      |........|  |----------|              |----------
L956  CAG RAT                 G T C A G G A |T G |G C C G |A G T     G G T C T A |A G G C |G |C T G C G |T T C A G G T |C G C A G
                              **************|    |........|                      |........|  |----------|              |----------
L957  CAG RAT                 G T C A G G A |T G |G C C G |A G C     G G T C T A |A G G C |G |C T G C G |T T C A G G T |C G C A G
                              **************|    |........|                      |........|  |----------|              |----------
L995  UAG HUMAN               G G T A G C G |T G |G C C G |A G C     G G T C T A |A G G C |G |C T G G A |T T T A G G C |T C C A G
                              ****  ********|    |........|                      |........|  |----------|              |----------
L996  AAG HUMAN               G G T A G C G |T G |G C C G |A G C     G G T C T A |A G G C |G |C T G G A |T T A A G G C |T C C A G
                              ****  ********|    |........|                      |........|  |----------|              |----------

          L Y S I N E

K040  UUU PHAGE T5            G G G T T G C |T A |G C T C |A A C T   G G T T T A |G A G C |A |C T G G T |C T T T T A A |A C C A T
                              **************|    |........|                      |........|  |----------|              |----------
K145  UUU METHANOCOC.VANI.    G G G C C C G |T A |G C T T |A G T C T G G T     A |G A G C |G |C C T G A |C T T T T A A |T C A G G
                              **************|    |........|                      |........|  |----------|              |----------
K148  UUU METHANOCOC.VOLTAE   G G G C C C G |T A |G C T T |A G T C T G G T     A |G A G C |G |C C T G G |C T T T T A A |T C A G G
                              **************|    |........|                      |........|  |----------|              |----------
K200  UUU MYCOPLASMA CAPRIC.  G A C T C G T |T A |G C T C |A G C C   G G T     A |G A G C |A |A C T G G |C T T T T A A |C C A G T
                              **************|    |........|                      |........|  |----------|              |----------
K205  UUU MYCOPLASMA PG50     G A C T C G T |T A |G C T C |A G C C   G G T     A |G A G C |A |A C T G G |C T T T T A A |C C A G T
                              **************|    |........|                      |........|  |----------|              |----------
K235  UUU BACILLUS SUBTILIS   G A G C C A T |T A |G C T C |A G T T   G G T     A |G A G C |A |T C T G A |C T T T T A A |T C A G A
                              **************|    |........|                      |........|  |----------|              |----------
K250  UUU E.COLI              G G G T C G T |T A |G C T C |A G T T   G G T     A |G A G C |A |G T T G A |C T T T T A A |T C A A T
                              **************|    |........|                      |........|  |----------|              |----------
K304  UUU EUGLENA GRACILIS    G A G T T G G |T A |G C T C |A G T T   G G T     A |G A G C |A |C T C G G |C T T T T A A |C C G A T
          CHLORO              **************|    |........|                      |........|  |----------|              |----------
K310  UUU MARCHANTIA POLYM.   G G G T T G C |T A |A C T C |A A T     G G T     A |G A G T |A |C T C G G |C T T T T A A*|C C G A C
          CHLORO              **************|    |........|                      |........|  |----------|              |----------
K335  UUU NICOTIANA TABACUM   G G G T T G C |T A |A C T C |A A C     G G T     A |G A G T |A |C T C G G |C T T T T A A*|C C G A C
          CHLORO              **************|    |........|                      |........|  |----------|              |----------
K355  UUU PISUM SATIVUM       G G G T T G C |T A |A C T C |A A T     G G T     A |G A G T |A |C T C G G |C T T T T A A*|C C G A C
          CHLORO              **************|    |........|                      |........|  |----------|              |----------
K360  UUU SINAPIS ALBA        G G G T T G C |T A |A C T C |A A C     G G T     A |G A G T |A |C T C G G |C T T T T A A*|C C G A C
          CHLORO              **************|    |........|                      |........|  |----------|              |----------
K410  UUU ASPERGILLUS NIDUL.  G A G A C T T |T A |G T T T |A A T     G G T     A |A A A C |A |T A T G A |C T T T T A A |T C A T T
          MITO                   ***********|    |........|                      |........|  |----------|              |----------
K417  UUU SACCHAROMYCES CER.  G A G A A T A |T T |G T T T |A A T     G G T     A |A A A C |A |G T T G T |C T T T T A A |G C A A C
          MITO                **************|    |........|                      |........|  |----------|              |----------
K425  UUU TORULOPSIS GLAB.    G A G A G T A |T T |G T T T |A A A     G G T     A |A A A C |A |G T T G T |C T T T T A A |G C A A C
          MITO                ********  ****|    |........|                      |........|  |----------|              |----------
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        45  47   B   D   F   H   J   L   N   P  49  51  53  55  57  59  61  63  65  67  69  71  73  75
      44  46   A   C   E   G   I   K   M   O  48  50  52  54  56  58  60  62  64  66  68  70  72  74  76
-------------------------------------------------------------------------------------------------------

L830   T C T C C C C T G G A G G               C|G T G G G|T T C G A A T|C C C A C|T T C T G A C|A
         : : : :       : : : :                   =========               ========= **  *********
L950   T C T C C C C T G G A G G               C|G T G G G|T T C G A A T|C C C A C|T C C T G A C|A
                                                 =========               ========= *************
L955   T C T C C C C T A G A G A G G           C|G T G G G|T T C G A A T|C C C A C|T C C T G A C|A
                                                 =========               ========= *************
L956   T C T C C C C T G G A G G               C|G T G G G|T T C G A A T|C C C A C|T C C T G A C|A
                                                 =========               ========= *************
L957   T C T C C C C T G G A G G               C|G T G G G|T T C G A A T|C C C A C|T C C T G A C|A
                                                 =========               ========= *************
L995   T C T C T T C G G A G G                 C|G T G G G|T T C G A A T|C C C A C|C G C T G C C|A
         : : :         : : :                     =========               ========= ********* ***
L996   T C T C T T C G G G G G                 C|G T G G G|T T C G A A T|C C C A C|C G C T G C C|A
                                                 =========               ========= ********* ***

             L Y S I N E

K040   A G G T                                 T|A C A G G|T T C G A G T|C C T G T|G C A A C C C|A C C A
                                                 =========               ========= *************
K145   C G G T                                 C|G A G G G|T T C G A A T|C C C T T|C G G G C C C|G
                                                   =======               =======   *************
K148   C G G T                                 C|G A G G G|T T C G A A T|C C C T T|C G G G C C C|G
                                                   =======               =======   *************
K200   G G G T                                 C|C G G G G|T T C G A A T|C C C C G|A C G A G T C|A C C A
                                                 =========               ========= *************
K205   G G G T                                 C|C G G G G|T T C G A A T|C C C C G|A C G A G T C|A C C A
                                                 =========               ========= *************
K235   G G G T                                 C|G A A G G|T T C G A G T|C C T T C|A T G G C T C|A C C A
                                                 =========               ========= *************
K250   T G G T                                 C|G C A G G|T T C G A A T|C C T G C|A C G A C C C|A C C A
                                                 =========               ========= *************
K304   C G G T                                 C|C T G G G|T T C G A A T|C C C A G|C C A A C T C|A
                                                 =========               ========= *************
K310   G A G T                                 T|C C G G G|T T C G A G C|C C C G G|G C A A C C C|A
                                                 =========               ========= *************
K335   T A G T                                 T|C C G G G|T T C G A A T|C C C G G|G C A A C C C|A
                                                 =========               ========= *************
K355   A G T                                   T|C C G G G|T T C G A G T|C C C G G|G C A A C C C|A C C A
                                                 =========               ========= *************
K360   T A G T                                 T|C C G G G|T T C G A G T|C C C G G|G C A A C C C|A
                                                 =========               ========= *************
K410   C T A C                                 T|A T A G G|T T C G A G T|C C T A T|A A G T C T T|A
                                                 =========               ========= ***********
K417   C C A                                   T|G C TTG G |T T C A A C T|C C A G C|T A T T C T C|A
                                                 =========               ========= *************
K425   C C A                                   T|G C T G G|T T C G A A T|C C A G C|T A T T C T C|A
                                                 =========               ========= ****  *******
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			1 2 3 4 5 6 7	8 9	10 11 12 13	14 15 16 17 A	18 19 20 A B	21	22 23 24 25	26	27 28 29 30 31	32 33 34 35 36 37 38	39 40 41 42 43
K450	UUU	ASCARIS SUUM MITO	G G G G T G T	T A	A C T T	A A G T T	T	A	A A G T	G	T T A G A	T T T T T A A	T C T G G
K454	CUU	LOCUSTA MIGRATORIA MITO	C A T C A G A	T G	A C T G	A A A G		T	A A G T	A	A T G G T	C T C T T A A	A C C A A
K457	CUU	DROSOPHILA MELANO. MITO	C A T T A G A	T G	A C T G	A A A G		C	A A G T	A	C T G G T	C T C T T A A	A C C A T
K459	CUU	DROSOPHILA YAKUBA MITO	C A T T A G A	T G	A C T G	A A A G		C	A A G T	A	C T G G T	C T C T T A A	A C C A T
K466	CUU	STRONGYLOCEN.PURP. MITO	C C T T A A T	T A	G C T T	A T T T		A	A A G C	T	T T A G A	C T C T T A A	T T T A A
K468	UUU	XENOPUS LAEVIS MITO	C A C T A A G	A A	G C T A	A A T	G G G C A	T	T A G C	G	A C A G C	C T T T T A A	G C T G T
K474	UUU	RAT MITO	C A T T G C G	A A	G C T T			A	G A G C	G	T T A A C	C T T T T A A	G T T A A
K475	UUU	RAT MITO	C A T T G C G	A A	G C T T			A	G A G C	G	T T A A C	C T T T T A A	G T T A A
K477	UUU	MOUSE MITO	C A C T A T G	A A	G C T A			A	G A G C	G	T T A A C	C T T T T A A	G T T A A
K480	UUU	BOVINE MITO	C A C T A A G	A A	G C T A	T		A	T A G C	A	C T A A C	C T T T T A A	G T T A G
K494	UUU	HUMAN MITO	C A C T G T A	A A	G C T A	A C		T	T A G C	A	T T A A C	C T T T T A A	G T T A A
K570	UUU	SACCHAROMYCES CER.	T C C T T G T	T A	G C T C	A G T T	G G T	A	G A G C	G	T T C G G	C T T T T A A*	C C G A A
K571	CUU	SACCHAROMYCES CER.	G C C T T G T	T G	G C G C	A A T C	G G T	A	G C G C	G	T A T G A	C T C T T A A	T C A T A
K575	CUU	SCHIZOSACCHA.POM.	T C C C G A G	T G	G C T C	A A T C	G G T T T	A	G A G C	G	T C T G A	C T C T T A* A	T C A G A
K700	CUU	CAENORHABDI.ELEG.	G C C C G G T	T A	G C T C	A G T C	G G T	A	G A G C	A	C C A G A	C T C T T A A	T C T G G
K770	CUU	BOMBYX MORI	G C C C G G C	T A	G C T C	A G T C	G G T	A	G A G C	A	T G A G A	C T C T T A A	T C T C A
K780	CUU	DROSOPHILA MELANO.	G C C C G G C	T A	G C T C	A G T C	G G T	A	G A G C	A	T G A G A	C T C T T A A	T C T C A
K781	UUU	DROSOPHILA MELANO.	G C C C G G A	T A	G C T C	A G T C	G G T	A	G A G C	A	T T G G A	C T T T T A A	T C C A A
K830	UUU	XENOPUS LAEVIS	G C C C G C A	T A	G C T C	A G T C	G G T	A	G A G C	A	T C A G A	C T T T T A A	T C T G A
K870	CUU	CHICKEN	G C C C G G C	T A	G C T C	A G T T	G G T	A	G A G C	A	T G A G A	C T C T T A A	T C T C A
K950	UUU	MOUSE	G C C T G G A	T A	G C T C	A A T T	G G T	A	G A G C	A	T C A G A	C T T T T A A	T C T G A
K951	CUU	MOUSE	G C C C G G C	T A	G C T C	A G T C	G G T	A	G A G C	A	T G A G A	C T C T T A A	T C T C A
K955	CUU	RAT	G C C C G G C	T A	G C T C	A G T C	G G T	A	G A G C	A	T G A G A	C T C T T A A	T C T C A

	44 45 46 47	A B C D E F G H I J K L M N O P	48	49 50 51 52 53	54 55 56 57 58 59 60	61 62 63 64 65	66 67 68 69 70 71 72	73 74 75 76
K450	A A A T	G G G T T G T C					A C A T C C T ****** ****	G
K454	A A A A		T	A G T A A ==========	A T T A A C GT	T T A C T ==========	T C T G A T G **************	A
K457	T T A A		T	A G T A A ==========	A T T A G C CA	T T A C T ==========	T C T A A T G **************	A
K459	T T T A		T	A G T A A ==========	A T T A G C AC	T T A C T ==========	T C T A A T G **************	A
K466	A G A		A	A T T A G == ======	C T A A T A C	C T A T T ====== ==	A T T A A G G **************	A
K468	A G A T		T	G G T G A ========	C T C C C A A	C C A C C ========	C T T A A T G ******** ****	A
K474	A G T T		A	G A G A C ==========	A A C A A	A T C T C ==========	C A C A T T G ** **** ****	A
K475	A G T T		A	G A G A C ==========	A A C A A	A T C T C ==========	C A C A A T G ** **********	A
K477	A G T T		A	G A G A C ========	C T T A A A	A T C T C ========	C A T A G T G ************	A
K480	A G A T		T	G A G A G ==========	C C A T A T A	C T C T C ==========	C T T G G T G ****** ******	A
K494	A G A T		T	A A G A G ==========	A A C C A ACAC	C T C T T ==========	T A C A G T G **************	A
K570	A T G T		C	A G G G G ==========	T T C G A G C	C C C C T ==========	A T G A G G A ** ********	G
K571	A G G T		T	A G G G G ==========	T T C G A G C	C C C C T ==========	A C A G G G C ****** ******	T
K575	A G G T		T	G C G A G ==========	T T C G A G T	C T C G C ==========	C T T G G G A **** ********	G
K700	T T G T		C	G C G G G ==========	T T C G A G C	C C C G C ==========	A T T G G G C ** **********	T
K770	G G G T		C	G T G G G ==========	T T C G A G C	C C C A C ==========	G T T G G G C ** ********	G
K780	G G G T		C	G T G G G ==========	T T C G A G C	C C C A C ==========	G T T G G G C ** **********	G
K781	G G G T		C	C A G G G ==========	T T C A A G T	C C C T G ==========	T T C G G G C ** **********	G
K830	G G G T		C	C A G G G ==========	T T C A A G T	C C C T G ==========	T T C G G G C ** **********	G
K870	G G G T		C	G T G G G ==========	T T C G A G C	C C C A C ==========	G T T G G G C ** ********	G
K950	G G G T		T	C A G G G ==========	T T C A A G T	C C C T G ==========	T T C A G G C ** **********	G
K951	G G G T		C	G T G G G ==========	T T C G A G C	C C C A C ==========	G T T G G G C ** ********	G
K955	G G G T		C	G T G G G ==========	T T C G A G C	C C C A C ==========	G T T G G G C ** ********	G

			1 2 3 4 5 6 7	8 9	10 11 12 13	14 15 16 17 A	18 19 20 A B	21	22 23 24 25	26	27 28 29 30 31	32 33 34 35 36 37 38	39 40 41 42 43
K995	UUU	HUMAN	G C C C G G A	T A	G C T C	A G T C	G G T	A	G A G C	A	T C A G A	C T T T T A A	T C T G A
M040	CAU	PHAGE T5	A G T T A G T	T G	G C A G	A G T	G G T	T	A T G C	A	C C T C C	T T C A T A C	G G A G C
		M E T H I O N I N E											
M203	CAU	MYCOPLASMA MYCOID.	G G C G G G G	T A	G C T C	A G T T	G G T T	A	G A G C	G	T T C G G	T T C A T A C	C C G A A
M206	CAU	SPIROPLASMA MELIF.	G G C G G G A	T A	G C T C	A G C T	G G T T	A	G A G C	G	C T C G G	C T C A T A C	C C G G G
M235	CAU	BACILLUS SUBTILIS	G G A C C T T	T A	G C T C	A G T T	G G T T	A	G A G C	A	G A C G G	C T C A T A A	C C G T C
M236	CAU	BACILLUS SUBTILIS	G G C G G T G	T A	G C T C	A G C T	G G C T	A	G A G C	G	T A C G G	T T C A T A C	C C G T G
M250	CAU	E.COLI	G G C T A C G	T A	G C T C	A G T T	G G T T	A	G A G C	A	C A T C A	C T C A T A A	T G A T G
M304	CAU	EUGLENA GRACILIS CHLORO	G G C T C A G	T A	G C T C	A G A	G G A T	A	G A G C	A	G G G G A	T T C A T A A	G C C C T
M310	CAU	MARCHANTIA POLYM. CHLORO	A C C T A C T	T A	A C T C	A G T	G G T T T	A	G A G T	A	T C G C T	T T C A T A C	G G C G A
M313	CAU	HORDEUM VULGARE CHLORO	G C C T A C T	T A	A C T C	A G T	G G T T	A	G A G T	A	T T G C T	T T C A T A C	G G C G G
M315	CAU	TRITICUM AESTIVUM CHLORO	G C C T A C T	T A	A C T C	A G T	G G T T	A	G A G T	A	T T G C T	T T C A T A C	G G C G G
M320	CAU	ZEA MAYS CHLORO	G C C T A C T	T A	A C T C	A G T	G G T T	A	G A G T	A	T T G C T	T T C A T A C	G G C G G
M324	CAU	ARABIDOPSIS THAL. CHLORO	A C C T A C T	T A	A C T C	A G T	G G T T	A	G A G T	A	T T G C T	T T C A T A C	G G C A G
M327	CAU	GLYCINE MAX CHLORO	A C C T A C T	T A	A C T C	A G T	G G T T	A	G A G T	A	T T G C T	T T C A T A C	G G C G G
M335	CAU	NICOTIANA TABACUM CHLORO	A C C T A C T	T A	A C T C	A G T	G G T T	A	G A G T	A	C T G C T	T T C A T A C	G G C G G
M365	CAU	SPINACEA OLERACEA CHLORO	A C C T A C T	T A	A C T C	A G C	G G T T	A	G A G T	A	T T G C T	T T C A T A C	G G C G G
M410	CAU	ASPERGILLUS NIDUL. MITO	G C C A A A G	T A	G T T T	A A T	G G T	A	G A A C	A	A T A A T	T T C A T G A	A T T A A
M411	CAU	ASPERGILLUS NIDUL. MITO	A A G A C T A	T A	G C T T	A A T C	G G T	A	A A G C	G	A A C C A	C T C A T G A	T G G T T
M417	CAU	SACCHAROMYCES CER. MITO	G C T T G T A	T A	G T T T	A A T T	G G T T	A	A A A C	A	T T T G T	C T C A T A A	A T A A A
M425	CAU	TORULOPSIS GLAB. MITO	A C T T G T A	T A	G T T T	A A A T	G G T T	A	A A A C	A	T T T G T	C T C A T A A	A C A A A
M430	CAU	ARABIDOPSIS THAL. MITO	A C C T A C T	T G	A C T C	A G C	G G T T	A	G A G T	A	T C G C T	T T C A T A C	G G C G A
M432	CAU	GLYCINE MAX MITO	A C C T A C T	T G	A C T C	A G C	G G T T	A	G A G T	A	T C G C T	T T C A T A C	G G C G A

	45 47 B D F H J L N P 44 46 A C E G I K M O	48	49 51 53 50 52	55 57 59 54 56 58 60	61 63 65 62 64	67 69 71 66 68 70 72	73 75 74 76
K995	GGGT	C	CAGGG ==========	TTCAAGT	CCCTG ==========	TTCGGGC ** **********	G
M040	GACTA	C	AGTGG ==========	TTCAAAT	CCACT ==========	ACTAACT **************	ACCA
	METHIONINE						
M203	AGGT	C	GAGAG ==========	TTCAACT	CTCTC ==========	CCCCGCT ************	ACCA
M206	AGGT	C	AAGAG ==========	TTCAAGT	CTCTT ==========	TCTCGCT **** ******	ACCA
M235	CGGT	C	GTAGG ==========	TTCGAGT	CCTAC ==========	AAGGTCC **************	ACCA
M236	AGGT	N	GGGGG == ======	TTCGATC	CCCTC ====== ==	CGCCGCT ** ********	ACCA
M250	GGGT	C	ACAGG ==== ====	TTCGAAT	CCCGT ==== ====	CGTAGCC **************	ACCA
M304	TGGT	C	ACAGG ====== ==	TTCAAAT	CTTGT == ======	CTGAGCC **************	A
M310	GAGT	C	ATTGG ==========	TTCAAAT	CCAAT ==========	AGTAGGT **************	A
M313	GTGT	C	ATTGG ==========	TTCAAAT	CCAAT ==========	AGTAGGT ************	A
M315	GAGT	C	ATTGG ==========	TTCAAAT	CCAAT ==========	AGTAGGT ************	A
M320	GAGT	C	ATTGG ==========	TTCAAAT	CCAAT ==========	AGTAGGT ************	A
M324	GAGT	C	ATTGG ==========	TTCAAAT	CCAAT ==========	AGTAGGT **************	A
M327	GAGT	C	ATTGG ==========	TTCAAAT	CCAAT ==========	AGTAGGT **************	A
M335	GAGT	C	ATTGG ==========	TTCAAAT	CCAAT ==========	AGTAGGT **************	A
M365	GAGT	C	ATTGG ==========	TTCAAAT	CCAAT ==========	AGTAGGT **************	A
M410	GAA	T	GAGAA ==========	TTCGATT	TTCTC ==========	CTTTGGC **************	T
M411	TGAG	T	AAATG ==========	TTCAAGT	CATTT ==========	TAGTCTT **************	A
M417	TAAT	G	TAAGG ========	TTCAATT	CCTTC ========	TACAAGT ************	A
M425	TAA	T	GTAAGG ==========	TTCAAAT	CCTTC ==========	TACAAGT **************	A
M430	GAGT	C	ATTGG ==========	TTCAAAT	CCAAT ==========	AGTAGGT **************	A
M432	GAGT	C	ATTGG ==========	TTCAAAT	CCAAT ==========	AGTAGGT **************	A

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                                 1 2 3 4 5 6 7|8 9|10  12 |14  16  A   19  A  21|  23 25|  |27  29 31|  33  35  37 |39  41 43
                                              |   |  11 13|  15  17  18  20  B  |22  24 |26|  28  30 |32  34  36 38|  40  42
                                 -------------|---|-------|---------------------|-------|--|---------|-------------|---------
M445   CAU ZEA MAYS              G G G C T T A|T A|G T T T|A A T T   G G T T   G|A A A C|G |T A C C G|C T C A T A A|C G G T G
           MITO                  *************|   |.......|                     |.......|  |  -------|             |-------
M570   CAU SACCHAROMYCES CER.    G C T T C A G|T A|G C T C|A G T A   G G A     A|G A G C|G |T C A G T|C T C A T A A|T C T G A
                                 ****** ******|   |.......|                     |.......|  |---------|          *  |---------
M635   CAU GLYCINE MAX           G G G G T G G|T G|G C G C|A G T T   G G G C   A|G C G C|G |T A G G T|C T C A T A A|T C C T G
                                 ************ |   |.......|                     |.......|  |  -----  |             |  -----
M780   CAU DROSOPHILA MELANO.    A G C A G A G|T G|G C G C|A G T     G G A     A|G C G T|G |C T G G T|C C C A T A A|C C C A G
                                 *************|   |  .....|                     |...... |  |---------|             |  -------

                 METHIONINE-INITIATOR

X040   CAU PHAGE T5              T G C G G G T|T A|G A T C|T C T C T G G T A G A|G A T C|G |C T A G T|C T C A T A A|G C T A G
                                   ***********|   |.......|                     |.......|  |-------  |          *  |  -------
X160   CAU SULFOLOBUS SOLFA.     G G G C C C G|T A|G C T T|A G C C C G G T     A|G A G C|G |C C C G G|C T C A T A A|C C G G G
                                 *************|   |...... |                     |  .....|  |---------|        *   *|---------
X190   CAU THERMOPROT. TENAX     A G C G G G G|T A|G G C C|A G C C A G G T     A|G G C C|G |C G G G G|C T C A T A G|C C C C G
                                 *************|   |.......|                     |.......|  |---------|             |---------
X203   CAU MYCOPLASMA MYCOID.    C G C G G G G|T A|G A G C|A G T T   G G T     A|G C T C|G |C C G G G|C T C A T A A|C C C G G
                                   ***********|   |.......|                     |.......|  |---------|             |---------
X206   CAU SPIROPLASMA MELIF.    C G T G G G G|T G|G A G C|A G T T   G G T     A|G C T C|G |T T G G G|C T C A T A A|C C C A A
                                   **  *******|   |.......|                     |.......|  |---------|             |---------
X218   CAU STREPTOMYCES RIM.     C G C G G G G|T G|G A G C|A G C T C G G T     A|G C T C|G |C T G G G|C T C A T A A|C T C A G
                                   ***********|   |.......|                     |.......|  |-----  --|             |--  -----
X219   CAU STREPTOMYCES RIM.     C G C G G G G|T G|G A G C|A G C T C G G T     A|G C T C|G |C T G G G|C T C A T A A|C C C A G
                                   ***********|   |.......|                     |.......|  |---------|             |---------
X235   CAU BACILLUS SUBTILIS     C G C G G G G|T G|G A G C|A G T T C G G T     A|G C T C|G |T C G G G|C T C A T A A|C C C G A
                                   ***********|   |.......|                     |.......|  |---------|             |---------
X250   CAU E.COLI                C G C G G G G|T G|G A G C|A G C C T G G T     A|G C T C|G |T C G G G|C T C A T A A|C C C G A
                                   ***********|   |.......|                     |.......|  |---------|             |---------
X251   CAU E.COLI                C G C G G G G|T G|G A G C|A G C C T G G T     A|G C T C|G |T C G G G|C T C A T A A|C C C G A
                                   ***********|   |.......|                     |.......|  |---------|             |---------
X304   CAU EUGLENA GRACILIS      G G C G G A G|T A|G A G C|A G T C A G G T     A|G C T C|G |C A G G G|C T C A T A A|T C C T G
           CHLORO                  ***********|   |.......|                     |.......|  |-------  |             |  -------
X310   CAU MARCHANTIA POLYM.     C G C G G A G|T A|G A G C|A G T C T G G T     A|G C T C|G |C A A G G|C T C A T A A|C C T T G
           CHLORO                  ***********|   |.......|                     |.......|  |---------|             |---------
X313   CAU HORDEUM VULGARE       A G C G G A G|T A|G A G C|A G T T T G G T     A|G C T C|A |C G A G G|C T C A T A A|C C T T G
           CHLORO                  ***********|   |.......|                     |.......|  |--  -----|             |-----  --
X315   CAU TRITICUM AESTIVUM     A G C G G A G|T A|G A G C|A G T T T G G T     A|G C T C|A |C G A G G|C T C A T A A|C C T T G
           CHLORO                  ***********|   |.......|                     |.......|  |--  -----|             |-----  --
X335   CAU NICOTIANA TABACUM     C G C G G G G|T A|G A G C|A G T T T G G T     A|G C T C|G |C A A G G|C T C A T A A|C C T T G
           CHLORO                  ******** **|   |.......|                     |.......|  |---------|             |---------
X355   CAU PISUM SATIVUM         C G C G G A G|T A|G A G C|A A C T T G G T     A|G C T C|G |C A A G G|C T C A T A A|C C T T G
           CHLORO                  ***********|   |.......|                     |.......|  |---------|             |---------
X405   CAU PARAMECIUM PRIM.      G C A G C A A|G G|G T G G|T C T C A A C        |       |  |C T G G G|T T C A T T C|C C C A G
           MITO                  **** ****  **|   |       |                     |       |  |---------|             |---------
X407   CAU TETRAHYMENA PYRIF.    G C T G C T T|G A|A T G G|T T T C A G T        |       |  |G T G G G|C T C A T T T|C C C A T
           MITO                  ****  *******|   |       |                     |       |  |  -------|             |-------
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	45 47 B D F H J L N P 44 46 A C E G I K M O	48	49 51 53 50 52	55 57 59 54 56 58 60	61 63 65 62 64	67 69 71 66 68 70 72	73 75 74 76
M445	A T A T	T	G T A G G ==========	T T C G A G C	C C T A C ==========	T A A G C C C **************	A
M570	A G G T	C	G A G A G ==========	T T C G A A C	C T C T C ==========	C T G G A G C ****** ******	A
M635	A G G T	C	G A G A G ==========	T T C G A G C	C T C T C ==========	T C A C C C C ************	A
M780	A G G T	C	C G A G G == ======	A T C G A A A	C C T T G ====== ==	C T C T G C T **************	A
	M E T H I O N I N E - I N I T I A T O R						
X040	A A A G A	G	G T A G G == ======	T T C G A T T	C C T G C ====== ==	A C C C G C T ************	T C C A
X160	T G G T	C	C G G G G ==========	T T C A A G T	C C C C G ==========	C G G G C C C **************	A
X190	A G G T	C	C C G G G ==========	T T C A A A T	C C C G G ==========	C C C C G C T **************	A
X203	A G G C	C	G C A G G ==========	T T C G A G T	C C T G C ==========	C C C C G C A ************	A C C A
X206	A G G T	C	G C A G G ==========	T T C A A G T	C C T G C ==========	C C C C G C A ******** **	A C C A
X218	A G G T	C	G C A G G ========	T T C A A A T	C C T G T ========	C C C C G C T ************	A

X219	A G G T	C	G C A G G
			  ======
				T T C A A A T	T C T G T
					  ======
						C C C C G C T
						************
							A

X235	A G G T	C	G C A G G ==========	T T C A A A T	C C T G C ==========	C C C C G C A ************	A C C A
X250	A G A T	C	G T C G G == ======	T T C A A A T	C C G G C ====== ==	C C C C G C A ************	A C C A
X251	A G G T	C	G T C G G == ======	T T C A A A T	C C G G C ====== ==	C C C C G C A ************	A C C A
X304	A A G T	C	A G A G G == ======	T T C A A A T	C C T T T ==========	C T C C G C T ************	A
X310	A G G T	C	A T A G G == ======	T T C A A A T	C C T G T ====== ==	C T C C G C C ************	A
X313	A G G T	C	A C G G G ==========	T T C G A T T	C C C G T ==========	C T C C G C A ************	C
X315	A G G T	C	A C G G G ==========	T T C G A T T	C C C G T ==========	C T C C G C A ************	C
X335	A G G T	C	A C G G G ==== ====	T T C A A A T	C C T G T ==== ====	C T C C G C A ** ********	A
X355	A G G T	T	A C G G G ==========	T T C A A A T	C C C G T ==========	C T C C G C A ************	C
X405	C T A	A	T A A A G ========	T T C G A T T	C T T T G ========	T A G C G G C ** **** ****	T
X407	T A C T	A	T A A A G ==========	T T C G A T T	C T T T A ==========	A A G C G G C ******** ****	C

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                              1  2  3  4  5  6  7  |8  9  |10 11 12 13 |14 15 16 17 A  18 19 20 A  B  21 |22 23 24 25 |26 |27 28 29 30 31 |32 33 34 35 36 37 38 |39 40 41 42 43
                              ------------------------------------------------------------------------------------------------------------------------------------------------
X408  CAU TETRAHYMENA THERM.  G  C  C  G  C  T  T  |G  G  |A  T  G  G  |T  T  C  C  G  G  T              |            |   |G  T  G  G  G  |C  T  C  A  T  T  T  |C  C  C  A  T
          MITO                ******   ******
X410  CAU ASPERGILLUS NIDUL.  A  G  C  G  G  G  T  |T  G  |A  T  G  T  |A  A  T  A  G  T              A  |A  C  A  T  |A  |T  A  T  G  G  |C  T  C  A  T  G  C  |C  C  A  T  A
          MITO                ***********   **
X425  CAU TORULOPSIS GLAB.    T  G  T  A  A  T  A  |T  G  |A  T  G  T  |A  A  T  T     G  G  T  T     A  |A  C  A  T  |A  |T  T  A  G  G  |T  T  C  A  T  G  A  |C  C  T  A  A
          MITO                   **   ********
X428  CAU YEAST               T  G  C  A  A  T  A  |T  G  |A  T  G  T  |A  A  T  T     G  G  T  T     A  |A  C  A  T  |T  |T  T  A  G  G  |G  T  C  A  T  G  A  |C  C  T  A  A
          MITO                   ************
X432  CAU GLYCINE MAX         A  G  C  G  G  G  G  |T  A  |G  A  G  T  |A  A  T  T     G  G  T  C     A  |A  C  T  C  |A  |T  C  A  G  G  |C  T  C  A  T  G  A  |C  C  T  G  A
          MITO                   ************
X434  CAU LUPINUS LUTEUS      A  G  C  G  G  G  G  |T  A  |G  A  G  T  |A  G  T  T     G  G  T  T     A  |A  C  T  C  |G  |T  C  A  G  G  |C  T  C  A  T  G  A  |C  C  T  G  A
          MITO                   ************
X436  CAU OENOTHERA SP.       A  G  C  G  G  G  G  |T  A  |G  A  G  G  |A  T  T  T     G  G  T  A     A  |A  C  T  C  |A  |T  C  A  G  G  |C  T  C  A  T  G  A  |C  C  T  G  A
          MITO                   ************
X442  CAU TRITICUM AESTIVUM   A  G  C  G  G  G  G  |T  A  |G  A  G  G  |A  A  T  T     G  G  T  C     A  |A  C  T  C  |A  |T  C  A  G  G  |C  T  C  A  T  G  A  |C  C  T  G  A
          MITO                   ************
X445  CAU ZEA MAYS            A  G  C  G  G  G  G  |T  A  |G  A  G  G  |A  A  T  T     G  G  T  C     G  |A  C  T  C  |A  |T  C  A  G  G  |C  T  C  A  T  G  A  |C  C  T  G  A
          MITO                   ************
X450  CAU ASCARIS SUUM        A  A  T  A  A  G  A  |T  A  |G  G  A  T  |A  A  G  T  T  G              A  |G  T  C  T  |G  |T  G  A  G  G  |T  T  C  A  T  A  C  |C  C  T  C  T
          MITO                **************
X452  CAU CAENORHABDI.ELEG.   A  G  T  A  A  G  A  |T  A  |G  G  A  T  |A  A  T  T  A                 A  |G  T  C  T  |G  |T  A  A  G  G  |T  T  C  A  T  A  C  |C  C  T  T  G
          MITO                **   **********
X459  CAU DROSOPHILA YAKUBA   A  A  A  A  A  G  A  |T  A  |A  G  C  T  |A  A  T  T                    A  |A  G  C  T  |A  |C  T  G  G  G  |T  T  C  A  T  A  C  |C  C  C  A  T
          MITO                **************
X461  CAU DROSOPHILA VIRILIS  A  A  A  A  A  G  A  |T  A  |A  G  C  T  |A  A  C  T                    A  |A  G  C  T  |A  |C  T  G  G  G  |T  T  C  A  T  A  C  |C  C  C  A  T
          MITO                **************
X464  CAU PARACENTROTUS LIV.  A  G  C  A  G  A  G  |T  A  |A  G  C  T  |A  A  G  T  G  C  T           A  |A  G  C  T  |T  |T  T  G  G  G  |C  T  C  A  T  A  C  |C  C  C  A  A
          MITO                **************
X466  CAU STRONGYLOCEN.PURP.  A  G  T  A  G  A  G  |T  A  |A  G  C  T  |A  A  G  T  G  C  T           A  |A  G  C  T  |T  |T  T  G  G  G  |C  T  C  A  T  A  C  |C  C  C  A  G
          MITO                **************
X468  CAU XENOPUS LAEVIS*     A  G  T  A  A  A  G  |T  C  |A  G  C  T  |A  A  A  A                    A  |A  G  C  T  |T  |T  T  G  G  G  |C  C  C  A  T  A  C  |C  C  C  A  A
          MITO                **************
X470  CAU RANA CATESBEIANA    A  G  T  A  A  G  G  |T  A  |A  G  C  T  |A  A  A  T                    A  |A  G  C  T  |T  |T  T  G  G  G  |C  C  C  A  T  A  C  |C  C  C  A  A
          MITO                **********   **
X474  CAU RAT                 A  G  T  A  A  G  G  |T  C  |A  G  C  T  |A  A  C  T                    A  |A  G  C  T  |A  |T  C  G  G  G  |C  C  C  A  T  A  C  |C  C  C  G  A
          MITO                **   ****   ****
X475  CAU RAT                 A  G  T  A  A  G  G  |T  C  |A  G  C  T  |A  A  C  T                    A  |A  G  C  T  |A  |T  C  G  G  G  |C  C  C  A  T  A  C  |C  C  C  G  A
          MITO                ********   ****
X477  CAU MOUSE*              A  G  T  A  A  G  G  |T  C  |A  G  C  T  |A  A  T  T                    A  |A  G  C  T  |A  |T  C  G  G  G  |C  C  C  A  T  A  C  |C  C  C  G  A
          MITO                ********   ****
X480  CAU BOVINE*             A  G  T  A  A  G  G  |T  C  |A  G  C  T  |A  A  T  T                    A  |A  G  C  T  |A  |T  C  G  G  G  |C  C  C  A  T  A  C  |C  C  C  G  A
          MITO                ********   ****
X494  CAU HUMAN*              A  G  T  A  A  G  G  |T  C  |A  G  C  T  |A  A  A  T                    A  |A  G  C  T  |A  |T  C  G  G  G  |C  C  C  A  T  A  C  |C  C  C  G  A
          MITO                ********   ****
X570  CAU SACCHAROMYCES CER.  G  G  C  G  C  C  G  |T  G  |G  C  G  C  |A  G  T        G  G  A        A  |G  C  G  C  |G  |C  A  G  G  G  |C  T  C  A  T  A  A  |C  C  C  T  G
                                 ************
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          45  47  B   D   F   H   J   L   N   P   |49  51  53|  55  57  59  |61  63  65|  67  69  71  |73  75
        44  46  A   C   E   G   I   K   M   O   48|  50  52  |54  56  58  60|  62  64  |66  68  70  72|  74  76
        ---------------------------------------------------------------------------------------------------------

X408    A A C T                                 A |T A A A G |T T C G A T T |C T T T A |A A G T G G C |T
                                                  |==========|              |==========|******  ******|
X410    A T A                                   T |T T A G G |T G C A A C T |C C T A A |A T C C G C T |A
                                                  |==========|              |==========|**  **********|
X425    T T A                                   T |A T A C G |T T C A A A T |C G T A T |T A T T G C T |A
                                                  |==========|              |==========|********  **  |
X428    T T A                                   T |A T A C G |T T C A A A T |C G T A T |T A T T G C T |A
                                                  |==========|              |==========|************  |
X432    A G A T                                 T |G C A G G |T T C G A A T |C C T G T |C C C C G C C |T
                                                  |  ========|              |========  |************  |
X434    A G A T                                 T |G C A G G |T T C G A A T |C C T G C |C C C C G C C |A
                                                  |==========|              |==========|************  |
X436    A G A C                                 A |G C A G G |T T C G A A T |C C T G T |C C C C G C C |T
                                                  |  ========|              |========  |************  |
X442    A G A C                                 T |G C A G G |T T C G A A T |C C T G T |C C C C G C C |T
                                                  |  ========|              |========  |************  |
X445    A G A C                                 T |G C A G G |T T C G A A T |C C T G T |C C C C G C C |T
                                                  |  ========|              |========  |************  |
X450    T G G T G T T T T T C                     |          |              |          |T C T T A T T |G
                                                  |          |              |          |**************|
X452    A G G T G G T T T T C                     |          |              |          |T C T T A T T |A
                                                  |          |              |          |**********  **|
X459    T T A                                   T |A A A G G |T T A T A A T |C C T T T |T C T T T T T |A
                                                  |==========|              |==========|**************|
X461    T T A                                   T |A A A G G |T T T T A A T |C C T T T |T C T T T T T |A
                                                  |==========|              |==========|**************|
X464    G A A T                                 G |G A A G G |A T A G A A A |C C T C C |C T C T G C T |T
                                                  |==  ======|              |======  ==|**************|
X466    G A A                                   T |G A A G G |A T A A A A A |C C T C C |C T C T A C T |T
                                                  |==  ======|              |======  ==|**************|
X468    A C A                                   T |G T T G G |T T A A A C C |C C T T C |C T T T A C T |A
                                                  |==    ====|              |====    ==|**************|
X470    C A A                                   T |G T T G   |T T A A A A T |C C T T C |C T T T A C T |A
                                                  |==    ==  |              |  ==    ==|**  **********|
X474    A A A                                   T |G T T G G |T C T A A A C |C C T T C |C C G T A T G |A
                                                  |==    ====|              |====    ==|****  ****  **|
X475    A A A                                   T |G T T G G |T T A A A   C |C C T T C |C C G T A C T |A
                                                  |==    ====|              |====    ==|****  ********|
X477    A A A                                   C |G T T G G |T T T A A A T |C C T T C |C C G T A C T |A
                                                  |==    ====|              |====    ==|****  ********|
X480    A A A                                   T |G T T G G |T T T A T A T |C C T T C |C C G T A C T |A
                                                  |==    ====|              |====    ==|****  ********|
X494    A A A                                   T |G T T G G |T T A T A   C |C C T T C |C C G T A C T |A
                                                  |==    ====|              |====    ==|****  ********|
X570    A T G T                                 C |C T C G G |A T G G A A A |C C G A G |C G G C G C T |A
                                                  |==========|              |==========|************  |
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		1 2 3 4 5 6 7	8 9	10 11 12 13	14 15 16 17	A	18 19 20	A B	21	22 23 24 25	26	27 28 29 30 31	32 33 34 35 36 37 38	39 40 41 42 43
X571	CAU SACCHAROMYCES CER.	A G C G C C G **************	T G	G C G C	A G T		G G A		A	G C G C	G	C A G G G	C T C A T A A	C C C T G
X575	CAU SCHIZOSACCHA.POM.	T G C G C G G **************	T A	G G A G	A G T		G G A		A	C T C C	G	A C G G G	C T C A T A A	C C C G T
X576	CAU SCHIZOSACCHA.POM.	T G C G C G G **************	T A	G G A G	A G T		G G A		A	C T C C	G	A C G G G	C T C A T A A	C C C G T
X635	CAU GLYCINE MAX	A T C A G A G **************	T G	G C G C	A G C		G G A		A	G C G T	G	G T G G G	C C C A T A A	C C C A C
X780	CAU DROSOPHILA MELANO.	A G C A G A G **************	T G	G C G C	A G T		G G A		A	G C G T	G	C T G G G	C C C A T A A	C C C A G
X830	CAU XENOPUS LAEVIS	A G C A G A G **************	T G	G C G C	A G C		G G A		A	G C G T	G	C T G G G	C C C A T A A	C C C A G
X831	CAU XENOPUS LAEVIS	A G C A G A G **************	T G	G C G C	A G C		G G A		A	G C G T	G	C T G G G	C C C A T A A	C C C A G
X950	CAU MOUSE	A G C A G A G **************	T G	G C G C	A G C		G G A		A	G C G T	G	C T G G G	C C C A T A A	C C C A G
X995	CAU HUMAN	A G C A G A G **************	T G	G C G C	A G C		G G A		A	G C G T	G	C T G G G	C C C A T A A	C C C A G
X996	CAU HUMAN	A G C A G A G **************	T G	G C G C	A G C		G G A		A	G C G T	G	C T G G G	C C C A T A A	C C C A G
	PHENYLALANINE													
F145	GAA METHANOCOC.VANI.	G C C A A G G **************	T A	G T T C	A G C C	T	G G G		A	G A A C	G	C T G G A	C T G A A G A	T C C A G
F160	GAA SULFOLOBUS SOLFA.	G C C G C C G **************	T A	G C T C	A G C C	C	G G G		A	G A G C	G	C C C G G	C T G A A* G A	C C G G G
F203	GAA MYCOPLASMA MYCOID.	G G T C G T G **************	T A	G C T C	A G T C		G G T		A	G A G C	A	G C A G A	C T G A A G C	T C T G C
F206	GAA SPIROPLASMA MELIF.	G G T T C A G **************	T A	G C T C	A G T T		G G T		A	G A G C	A	T T T G A	T T G A A G C	T C A A A
F235	GAA BACILLUS SUBTILIS	G G C T C G G **************	T A	G C T C	A G T T		G G T		A	G A G C	A	A C G G A	C T G A A A A	T C C G T
F236	GAA BACILLUS SUBTILIS	G G C T C G G **************	T A	G C T C	A G T T		G G T		A	G A G C	A	A C G G A	C T G A A A A	T C C G T
F250	GAA E.COLI	G C C C G G A **************	T A	G C T C	A G T C		G G T		A	G A G C	A	G G G G A	T T G A A A A	T C C C C
F304	GAA EUGLENA GRACILIS CHLORO	G C T G G G A ****** ******	T A	G C T C	A G T T		G G T		A	G A G C	G	G A G G A	C T G A A A A	T C C T T
F310	GAA MARCHANTIA POLYM. CHLORO	G C C G G G A ****** ** **	T A	G C T C	A G T T		G G T		A	G A G C	A	G A G G A	C T G A A A A	T C C T C
F320	GAA ZEA MAYS CHLORO	G T C A G G A ** **********	T A	G C T C	A G T T		G G T		A	G A G C	A	G A G G A	C T G A A A A	T C C T C
F335	GAA NICOTIANA TABACUM CHLORO	G C C G G G A ****** ******	T A	G C T C	A G T T		G G T		A	G A G C	A	G A G G A	C T G A A A A	T C C T C
F375	GAA VICIA FABA CHLORO	G T C G G G A ** **********	T A	G C T C	A G C C		G G T		A	G A G C	A	A A G G A	C T G A A A A	T C C T T

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        45  47  B   D   F   H   J   L   N   P   49  51  53  55  57  59  61  63  65  67  69  71  73  75
      44  46  A   C   E   G   I   K   M   O   48  50  52  54  56  58  60  62  64  66  68  70  72  74  76
      -------------------------------------------------------------------------------------------------

X571  A T G T                                 C|C T C G G|A T C G A A A|C C G A G|C G G C G C T|A
                                                =========               ========= *************
X575  A G G T                                 C|C C A G G|A T C G A A A|C C T G G|C C G C G C A|A
                                                =========               ========= *************
X576  A G G T                                 C|C C A G G|A T C G A A A|C C T G G|C C G C G C A|A
                                                =========               ========= *************
X635  A G G T                                 C|C C A G G|A T C G A A A|C C T G G|C T C T G A T|A
                                                =========               ========= *************
X780  A G G T                                 C|C G A G G|A T C G A A A|C C T T G|C T C T G C T|A
                                                =========               ========= *************
X830  A G G T                                 C|G A T G G|A T C G A A A|C C A T T|C T C T G C T|A
                                                  =======               =======   *************
X831  A G G T                                 C|G A T G G|A T C G A A A|C C A T C|C T C T G C T|A
                                                =========               ========= *************
X950  A G G T                                 C|G A T G G|A T C G A A A|C C A T C|C T C T G C T|A
                                                =========               ========= *************
X995  A G G T                                 C|G A T G G|A T C G A A A|C C A T C|C T C T G C T|A
                                                =========               ========= *************
X996  A G G T                                 C|G A T G G|A T C T A A A|C C A T C|C T C T G C T|A
                                                =========               ========= *************

            P H E N Y L A L A N I N E

F145  T T G T                                 C|G G G T G|T T C G A A T|C A C C C|C C T T G G C|A
                                                =========               ========= *************
F160  T T G T                                 C|C G G G G|T T C A A G T|C C C C G|C G G C G G C|A
                                                =========               ========= *************
F203  G T G T                                 C|G G C G G|T T C A A T T|C C G T C|C A C G A C C|A C C A
                                                ==  =====               ======  = *************
F206  G T G T                                 C|G G C A G|T T C A A T T|C T G T C|C T G A A C C|A C C A
                                                ==  =====               ======  = *************
F235  G T G T                                 C|G G C G G|T T C G A T T|C C G T C|C C G A G C C|A C C A
                                                ==  =====               ======  = *************
F236  G T G T                                 C|G G C G G|T T C G A T T|C C G T C|C C G A G C C|A
                                                ==  =====               ======  = *************
F250  G T G T                                 C|C T T G G|T T C G A T T|C C G A G|T C C G G G C|A C C A
                                                ====  ===               ====  === *************
F304  G T G T                                 C|A C C A G|T T C A A A T|C T G G T|T C C T A G C|A
                                                =========               ========= *****   *****
F310  G T G T                                 C|A C C A G|T T C A A A T|C T G G T|T T C T G G C|A
                                                =========               ========= **  **  *****
F320  G T G T                                 C|A C C A G|T T C A A A T|C T G G T|T C C T G G C|A
                                                =========               ========= *********  **
F335  G T G T                                 C|A C C A G|T T C A A A T|C T G G T|T C C T G G C|A
                                                =========               ========= *****   *****
F375  G T G T                                 C|A C C A G|T T C A A A T|C T G G T|T C C C G G C|G
                                                =========               ========= *********  **
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                              1 2 3 4 5 6 7|8 9|10  12 |14  16  A   19  A  21|  23 25| |27  29 31|  33  35  37 |39  41  43
                                           |   |  11 13|  15  17  18  20  B  |22  24 |26  28  30 |32  34  36 38|  40  42
                              ------------------------------------------------------------------------------------------

F407  GAA TETRAHYMENA PYRIF.  G C T T A A G|T A|G C T C|A G T     G G T     A|G A G C|G|T C A G G|C T G A A A A|C C T G A
          MITO                **** ********     ........                      ........  ----------              ----------
F410  GAA ASPERGILLUS NIDUL.  G C T T G A G|A A|G C T C|A A T T   G G T     A|G A G C|G|G G T C A|G T G A A G T|T G A T T
          MITO                ****** ******     ........                      ........      ------              ------
F417  GAA SACCHAROMYCES CER.  G C T T T T A|T A|G C T T|A G T     G G T     A|A A G C|G|A T A A A|T T G A A G A|T T T A T
          MITO                ****   ******     ........                      ........  ----------              ----------
F425  GAA TORULOPSIS GLAB.    G C C T T T A|T A|G C T T|A G T     G G T     A|A A G C|G|A T A A A|C T G A A G A|T T T A T
          MITO                ****** ******     ........                      ........  ----------              ----------
F450  GAA ASCARIS SUUM        A C T C T G T|T A|G T T T|A T G T T T T       A|A A A T|A|T G A C T|T T G A A G A|A G T T G
          MITO                *********           ......                      ......        ------              ------
F453  GAA ARTEMIA SP.         T A T T C T A|T A|G C T T|A A T A             A|G A G T|A|C A A C A|C T G A A G A|T G T T G
          MITO                ****** ****         ....                          ....    ----------              ----------
F456  GAA AEDES ALBOPICTUS    A T T T A A A|T A|G C T T|A T A A T T         A|G A G C|A|T A A C A|T T G A A G A|T G T T G
          MITO                **************    ......                          .....      -------              --------
F459  GAA DROSOPHILA YAKUBA   A T T C A A A|T A|G C T T|A T A T T T         A|G A G T|A|T G A C A|C T G A A G A|T G T T A
          MITO                **************      ....                          ....    --  ------              ------  --
F464  GAA PARACENTROTUS LIV.  G C A A A G G|T A|G C T T|A A C A G A T T     A|A A G C|A|T A G C A|C T G A A A A|T G C T T
          MITO                **** ********     ........                      ........     -------              --------
F465  GAA PARACENTROTUS LIV.  G C A A A G G|T A|G C T T|A A C A C A T T     A|A A G C|A|T A G C A|C T G A A A A|T G C T T
          MITO                **** ********     ........                      ........     -------              --------
F466  GAA STRONGYLOCEN.PURP.  G C A A A G G|T A|G C T T|A A C     G G A T T A|A A G C|A|C A G C A|C T G A A A A|T G C T T
          MITO                **** ********     ........                      ........     -------              --------
F468  GAA XENOPUS LAEVIS      G C T T A C G|T A|G C T T|A A G T             A|A A G C|A|C A G C A|C T G A A G A|T G C T G
          MITO                ********* ****    ........                      ........  ----------              ----------
F469  GAA XENOPUS LAEVIS      G C T T A C G|T A|G C T T|A A G T             A|A A G C|A|C A G C A|C T G A A A A|T G C T G
          MITO                **************    ........                      ........  ----------              ----------
F470  GAA RANA CATESBEIANA    A C T C T T A|T A|G C T T|A A T A T T         A|A A G T|A|T A G C G|C T G A A A A|C G C T A
          MITO                **** ** ****        ......                      ......    ----------              ----------
F471  GAA CEPHALORHYN.COM.    G T T A A T G|T A|G C T T|A A A A T T T T A T A|A A G C|A|A G A C A|C T G A A A A|T G T C T
          MITO                ****** ******     ........                      ........  ----------              ----------
F474  GAA RAT                 G T T A A T G|T A|G C T T|A T A A T           A|A A G C|A|A A G C A|C T G A A A A|T G C T T
          MITO                ****** ******     ........                      ........  ----------              ----------
F477  GAA MOUSE               G T T A A T G|T A|G C T T|A A T A A C         A|A A G C|A|A A G C A|C T G A A A A|T G C T T
          MITO                ****** ******     ........                      ........  ----------              ----------
F480  GAA BOVINE              G T T G A T G|T A|G C T T|A A C C C           A|A A G C|A|A G G C A|C T G A A A A|T G C C T
          MITO                ****** ******     ........                      ........  ----------              ----------
F482  GAA GREEN MONKEY        G T C T A C G|T A|G C T T|A A C C C C C       A|A A G C|A|A G A C A|C T G A A A A|T G C C T
          MITO                **********  **    ........                      ........  ----  ----              ----  ----
F494  GAA HUMAN               G T T T A T G|T A|G C T T|A C C T C C T C     A|A A G C|A|A T A C A|C T G A A A A|T G T T T
          MITO                **************    ........                      ........  --  ------          *   ----------
F560  GAA NEUROSPORA CRASSA   G C G G G T T|T A|G C T C|A G T T   G G G     A|G A G C|G|T C A G A|C T G A A G A|T C T G A
                              ********* ****    ........                      ........  ----------              ----------
F575  GAA SCHIZOSACCHA.POM.   G T C G C A A|T G|G T G T|A G T T   G G G     A|G C A T|G|A C A G A|C T G A A G A|T C T G T
                              ****** ******       ....                          ....    ----------          *   ----------
F590  GAA YEAST               G C G G A T T|T A|G C T C|A G T T   G G G     A|G A G C|G|C C A G A|C T G A A G A|T C T G G
                              ****** ******     ........                      ........  ----------              ----------
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        45  47  B   D   F   H   J   L   N   P   |49  51  53|  55  57  59  |61  63  65|  67  69  71  |73  75
      44  46  A   C   E   G   I   K   M   O   48|  50  52  |54  56  58  60|  62  64  |66  68  70  72|  74  76
---------------------------------------------------------------------------------------------------------
F407  A G G T                                 C |A T T G G |T C C G A T T |C C A T T |C T T A G G C |A
                                                |==  ======|              |======  ==|********  ****|
F410  A G G T                                 T |G T A A G |T T C A A G T |C T T A T |C T C G A G C |A
                                                |  ========|              |========  |******  ******|
F417  T T A                                   C |A T GTA G |T T C G A T T |C T C A T |T A A G G G C |A
                                                |==========|              |==========|******    ****|
F425  T T A                                   C |A T GTA G |T T C G A T T |C T C A T |T A A G G G C |A
                                                |==========|              |==========|******  ******|
F450  G G A A A T G T                           |          |              |          |T A G G A G T |G
                                                |          |              |          |      ********|
F453  G G G T G G A T G A T T C               C |T G G A A |A T           |A T T T A |A A G G A T A |T
                                                |==    ==  |              |  ==    ==|  ****  ******|
F456  G G G                                   A |A A T T A |T T         T |T A A T T |T T T A A A T |A
                                                |==========|              |==========|**************|
F459  T G G                                   A |G A T T A |A           T |T A A T C |T T T G A A T |A
                                                |==========|              |==========|**************|
F464  C A A                                   A |G A G A G |T T A A A G T |C C C T C |C C T T A G C |A
                                                |======  ==|              |==  ======|********  ****|
F465  C A A                                   A |G A G A G |T T A A A G T |C C C T C |C C T T A G C |A
                                                |======  ==|              |==  ======|********  ****|
F466  C A A                                   A |G G G A G |T T A A A G T |C C C T C |C C T T A G C |A
                                                |==  ==  ==|              |==  ==  ==|********  ****|
F468  A G A                                   T |G A G C C |C T A G A   A |A G C T C |C G A A A G C |A
                                                |========  |              |  ========|****  ********|
F469  A G A                                   T |G A G C C |C T A C G A A |A G C T C |C G T A A G C |A
                                                |========  |              |  ========|**************|
F470  A G A                                   T |G A A C C |C T A A   A A |A G T T C |T A G G G G T |A
                                                |========  |              |  ========|****  **  ****|
F471  A G A                                   T |G G G C A |T T A C       |C G C C C |C A T C A A C |A
                                                |========  |              |  ========|******  ******|
F474  A G A                                   T |G G A T T |C A A       A |A A T C C |C A T A A A C |A
                                                |==========|              |==========|******  ******|
F477  A G A                                   T |G G A T A |A T T       G |T A T C C |C A T A A A C |A
                                                |==========|              |==========|******  ******|
F480  A G A                                   T |G A G T C |T C C       C |A A C T C |C A T A A A C |A
                                                |========  |              |  ========|******  ******|
F482  A G A                                   T |G G A T T |C A C A       |C A T C C |C A T A G A C |A
                                                |========  |              |  ========|**  **********|
F494  A G A                                   C |G G G C T |C A C A     T |C A C C C |C A T A A A C |A
                                                |======    |              |    ======|**************|
F560  A G G T                                 C |G T G T G |T T C G A T C |C A C A C |A A A C C G C |A
                                                |==========|              |==========|****  ********|
F575  T G G T                                 C |A T C G G |T T C G A T C |C C G G T |T T G T G A C |A
                                                |==  ======|              |======  ==|******  ******|
F590  A G G T                                 C |C T G T G |T T C G A T C |C A C A G |A A T T C G C |A
                                                |==========|              |==========|******  ******|
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			1 2 3 4 5 6 7	8 9	10 11 12 13	14 15 16 17 A 18 19 20 A B 21	22 23 24 25	26	27 28 29 30 31	32 33 34 35 36 37 38	39 40 41 42 43
F591	GAA	YEAST	G C G G A T T ****** ** **	T A	G C T C	A G T T G G G A	G A G C	G	C C A G A	C T G A A G* A	T C T G G
F780	GAA	DROSOPHILA MELANO.	G C C G A A A **************	T A	G C T C	A G T T G G G A	G A G C	G	T T A G A	C T G A A G A	T C T A A
F830	GAA	XENOPUS LAEVIS	G C C G A A A **************	T A	G C T C	A G T T G G G A	G A G C	G	T T A G A	C T G A A G A	T C T A A
F955	GAA	RAT	G C C G A A A **************	T A	G C T C	A G T T G G G A	G A G C	G	T T A G A	C T G A A G A	T C T A A
		P R O L I N E									
P020	UGG	PHAGE T4	C T C C G T G ******** **	T A	G C T C	A G T T T G G T A	G A G C	G	C C T G A	T T T G G G A	T C A G G
P040	UGG	PHAGE T5	C T C C G A T ******** ****	T A	G C T C	A A T T G G C T A	G A G T	A	C A C C G	T T T G G G G	C G G T G
P145	UGG	METHANOCOC.VANI.	G G G C C T G **************	T G	G G G T	A G C C T G G T C C A	T C C T	T	T G G G A	T T T G G G A	T C C T G
P148	UGG	METHANOCOC.VOLTAE	G G G C C T G **************	T G	G G G T	A G C C T G G T C A	T C C T	T	T G G G A	T T T G G G A	T C C T G
P203	UGG	MYCOPLASMA MYCOID.	C G G G A A G **************	T G	G C T C	A G T T T G G T A	G A G C	A	T T C G G	T T T G G G A	C C G A A
P206	UGG	SPIROPLASMA MELIF.	C G G A A A G **************	T A	G C T T	A G C T T G G T A	G A G C	A	C T C G G	T T T G G G A	C C G A G
P235	UGG	BACILLUS SUBTILIS	C G G G A A G **************	T A	G C T C	A G C T T G G T A	G A G C	A	C A T G G	T T T G G G A	C C A T G
P250	UGG	E.COLI	C G G C G A G **************	T A	G C G C	A G C T T G G T A	G C G C	A	A C T G G	T T T G G G A	C C A G T
P251	CGG	E.COLI	C G G T G A T **************	T G	G C G C	A G C C T G G T A	G C G C	A	C T T C G	T T C G G G A	C G A A G
P255	UGG	SALMONELLA TYPHI.	C G G C G A G **************	T A	G C G C	A G C T T G G T A	G C G C	A	A C T G G	T T T G G G A	C C A G T
P258	UGG	PHOTOBACT. PHOSPH.	C G G T G A A **************	T A	G C G C	A G T T T G G T A	G C G C	A	T C T G G	T T T G G G A	C C A G A
P259	UGG	AEROMONAS HYDROPH.	C G G T G A T **************	T A	G C G C	A G C C C G G T A	G C G C	A	T C T G G	T T T G G G A	C C A G A
P304	UGG	EUGLENA GRACILIS CHLORO	C G G G A T G **************	T A	G C G C	A G T T T G G T A	G C G C	A	T T G C A	T T T G G G A	T G C A A
P310	GGG	MARCHANTIA POLYM.* CHLORO	C G G A G T A **********	T A	G T	T T G G T A	G T G T	A	T C A T C	T T G G G G T	G A T G A
P311	UGG	MARCHANTIA POLYM. CHLORO	A G G G A T G **************	T A	G C G C	A G T T T G G T A	G C G C	G	T T T G T	T T T G G G T	A C A A A
P315	UGG	TRITICUM AESTIVUM CHLORO	A G G G A T G **************	T A	G C G C	A G C T T G G T A	G C G C	G	T T T G T	T T T G G G T	A C A A A
P320	UGG	ZEA MAYS CHLORO	A G G G A T G **************	T A	G C G C	A G C T T G G T A	G C G C	G	T T T G T	T T T G G G T	A C A A A
P335	UGG	NICOTIANA TABACUM CHLORO	A G G G A T G **************	T G	G C G C	A G C T T G G T A	G C G C	G	T T T G T	T T T G G G T	A C A A A

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        45  47  B   D   F   H   J   L   N   P   49  51  53  55  57  59  61  63  65  67  69  71  73  75
      44  46  A   C   E   G   I   K   M   O   48  50  52  54  56  58  60  62  64  66  68  70  72  74  76
      -----------------------------------------------------------------------------------------------------
F591  A G G T                                 C|C T G T G|T T C G A T C|C A C A G|A G T T C G C|A
                                               ==========              ==========**  **  ******
F780  A G G T                                 C|C C C G G|T T C A A T C|C C G G G|T T T C G G C|A
                                               ==========              ==========**************
F830  A G G T                                 C|C C T G G|T T C G A T C|C C G G G|T T T C G G C|A
                                               ====  ====              ====  ====**************
F955  A A G G T                               C|C C T G G|T T C G A T C|C C G G G|T T T C G G C|A
                                               ====  ====              ====  ====**************
          P R O L I N E
P020  A G G T                                 C|C A A G G|T T C A A A T|C C T T G|T A T G G A G|A
                                               ==========              ==========  **  ********
P040  G G G T                                 T|G A A G G|T T C G A G T|C C T T C|A T T G G A G|A C C A
                                               ==========              ==========****  ********
P145  A G A                                   C|C C C A G|T T C A A A T|C T G G G|C A G G C C C|A C C A
                                               ==========              ==========**************
P148  A A A                                   C|C C C A G|T T C G A A T|C T G G G|C A G G C C C|A C C A
                                               ==========              ==========**************
P203  G G G T                                 C|G C A G G|T T C A A A T|C C T G T|C T T C C C G|A C C A
                                                 ========              ========  **************
P206  G G G T                                 C|G C A G G|T T C G A A T|C C T G T|C T T T C C G|A C C A
                                                 ========              ========  **************
P235  G G G T                                 C|G C A G G|T T C G A A T|C C T G T|C T T C C C G|A C C A
                                                 ========              ========  **************
P250  G G G T                                 C|G G A G G|T T C G A A T|C C T C T|C T C G C C G|A C C A
                                                 ========              ========  **************
P251  G G G T                                 C|G G A G G|T T C G A A T|C C T C T|A T C A C C G|A C C A
                                                 ========              ========  **************
P255  G G G T                                 C|G G A G G|T T C G A A T|C C T C T|C T C G C C G|A C C A
                                                 ========              ========  **************
P258  G G G T                                 C|G G G G G|T T C G A A T|C C C T C|T T C A C C G|A C C A
                                               ==  ======              ======  ==**************
P259  G G G T                                 C|A A A G G|T T C G A A T|C C T T T|A T C A C C G|A C C A
                                               ==========              ==========**************
P304  G G G T                                 C|G C A G G|T T C G A A T|C C T G T|C A T C C C G|A
                                                 ========              ========  **************
P310  A A G T                                 C|G T G G G|T T C A A A T|C C C G C|T A C T C A A|A
                                               ==  ======              ======  ==***********
P311  A T G T                                 C|G C A G G|T T C G A A T|C C T G T|C A T C C C T|A
                                                 ========              ========  **************
P315  A T G T                                 C|A C A G G|T T C A A A T|C C T G T|C A T C C C T|A
                                               ==========              ==========**************
P320  A T G T                                 C|A C A G G|T T C A A A T|C C T G T|C A T C C C T|A
                                               ==========              ==========**************
P335  A T G T                                 C|A C A G G|T T C A A A T|C C T G T|C A T C C C T|A
                                               ==========              ==========**************
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			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	A	18	19	20	A	B	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
P342	UGG	OENOTHERA SP. CHLORO	A	G	G	G	A	T	G	T	A	G	C	G	C	A	G	C	T	T	G	G	T			A	G	C	G	C	G	T	T	T	G	T	T	T	T	G	G	G	T	A	C	A	A	A
P355	UGG	PISUM SATIVUM CHLORO	A	G	G	G	A	T	G	T	A	G	C	G	C	A	G	C	T	T	T	G	T			A	G	C	G	C	G	T	T	T	G	T	T	T	T	G	G	G	T	A	C	A	A	A
P410	UGG	ASPERGILLUS NIDUL. MITO	C	A	G	G	T	T	A	G	A	G	C	C	A	G	G	T			G	G	T			T	A	G	G	C	G	T	C	T	T	G	T	T	T	G	G	G	T	C	A	A	G	A
P417	UGG	SACCHAROMYCES CER. MITO	C	A	G	A	T	A	G	A	A	G	C	C	A	A	A	A			G	G	T			C	A	G	G	C	G	C	T	T	T	C	T	T	T	G	G	G	A	G	A	A	A	G
P425	UGG	TORULOPSIS GLAB. MITO	C	A	G	A	T	A	G	A	A	G	C	C	A	A	A	A			G	G	T			C	A	G	G	C	G	C	T	T	T	C	T	T	T	G	G	G	T	G	A	A	A	G
P442	UGG	TRITICUM AESTIVUM MITO	C	G	A	G	G	T	G	T	A	G	C	G	C	A	G	T	C	T	G	G	T	C		A	G	C	G	C	A	T	C	T	G	T	T	T	T	G	G	G	T	A	C	A	G	A
P445	UGG	ZEA MAYS* MITO	A	G	G	G	A	T	G	T	A	G	C	G	C	A	G	C	T	T	G	G	T			A	G	C	G	C	G	T	T	T	G	T	T	T	T	G	G	G	T	A	C	A	A	A
P450	UGG	ASCARIS SUUM MITO	C	A	G	T	A	G	G	T	A	G	T	T	T	A	T	T	T	T	T					A	A	A	A	T	G	T	A	G	T	A	T	T	T	G	G	G	T	T	A	C	T	G
P459	UGG	DROSOPHILA YAKUBA MITO	C	A	A	G	A	G	G	T	A	G	T	T	T	A	T	T	T	T	A	T				A	A	A	A	T	A	T	T	A	A	T	T	T	T	G	G	G	G	A	T	T	A	A
P464	UGG	PARACENTROTUS LIV. MITO	C	A	A	A	G	A	A	T	A	G	T	T	T	A	A	G	A							A	A	A	A	C	A	A	C	A	G	C	T	T	T	G	G	G	A	G	T	T	G	T
P466	UGG	STRONGYLOCEN.PURP. MITO	C	A	G	G	A	G	A	A	A	G	T	T	T	A	A	T	A	A						A	A	A	A	C	C	G	C	A	G	C	T	T	T	G	G	A	A	G	T	T	G	C
P468	UGG	XENOPUS LAEVIS MITO	C	G	G	G	A	G	A	G	A	A	T	T	T	A	A	A	T	T						A	G	A	A	T	G	T	T	G	G	C	T	T	T	G	G	G	G	G	T	C	A	A
P470	UGG	RANA CATESBEIANA MITO	C	A	G	G	A	T	A	T	A	G	T	T	T	A	G	G	T							A	G	A	A	T	G	C	C	G	G	T	T	T	T	G	G	G	G	A	C	C	G	G
P471	UGG	CEPHALORHYN. COM. MITO	C	A	A	G	G	A	A	T	A	G	T	T	T	A	T	G	T							A	G	A	A	T	T	C	C	A	G	C	T	T	T	G	G	G	T	G	T	T	G	G
P474	UGG	RAT MITO	C	A	A	G	A	A	G	T	A	G	T	T	T	A	A	G	T	A						A	G	A	A	T	A	T	C	A	G	C	T	T	T	G	G	G	T	G	T	T	G	G
P475	UGG	RAT MITO	C	A	A	G	A	A	G	T	A	G	T	T	T	A	A	G	T	A						A	G	A	A	T	A	T	C	A	G	C	T	T	T	G	G	G	T	G	T	T	G	A
P477	UGG	MOUSE MITO	C	A	A	G	A	A	G	T	A	G	T	T	T	A	A	T	T							A	G	A	A	T	A	C	C	A	G	C	T	T	T	G	G	G	T	G	C	T	G	G
P480	UGG	BOVINE MITO	C	A	G	G	G	A	A	T	A	G	T	T	T	A	A	A	T							A	G	A	A	C	T	T	C	A	G	C	T	T	T	G	G	G	G	G	T	T	G	A
P494	UGG	HUMAN MITO	C	A	G	A	G	A	A	T	A	G	T	T	T	A	A	A	T	T						A	G	A	A	T	C	T	T	A	G	C	T	T	T	G	G	G	T	G	C	T	A	A
P570	UGG	SACCHAROMYCES CER.	G	G	G	C	G	T	G	T	G	G	T	C	T	A	G	T			G	G	T			A	T	G	A	T	T	C	T	C	G	C	T	T	T	G	G	G*	T	G	C	G	A	G
P645	UGG	PHASEOLUS VULGARIS	G	G	G	C	A	T	T	T	G	G	T	C	T	A	G	T			G	G	T			A	T	G	A	T	T	C	T	C	G	C	T	T	T	G	G	G	T	G	C	G	A	G
P646	AGG	PHASEOLUS VULGARIS	G	G	G	C	A	T	T	T	G	G	T	C	T	A	G	T			G	G	T			A	T	G	A	T	T	C	T	C	G	C	T	T	A	G	G	G	T	G	C	G	A	G
P700	UGG	CAENORHABDI. ELEG.	G	G	C	C	G	A	A	T	G	G	T	C	T	A	G	T			G	G	T			A	T	G	A	T	T	C	T	C	G	C	T	T	T	G	G	G	T	G	C	G	A	G

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         45    47    B     D     F     H     J     L     N     P     |49    51    53 |   55    57    59    |61    63    65 |   67    69    71    |73    75
      44    46    A     C     E     G     I     K     M     O     48 |   50    52    |54    56    58    60 |   62    64    |66    68    70    72 |   74    76
-----------------------------------------------------------------------------------------------------------------------------------------------------------------
P342  A  T  G  T                                                  C  |A  C  G  G  G  |T  T  C  A  A  A  T  |C  C  T  G  T  |C  A  T  C  C  C  T  |A
                                                                     |======   ======|                     |======   ======|*********************|
P355  A  T  G  T                                                  C  |A  C  A  G  G  |T  T  C  A  A  A  T  |C  C  T  G  T  |C  A  T  C  C  C  T  |A
                                                                     |===============|                     |===============|*********************|
P410  A  A  T  T                                                  G  |T  T  A  T  G  |T  T  C  G  A  A  T  |C  A  T  A  A  |T  A  A  C  C  T  G  |A
                                                                     |===============|                     |===============|*********************|
P417  A  C  C  T                                                  A  |G  T  T  A  G  |T  T  C  G  A  G  T  |C  T  A  T  C  |C  T  A  T  C  T  G  |A
                                                                     |===   =========|                     |=========   ===|*********************|
P425  A  T  C                                                     T  |A  GT T  A  G  |T  T  C  G  A  G  T  |C  T  A  T  C  |C  T  A  T  C  T  G  |A
                                                                     |      =========|                     |=========      |*********************|
P442  G  G  G  C                                                  C  |A  T  A  G  G  |T  T  C  G  A  A  T  |C  C  T  G  T  |C  A  C  C  T  T  G  |A
                                                                     |===   =========|                     |=========   ===|***************   ***|
P445  A  T  G  T                                                  A  |A  C  G  G  G  |T  T  C  A  A  A  T  |C  C  A  G  T  |C  A  T  C  C  C  T  |A
                                                                     |======   ======|                     |======   ======|*********************|
P450  T  G  A  A  T  T                                               |               |                     |               |T  T  T  A  C  T  G  |A
                                                                     |               |                     |               |      ***************|
P459  T  G  A                                                     A  |A  A  A  G  A  |A  A  T           T  |T  C  T  T  T  |T  C  T  C  T  T  G  |A
                                                                     |===============|                     |===============|   ******************|
P464  A  G  A                                                     C  |G  T  A  A  G  |T  G  A  A  A  A  C  |C  T  T  A  C  |T  T  C  T  T  T  G  |A
                                                                     |===============|                     |===============|*********************|
P466  A  A  T  G                                                     |T  A  A  G  G  |T  A  A  G           |C  C  T  T  A  |TT C  T  C  T  T  G  |A
                                                                     |===============|                     |===============|************   ******|
P468  T  A  G                                                     T  |G  G  A  G  G  |T  T  T  G  A  G  T  |C  C  T  T  C  |T  T  T  C  T  C  G  |A
                                                                     |===   =========|                     |=========   ===|***   ******   ******|
P470  T  G  G                                                     T  |A  A  A  G  G  |T  T  A  A  A  G  T  |C  C  T  T  T  |T  A  T  C  C  T  G  |A
                                                                     |===============|                     |===============|*********************|
P471  T  G  G                                                     T  |G  A  G  G  T  |T  T  A  A  T        |G  T  C  T  C  |T  T  C  C  T  T  G  |A
                                                                     |=========      |                     |      =========|*********************|
P474  T  G  G                                                     T  |G  G  G  G  A  |G  G  T  A  G     T  |T  C  C  T  T  |C  T  T  C  T  T  G  |A
                                                                     |      =========|                     |=========      |*********************|
P475  T  G  G                                                     T  |G  G  G  G  A  |G  G  T  A  G     T  |T  C  C  T  T  |C  T  T  C  T  T  G  |A
                                                                     |      =========|                     |=========      |*********************|
P477  T  G  G                                                     T  |G  G  G  G  A  |G  T  A  G        C  |T  C  C  T  T  |C  T  T  C  T  T  G  |A
                                                                     |      =========|                     |=========      |*********************|
P480  T  G  G                                                     T  |G  A  G  A  C  |T  G  C           A  |G  T  T  T  C  |T  T  C  C  T  T  G  |A
                                                                     |======   ======|                     |======   ======|************   ******|
P494  T  G  G                                                     T  |G  G  A  G  T  |T  A  A  A        G  |A  C  T  T  T  |T  T  C  T  C  T  G  |A
                                                                     |      =========|                     |=========      |*********************|
P570  A  G  G  C                                                  C  |C  T  G  G  G  |T  T  C  A  A  T  T  |C  C  C  A  G  |C  T  C  G  C  C  C  |C
                                                                     |===============|                     |===============|***   ***************|
P645  A  G  G  T                                                  C  |C  C  G  A  G  |T  T  C  G  A  T  T  |C  T  C  G  G  |A  A  T  G  C  C  C  |C
                                                                     |===============|                     |===============|*********************|
P646  A  G  G  T                                                  C  |C  C  G  A  G  |T  T  C  A  A  T  T  |C  T  C  G  G  |A  A  T  G  C  C  C  |C
                                                                     |===============|                     |===============|*********************|
P700  A  G  G  T                                                  C  |C  C  G  G  G  |T  T  C  A  A  T  C  |C  C  C  G  G  |T  T  C  G  G  C  C  |C
                                                                     |===============|                     |===============|*********************|
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		1 2 3 4 5 6 7	8 9	10 12 11 13	14 16 A 19 A 21 15 17 18 20 B	23 25 22 24	26	27 29 31 28 30	33 35 37 32 34 36 38	39 41 43 40 42
P780	UGG DROSOPHILA MELANO.	G G C T C A A	T G	G T C T	A G G G G T A	T G A T	T	C T C G C	T T T G G G T	G C G A G
P950	CGG MOUSE	G G C T C G T	T G	G T C T	A G G G G T A	T G A T	T	C T C G C	T T C G G G T	G C G A G
P951	AGG MOUSE	G G C T C G T	T G	G T C T	A G G G G T A	T G A T	T	C T C G C	T T A G G G T	G C G A G
P955	CGG RAT	G G C T C G T	T G	G T C T	A G G G G T A	T G A T	T	C T C G C	T T C G G G T	G C G A G
P956	AGG RAT	G G C T C G T	T G	G T C T	A G G G G T A	T G A T	T	C T C G C	T T A G G G T	G C G A G
P995	AGG HUMAN	G G C T C G T	T G	G T C T	A G G G G T A	T G A T	T	C T C G C	T T A G G G T	G C G A G
	S E R I N E									
S020	UGA PHAGE T4	G G A G G C G	T G	G C A G	A G T G G T T T A	A T G C	A	C C G G T	C T T G A A A	A C C G G
S040	UGA PHAGE T5*	G G A A G G T	A GG	G C G T	A G T G G T A	C G C A	A	C T A G T	C T T G A A A	A C T A G
S041	GGA PHAGE T5	G G A A A A G	C AA	A T A G	A C T G G C G A	C T A A	A	C C C G A	T T G G A A A	T C G G T
S160	CGA SULFOLOBUS SOLFA.	G C C G G G G	T G	C C C G	A G C G G A C C A	A G G G	G	G T A G G	C T C G A $\overset{*}{G}$ A	C C T A C
S203	UGA MYCOPLASMA MYCOID.	G G A A G A T	T A	C C C A	A G T C C G G C T G A	A G G G	A	T C G G T	C T T G A A A	A C C G A
S206	UGA SPIROPLASMA MELIF.	G G A A G A T	T A	C C C A	A G T C T G G T T G A	A G G G	A	T C G G T	C T T G A A A	A T T G A
S232	CGA LACTOBAC. BULG.	G G A G A G T	T G	G C A G	A G C G G T A	A T G C	A	G C G G A	C T C G A A A	T C C G C
S235	GGA BACILLUS SUBTILIS	G G A G A G C	T G	T C C G	A G T G G T C G A	A G G A	G	C A C G A	T T G G A A A	T C G T G
S236	UGA BACILLUS SUBTILIS	G G A G G A A	T A	C C C A	A G T C T G G C T G A	A G G G	A	T C G G T	C T T G A A A	A C C G A
S237	GCU BACILLUS SUBTILIS	G G A G A A G	T A	C T C A	A G T G G C T G A	A G A G	G	C G C C C	C T G C T A A	G G G T G
S250	CGA E.COLI	G G A G A G A	T G	C C G G	A G C G G C T G A	A C G G	A	C C G G T	C T C G A A A	A C C G G
S251	UGA E.COLI	G G A A G T G	T G	G C C G	A G C G G T T G A	A G G C	A	C C G G T	C T T G A A A	A C C G G
S252	UCA E.COLI*	GGA A G A T C	G T	C G T C	T C C G G T G A	G G C G	G	C T G G A	C T T C A A A	T C C A G
S295	GGA CYANOPHORA PARAD.*	G G A G A G A	T G	G C C G	A G T G G T T G A	A G G C	G	C A G C A	C T G G A A A	T G C T G
S304	GCU EUGLENA GRACILIS CHLORO	G G A G A A G	T G	T C T G	A G T G G T C G A	A A G A	G	C T C G A	T T G C T A A	T C G A G
S305	UGA EUGLENA GRACILIS CHLORO	G G A G A G G	T G	T C T G	A G T G G T T T A	A A G T	A	C T G G T	C T T G A A A	A C C A G

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         45    47    B     D     F     H     J     L     N     P     |49    51    53 |   55    57    59    |61    63    65 |   67    69    71    |73    75
      44    46    A     C     E     G     I     K     M     O     48 |   50    52    |54    56    58    60 |   62    64    |66    68    70    72 |   74    76
      -------------------------------------------------------------------------------------------------------------------------------------------------------------

P780  A  G  G  T                                                C  |C  C  G  G  G  |T  T  C  A  A  A  T  |C  C  C  G  G  |T  T  G  A  G  C  C  |C
                                                                   |===============|                     |===============|*********************|
P950  A  G  G  T                                                C  |C  C  G  G  G  |T  T  C  A  A  A  T  |C  C  C  G  G  |A  C  G  A  G  C  C  |C
                                                                   |===============|                     |===============|*********************|
P951  A  G  G  T                                                C  |C  C  G  G  G  |T  T  C  A  A  A  T  |C  C  C  G  G  |A  C  G  A  G  C  C  |C
                                                                   |===============|                     |===============|*********************|
P955  A  G  G  T                                                C  |C  C  G  G  G  |T  T  C  A  A  A  T  |C  C  C  G  G  |A  C  G  A  G  C  C  |C
                                                                   |===============|                     |===============|*********************|
P956  A  G  G  T                                                C  |C  T  G  G  G  |T  T  C  A  A  A  T  |C  C  C  G  G  |A  C  G  A  G  C  C  |C
                                                                   |===   =========|                     |=========   ===|*********************|
P995  A  G  G  T                                                C  |C  C  G  G  G  |T  T  C  A  A  A  T  |C  C  C  G  G  |A  C  G  A  G  C  C  |C
                                                                   |===============|                     |===============|*********************|

         S  E  R  I  N  E

S020  C  A  G  T  C  G  C  T  C  C  G  G  C  G  A  C  T           C  |A  T  A  G  G  |T  T  C  A  A  A  T  |C  C  T  A  T  |C  G  C  C  T  C  C  |G
            :  :  :  :  :           :  :  :  :  :  :               |===============|                     |===============|*********************|
S040  C  C  C  G  C  T  G  T  A  G  T  G  A  T  A  C  G  G        T  |G  A  T  G  G  |T  T  C  G  A  C  T  |C  C  A  T  T  |A  C  C  T  T  C  C  |T  C  C  A
                                                                   |   ============|                     |============   |*********************|
S041  T  G  A  G  T  A  A  T  A  G  C  A  A  T  A  T  T  G  C  C  TT |A  T  G  G  G  |T  T  C  A  A  C  T  |C  C  C  A  T  |C  T  T  T  T  C  C  |G  C  C  A
                                                                   |===============|                     |===============|*********************|
S160  T  G  C  C  T  C  T  C  C  G  A  G  G  C  A                 C  |G  C  G  G  G  |T  T  C  A  A  A  T  |C  C  C  G  C  |C  C  C  C  G  G  C  |G
         :  :  :  :  :           :  :  :  :  :                     |===============|                     |===============|*********************|
S203  G  A  G  T  C  G  G  G  G  A  A  A  C  C  C  G  A  G        C  |G  G  G  G  G  |T  T  C  G  A  A  T  |C  C  C  T  C  |A  T  C  T  T  C  C  |G  C  C  A
                                                                   |===   =========|                     |=========   ===|*********************|
S206  C  A  G  G  C  G  G  T  G  A  A  A  G  C  C  G  C  G        C  |G  G  G  G  G  |T  T  C  G  A  A  T  |C  C  C  T  C  |A  T  C  T  T  C  C  |G  C  C  A
                                                                   |===   =========|                     |=========   ===|*********************|
S232  C  G  A  A  C  C  A  A  T  G  TT G  A  A  T  T  G  G  T  G  C  |G  C  A  G  G  |T  T  C  A  A  A  T  |C  C  T  G  T  |A  C  T  C  T  C  C  |T
                                                                   |   ============|                     |============   |*********************|
S235  T  A  G  G  C  G  G  T  C  A  A  C  T  C  C  G  T  C  T     C  |A  A  G  G  G  |T  T  C  G  A  A  T  |C  C  C  T  T  |G  C  T  C  T  C  C  |G  C  C  A
               *                                                   |===============|                     |===============|*********************|
S236  C  A  G  G  G  T  G  T  C  A  A  A  G  C  C  C  G           C  |G  G  G  G  G  |T  T  C  G  A  A  T  |C  C  C  T  C  |T  T  C  C  T  C  C  |G  C  C  A
            :  :  :                             :  :  :            |===   =========|                     |=========   ===|*********************|
S237  T  A  G  G  T  C  G  T  G  T  A  A  G  C  G  G  C  G        C  |G  A  G  G  G  |T  T  C  A  A  A  T  |C  C  C  T  C  |C  T  T  C  T  C  C  |G  C  C  A
               :     :  :                       :  :  :  :         |===============|                     |===============|*********************|
S250  A  G  T  A  G  G  G  G  C  A  A  C  T  C  T  A  C           C  |G  G  G  G  G  |T  T  C  A  A  A  T  |C  C  C  C  C  |T  C  T  C  T  C  C  |G  C  C  A
                                                                   |===============|                     |===============|*********************|
S251  C  G  A  C  C  C  G  A  A  A  G  G  G  T  T                 C  |C  A  G  A  G  |T  T  C  G  A  A  T  |C  T  C  T  G  |C  G  C  T  T  C  C  |G  C  C  A
                                                                   |===============|                     |===============|***   ***************|
S252  T  T  G  G  G  G  C  C  G  C  C  A  G  C  G  G  T  C  C  C  GG |G  C  A  G  G  |T  T  C  G  A  C  T  |C  C  T  G  T  |G  A  T  C  T  T  CC |G  C  C  A
                                                                   |   ============|                     |============   |*********************|
S295  T  T  T  A  A  G  G  T  T  T  T  C  C  C  T  T  A  A        C  |G  A  G  G  G  |T  T  C  G  A  A  T  |C  C  C  T  C  |T  C  T  C  T  C  C  |G
                                                                   |===============|                     |===============|*********************|
S304  T  G  T  G  T  C  T  A  A  T  A  A  A  C  A  C              C  |G  A  G  G  G  |T  T  C  A  A  A  T  |C  C  C  T  T  |C  T  T  C  T  C  C  |T
         :  :  :  :     :           :     :  :  :  :               |   ============|                     |============   |*********************|
S305  C  G  T  A  G  T  T  T  T  T  G  C  T  A  C                 C  |G  A  G  G  G  |T  T  C  G  A  A  T  |C  C  C  T  C  |C  T  T  C  T  C  C  |G
                                                                   |===============|                     |===============|***   ***************|
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                              1 2 3 4 5 6 7 8 9 10  12  14  16 A    19  A  21   23  25  27  29  31  33  35  37  39  41  43
                                                  11  13  15   17 18  20  B   22  24  26  28  30  32  34  36  38  40  42
                              -------------------------------------------------------------------------------------------

S310  UGA MARCHANTIA POLYM.   G G A G A G A|T G|G C C G|A G T     G G T T T A|T G G C|G|T C G G T|C T T G A A A|A C C G A
          CHLORO              **************    .......                       .......   ---------               ---------
S311  GCU MARCHANTIA POLYM.   G G A G A G A|T G|G C C G|A G T     G G A C G A|A A G C|G|G C G G A|T T G C T A A|T C C G T
          CHLORO              **************    ....                             ....     -------               -------
S312  GGA MARCHANTIA POLYM.   G G A A A G A|T G|G T T G|A G T     G G T T T A|A G G C|G|T A G C A|T T G G A A A|T G C T A
          CHLORO              **************    ..                                 ..   ---------               ---------
S313  UGA HORDEUM VULGARE     G G A G A G A|T G|G C T G|A G T     G G T T G A|T A G C|T|C C G G T|C T T G A A A|A C C G G
          CHLORO              **************    .......                       .......   ---------               ---------
S315  GCU TRITICUM AESTIVUM   G G A G A G A|T G|G C T G|A G T     G G A C T A|A A G C|G|G C G G A|T T G C T A A|T C C G T
          CHLORO              ******  ******    .......                       .......     -------               -------
S320  UGA ZEA MAYS            G G A G A G A|T G|G C T G|A G T     G G T T G A|T A G C|T|C C G G T|C T T G A A A|A C C G G
          CHLORO              **************    .......                       .......   ---------               ---------
S321  GGA ZEA MAYS            G G A G A G A|T G|G C C G|A G C     G G T T C A|A G G C|G|T A G C A|T T G G A A C|T G C T A
          CHLORO              **************    .......                       .......   ---------               ---------
S322  GCU ZEA MAYS            G G A G A G A|T G|G C T G|A G T     G G A C T A|A A G C|G|G C G G A|T T G C T A A|T C C G T
          CHLORO              ******  ******    .......                       .......     -------               -------
S335  GCU NICOTIANA TABACUM   G G A G A G A|T G|G C T G|A G T     G G A C T A|A A G C|G|G C G G A|T T G C T A A|T C C G T
          CHLORO              ******  ******    .......                       .......     -------               -------
S336  GGA NICOTIANA TABACUM   G G A G A G A|T G|G C C G|A G T     G G T T G A|A G G C|G|T A G C A|T T G G A A C|T G C T A
          CHLORO              ******  ******    .......                       .......   ---------               ---------
S337  UGA NICOTIANA TABACUM   G G A G A G A|T G|G C T G|A G C     G G T T G A|T A G C|C|C C G G T|C T T G A A A|A C C G G
          CHLORO              **************    .......                       .......   ---------               ---------
S355  UGA PISUM SATIVUM       G G A G A G A|T G|G C T G|A G T     G G T T G A|T A G C|T|C C G G T|C T T G A A A|A C C G G
          CHLORO              **************    .......                       .......   ---------               ---------
S365  UGA SPINACIA OLERACEA   G G A G A G A|T G|G C T G|A G T     G G T T G A|T A G C|T|C C G G T|C T T G A A A|A C C G G
          CHLORO              **************    .......                       .......   ---------               ---------
S366  GGA SPINACIA OLERACEA   G G A G A G A|T G|G C C G|A G T     G G T T G A|A G G T|G|T A G C A|T T G G A A C|T G C T A
          CHLORO              ******  ******      ....                         ....     ---------               ---------
S410  UGA ASPERGILLUS NIDUL.  A G A G A G T|T G|G C T G|A G T     G G T     A|A G G C|G|A C T A G|C T T G A G T|C T A G T
          MITO                **************    ....                             ....   ---------               ---------
S411  GCU ASPERGILLUS NIDUL.  G G G A A A G|T  |T T C C|A T G     G G T A   G|G G T A|A|G A T A T|T T G C T A A|A T A T T
          MITO                **************    .. ....                       ...  ..     -------               -------
S414  GCU PODOSPORA ANSERINA  G G A A A A G|T  |T G C C|A T A     G G T   A A|G G T A|A|G A T A T|T T G C T A A|A T A T T
          MITO                **************    .. ....                       ...  ..     -------               -------
S417  GCU SACCHAROMYCES CER.  G G A A A A T|T A|A C T A|T A       G G T     A|A A G T|GGA T T A T|T T G C T A A|G T A A T
          MITO                **************    .......                       .......   ---------               ---------
S418  UGA SACCHAROMYCES CER.  G G A T G G T|T G|A C T G|A G T     G G T T T A|A A G T|G|T G A T A|T T T G A G C|T A T C A
          MITO                **********  **    .......                       .......   ---------               ---------
S425  UGA TORULOPSIS GLAB.    G G A T G G T|T G|A C T G|A G T     G G T T T A|A G G T|G|T G A T A|T T T G A G C|T A T C A
          MITO                **********  **    ....                             ....   ---------               ---------
S426  GCU TORULOPSIS GLAB.    G G A A A A T|T C|A C C A|T A       G G T A   A|G G T A|A|A T T A T|T T G C T A T|G T A A T
          MITO                **************       ..                          ..       -------                   -------
S436  GGA OENOTHERA SP.       G G A G A G A|T G|G C C G|A G T     G G T T T A|A G G C|G|T A G C A|T T G G A A C|T G C T A
          MITO                ******  ******    .......                       .......   ---------               ---------
S438  GCU PHASEOLUS VULGARIS  G G A G G T A|T G|G C T G|A G T     G G C T T A|A G G C|A|T T G G T|T T G C T A A|A T C G A
          MITO                **********  **    ....                             ....   --  -- --               -- --  --
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         45  47  B   D   F   H   J   L   N   P  |49  51  53|55  57  59  |61  63  65|67  69  71    |73 75
       44  46  A   C   E   G   I   K   M   O  48| 50  52   |54  56  58  60| 62  64 |66  68  70  72| 74 76
       ----------------------------------------------------------------------------------------------------

S310   T A T A G T T T T T A A G A T T A T     C|G A G G G|T T C A A A T|C C C T C|T C T C T C C|T
                                                 =========               ========= *************
S311   T G T A C A A G C T T T T T G T A C     C|G A G G G|T T C G A A T|C C C T C|T C T C T C C|G
                                                 =========               ========= *************
S312   T G T A G G C T T T T G G T C T A T     C|G A G G G|T T C G A A T|C C C T C|T C T T T C C|G
                                                 =========               ========= *************
S313   T A T A G T T C T A G G A A C T A T     C|G A G G G|T T C G A A T|C C C T C|T C T C T C C|T
                                                 =========               ========= *************
S315   T G T A C A A T T T T T T T G T A C     C|G A G G G|T T C G A A T|C C C T C|T C T T T C C|G
                                                 =========               ========= *****   *****
S320   T A T A G T T C T A G G A A C T A T     C|G A G G G|T T C G A A T|C C C T C|T C T C T C C|T
                                                 =========               ========= *************
S321   T G T A G A C T T T T G T T T A C       C|G A G G G|T T C G A A T|C C C T C|T C T T T C C|G
         ::::::  ::::        ::::  ::::::        =========               ========= *****   *****
S322   T G T A C A A T T T T T T T G T A C     C|G A G G G|T T C G A A T|C C C T C|T C T T T C C|G
                                                 =========               ========= *****   *****
S335   T G T A C G A G T T A A T C G T A C     C|G A G G G|T T C G A A T|C C C T C|T C T T T C C|G
                                                 =========               ========= *****   *****
S336   T G T A G G C T T T T G T T T A C       C|G A G G G|T T C G A A T|C C C T C|T C T T T C C|G
                                                 =========               ========= *****   *****
S337   T A T A G T T T T A A C A A A G A A TCTAC|G A G G G|T T C G A A T|C C C T C|T C T C T C C|T
                                                 =========               ========= *************
S355   T A T A G T T C G A A A C A A A G AATCTAC|G A G G G|T T C G A A T|C C C T C|T C T C T C C|T
                                                 =========               ========= *************
S365   C A T A G T T C T T T A T T C A G AACTATC|G A G G G|T T C G A A T|C C C T C|T C T C T C C|T
                                                 =========               ========= *************
S366   T G T A G G C T T T T G T T T A C       C|G A G G G|T T C G A A T|C C C T C|T C T T T C C|G
                                                 =========               ========= *****   *****
S410   T A A G T T A A A A C T T T             C|A T A T G|T T C G A A T|C A T A T|A C T C T C T|G
         ::::::::::    ::::::::::                =========               ========= *************
S411   G T G C G T T T G C A C A               T|A G A T G|T T C G A A T|C A T C T|C T T T C C C|G
       ::::::::        ::::::::                  =========               ========= *************
S414   G T G T T T A A G C A C C               T|A G G T G|T T C G A G T|C A C C T|C T T T T C C|G
                                                 =========               =========   *****  ****
S417   T G A A T T G T A A A T T C T           T|A T G A G|T T C G A A T|C T C A T|A T T T T C C|G
         ::::::::::      ::::::::::              =========               ========= *************
S418   T T A G T C T T T A T T G G C T A       C|G T A G G|T T C A A A T|C C T A C|A T C A T C C|G
                                                 =========               ========= **   ********
S425   T T A G T T T A A T A A C T A           C|G T A G G|T T C A A A T|C C T A C|A T C A T C C|G
                                                 =========               ========= **   ********
S426   T G A A T T T A T T A T T C T           T|A T G A G|T T C G A A T|C T C A T|A T T T T C C|G
                                                 =========               ========= *************
S436   T G T A G G C T T T T G T T T A C       C|G A G G G|T T C G A A T|C C C T C|T C T T T C C|G
                                                 =========               ========= *****   *****
S438   C A T A C A A G A A G A T T G T A T     C|A T G G G|T T C G A A T|C C C A T|T T C C T C C|G
                                                 =========               ========= **   ********
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			1 2 3 4 5 6 7	8 9	10 11 12 13	14 15 16 17 A	18 19 20 A B	21	22 23 24 25	26	27 28 29 30 31	32 33 34 35 36 37 38	39 40 41 42 43
S442	UGA	TRITICUM AESTIVUM MITO	G G A T G G A	T G	T C T G	A G C	G G T T G	A	A A G A	G	T C G G T	C T T G A A A	A C C G A
S443	GCU	TRITICUM AESTIVUM MITO	G G A G G T A	T G	G C T G	A G T	G G C T T	A	A G G C	A	T T G G T	T T G C T A A	A T C G A
S445	GCU	ZEA MAYS MITO	G G A G G T A	T G	G C T G	A G T	G G C T T	A	A G G C	A	T T G G T	T T G C T A A	A T C G A
S450	UCU	ASCARIS SUUM MITO	G A C A A A T	G T	T T					T	C A G G T	C T T * C T A A	A T C T G
S451	UGA	ASCARIS SUUM MITO	G T T G T C T	T A	A T G A	A C T A		G	T T G T	T	T G T G T	T T T G A A A	A C A C A
S454	UGA	LOCUSTA MIGRATORIA MITO	A G T T A A T	T A	G C T T	A A G A		A	A A G C	A	A A T G T	T T T G A A A	A C A T A
S456	GCU	AEDES ALBOPICTUS MITO	G A A A T A T	G T	T G A T				C A A G	A	A A A A G	C T G C T A A	CTT T T T
S459	GCU	DROSOPHILA YAKUBA MITO	G A A G T A T	G G	T G A T				C A A G	T	A A A A G	C T G C T A A	C T T T T
S460	UGA	DROSOPHILA YAKUBA MITO	A G T T A A T	G A	G C T T	G A A		C	A A G C	G	T A T G T	T T T G A A A	A C A T A
S462	UGA	ASTERINA PECTINI. MITO	G G A G A A A	T G	G C A G	A C A G G		G	A T G C	A	T T T A G	C T T G A A A	C T A A A
S463	GCU	ASTERINA PECTINI. MITO	G A A A C T T	A T	T G G C	T			T A T T	C	C G G T C	C T G C T A A	G T C T C
S464	UGA	PARACENTROTUS LIV. MITO	G G A G A A G	T G	G C A G	A T A G A		A	A T G C	A	T G C G G	C T T G A A A	C C G T T
S465	GCU	PARACENTROTUS LIV. MITO	A A A T C T A	T T	G G T T				T A C C	T	T A G T C	C T G C T A A	G T C T A
S466	UGA	STRONGYLOCEN.PURP. MITO	G G A G A A G	T G	G C A C	G A T A	G G	A	A T G C	A	T G C G G	C T T G A A A	C C G T T
S467	GCU	STRONGYLOCEN.PURP. MITO	G A A A T C T	A T	A G G T			T	T G T C	T	T G G G C	C T G C T A A	G C C C A
S468	GCU	XENOPUS LAEVIS MITO	G A A C T T G	A C	T G G A				C C C	T	A A G A A	C T G C T A A	T TAC T T
S469	UGA	XENOPUS LAEVIS MITO	A A G A A A A	T G	G C A G	A G T	G G T	G	A T G C	A	A C T G A	C T T G A A A	T C A G A
S474	UGA	RAT MITO	T T G A G A A	A G	A C A T	A A T	G G T	T	A T G A	A	A T T G G	C T T G A A A	C C A G T
S475	GCU	RAT MITO	A A G A A A G	T A	T				G	C	A A G A A	C T G C T A A	T T C A T
S476	UGA	RAT MITO	T T G A G A A	A G	A C A T	A A T	G G T	T	A T G A	A	A T T G G	C T T G A A A	C C A G T
S477	UGA	MOUSE MITO	T T G A G A A	A G	A C A T	A T A	G G A		T A	T	G A G A T	T G G C T T G	A A A C C
S478	GCU	MOUSE MITO	A A G A A A G	A T	T				G	C	A A G A A	C T G C T A A	T T C A T
S480	UGA	BOVINE MITO	T T G A G A G	A G	A C A T	A G A	G G T	T	A T G A	T	G T T G G	C T T G A A A	C C A A T

	44 45 46 47 A B C D E F G H I J K L M N O P	48	49 50 51 52 53	54 55 56 57 58 59 60	61 62 63 64 65	66 67 68 69 70 71 72	73 74 75 76
S442	A G T A T T G A T A G G A A T A C	C	G G G G G = = = =	T T C G A A T	C C C T C = = = =	T C C A T C C * * * * * * *	G
S443	C A T A C A A G A A G A T T G T A T	C	A T G G G = = = = =	T T C G A A T	C C C A T = = = = =	T T C C T C C * * * * * *	G
S445	C A T A C A A G A A G A T T G T A T	C	A T G G G = = = = =	T T C G A A T	C C C A T = = = = =	T T C C T C C * * * * * *	G
S450	T T T	T	G G A G A = = =	A A	T C C = = =	G T T T G T T * * * * *	T
S451	A T T T					A G G T T T T * *	T
S454	A G A A	A	A G A A G = = = = =	T T C A A T T	C T T C T = = = = =	A T T A A C T * * * * * * *	T
S456	T C T	T	T A A T G = = = = =	G T T T A ATTC	C A T T T = = = = =	A T A T T T C * * * * * * *	T
S459	T T C T T	T	T A A T G = = = =	G T T A A ATTC	C A T T T = = = =	A T A C T T C * * * * * * *	T
S460	A G A	T	A G A A T = = = =	T T A A T	T T T C T = = = =	A T T A A C T * * * * * * *	T
S462	T A G A	G	G A A G G = = = =	T T C G A A T	C C T T T = = = =	T T T C T C T * * * * * *	T
S463	A G A A	T	C TGT A G = = = = =	T T C A A C T	C T A TAG = = = = =	A A G T T T C * * * * * * *	G
S464	G G A	T	A G A G G = = = = =	T T G A A T T	C C T C T = = = = =	C T T C T C T * * * * * *	T

S465	A A G G C	T	T G C G G
			    = = =
				T T C A A T C	C C G T T
					= = =
						G A G T T T T
						  * * * * *
							C

S466	T G A	T	A G A G G = = = = =	T T T C T T	C C T C T = = = = =	C T T C T C T * * * * * *	T

S467	A A G A C	C	T G C G G
			    = = =
				T T C G A A T	C C G T T
					= = =
						G A G T T T T
						      * * *
							C

S468	A C	G	C T G T G = = = =	T T C A T T C	C A C G G = = = =	C T T G T T C * * * * *	G
S469	G T A	G	G G G G G = = = =	T T C G A T T	C C C T C = = = =	T T T T C T C * * * * * *	G
S474	T G T	A	G G G G G = = =	T T C G A A TC	C T T C C = = =	T T T C T T A * * *	T
S475	G C A	C	C C A T A = = = = =	C C T A A AACA	T A T G G = = = = =	C T T T C T T * * * * * * *	A
S476	T G T	A	G G G G G = = =	T C G A A T C	C T T C C = = =	T T T C T T A * * *	T
S477	A A T T T T - - -	A	G G G G G = = =	T T C G A T TC	C T T C C = = =	T T T C T T A * * *	T
S478	G C T	T	C C A T G = = = = =	T T T A A A AA	C A T G G = = = = =	C T T T C T T * * * * * * *	A
S480	A G T	A	G G G G G = = =	T T C G A T T	C C T T C = = =	C T T T C T T * * * *	A

			1 2 3 4 5 6 7	8 9	10 11 12 13	14 15 16 17 A 18 19 20 A B 21	22 23 24 25	26	27 28 29 30 31	32 33 34 35 36 37 38	39 40 41 42 43
S481	GCU	BOVINE MITO	G A A A A A G	T A	T		G	C	A A G A A	C T G C T A A	T T C TAT
S483	GCU	MACACA FUSCATA MITO	G A G A A A A	C T	C		G	C	A A G G A	C T G C T A A	C C C A T
S484	GCU	MACACA MULATTA MITO	G A G A A A A	C T	C		G	C	G A G G A	C T G C T A A	C C C A T
S485	GCU	MACACA FASCICULA. MITO	G A G A A A A	C T	C		G	C	A A G G A	C T G C T A A	T C C A T
S486	GCU	MACACA SYLVANUS MITO	G A G A A A A	C T	T		G	C	A A G G A	C C G C T A A	T C C A C
S487	GCU	SAIMIRI SCIUREUS MITO	G A G A A A G	T G	C		G	C	A A G A A	C T G C T A A	T T C A T
S488	GCU	TARSIUS SYRICHTA MITO	A A G A A A G	T A	T		G	C	A A G A A	C T G C T A A	C T C A T
S489	GCU	LEMUR CATTA MITO	G A G A A A G	T A	A T		G	T	A T G A A	C T G C T A A	C T C T G
S490	GCU	CHIMPANZEE MITO	G A G A A A G	C T	T		A	T	A A G A A	C T G C T A A	T T C A T
S491	GCU	GIBBON MITO	G A G A A A G	C T	C		A	C	A A G A A	C T G C T A A	C T C A C
S492	GCU	GORILLA MITO	G A G A A A G	C T	C		G	T	A A G A G	C T G C T A A	C T C A T
S493	GCU	ORANG UTAN MITO	G A G A A A G	C T	C		A	C	A A G A A	C T G C T A A	C T C T C
S494	UGA	HUMAN MITO	T T G A A A A	A G	T C A T	G G A G G C C	A T G G	G	G T T G G	C T T G A A A	C C A G C
S495	GCU	HUMAN MITO	G A G A A A G	C T	C		A	C	A A G A A	C T G C T A A	C T C A T
S565	UGA	PODOSPORA ANSERINA	G T C A G C A	T G	G C A G	A G T G G T C T A	A T G C	G	T T A G A	C T T G A A A	T C T A A
S566	UGA	PODOSPORA ANSERINA	G G C G C G A	T G	G C A G	A G T G G T C T A	A T G C	G	T G A G A	C T T G A A A	T C T C A
S570	AGA	SACCHAROMYCES CER.	G G C A A C T	T G	G C C G	A G T G G T T A	A G G C	G	A A A G A	T T A G A A A	T C T T T
S571	GCU	SACCHAROMYCES CER.	G T C C C A G	T G	G C C G	A G T G G T T A	A G G C	G	A T G C C	C T G C T A A	G G C A T
S575	UGA	SCHIZOSACCHA.POM.	G T C A C T A	T G	T C C G	A G T G G T T A	A G G A	G	T T A G A	C T T G A A A	T C T A A
S576	UGA	SCHIZOSACCHA.POM.	G T C A C T A	T G	T C C G	A G T G G T T A	A G G A	G	T T A G A	C T T G A A A	T C T A A
S577	CGA	SCHIZOSACCHA.POM.	G T C A C T A	T G	T C C G	A G T G G T T A	A G G A	G	T T A G A	C T C G A A A	T C T A A
S590	CGA	YEAST	G G C A C T A	T G	G C C G	A G T G G T T A	A G G C	G	A G A G A	C T C G A A A	T C T C T
S591	UGA	YEAST	G G C A C T A	T G	G C C G	A G T G G T T A	A G G C	G	A C A G A	C T T G A A A	T C T G T

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          45  47  B   D   F   H   J   L   N   P   49  51  53  55  57  59   61  63  65  67  69  71  73  75
        44  46  A   C   E   G   I   K   M   O   48  50  52  54  56  58  60   62  64  66  68  70  72  74  76
        ---------------------------------------------------------------------------------------------------
S481    G C T                                   C|C C A T A|T C T A A T AG|T A T G G|C T T T T T C|G
                                                  ==========               ==========**************
S483    G T A                                   C|C C G T A|C C T A A A AT|T A C G G|T T T T C T C|A
                                                  ==========               ==========**************
S484    G T A                                   T|C C G T A|C C T A A A AT|T A C G G|T T T T C T C|A
                                                  ==========               ==========**************
S485    G C C                                   T|C C G T A|C T T A A A AC|T A C G G|T T T C C T C|A
                                                  ==========               ==========******  ******
S486    A C C                                   T|C C G T A|C T T A A A AC|T A C G G|T T T T C T C|A
                                                  ==========               ==========**************
S487    G C T                                   C|C C A A G|A C T A A C AA|C T T G G|C T T C C T C|A
                                                  ==========               ==========******  ******
S488    G C C                                   T|C C A T A|T A T A A C AA|T G T G G|C T T T C T T|
                                                  ======  ==               ==  ======**************
S489    C A C                                   T|C C G T A|T A T A A A AA|T A C G G|C T A T C T C|A
                                                  ==========               ==========****  ********
S490    A T C                                   C|C C A T G|C C T G A C AA|C A T G G|C T T T C T C|A
                                                  ==========               ==========**************
S491    T A T                                   C|C C A T G|T A T G A C AA|C A T G G|C T T T C T C|A
                                                  ==========               ==========**************
S492    A C C                                   C|C C G T G|C T T G A C AA|C A T G G|C T T T C T C|A
                                                  ====  ====               ====  ====  ************
S493    A C                                     T|C C A T G|T G T G A C AA|C A T G G|C T T T C T C|A
                                                  ==========               ==========**************
S494    T T T                                   G|G G G G G|T T C G A T TC|C T T C C|T T T T T T G|T
                                                  ====    ==      *        ==    ====********
S495    G C C                                   C|C C A T G|T C T N A C AA|C A T G G|C T T T C T C|A
                                                  ==========               ==========**************
S565    T T C C T T C G G G A G                 C|G T A G G|T T C G A A C |C C T A C|T G C T G A C|G
                                                  ==========               ==========**************
S566    T T T C T T C G G A A G                 C|G T C G G|T T C A A A T |C C G G C|T C G C G T C|G
                                                  ==  ======               ======  ==**********  **
S570    T G G G C T T T G C C C G               C|G C A G G|T T C G A G T |C C T G C|A G T T G T C|G
          ::::::::      ::::::::                  ==========               ==========**********  **
S571    T G G G T T T T A C C T G               C|G C A G G|T T C G A A T |C C T G T|C T G T G A C|G
                                                    ========               ========  ******  ******
S575    T G G G C T T T G C C C G               C|G C A G G|T T C A A A T |C C T G C|T G G T G A C|G
                                                  ==========               ==========**  **********
S576    T G G G C T C T G C C C G               C|G C A G G|T T C A A A T |C C T G C|T G G T G A C|G
                                                  ==========               ==========**  **********
S577    T G G G C T C T G C C C G               C|G C A G G|T T C A A A T |C C T G C|T G G T G A C|G
          ::::::::      ::::::::                  ==========               ==========**  **********
S590    T G G G C T C T G C C C G               C|G C T G G|T T C A A A T |C C T G C|T G G T G T C|G
          ::::::::      ::::::::                  ====  ====               ====  ====**  ******  **
S591    T G G G C T C T G C C C G               C|G C T G G|T T C A A A T |C C T G C|T G G T G T C|G
          ::::::::      ::::::::                  ====  ====               ====  ====**  ******  **
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		1 2 3 4 5 6 7	8 9	10 12 / 11 13	14 16 A 19 A 21 / 15 17 18 20 B	23 25 / 22 24	26	27 29 31 / 28 30	33 35 37 / 32 34 36 38	39 41 43 / 40 42
S592	CGA YEAST	G G C T A C A ** ** ******	T G	G C C G	A G T G G T T A	A G G C	G	A G A G A	C T C G A A* A	T C T C T
S780	AGA DROSOPHILA MELANO.	G C A G T C G **************	T G	G C C G	A G C G G T T A	A G G C	G	T C T G A	C T A G A A A	T C A G A
S781	CGA DROSOPHILA MELANO.	G C A G T C G ******** ****	T G	G C C G	A G T G G T T A	A G G C	G	T C T G A	C T C G A A A	T C A G A
S785	CGA DROSOPHILA SIMUL.	G C A G T C G ******** ****	T G	G C C G	A G T G G T T A	A G G C	G	T C T G A	C T C G A A A	T C A G A
S870	UCA CHICKEN*	G C C C G G A ********** **	T G	A C C C	T C A G T G G T C T	G G G G	T	G C A G G	C T T C A A A	C C T G T
S995	UGA HUMAN	G T A G T C G **************	T G	G C C G	A G T G G T T A	A G G C	G	A T G G A	C T T G A A A	T C C A T
S996	AGA HUMAN	G T A G T C G **************	T G	G C C G	A G T G G T T A	A G G C	G	A T G G A	C T A G A A A	T C C A T
S997	AGA HUMAN	G T A G T C G **************	T G	G C C G	A G T G G T T A	A G G C	G	A T G G A	C T A G A A A	T C C A T
	T H R E O N I N E									
T020	UGU PHAGE T4	G C T G A T T **************	T A	G C T C	A G T A G G T A	G A G C	A	C C T C A	C T T G T A A	T G A G G
T040	UGU PHAGE T5	G C T C C T A ********** **	A A	G C A T	T G T T G G T G	A T G C	A	G T T G C	C T T G T A A	G C A T C
T145	UGU METHANOCOC.VANI.	G C C T C G G **************	T G	G C T C	A G C C T G G T A	G A G C	G	C C T G A	C T T G T A A	T C A G G
T146	GGU METHANOCOC.VANI.	G C C T C A G **************	T G	G C T C	A G C C T G G T A	G A G C	G	C C T G C	T T G G T A A	G C A G G
T148	UGU METHANOCOC.VOLTAE	G C C T C A G ****** ******	T G	G C T C	A G C C T G G T A	G A G C	G	C C T G A	C T T G T A A	T C A G G
T200	AGU MYCOPLASMA CAPRIC.	G C T G A C T **************	T A	G C T C	A G T T G G T A	G A G C	A	A T T G A	C T A G T A A	T C A A T
T203	UGU MYCOPLASMA MYCOID.	G C T G A C T **************	T A	G C T C	A G C A G G C A	G A G C	A	A C T G A	C T T G T A A	T C A G T
T235	GGU BACILLUS SUBTILIS	G C T T C C A **************	T A	G C T C	A G C A G G T A	G A G C	A	C T T C C	A T G G T A A	G G A A G
T236	UGU BACILLUS SUBTILIS	G C C G G T G **********	T A	G C T C	A A T T G G T A	G A G C	A	A C T G A	C T T G T A A	T C A G T
T237	UGU BACILLUS SUBTILIS	G C C G G T G **********	T A	G C T C	A A T T G G T A	G A G C	A	A C T G A	C T T G T A A	T C A G T
T250	GGU E.COLI	G C T G A T A **************	T G	G C T C	A G T T G G T A	G A G C	G	C A C C C	T T G G T A G	G G G T G
T251	GGU E.COLI	G C T G A T A **************	T A	G C T C	A G T T G G T A	G A G C	G	C A C C C	T T G G T A A	G G G T G
T252	UGU E.COLI	G C C G A C T ********** **	T A	G C T C	A G T A G G T A	G A G C	A	A C T G A	C T T G T A A	T C A G T
T253	CGU E.COLI	G C C G A T A **************	T A	G C T C	A G T T G G T A	G A G C	A	G C G C A	T T C G T A A	T G C G A

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        45  47  B   D   F   H   J   L   N   P   49  51  53  55  57  59  61  63  65  67  69  71  73  75
      44  46  A   C   E   G   I   K   M   O   48  50  52  54  56  58  60  62  64  66  68  70  72  74  76
      ----------------------------------------------------------------------------------------------------

S592  G G G C T C T G C C C G                 C|G C T G G|T T C A A T C|C C T G C|T G T G G T C|G
                                                ====  ====              ====  ====******  **  **
S780  T T C C C T C T G G G A G               C|G T A G G|T T C G A A T|C C T A C|C G A C T G C|G
                                                ==========              ==========**************
S781  T T C C C T C T G G G A G               C|G T A G G|T T C G A A T|C C T A C|C G G C T G C|G
                                                ==========              ==========****  ********
S785  T T C C C T C T G G G A G               C|G T A G G|T T C G A A T|C C T A C|C G G C T G C|G
                                                ==========              ==========****  ********
S870  A G C T G T C T A G C G A C A           G|A G T G G|T T C A A T T|C C A CCT|T T C G G G C|G
          ::::::::::        ::::::::            ==========              ==========**************
S995  T G G G G T T T C C C C G               C|G C A G G|T T C G A A T|C C T G C|C G A C T A C|G
                                                ==========              ==========**************
S996  T G G G G T T T C C C C A               C|G C A G G|T T C G A A T|C C T G C|C G A C T A C|G
                                                ==========              ==========**************
S997  T G G G G T C T C C C C G               C|G C A G G|T T C G A A T|C C T G C|C G A C T A C|G
                                                ==========              ==========**************

                T H R E O N I N E

T020  A T G T                                 C|G G C G G|T T C G A T T|C C G T C|A A T C A G C|A C C A
                                                ==  ======              ======  ==**************
T040  T G A                                   A|C C G G G|T T C G A T T|C C T A G|T G G G A G C|A C C A
                                                ==    ====              ====    ==**  **********
T145  T G G T                                 C|G G G G G|T T C G A A T|C C C C C|C C G A G G C|T
                                                ==========              ==========**************
T146  A G G C                                 C|G C G G G|T T C A A A C|C C C G C|C T G A G G C|T
                                                ==========              ==========**************
T148  T G G T                                 C|G G G G G|T T C G A A T|C C C C C|C T G G G G C|T
                                                ==========              ==========******  ******
T200  A G G T                                 C|G A A G G|T T C A A A T|C C T T T|A G T C A G C|A C C A
                                                  ========              ========  **************
T203  A G G T                                 C|G T A G G|T T C G A T T|C C T A T|A G T C A G C|A C C A
                                                  ========              ========  **************
T235  A G G T                                 C|A G C G G|T T C G A G C|C C G C T|T G G A A G C|T
                                                ==========              ==========**************
T236  A G G T                                 T|G G G G G|T T C A A G T|C C T C T|T G C C G G C|A
                                                  ==  ====              ====  ==      **********
T237  A G G T                                 T|G G G G G|T T C A A G T|C C T C T|T G C C G G C|A C C A
                                                  ==  ====              ====  ==      **********
T250  G G G T                                 C|C C C A G|T T C G A C T|C T G G G|T A T C A G C|A C C A
                                                ==========              ==========**************
T251  A G G T                                 C|G G C A G|T T C G A A T|C T G C C|T A T C A G C|A C C A
                                                ==========              ==========**************
T252  A G G T                                 C|A C C A G|T T C G A T T|C C G G T|A N T C G G C|A C C A
                                                ======  ==              ==========**  **********
T253  A G G T                                 C|G T A G G|T T C G A C T|C C T A T|T A T C G G C|A C C A
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			1 2 3 4 5 6 7	8 9	10 11 12 13	14	15	16	17	A	18	19	20	A	B	21	22 23 24 25	26	27 28 29 30 31	32 33 34 35 36 37 38	39 40 41 42 43
T260	CGU	PSEUDOMONAS AER.	G C C G G A T	T A	G C T C	A	G	T	C		G	G	T			A	G A G C	A	G C T C A	T T C G T A A	T G A G A
T261	GGU	PSEUDOMONAS AER.	G C T C A T G	T A	G C T C	A	G	T	T		G	G	T			A	G A G C	A	C A C C C	T T G G T A A	G G G T G
T304	UGU	EUGLENA GRACILIS CHLORO	G C C T T T T	T A	G C T C	A	G	T			G	G	T			A	G A G C	A	T T G T A	T T T G T A A	T G C G G
T310	GGU	MARCHANTIA POLYM. CHLORO	G C C C T T T	T A	A C T C	A	G	T			G	G	T			A	G A G T	A	A C G C C	A T G G T A G	G G C G T
T311	UGU	MARCHANTIA POLYM. CHLORO	G C C T G T T	T A	G C T C	A	G	A			G	G	T	C		A	G A G C	G	T C G C A	C T T G T A A	T G C G A
T313	GGU	HORDEUM VULGARE CHLORO	G C C C T T T	T A	A C T C	A	G	T			G	G	T			A	G A G T	A	A T G C C	A T G G T A A	G G C A T
T315	GGU	TRITICUM AESTIVUM CHLORO	G C C C T T T	T A	A C T C	A	G	T			G	G	T			A	G A G T	A	A T G C C	A T G G T A A	G G C A T
T320	UGU	ZEA MAYS CHLORO	G C C C A C T	T A	G C T C	A	G	A			G	G	T	T		A	G A G C	A	T C G C A	T T T G T A A	T G G G A
T335	UGU	NICOTIANA TABACUM CHLORO	G C C C G C T	T A	G C T C	A	G	A			G	G	T	T		A	G A G C	A	T C G C A	T T T G T A A	T G C G A
T336	GGU	NICOTIANA TABACUM CHLORO	G C C C T T T	T A	A C T C	A	G	T			G	G	T			A	G A G T	A	A C G C C	A T G G T A A	G G C G T
T355	GGU	PISUM SATIVUM CHLORO	G C C C T T T	T A	A C T C	A	G	T			G	G	T			A	G A G T	A	A C G C C	A T G G T A A	G G C G T
T365	GGU	SPINACIA OLERACEA CHLORO	G C C C C T T	T A	A C T C	A	G	T			G	G	T			A	G A G T	A	A C G C C	A T G G T A A	G G C G T
T366	UGU	SPINACIA OLERACEA CHLORO	G C C C G C T	T A	G C T C	A	G	A			G	G	T	T		A	G A G C	A	T C G C A	T T T G T A A	T G C G A
T375	GGU	VICIA FABA CHLORO	G C C C T T T	T A	A C T C	A	G	T			G	G	T			A	G A G T	A	A C G C C	A T G G T A A	G G C G T
T410	UGU	ASPERGILLUS NIDUL. MITO	G C C C G G T	T A	G C A T	A	A	A	A	G	T					A	A T G T	A	T C C G T	T T T G T A A	T C G G A
T417	UAG	SACCHAROMYCES CER.* MITO	G T A A A T A	T A	A T T T	A	A	T			G	G	T			A	A A A T	G	T A T G T	TTT T A G G T	G C A T A
T418	UGU	SACCHAROMYCES CER. MITO	G T T A T A T	T A	G C T T	A	A	T	T		G	G	T			A	G A G C	A	T T C G T	T T T G T A A	T C G A A
T425	UGU	TORULOPSIS GLAB. MITO	G T T A T A T	T A	G C T C	A	A	T	T		G	G	T			A	G A G C	A	T T C G T	T T T G T A A	T C G A A
T426	UAG	TORULOPSIS GLAB. MITO	G T A G A T A	T A	A T T T	A	A	T	C		G	G	T			A	A A A T	G	TAT G T T	T T T A G G G	T A C A T
T450	UGU	ASCARIS SUUM MITO	G C C A T G T	T A	G T T T	A	T	G	T	G						A	A A A T	G	T G T G A	T T T G T A A	T C G T G
T452	UGU	CAENORHABDI.ELEG. MITO	G C T A T G A	T A	G T T T	A	A	T	T	T						A	G A A T	A	T A T A A	C T T G T A A	T T A T A
T459	UGU	DROSOPHILA YAKUBA MITO	G T T T T A A	T A	G T T T	A	A	T	A							A	A A A C	A	T T G G T	C T T G T A A	A T C A A
T464	UGU	PARACENTROTUS LIV. MITO	A C C T T G A	A G	G C T C	A	A	T	A	G	T	T				A	G A G C	GC	C A A G T	C T T G T A A	A C T T G

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        45  47  B   D   F   H   J   L   N   P   |49  51  53|  55  57  59  |61  63  65|  67  69  71  |73  75
      44  46  A   C   E   G   I   K   M   O   48|  50  52  |54  56  58  60|  62  64  |66  68  70  72|  74  76
      ------------------------------------------|----------|--------------|----------|--------------|--------

T260  A G G T                                 C |G G G G G |T T C G A T T |C C T C T |A T C C G G C |A C C A
                                                |  ==  ====|              |====  ==  |**************|
T261  A G G T                                 C |A G C G G |T T C A A A T |C C G C T |C A T G A G C |T C C A
                                                |==========|              |==========|**************|
T304  T G G T                                 C |G T C G G |T T C G A A T |C C G A C |A A A A G G C |T
                                                |==========|              |==========|**************|
T310  A A G T                                 C |A T C G G |T T C A A A T |C T G A T |A A A G G G C |T
                                                |======  ==|              |==  ======|**************|
T311  T G G T                                 C |A T C G G |T T C G A C T |C C G A T |A G C G G G C |T
                                                |==========|              |==========|**  **  ******|
T313  A A G T                                 C |A T C G G |T T C A A A T |C C G A T |A A A G G G C |T
                                                |==========|              |==========|**************|
T315  A A G T                                 C |A T C G G |T T C A A A T |C C G A T |A A A G G G C |T
                                                |==========|              |==========|**************|
T320  G G G T                                 C |A T C G G |T T C A A A T |C C G A T |A G T C G G C |T
                                                |==========|              |==========|******  ******|
T335  T G G T                                 C |A T C G G |T T C G A T T |C C G A T |A G C C G G C |T
                                                |==========|              |==========|******  ******|
T336  A A G T                                 C |A T C G G |T T C A A A T |C C G A T |A A G G G G C |T
                                                |==========|              |==========|****  ********|
T355  A A G T                                 C |G T C G G |T T C A A A T |C C G A T |A A A G G G C |T
                                                |  ========|              |========  |**************|
T365  A A G T                                 C |A T C G G |T T C A A A T |C C G A T |A A G G G G C |T
                                                |==========|              |==========|**************|
T366  T G G T                                 C |A T C G G |T T C G A G T |C C G A T |A G C C G G C |T
                                                |==========|              |==========|******  ******|
T375  A A G T                                 C |A T C G G |T T C A A A T |C C G A T |A A G G G G C |T
                                                |==========|              |==========|****  ********|
T410  A T A                                   A |A C A A G |T G C G A T A |C T T G T |A C T G G G C |T
                                                |==========|              |==========|****  ********|
T417  T T A                                   T |C T A A G |T T C A A A T |C T T A G |T A T T T A C |A
                                                |==========|              |==========|**************|
T418  A G G T                                 T |T G G G G |T T C A A A T |C C C T A |A T A T A A C |A
                                                |==  ======|              |======  ==|**************|
T425  A G G T                                 T |T G G G G |T T C A A A T |C C C T A |A T A T A A C |A
                                                |==  ======|              |======  ==|**************|
T426  A T T A                                 T |C T A A G |T T C A A A T |C T T A G |T A T T T A C |A
                                                |==========|              |==========|******  ******|
T450  G G T A G T                               |          |              |          |T T G T G G C |T
                                                |          |              |          |      ********|
T452  A G G T T T C                             |          |              |          |T A G T A G C |T
                                                |          |              |          |**    ********|
T459  A A A                                   T |A A G A T |T A         T |T T C T T |T T A A A A C |T
                                                |========  |              |  ========|**************|
T464  G A G                                   A |G A G G G |T T A A A G T |C C C T C |T C A A G G C |T
                                                |==========|              |==========|************  |
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                                1 2 3 4 5 6 7 8 9 10  12  14  16  A   19  A   21  23  25  27  29  31  33  35  37  39  41  43
                                                    11  13  15  17  18  20  B   22  24  26  28  30  32  34  36  38  40  42
                                -------------------------------------------------------------------------------------------
T466  UGU STRONGYLOCEN.PURP.    G C C T T G A|A A|G C T C|A A C A A C T       A|G A G C|T|T T G G T|C T T G T A A|A C C A G
          MITO                  *************     .......                       .......       -------               -------
T468  UGU XENOPUS LAEVIS        G T C C T G A|T A|G C T T|A A T T             A|A A G C|A|T C G G T|C T T G T A A|G C C G A
          MITO                  ****** ******     .......                       .......   -----                     -------
T470  UGU RANA CATESBEIANA      G C C T T G A|T A|G C T T|A A A C T           A|A A G C|A|C C G G T|C T T G T A A|G C C G G
          MITO                  *************     .......                       .......   -----                     -------
T471  UGU CEPHALORHYN.COM.      G T C T T T G|T A|G T A T|A A C A A           A|A T A C|C|C C G G T|C T T G T A A|A C C G G
          MITO                  ********** **     .......                       .......   ---------               ---------
T474  UGU RAT                   G T C C C G A|T A|G T A T|A A A A             A|T T A C|T|C T G G T|C T T G T A A|A C C A A
          MITO                  ********  ***     .....                           .....       -------               -*-----
T475  UGU RAT                   G T C C C G A|T A|G T A T|A A A A             A|T T A C|T|C T G G T|C T T G T A A|N C C A A
          MITO                  *************     .....                           .....       -----                   -----
T477  UGU MOUSE                 G T C T T G A|T A|G T A T|A A A C             A|T T A C|T|C T G G T|C T T G T A A|A C C T G
          MITO                  *************     .....                           .....     --  -----               ------  -
T480  UGU BOVINE                G T C T T T G|T A|G T A C|A T C T             A|A T A T|A|C T G G T|C T T G T A A|A C C A G
          MITO                  ********** **       ...                           ...       ---------               ---------
T494  UGU HUMAN                 G T C C T T G|T A|G T A T|A A A C T           A|A T A C|A|C C A G T|C T T G T A A|A C C G G
          MITO                  *************     .......                       .......   ---   ---               ---   ---
T780  AGU DROSOPHILA MELANO.    G G C G C C G|T G|G C T T|A G T T   G G T T   A|A A G C|G|C C T G T|C T A G T A A|A C A G G
                                ****** ******     .......                       .......   ---------               ---------
T995  UGU HUMAN                 G G C T C C A|T A|G C T C|A G G     G G T T   A|G A G C|A|C T G G T|C T T G T A A|A C C A G
                                  ****  *****     .......                       .......   ---------               ---------

              T R Y P T O P H A N
                                                                                                              *
W115  CCA HALOBACTERIUM MED.    G G G G C T G|T G|G C C A|A G C C C G G C     A|T G G C|G|A C T G A|C T C C A G A|T C A G T
                                ********** **     .......                       .......   ---------            *  ---------
W120  CCA HALOBACTERIUM VOL.    G G G G C T G|T G|G C C A|A G C C C G G C     A|T G G C|G|A C T G A|C T C C A G A|T C A G T
                                ********** **     .......                       .......   ---------               ---------
W200  UCA MYCOPLASMA CAPRIC.    A G G G G C A|T A|G T T C|A G T A   G G T     A|G A A C|A|T C G G T|C T T C A A A|A C C G A
                                *************     .......                       .......   ---------               ---------
W201  CCA MYCOPLASMA CAPRIC.    A G G A G A G|T A|G T T C|A A T     G G T     A|G A A C|G|T C G G T|C T C C A A A|A C C G A
                                *************     .......                       .......   ---------               ---------
W235  CCA BACILLUS SUBTILIS     A G G G G C A|T A|G T T T|A A C     G G T     A|G A A C|A|G A G G T|C T C C A A A|A C C T C
                                *************     .....                         .......   ---------               ---------
W250  CCA E.COLI                A G G G G C G|T A|G T T C|A A T T   G G T     A|G A G C|A|C C G G T|C T C C A A A|A C C G G
                                *************     ..  ...                       ...   .   ---------               ---------
W304  CCA EUGLENA GRACILIS      G C G C T T T|T A|G T T C|A A T T   G G T     A|G A A C|G|T A G G T|C T C C A A A|A C C T G
          CHLORO                ********** **     .......                       .......   ---------               ---------
W310  CCA MARCHANTIA POLYM.     G C G C T T T|T A|G T T C|A G T T C G G T     A|G A A C|G|T A G G T|C T C C A A A|A C C T A
          CHLORO                  ******** **     .......                       .......   ---------               ---------
W315  CCA TRITICUM AESTIVUM     G C G C T C T|T A|G T T C|A G T T C G G T     A|G A A C|G|C G G G T|C T C C A A A|A C C C G
          CHLORO                  ***********     .......                       .......   ---------               ---------
W320  CCA ZEA MAYS              G C G C T C T|T A|G T T C|A G T T T G G T     A|G A A C|G|C G G G T|C T C C A A A|A C C C G
          CHLORO                  ***********     .......                       .......   ---------               ---------
W335  CCA NICOTIANA TABACUM     G C G C T C T|T A|G T T C|A G T T C G G T     A|G A A C|G|T G G G T|C T C C A A A|A C C C G
          CHLORO                  ***********     .......                       .......     -------               -------
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        45  47  B   D   F   H   J   L   N   P   |49  51  53|  55  57  59  |61  63  65|  67  69  71  |73  75
      44  46  A   C   E   G   I   K   M   O   48|  50  52  |54  56  58  60|  62  64  |66  68  70  72|  74  76
------------------------------------------------------------------------------------------------------------
T466  G A G                                   A |G A G G G |T A A A C T   |C C C T C |T C A A G G C |T
                                                |==========|              |==========|**************|
T468  A G A                                   T |T G A G G |C T A A A A C |C C T C C |T C A A G A C |T
                                                |  ========|              |==========|******  ******|
T470  A G A C                                 T |G T A G C |C T A A   C C |C C T A C |T C A A G G C |T
                                                |========  |              |  ========|**************|
T471  A A A                                   A |G G A G A |A C C C C A T |T CCT C C |C T A A G A C |T
                                                |==========|              |==========|**  **********|
T474  A A A                                   T |G A A G A |G T C A     G |T C T T C |T C A G G A C |A
                                                |==========|          *   |==========|****  ********|
T475  A A A                                   T |G A A G A |G T C A G   N |T C T T C |T C G G G A C |A
                                                |==========|              |==========|**************|
T477  A A A                                   T |G A A G A |T C T T     C |T C T T C |T C A A G A C |A
                                                |==========|              |==========|**************|
T480  A G A                                   A |G G A G A |A C A A C T AA|C C T C C |C T A A G A C |T
                                                |========  |              |  ========|**  **********|
T494  A G A                                   T |G A A A A |C C         T |T T T T C |C A A G G A C |A
                                                |==========|              |==========|**************|
T780  A G A T                                 C |G T G A G |T T C G A A T |C T C G C |C G G G G C C |T
                                                |==  ======|              |======  ==|******  ******|
T995  G G G T                                 C |G C G A G |T T C A A T T |C T C G C |T G G G G C T |T
                                                |==========|              |==========|******  ****  |

          T R Y P T O P H A N

W115  C G A T                                 C |G G G G G |T T C A A A T |C C C T C |C G G C C C C |A
                                                |==  ======|              |======  ==|**  **********|
W120  C G A T                                 C |G G G G G |T T C A A A T |C C C T C |C G G C C C C |A
                                                |==  ======|              |======  ==|**  **********|
W200  G T G T                                 C |A C G A G |T T C G A G T |C T T G T |T G C C C C T |G C C A
                                                |====  ====|              |====  ====|**************|
W201  G C G T                                 T |G A G G G |T T C G A T T |C C T T T |C T C T C C T |G C C A
                                                |  ==  ====|              |====  ==  |**************|
W235  C G G                                   T |G T G G G |T T C G A T T |C C T A C |T G C C C C T |G C C A
                                                |====  ====|              |====  ====|**************|
W250  G T G T                                 T |G G G A G |T T C G A G T |C T C T C |C G C C C C T |G C C A
                                                |==  ======|              |======  ==|**************|
W304  A T G T                                 A |G T A G G |T T C G A A T |C C T A C |A G A G C G C |G
                                                |==========|              |==========|**  **********|
W310  A T G T                                 C |G T A G G |T T C A A A T |C C T A C |A G A G C G T |G
                                                |==========|              |==========|**  ********  |
W315  A T G T                                 C |G T A G G |T T C A A A T |C C T A C |A G A G C G T |G
                                                |==========|              |==========|************  |
W320  A T G T                                 C |G T A G G |T T C A A A T |C C T A C |A G A G C G T |G
                                                |==========|              |==========|************  |
W335  A T G T                                 C |G T A G G |T T C A A A T |C C T A C |A G A G C G T |G
                                                |==========|              |==========|************  |
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			1 2 3 4 5 6 7	8 9	10 11 12 13	14	15	16	17	A	18	19	20	A	B	21	22 23 24 25	26	27 28 29 30 31	32 33 34 35 36 37 38	39 40 41 42 43
W342	CCA	OENOTHERA SP.	G C G C T C T	T A	G T T C	A	G	T	T	C	G	G	T			A	G A A C	G	C G G G T	C T C C A A A	A C C C G
		CHLORO	************		....												....		----------		----------
W355	CCA	PISUM SATIVUM	G C G C T C T	T T	G T T C	A	G	T	T	C	G	G	T			A	G A A C	G	C G G G T	C T C C A A A	A C C C G
		CHLORO	************		....												....		----------		----------
W402	CCA	CHLAMYDOMO. REINH.	A G A G G T G	T A	G C T T	A	G	T	T		G	G	T	T		A	A A G C	G	C A A G A	T T C C A A A	T C T T G
		MITO	******** ****		....												....		----------		----------
W406	UCA	PARAMECIUM TETRA.	A G G G G A G	T A	G T T N*	A	A	C			G	G	N*			A	A A A C	T	T T A G T	C T T C A A A	A C T G A
		MITO	** **********		......												......		-- ------		------ --
W407	UCA	TETRAHYMENA PYRIF.	G G G G G A A	T A	G T T T	A	A	C			G	G	T			A	G A A C	A	A C G G T	C T T C A A A	A T C G T
		MITO	** **********		......												......		------ --		-- ------
W410	UCA	ASPERGILLUS NIDUL.	A A G A G T A	T A	G T T T	A	A	T			G	G	T			A	A A A C	T	G T A A G	C T T C A A C	C T T A T
		MITO	**************		....												....		----------		----------
W414	UCA	PODOSPORA ANSERINA	A A G A G T A	T A	G T T T	A	A	A			G	G	T			A	A A A C	A	G A A A G	C T T C A A C	C T T T A
		MITO	********** **		....												....		--------		--------
W425	UCA	TORULOPSIS GLAB.	A A G G A T A	T A	G T T T	A	A	T			G	G	T			A	A A A C	T	A T T G A	T T T C A A A	T C A A T
		MITO	**************		....												....		----------		----------
W428	UCA	YEAST	A A G G A T A	T A	G T T T	A	A	T			G	G	T			A	A A A C	A	G T T G A	T T T C A A A	T C A A T
		MITO	**************		....												....		--------		--------
W436	CCA	OENOTHERA SP.	G C G C T C T	T A	G T T C	A	G	T	T	C	G	G	T			A	G A A C	G	C G G G T	C T C C A A A	A C C C G
		MITO	************		....												....		----------		----------
W442	CCA	TRITICUM AESTIVUM	G C G C T C T	T A	G T T C	A	G	T	T	C	G	G	T			A	G A A C	G	T G T G T	C T C C A A A	A C C C A
		MITO	************		....												....		---- ----		---- ----
W445	CCA	ZEA MAYS*	G C G C T C T	T A	G T T C	A	G	T	T	C	G	G	T			A	G A A C	G	T G G G T	C T C C A A A	A C C C A
		MITO	************		....												....		----------		----------
W450	UCA	ASCARIS SUUM	A C A G A T T	T A	A G T T	A	A	G	T	T	T					A	A A C T	C	T T G G T	T T T C A A A	A C C A A
		MITO	********** **		....												....		----------		----------
W457	UCA	DROSOPHILA MELANO.	A A G G C T T	T A	A G T T	A	A	T	A							A	A A C T	A	A T A A C	C T T C A A A	G C T A T
		MITO	**************		....												....		------ --		-- ------
W459	UCA	DROSOPHILA YAKUBA	A A G G C T T	T A	A G T T	A	A	C	T							A	A A C T	A	A T A G C	C T T C A A A	G C T G T
		MITO	****** ******		....												....		-- ------		------ --
W464	UCA	PARACENTROTUS LIV.	A A G A G C T	T A	A G T T	A	A	A	T							A	A A C T	G	A A A G C	C T T C A A A	G C T T T
		MITO	**************		....												....		----------		----------
W466	UCA	STRONGYLOCEN.PURP.	A A G G A C T	T A	A G T T	A	A	A	T							A	A A C T	G	A A A G C	C T T C A A A	G C T T T
		MITO	**************		....												....		----------		----------
W468	UCA	XENOPUS LAEVIS	A G A G A T T	T A	N* G T T	A	A	C	A							A	G A C T	A	A G A G C	C T T C A A A	G C C C T
		MITO	**************		....												....		---- ----		---- ----
W470	UCA	RANA CATESBEIANA	A G A A A C T	T A	G G C T	A	G	C	A	C						A	G A C C	A	A A G G C	C T T C A A A	G C C T T
		MITO	**************		....												....		----------		----------
W474	UCA	RAT	A G A A G T T	T A	G G A T	A	T	A	C							A	G T C C	A	A G A G C	C T T C A A A	G C C C T
		MITO	**************		......												......		---- ----		---- ----
W475	UCA	RAT	A G A A G T T	T A	G G A T	A	T	A	C							A	G T T C	A	A G A G C	C T T C A A A	G C C C T
		MITO	**************		.. ..												.. ..		---- ----		---- ----
W477	UCA	MOUSE	A G A A G T T	T A	G G A T	A	T	A	C	T						A	G T C C	G	C G A G C	C T T C A A A	G C C C T
		MITO	**************		......												......		-- ----		---- --
W480	UCA	BOVINE	A G G A A T T	T A	G G T T	A	A	A	C							A	G A C C	A	A G A G C	C T T C A A A	G C C C T
		MITO	**************		......												......		---- ----		---- ----

	44 45 46 47 A B C D E F G H I J K L M N O P	48	49 50 51 52 53	54 55 56 57 58 59 60	61 62 63 64 65	66 67 68 69 70 71 72	73 74 75 76
W342	A T G T	C	G T A G G	T T C A A A T	C C T A C	A G A G C G T	G
W355	A T G T	C	G T A G G	T T C A A A T	C C T A C	A G A G C G T	G
W402	A A A T	C	G A G G G	T T C G A G T	C C T T T	C A T C T C T	G
W406	C A T	C	G T G G G	T T C G A C T	C C C G C	C T C C C T T	G
W407	T A G	C	G T G G G	T T C G A A T	C C T G C	T T C C C T C	G
W410	A T T	T	C T T A G	T T C A A A T	C T A A G	T A C T C T T	G
W414	A T T	T	C T T A G	T T C G A G T	C T A A G	T G C T C T T	G
W425	C A T	T	A A G A G	T T C G A A T	C T T T T	T A T C C T T	G
W428	C A T	T	A G G A G	T T C G A A T	C T C T T	T A T C C T T	G
W436	A T G T	C	G T A G G	T T C A A A T	C C T A C	A G A G C G T	G
W442	A T G T	C	G T A G G	T T C A A A T	C C T A C	A G A G C G T	G
W445	A T G T	C	G T A G G	T T C A A A T	C C T A C	A G A G C G T	G
W450	A A A T T T T					A C T C T G T	A
W457	A A A	T	A A A G A	A A T T	T C T T T	A A G C C T T	A
W459	A A A	T	A A A G G	G T A T T	C C T T T	A A G T C T T	A
W464	T T A	T	A A G A A	T G G A A A C	T T C T T	A G C T C T T	G
W466	A A C	A	A A G A A	T T G G A AAC	T T C T T	A G T C C T T	G
W468	A A G	C	A G G A G	T T A G A A T	C T C C T	A A T C T C T	G
W470	A A G	C	G G A G G	T T A A A C T	C C T T C	A G T T T C T	G
W474	T A G	A	A A A C A	A A C A	A G T T T	A A C T T C T	G
W475	T A G	A	A A A C A	A A C A	A G T T T	A A C T T C T	G
W477	A A G	A	A A A C A	C A C A	A G T T T	A A C T T C T	G
W480	A A G	C	A A G T A	C A A T T	T A C T T	A A T T C C T	G

			1 2 3 4 5 6 7	8 9	10 11 12 13	14	15	16	17	A	18	19	20	A	B	21	22 23 24 25	26	27 28 29 30 31	32 33 34 35 36 37 38	39 40 41 42 43
W494	UCA	HUMAN MITO	A G A A A T T	T A	G G T T	A	A	A	T	A	C					A	G A C C	A	A G A G C	C T T C A A A	G C C C T
W555	CCA	DICTYOSTELIUM DIS.	G A C T C C T	T A	G C A T	A	G	T			G	G	T	T	T	A	T T G T	A	A T T G T	C T C C A A* A	G C A G T
W570	CCA	SACCHAROMYCES CER.	G A A G C G G	T G	G C T C	A	A	T			G	G	T			A	G A G C	T	T T C G A	C T C C A* A A	T C G A A
W700	CCA	CAENORHABDI.ELEG.	G A C T G C T	T G	G C G C	A	A	T			G	G	T			A	G C G C	G	T T C G A	C T C C A G A	T C G A A
W870	CCA	CHICKEN	G A C C T C G	T G	G C G C	A	A	C			G	G	T			A	G C G C	G	T C T G A	C T C C A G A	T C A G A
		T Y R O S I N E																			
Y145	GUA	METHANOCOC.VANI.	C C C G C G A	T A	G T T C	A	G	A	T	T	G	G	T			A	G A A C	G	G C G G A	C T G T A G A	T C C G C
Y148	GUA	METHANOCOC.VOLTAE	C C C G C G A	T A	G T T C	A	G	A	C	T	G	G	T			A	G A A C	G	G C G G A	C T G T A G A	T C C G C
Y200	GUA	MYCOPLASMA CAPRIC.	G G A G G G G	T A	G C G A	A	G	T			G	G	C	T	A	A	A C G C	G	G G T G G	C T G T A A C	C C A C T
Y235	GUA	BACILLUS SUBTILIS	G G A G G G G	T A	G C G A	A	G	T			G	G	C	T	A	A	A C G C	G	G C G G A	C T G T A A A	T C C G C
Y250	GUA	E.COLI	G G T G G G G	T T	C C C G	A	G	C			G	G	C	C	A	A	A G G G	A	G C A G A	C T G T A A A	T C T G C
Y251	CUA	E.COLI	G G T G G G G	T T	C C C G	A	G	C			G	G	C	C	A	A	A G G G	A	G C A G A	C T C T A A A	T C T G C
Y260	GUA	PSEUDOMONAS AER.	G G A G G G A	T C	C C T T	A	G	T			G	G	C	C		A	A A G G	A	T C A G A	C T G T A A A	T C T G A
Y304	GUA	EUGLENA GRACILIS CHLORO	G A G T T G T	T G	C C C G	A	G	T			G	G	T	T	A	A	T G G G	G	G C G G A	T T G T A A A	T C C G C
Y310	GUA	MARCHANTIA POLYM. CHLORO	G G G T C G A	T G	C T C G	A	G	T			G	G	T	T	A	A	T G G G	G	A C G G A	C T G T A A A	T C C G C
Y315	GUA	TRITICUM AESTIVUM CHLORO	G G G T C G A	T G	C C C G	A	G	T			G	G	T	T	A	A	T G G G	G	A C G G A	C T G T A A A	T T C G T
Y335	GUA	NICOTIANA TABACUM CHLORO	G G G T C G A	T G	C C C G	A	G	C			G	G	T	T	A	A	T G G G	G	A C G G A	C T G T A A A	T T C G T
Y355	GUA	PISUM SATIVUM CHLORO	G G G T C G A	T G	C C C G	A	G	C			G	G	T	T	A	A	T G G G	G	A C G G A	C T G T A A A	T T C G T
Y365	GUA	SPINACIA OLERACEA CHLORO	G G G T C G A	T G	C C C G	A	G	C			G	G	T	T	A	A	T G G G	G	A C G G A	C T G T A A A	T T C G T
Y375	GUA	VICIA FABA CHLORO	G G G T C G A	T G	C C C G	A	G	C			G	G	T	T	A	A	T G G G	G	A C G G A	C T G T A A A	T T C G T
Y405	GUA	PARAMECIUM PRIM. MITO	G A A G T A A	T G	G C T G	A	G	T			G	G	T	T		A	A A G C	G	G C A G A	C T G T A A A	T C T G T
Y406	GUA	PARAMECIUM TETRA. MITO	G A A G T A A	T G	G C T G	A	G	T			G	G	T	T		A	A A G C	G	G C A G A	C T G T A A A	T C T G T
Y408	GUA	TETRAHYMENA THERM. MITO	G A G G T G G	T G	G C T G	A	A	T			G	G	T	T		A	A A G C	G	G T A G A	C T G T A A A	T C T A T

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          45  47  B   D   F   H   J   L   N   P    49  51  53  55  57  59  61  63  65  67  69  71  73  75
        44  46  A   C   E   G   I   K   M   O   48   50  52  54  56  58  60  62  64  66  68  70  72  74  76
        --------------------------------------------------------------------------------------------------
W494    C A G                                   T |A A G T T|G C A       A|T A C T T|A A T T T C T|G
                                                  |=======  |             |  =======|*************|
W555    T G G T                                 C |C A G G G|T T C A A C T|C C C T G|A G G G G T C|T
                                                  |=========|             |=========|*****   *****|
W570    G G G T                                 T |G C A G G|T T C A A T T|C C T G T|C C G T T T C|A
                                                  |  =======|             |=======  |*****   *****|
W700    A G G T                                 T |G G G C G|T T C G A T C|C G C T C|A G T G G T C|A
                                                  |=   =====|             |=====   =|***     *****|
W870    A G G C                                 T |G C G T G|T T C G A A T|C A C G T|C G G G G T C|A
                                                  |  =======|             |=======  |***   *******|

                  T Y R O S I N E

Y145    A T G T                                 C |G C T G G|T T C A A A T|C C G G C|T C G C G G G|A
                                                  |===   ===|             |===   ===|*************|
Y148    A T G T                                 C |G C T G G|T T C A A A T|C C G G C|T C G C G G G|A
                                                  |===   ===|             |===   ===|*************|
Y200    T C C T T A C G G T T                   C |G G G G G|T T C G A A T|C C C T C|C C C C T C C|A C C A
                                                  |=   =====|             |=====   =|*************|
Y235    T C C C T C A G G G T T                 C |G G C A G|T T C G A A T|C T G C C|C C C C T C C|A C C A
                                                  |=========|             |=========|*************|
Y250    C G T C A C A G A C T T                 C |G A A G G|T T C G A A T|C C T T C|C C C C A C C|A C C A
          :::::       :::::                       |=========|             |=========|*************|
Y251    C G T C A T C G A C T T                 C |G A A G G|T T C G A A T|C C T T C|C C C C A C C|A C C A
                                                  |=========|             |=========|*************|
Y260    C G T C A T A G A C T T                 C |G A A G G|T T C G A A T|C C T T C|T C C C T C C|A C C A
                                                  |=========|             |=========|*************|
Y304    A G T T C A T C T T T                   C |G C T G G|T T C G A A T|C C A G C|A C G A C T C|A
                                                  |=========|             |=========|***   *******|
Y310    T G G C A A T G C C T A                 C |G C T G G|T T C A A A T|C C A G C|T C G A C C C|A
                                                  |=========|             |=========|*************|
Y315    T G A C A A T G T C T A                 C |G C T G G|T T C A A A T|C C A G C|T C G G C C C|A
                                                  |=========|             |=========|*****   *****|
Y335    T G G C A A T A T G T C T A             C |G C T G G|T T C A A A T|C C A G C|T C G G C C C|A
                                                  |=========|             |=========|*****   *****|
Y355    T G G C A A T A T G T C T A             C |G C T G G|T T C A A A T|C C A G C|T C G G C C C|A
                                                  |=========|             |=========|*****   *****|
Y365    T G G C A A T A T G T C T A             C |G C T G G|T T C A A A T|C C A G C|T C G G C C C|A
                                                  |=========|             |=========|*****   *****|
Y375    T G G C A A T A T G T C T A             C |G C T G G|T T C A A A T|C C A G C|T C G G C C C|A
                                                  |=========|             |=========|*****   *****|
Y405    T G G T A G T A C C G T                 C |G T T G G|T T C G A A T|C C A A C|T T A C T T C|A
          :::::       :::::                       |=======  |             |=========|*************|
Y406    T G G T A G T A C C G T                 C |G T T G G|T T C G A A T|C C A A C|T T A C T T C|A
          :::::       :::::                       |=======  |             |=========|*************|
Y408    T G G G A T T C C G T                   C |G C C G G|T T C G A T T|C C G G T|C C A C C T C|A
                                                  |  =======|             |=======  |*************|
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                                  1 2 3 4 5 6 7|8 9|10  12 |14  16  A   19  A  21|  23 25| |27  29 31|  33  35  37 |39  41  43
                                               |   |  11 13|  15  17  18  20  B  |22  24 |26  28  30 |32  34  36 38|  40  42
                                  -------------------------------------------------------------------------------------------
Y410  GUA ASPERGILLUS NIDUL.      A G G A A G G|G T|C C G T|A T G T T G G T T   T|A C G G|G|T T G A G|C T G T A A A|C T C A A
          MITO                    *************     .......                       .......   ---------               ---------
Y417  GUA SACCHAROMYCES CER.      G G A G G G A|T T|T T C A|A T G T T G G T A G T|T G G A|G|T T G A G|C T G T A A A|C T C A A
          MITO                    **  **********    ..  ...                       ...  ..   ---------               ---------
Y418  GUA SACCHAROMYCES CER.      G G A G G G A|T TTT C A A|T G T T   G G T A G T|T G G A|G|T T G A G|C T G T A A A|C T C A A
          MITO                        **********    ....  .                       ..  ...   ---------               ---------
Y425  GUA TORULOPSIS GLAB.        G G A G G G A|T T|T C C A|A T G T T G G T A A T|T G G A|G|T T G A G|C T G T A A A|C T C A A
          MITO                    **  **********    .......                       .......   ---------               ---------
Y442  GUA TRITICUM AESTIVUM       G G G A G A G|T G|G C C G|A G C     G G T C A A|A A G C|G|A C A G A|C T G T A A A|T C T G T
          MITO                    **************    ....                             ....   ---------               ---------
Y450  GUA ASCARIS SUUM            A A A A G A T|T A|G T T T|A T T A T T         A|A A A T|G|T T A G A|T T G T A A A|T C T A A
          MITO                    *************       .....                       ......    ---------               ---------
Y457  GUA DROSOPHILA MELANO.      G A T T A A G|T G|G C T G|A A G T T           T|A G G C|G|A T A G A|T T G T A A A|T C T A T
          MITO                    **************    ....                             ....   ---------               ---------
Y459  GUA DROSOPHILA YAKUBA       G A T T A A G|T G|G C T G|A A G T T           T|A G G C|G|A T A G A|T T G T A A A|T C T A T
          MITO                    **************    ....                             ....   ---------               ---------
Y464  GUA PARACENTROTUS LIV.      A A T A A G A|T G|G C T G|A G A G A A         C|A A G C|G|G T G G A|T T G T A A A|T C C A T
          MITO                    **************    ......                          .....    --------               --------
Y466  GUA STRONGYLOCEN.PURP.      A G T A A G G|T G|G C T G|A G       G G A A   T|A A G C|G|G T G G A|T T G T A A A|T C C A T
          MITO                    *************     ......                          .....    --------               --------
Y468  GUA XENOPUS LAEVIS          G G T A A G G|T G|G C C G|A G T A A           T|A G G C|G|G C G G A|T T G T A G C|T C C G T
          MITO                    **  ********        ...                           ...      --------               --------
Y470  GUA RANA CATESBEIANA        G G T A A A G|T G|G C C G|A G C                |A G G C|G|G C G A A|T T G T A G C|T T C G A
          MITO                    **************    ......                          .....    --------               --------
Y474  GUA RAT                     G G T A A A A|T G|G C T G|A G                 T|A A G C|A|T T A G A|C T G T A A A|T C T A A
          MITO                    **************    ......                          .....   ---------               ---------
Y477  GUA MOUSE                   G G T A A A A|T G|G C T G|A G                 T|A A G C|A|T T A G A|C T G T A A A|T C T A A
          MITO                    **************    ......                          .....   ---------               ---------
Y480  GUA BOVINE                  G G T A A A A|T G|G C T G|A G C               A|A A G C|A|T T A G A|C T G T A A A|T C T A A
          MITO                    **************    ......                          .....   ---------               ---------
Y494  GUA HUMAN                   G G T A A A A|T G|G C T G|A G T               G|A A G C|A|T T G G A|C T G T A A A|T C T A A
          MITO                    **************    ......                          .....   ----  ---           *   ---- ----
Y570  GUA SACCHAROMYCES CER.      C T C T C G G|T A|G C C A|A G T T   G G T T T A|A G G C|G|C A A G A|C T G T A A A|T C T T G
                                  ******  ******    ......                          .....   ---------           *   ---------
Y615  GUA ARABIDOPSIS THAL.       C C G A C C T|T A|G C T C|A G T T   G G T     A|G A G C|G|G A G G A|C T G T A G A|T C C T T
                                  **************    .......                       .......    --------           *   -------- 
Y655  GUA NICOTIANA RUSTICA       C C G A C C T|T A|G C T C|A G T T   G G T     A|G A G C|G|G A G G A|C T G T A G A|T C C T T
                                  **************    .......                       .......    --------           *   -------- 
Y780  GUA DROSOPHILA MELANO.      C C T T C G A|T A|G C T C|A G T T   G G T     A|G A G C|G|G T G G A|C T G T A G A|T C C A T
                                  **************    .......                       .......    --------           *   -------- 
Y830  GUA XENOPUS LAEVIS          C C T T C G A|T A|G C T C|A G C T   G G T     A|G A G C|G|G A G G A|C T G T A A A|T C C T T
                                  **************    .......                       .......    --------           *   -------- 
Y831  GUA XENOPUS LAEVIS          C C T T C G A|T A|G C T C|A G C T   G G T     A|G A G C|G|G A G G A|C T G T A G A|T C C T T
                                  **************    .......                       .......    --------           *   -------- 
Y995  GUA HUMAN                   C C T T C G A|T A|G C T C|A G C T   G G T     A|G A G C|G|G A G G A|C T G T A G A|T C C T T
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         45  47  B   D   F   H   J   L   N   P    49  51  53  55  57  59  61  63  65  67  69  71  73  75
       44  46  A   C   E   G   I   K   M   O   48   50  52  54  56  58  60  62  64  66  68  70  72  74  76
       --------------------------------------------------------------------------------------------------

Y410   T G G C T A T G A G G C C G T           C |G A A G G|T T C G A T T|C C T T T|T C T T C C T|A
         ::::::::      ::::  ::::                |  =======|             |=======  |  ***********|
Y417   T G A C T T A G G T C T T               C |A T A G G|T T C A A T T|C C T A T|T C C C T T C|A
                                                 |=========|             |=========|*********  **|
Y418   T G A C T T A G G T C T T               C |A T A G G|T T C A A T T|C C T A T|T C C C T T T|A
                                                 |=========|             |=========|*********    |
Y425   T G A T T A T A T A T C T T             C |A T A G G|T T C A A T T|C C T A T|T C C C T T C|A
                                                 |=========|             |=========|*********  **|
Y442   T G A A G G T T T T C T A               C |G T A G G|T T C G A A T|C C T G C|C T C T C C C|A
                                                 |==  =====|             |====== ==|*************|
Y450   A G A A T T T T                           |         |             |         |T T C T T T T|G
                                                 |         |             |         |  ***********|
Y457   A T A                                   T |A A G A T|T T         A|T T C T T|C T T A A T C|A
                                                 |=======  |             |  =======|*************|
Y459   T T A                                   T |A A G A A|T T         A|T T C T T|C T T A A T C|A
                                                 |=========|             |=========|*************|
Y464   A C A                                   C |A A A G G|T T A A A T C|C C T T T|T C T T A T T|A
                                                 |=========|             |=========|*************|
Y466   A T A                                   C |A A G G G|T T A G A C T|C C T T T|T C T T A C T|A
                                                 |=========|             |=========|  ***********|
Y468   G T A                                   C |A G A G G|T T C A A G T|C C T C T|T C T T A T C|A
                                                 |=========|             |=========|  *******  **|
Y470   A G A                                   C |A G A G G|T T T G A G T|C C C C T|C T T T A C C|A
                                                 |==== ====|             |==== ====|*************|
Y474   A G A                                   C |A G G G G|T T G A G   C|C C C C T|T T T T A C C|A
                                                 |=========|             |=========|*************|
Y477   A C A                                   C |A G A G G|T T T A A A T|C C T C T|T T T T A C C|A
                                                 |=========|             |=========|*************|
Y480   A G A                                   T |A G A G G|T T T G A C T|C C T C T|T T T T A C C|A
                                                 |=========|             |=========|*************|
Y494   A G A                                   C |A G G G G|T T A G     G|C C T C T|T T T T A C C|A
                                                 |==== ====|             |==== ====|*************|
Y570   A G A T                                 C |G G G C G|T T C G A C T|C G C C C|C C G G G A G|A
                                                 |=========|             |=========|******  *****|
Y615   A G G T                                 C |A C T G G|T T C G A A T|C C G G T|A G G T C G G|A
                                                 |==== ====|             |==== ====|*************|
Y655   A G G T                                 C |A C T G G|T T C G A A T|C C G G T|A G G T C G G|A
                                                 |==== ====|             |==== ====|*************|
Y780   A G G T                                 C |G C T G G|T T C A A A T|C C G G C|T C G A A G G|A
                                                 |==== ====|             |==== ====|*************|
Y830   A G G T                                 C |G C T G G|T T C G A T T|C C G G C|T C G A A G G|A
                                                 |==== ====|             |==== ====|*************|
Y831   A G G T                                 C |G C T G G|T T C A A T T|C C G G C|T C G A A G G|A
                                                 |==== ====|             |==== ====|*************|
Y995   A G G T                                 C |G C T G G|T T C A A T T|C C G G C|T C G A A G G|A
                                                 |==== ====|             |==== ====|*************|
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                                1 2 3 4 5 6 7|8 9|10  12 |14  16  A   19  A   21|  23  25| |27  29  31|  33  35  37  |39  41  43
                                             |   |  11  13|  15  17  18  20  B    |22  24  |26|  28  30  |32  34  36  38|  40  42
                                -----------------------------------------------------------------------------------------------
                                                                                                              *
Y996    GUA HUMAN               C C T T C G A|T A|G C T C|A G C T   G G T     A|G A G C|G|G A G G A|C T G T A G A|T C C T T
                                **************    .......                       .......     -------               --------

            V A L I N E

V040    UAC PHAGE T5            G C T C G G T|T A|G T A T|A A T     G G G     A|G A A C|C|C C G C C|T T T A C A C|G G C G G
                                 *************    ....                              ...   ---------               ---------
V145    UAC METHANOCOC.VANI.    G G A C T C A|T G|G T C T|A G T T   G G C T   A|T G A C|A|T C G C C|C T T A C A A|G G C G A
                                ********  ****    ......                          .....   ---------               ---------
V160    GAC SULFOLOBUS SOLFA.   G G G C C C G|T C|G T C T|A G C C T G G T T   A|G G A C|G|C T G C C|C T G A C G C|G G C A G
                                **************    .......                       .......   ---------               ---------
V203    UAC MYCOPLASMA MYCOID.  G G A G T G T|T A|G C T C|A G C T   G G G     A|G A G C|T|C C T G C|C T T A C A A|G C A G G
                                **************    .......                       .......   ---------               ---------
V235    UAC BACILLUS SUBTILIS   G G A G G A T|T A|G C T C|A G C T   G G G     A|G A G C|A|T C T G C|C T T A C A A|G C A G A
                                **************    .......                       .......   ---------               ---------
V250    UAC E.COLI              G G G T G A T|T A|G C T C|A G C T   G G G     A|G A G C|A|C C T C C|C T T A C A A|G G A G G
                                **************    .......                       .......   ---------               ---------
V304    UAC EUGLENA GRACILIS    G G G G G T A|T A|G C T C|A G T T   G G T     A|G A G C|G|T C T G C|C T T A C A A|G C A G A
            CHLORO              **  ******  **    .......                       .......   ---------               ---------
V310    GAC MARCHANTIA POLYM.   A G G G A T A|T A|A C T C|A G C     G G T     A|G A G T|A|T C A C C|T T G A C G T|G G T G G
            CHLORO              **************    .......                       .......     -------               --------
                                                                                                                *
V311    UAC MARCHANTIA POLYM.   A G G G C T A|T A|G C T C|A G C     G G T     A|G A G C|G|C C T C G|T T T A C A C|C G A G A
            CHLORO              **************    .......                       .......     -------               --------
                                                                                                            *
V313    UAC HORDEUM VULGARE     A G G G C T A|T A|G C T C|A G T T C G G T     A|G A G C|A|A C T C G|T T T A C A C|C G A G A
            CHLORO              **************    .......                       .......     -------               --------
                                                                                                            *
V320    UAC ZEA MAYS            A G G G C T A|T A|G C T C|A G T T C G G T     A|G A G C|A|A C T C G|T T T A C A C|C G A G A
            CHLORO              **************    .......                       .......     -------               --------
V321    GAC ZEA MAYS            A G G G A T A|T A|A C T C|A G C     G G T     A|G A G T|G|T C A C C|T T G A C G T|G G T G G
            CHLORO              **************    .......                       .......     -------               --------
V327    GAC GLYCINE MAX         A G G G A T A|T A|A C T C|A G C     G G T     A|G A G T|G|T C A C C|T T G A C G T|G G T G G
            CHLORO              **************    .......                       .......     -------               --------
V335    GAC NICOTIANA TABACUM   A G G G A T A|T A|A C T C|A G C     G G T     A|G A G T|G|T C A C C|T T G A C G T|G G T G G
            CHLORO              **************    .......                       .......     -------               --------
                                                                                                            *
V336    UAC NICOTIANA TABACUM   A G G G C T A|T A|G C T C|A G T T   G G T     A|G A G C|A|A C T C G|T T T A C A C|C G A G A
            CHLORO              **************    .......                       .......     -------               --------
V355    GAC PISUM SATIVUM       A G G G G T A|T A|A C T C|A G C     G G T     A|G A G T|G|T C A C C|T T G A C G T|G G T G G
            CHLORO              ********  ****    .......                       .......     -------               --------
V360    GAC SINAPIS ALBA        A G G G A T A|T A|A C T C|A G C     G G T     A|G A G T|G|T C A C C|T T G A C G T|G G T G G
            CHLORO              **************    .......                       .......     -------               --------
V365    GAC SPINACIA OLERACEA   A G G G G T A|T A|A C T C|A G C     G G T     A|G A G T|G|T C A C C|T T G A C G T|G G T G G
            CHLORO              ********  ****    .......                       .......     -------               --------
V410    UAC ASPERGILLUS NIDUL.  A A G A A A T|T A|G C T C|A G T T   G G T     A|G A G C|G|T T C G T|T T T A C A C|A C G A A
            MITO                **************    .......                       .......   ---------               ---------
V414    UAC PODOSPORA ANSERINA  A A G A A A T|T A|G C T C|A A C     G G T     A|G A G C|A|A C C G T|T T T A C A C|A C G G A
            MITO                **************    .......                       .......     -------               --------
V417    UAC SACCHAROMYCES CER.  A G G A G A T|T A|G C T T|A A T T   G G T     A|T A G C|A|T T C G T|T T T A C A C|A C G A A
            MITO                ********  ****    ......                          .....   ---------               ---------
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        45  47  B   D   F   H   J   L   N   P   49  51  53  55  57  59  61  63  65  67  69  71  73  75
      44  46  A   C   E   G   I   K   M   O   48  50  52  54  56  58  60  62  64  66  68  70  72  74  76
      -----------------------------------------------------------------------------------------------
Y996  A G G T                                 C|G C T G G|T T C G A T T|C C G G C|T C G A A G G|A
                                                ====  ====              ====  ====**************

          V A L I N E

V040  T T G                                   T|G A T A G|T T C G A T T|C T A T C|A C C G A G T|A C C A
                                                ==========              ==========************
V145  G G G T                                 C|G C C G G|T T C G A A T|C C G G C|T G G G T C C|A
                                                ==========              ==========****  ********
V160  A A A T                                 C|C T G G G|T T C A A G T|C C C A G|C G G G C C C|A
                                                ==========              ==========**************
V203  C G G T                                 C|A T A G G|T T C A A G T|C C T A T|A C A C T C C|A C C A
                                                ==========              ==========**************
V235  G G G T                                 C|G G C G G|T T C G A G C|C C G T C|A T C C T C C|A C C A
                                                ==  ======              ======  ==**************
V250  G G G T                                 C|G G C G G|T T C G A T C|C C G T C|A T C A C C C|A C C A
                                                ==  ======              ======  ==**************
V304  A T G T                                 C|A G C G G|T T C G A A T|C C G T T|T G C C C T C|A
                                                ==  ======              ==========**  ******  **
V310  A A G T                                 C|A T C A G|T T C G A A C|C T G A T|T A T C C C T|A
                                                ==========              ==========**************
V311  A T G T                                 C|T A C G G|T T C A A A T|C C G T A|T A G C C C T|A
                                                ==========              ==========**************
V313  A G G T                                 C|T A C G G|T T C G A G T|C C G T A|T A G C C C T|A
                                                ==========              ==========**************
V320  A G G T                                 C|T A C G G|T T C G A A T|C C G T A|T A G C C C T|A
                                                ==========              ==========**************
V321  A A G T                                 C|A T C A G|T T C G A G C|C T G A T|T A T C C C T|A
                                                ==========              ==========**************
V327  A A G T                                 T|A T C A G|T T C G A G C|C T G A T|T A T C C C T|A
                                                ==========              ==========**************
V335  A A G T                                 C|A T C A G|T T C G A G C|C T G A T|T A T C C C T|A
                                                ==========              ==========**************
V336  A G G T                                 C|T A C G G|T T C G A G T|C C G T A|T A G C C C T|A
                                                ==========              ==========**************
V355  A A G T                                 C|A T C A G|T T C G A A C|C T G A T|T A T C C C T|A
                                                ==========              ==========****  ********
V360  A A G T                                 C|A T C A G|T T C G A G C|C T G A T|T A T C C C T|A
                                                ==========              ==========**************
V365  A A G T                                 C|A T C A G|T T C G A G C|C T G A T|T A T C C C T|A
                                                ==========              ==========****  ********
V410  G G T                                   C|A G G T G|T T C A A A T|C A C C T|A T T T C T T|A
                                                ==========              ==========**************
V414  A G G C                                 T|A T G A G|T T C G A A T|C T C C T|A T T T C T T|A C C A
                                                ==  ======              ======  ==**************
V417  A G A T                                 T|A T A G G|T T C G     A|C C T A T|A T T T C C T|A
                                                ==========              ==========****  ********
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                                1 2 3 4 5 6 7|8 9|10  12  |14  16  A   19  A   21|  23  25|  |27  29  31|  33  35  37  |39  41  43
                                             |   |  11  13|  15  17  18  20  B   |22  24  |26|  28  30  |32  34  36  38|  40  42
                                ---------------------------------------------------------------------------------------------------
V418  UAC SACCHAROMYCES CER.    A G G A G A T|T A|G C T T |A A T T   G G T     A |T A G C |A |T T C G T |T T T A C A C |A C G A A
          MITO                  ********  ****
V425  UAC TORULOPSIS GLAB.      A G G A T A T|T A|G C T T |A A T T   G G T     A |T A G C |A |T T C G T |T T T A C A C |A C G A A
          MITO                  ********  ****
V450  UAC ASCARIS SUUM          A A A C T T T|T A|G T T T |A A T T T           A |G A A T |T |T C T C G |C T T A C A A |T G A G A
          MITO                  *************
V456  UAC AEDES ALBOPICTUS      C A A T T T A|A A|G C T T |A A T T A G T       A |A A G T |A |T T T C A |T T T A C A T |T G A A A
          MITO                  **************
V459  UAC DROSOPHILA YAKUBA     C A A T T T A|A A|G C T T |A T T A A G T       A |A A G C |A |T T T C A |T T T A C A T |T G A A A
          MITO                  **************
V464  UAC PARACENTROTUS LIV.    C A A G A C A|T A|G C T A |G T T A G           T |A A G T |T |C C T C T |T T T A C A C |G G A G G
          MITO                  **************
V466  UAC STRONGYLOCEN.PURP.    T T C A A G G|CAT|A G C T |A G T T A G T       A |A G T T |  |T C T C C |T T T A C A C |G G A G A
          MITO                  **********
V468  UAC XENOPUS LAEVIS        C A A A G T A|T A|G C T T |A A C C             A |A A G C |C |T T T C G |C T T A C A C |C G A A A
          MITO                  **************
V474  UAC RAT                   C A C A G T G|T A|G C T T |A A T C A C         A |A A G C |A |T C T G G |C C T A C A C |C C A G A
          MITO                  ****  ********
V477  UAC MOUSE                 C A T A G T G|T A|G C T T |A A T A T T         A |A A G C |A |T C T G G |C C T A C A C |C C A G A
          MITO                  ****  ********
V480  UAC BOVINE                C A A G A T A|T A|G C T T |A A A C             A |A A G C |A |T C C A G |T T T A C A C |C T A G A
          MITO                  **************
V494  UAC HUMAN                 C A G A G T G|T A|G C T T |A A C A C           A |A A G C |A |C C C A A |C T T A C A C |T T A G G
          MITO                  **********  **
V555  AAC DICTYOSTELIUM DIS.    G T T C G G A|T G|G T G T |A G T C   G G T T   A |T C A C |G |A A T C C |T T A A C A C |G G A T T
                                  ******  ****
V556  UAC DICTYOSTELIUM DIS.    G G T C G G A|T G|G T G T |A G T C   G G T T   A |T C A C |G |G T T G C |T T T A C A C |G C A A C
                                **  ****  ****
V570  AAC SACCHAROMYCES CER.    G G T T T C G|T G|G T C T |A G T C   G G T T   A |T G G C |A |T C T G C |T T A A C A C |G C A G A
                                **  **********
V780  AAC DROSOPHILA MELANO.    G T T T C C G|T G|G T G T |A G T     G G T T   A |T C A C |A |T C C G C |C T A A C A C |G C G G A
                                **************
V781  CAC DROSOPHILA MELANO.    G T T T T C G|T A|G T G T |A G T     G G T T   A |T C A C |G |T G T G C |T T C A C A C |G C A C A
                                **************
V830  CAC XENOPUS LAEVIS        G T T T C T G|T A|G T G T |A G C     G G T T   A |T C A C |G |T T C G C |C T C A C A T |G C G A A
                                **************
V995  AAC HUMAN                 G T T T C C G|T A|G T G T |A G T     G G T T   A |T C A C |G |T T C G C |C T A A C A C |G C G A A
                                **************
V996  CAC HUMAN                 G T T T C C G|T A|G T G T |A G T     G G T T   A |T C A C |G |T T C G C |C T C A C A C |G C G A A
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        45  47  B   D   F   H   J   L   N   P    49  51  53   55  57  59   61  63  65   67  69  71   73  75
      44  46  A   C   E   G   I   K   M   O   48   50  52   54  56  58  60   62  64   66  68  70  72   74  76
      --------------------------------------------------------------------------------------------------------
V418  A G A T                                 T |A T A G G |T T C G A A C |C C T A T |A T T T C C T |A
                                                |==========|              |==========|****  ********|
V425  A G A T                                 T |A T A G G |T T C G A A T |C C T A T |A T T T C C T |A
                                                |==========|              |==========|****  ********|
V450  G G G T T T A T                           |          |              |          |T A A G T T T |T
                                                |          |              |          |  ************|
V456  A G A                                   A |A T T T G |T G C A A A T |C A A T T |T A A A T T G |A
                                                |==========|              |==========|**************|
V459  A G A                                   T |T T T T G |T G C A A A T |C A A T A |T A A A T T G |A
                                                |==  ======|              |======  ==|**************|
V464  T C A                                   C |A C T C G |T G C A A T T |C G G G T |T G T C T T G |A
                                                |====  ====|              |====  ====|**************|
V466  C C A                                   C |A C T C G |T G C A A T T |C G A G T |TGT T TTG A A |G
                                                |==========|              |==========|    **********|
V468  C A A                                   T |A T C T G |T T A A A C C |C G G A T |T A C T T T G |A
                                                |======  ==|              |==  ======|**************|
V474  A G A                                   A |T T C A T |A A A       A |A T G A A |C A C T T T G |A
                                                |==========|              |==========|********  ****|
V477  A G A                                   T |T T C A T |G A C C     A |A T G A A |C A C T C T G |A
                                                |==========|              |==========|********  ****|
V480  A G A                                   C |T T C A T |T C A T     T |A T G A A |T A T C T T G |A
                                                |==========|              |==========|**************|
V494  A G A                                   T |T T C A A |C T T A A   C |T T G A C |C G C T C T G |A
                                                |  ========|              |========  |**  **********|
V555  A G G T                                 C |G T G G G |T T C G A T T |C C C G C |T C T G A A T |A
                                                |==  ======|              |======  ==|****  ******  |
V556  A G G T                                 C |T C G A G |T T C G A T C |C T C G G |T C G G A T C |A
                                                |  ========|              |========  |****  ****  **|
V570  A C G T                                 C |C C C A G |T T C G A T C |C T G G G |C G A A A T C |A
                                                |==========|              |==========|**********  **|
V780  A G G C                                 C |C C C G G |T T C A A T C |C C G G G |C G G A A A C |A
                                                |==========|              |==========|**************|
V781  A G G T                                 C |C C C G G |T T C G A A C |C C G G G |C G A A A A C |A
                                                |==========|              |==========|**************|
V830  A G G T                                 C |C C C G G |T T C G A A A |C C G G G |C A G A A A C |A
                                                |==========|              |==========|**************|
V995  A G G T                                 C |C C C G G |T T C G A A A |C C G G G |C G G A A A C |A
                                                |==========|              |==========|**************|
V996  A G G T                                 C |C C C G G |T T C G A A A |C C G G G |C G G A A A C |A
                                                |==========|              |==========|**************|
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FOOTNOTES

A190/29	AFTER RESIDUE 29 INTERVENING SEQUENCE OF 16 BP
A191/29	AFTER RESIDUE 29 INTERVENING SEQUENCE OF 16 BP
A295/0	DNA OF CYANELLES (PHOTOSYNTHETIC ORGANELLES)
A297/0	DNA OF CYANELLES (PHOTOSYNTHETIC ORGANELLES)
A310/38	AFTER RESIDUE 38 INTERVENING SEQUENCE OF 768 BP
A320/36	AFTER RESIDUE 36,37 OR 38 INTERVENING SEQUENCE OF 806 BP
A327/38	AFTER RESIDUE 38 INTERVENING SEQUENCE OF UNIDENTIFIED LENGTH
A335/37	AFTER RESIDUE 37 INTERVENING SEQUENCE OF 710 BP
A365/37	AFTER RESIDUE 37 INTERVENING SEQUENCE OF 816 BP
A403/0	STRAIN 164
A404/0	STRAIN 427
R252/0	COMPARE: M.J.FOURNIER, H.OZEKI (1985) MICROBIOL REV. 49, 379-397
N468/58	N IS EITHER G OR A
N468/60	N IS EITHER A OR G
D475/59	N IS EITHER A OR T
D475/60	N IS EITHER * OR C
E295/0	DNA OF CYANELLES (PHOTOSYNTHETIC ORGANELLES)
G160/36	AFTER RESIDUE 36 OR 37 INTERVENING SEQUENCE OF 15 BP
G236/20	N IS EITHER A OR T
G295/0	DNA OF CYANELLES (PHOTOSYNTHETIC ORGANELLES)
G311/24	AFTER RESIDUE 24 INTERVENING SEQUENCE OF 593 BP
G314/24	AFTER RESIDUE 24 INTERVENING SEQUENCE OF 677 BP
G316/24	AFTER RESIDUE 24 INTERVENING SEQUENCE OF 676 BP
G335/24	AFTER RESIDUE 24 INTERVENING SEQUENCE OF 691 BP
I145/0	ANTICODON CAU AFTER MODIFICATION ON C-34 PROBABLY RECOGNISES ILE CODONS (YOKOYAMA, NATURE 336, 179)
I295/0	DNA OF CYANELLES (PHOTOSYNTHETIC ORGANELLES)
I297/0	DNA OF CYANELLES (PHOTOSYNTHETIC ORGANELLES)
I311/38	AFTER RESIDUE 38 INTERVENING SEQUENCE OF 886 BP
I320/38	AFTER RESIDUE 38 INTERVENING SEQUENCE OF 949 BP
I327/38	AFTER RESIDUE 38 INTERVENING SEQUENCE OF UNIDENTIFIED LENGTH
I335/37	AFTER RESIDUE 37 INTERVENING SEQUENCE OF 707 BP
I366/36	AFTER RESIDUE 37 INTERVENING SEQUENCE OF 729 BP
I590/37	AFTER RESIDUE 37 INTERVENING SEQUENCE OF 60 BP
L160/37	AFTER RESIDUE 37 INTERVENING SEQUENCE OF 15 BP
L191/34	AFTER RESIDUE 34 OR 35 INTERVENING SEQUENCE OF 18 BP
L295/0	DNA OF CYANELLES (PHOTOSYNTHETIC ORGANELLES)
L295/34	AFTER RESIDUE 34 INTERVENING SEQUENCE OF 232 BP
L311/34	AFTER RESIDUE 34 INTERVENING SEQUENCE OF 315 BP
L320/37	AFTER RESIDUE 34 INTERVENING SEQUENCE OF 458 BP
L336/34	AFTER RSIDUE 34 INTERVENING SEQUENCE OF 503 BP
L376/34	AFTER RESIDUE 34 INTERVENING SEQUENCE OF 451 BP
L378/34	AFTER RESIDUE 34 INTERVENING SEQUENCE OF 450 BP
L560/37	AFTER RESIDUE 37 INTERVENING SEQUENCE OF 27 BP
L570/37	AFTER RESIDUE 37 INTERVENING SEQUENCE OF 32 OR 33 BP
L780/37	AFTER RESIDUE 37 INTERVENING SEQUENCE OF 38 (LEU A) OR 45 (LEU B) BP
K310/38	AFTER RESIDUE 38 INTERVENING SEQUENCE OF 2111 BP
K335/38	AFTER RESIDUE 38 INTERVENING SEQUENCE OF 2526 BP
K355/38	AFTER RESIDUE 38 INTERVENING SEQUENCE OF 2447 BP.
K360/38	AFTER RESIDUE 38 INTERVENING SEQUENCE OF 2574 BP
K570/38	AFTER RESIDUE 38 INTERVENING SEQUENCE OF 23 BP
K575/37	AFTER RESIDUE 37 INTERVENING SEQUENCE OF 8 BP
M635/37	AFTER RESIDUE 37 INTERVENING SEQUENCE OF 11 BP
X160/37	AFTER RESIDUE 37 INTERVENING SEQUENCE OF 18 BP
X190/36	AFTER RESIDUE 36,37 OR 38 INTERVENING SEQUENCE OF 20 BP
X190/38	N IS EITHER G OR A
X468/0	ELONGATOR AND INITIATOR TRNA MAY ORIGINATE FROM IDENTICAL GENE
X477/0	ELONGATOR AND INITIATOR TRNA MAY ORIGINATE FROM IDENTICAL GENE
X480/0	ELONGATOR AND INITIATOR TRNA MAY ORIGINATE FROM IDENTICAL GENE
X494/0	ELONGATOR AND INITIATOR TRNA MAY ORIGINATE FROM IDENTICAL GENE
F160/36	AFTER RESIDUE 36 OR 37 INTERVENING SEQUENCE OF 18 BP
F560/37	AFTER RESIDUE 37 INTERVENING SEQUENCE OF 16 BP
F590/37	AFTER RESIDUE 37 OR 38 INTERVENING SEQUENCE OF 18 OR 19 BP
F591/37	AFTER RESIDUE 37 OR 38 INTERVENING SEQUENCE OF 18 BP.
P310/0	HAS AN INCOMPLETE AMINOACYL- AND DIHYDRURIDIN STEM STRUCTURE
P445/0	FROM P.LEON, P.BEDINGER; PERSONAL COMMUNICATION
P570/37	AFTER RESIDUE 37 INTERVENING SEQUENCE OF 31 BP
S040/0	IN KRYUKOV ET AL. ALIGNMENT DEVIATING
S160/37	AFTER RESIDUE 37 INTERVENING SEQUENCE OF 25 BP
S236/46	E.F.WAWROUSEK ET AL. FIND FOUR G
S252/0	SELENOCYSTEIN INSERTING TRNA
S295/0	DNA OF CYANELLES (PHOTOSYNTHETIC ORGANELLES)
S450/34	UNIQUE GENETIC CODE MODIFICATION
S495/57	N IS EITHER A OR G
S571/37	AFTER RESIDUE 37 INTERVENING SEQUENCE OF 19 BP
S575/37	AFTER RESIDUE 37 INTERVENING SEQUENCE OF 15 BP
S576/37	AFTER RESIDUE 37 INTERVENING SEQUENCE OF 15 BP
S577/37	AFTER RESIDUE 37 INTERVENING SEQUENCE OF 16 BP
S590/37	AFTER RESIDUE 37 INTERVENING SEQUENCE OF 19 BP
S592/37	AFTER RESIDUE 37 INTERVENING SEQUENCE OF 19 BP
S870/0	UGA SUPPRESSOR TRNA
T252/67	N IS EITHER G OR C
T417/0	A LEUCINE TRNA ENCODES FOR THREONINE
T475/39	N IS EITHER G OR A
T475/59	N IS EITHER * OR C
W115/37	AFTER RESIDUE 37 OR 38 INTERVENING SEQUENCE OF 103 BP
W120/37	AFTER RESIDUE 37 OR 38 INTERVENING SEQUENCE OF 105 BP
W406/13	N IS EITHER T OR C
W406/20	N IS EITHER T OR A
W445/0	FROM P.LEON, P.BEDINGER; PERSONAL COMMUNICATION
W468/10	N IS EITHER G OR T
W555/37	AFTER RESIDUE 37 INTERVENING SEQUENCE OF 13 BP
W570/36	AFTER RESIDUE 36 OR 37 INTERVENING SEQUENCE OF 34 BP
Y570/37	AFTER RESIDUE 37 INTERVENING SEQUENCE OF 14 BP
Y615/37	AFTER RESIDUE 37 INTERVENING SEQUENCE OF 12 BP
Y655/37	AFTER RESIDUE 37 INTERVENING SEQUENCE OF 13 BP
Y780/37	AFTER RESIDUE 37 INTERVENING SEQUENCE OF 20, 21 OR 113 BP (IN SIX IDENTICAL GENES)
Y830/37	AFTER RESIDUE 37 INTERVENING SEQUENCE OF 13 BP
Y831/37	AFTER RESIDUE 37 INTERVENING SEQUENCE OF 12 BP
Y995/37	AFTER RESIDUE 37 OR 38 INTERVENING SEQUENCE OF 21 BP
Y996/37	AFTER RESIDUE 37 OR 38 INTERVENING SEQUENCE OF 21 BP
V311/38	AFTER RESIDUE 38 INTERVENING SEQUENCE OF 530 BP
V313/36	AFTER RESIDUE 36,37 OR 38 INTERVENING SEQUENCE OF 597 BP
V320/36	AFTER RESIDUE 36, 37 OR 38 INTERVENING SEQUENCE OF 603 BP
V336/36	AFTER RESIDUE 36 OR 37 INTERVENING SEQUENCE OF 571 BP

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C464 P.CANTATORE ET AL. (1988) CURR. GENET. 13, 91-96

C466 H.T.JACOBS, D.J.ELLIOTT, V.B.MATH, A.FARQUHARSON (1988) J. MOL. BIOL. 202, 185-217

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Q417 R.E.BERLANI, S.G.BONITZ, G.CORUZZI, M.NOBREGA, A.TZAGOLOFF (1980) NUCL. ACIDS RES. 8, 5017-5030

Q425 G.D.CLARK-WALKER, C.R.MCARTHUR, K.S.SRIPRAKASH (1985) EMBO J. 4,465-473

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Q995 K.L.ROY, H.COOKE, R.BUCKLAND (1982) NUCL. ACIDS RES. 10, 7313-7322

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E235 Y.YAMADA, M.OHKI, H.ISHIKURA (1983) NUCL. ACIDS RES. 11, 3037-3045
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E250 J.BROSIUS, T.J.DULL, D.D.SLEETER, H.F.NOLLER (1981)
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D.SOELL, J.ABELSON, P.SCHIMMEL (ED), COLD SPRING HARB. 259-266
E295 J.-L.EVRARD, M.KUNTZ, N.A.STRAUS, J.-H.WEIL (1988)
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E304 R.B.HALLICK ET AL.(1984) PLANT. MOL. BIOL. 3, 169-175
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E417 F.G.NOBREGA, A.TZAGOLOFF (1980) FEBS LETTERS 113, 52-54
E425 G.D.CLARK-WALKER, C.R.MCARTHUR, K.S.SRIPRAKASH (1985) EMBO J.
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E432 H.WINTZ, H.-C.CHEN, D.T.N.PILLAY (1987) NUCL. ACIDS RES. 15, 10588-10588
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E453 B.BATUECAS ET AL. (1988) NUCL. ACIDS RES. 16, 6515-6529
E456 D.T.DUBIN, C.-C.HSUCHEN, L.E.TILLOTSON (1986)
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E474 G.GOERTZ, H.FELDMANN (1982) CURR. GENET. 5, 221-225
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E575 V.GAMULIN ET AL. (1983) NUCL. ACIDS RES. 11, 8537-8546

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E780 H.A.HOSBACH, M.SILBERKLANG, B.J.MC CARTHY (1980) CELL 21, 169-178
E781 H.A.HOSBACH, M.SILBERKLANG, B.J.MC CARTHY (1980) CELL 21, 169-178
E782 Z.K.INDIK, K.D.TARTOF (1982) NUCL. ACIDS RES. 10, 4159-4172
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E956 A.ROSEN, S.SARID, V.DANIEL (1984) NUCL. ACIDS RES. 12, 4893-4906
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G410 H.G.KOECHEL, C.M.LAZARUS, N.BASAK, H.KUENTZEL (1981)
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G434	E.BARTNIK, P.BORSUK (1986) NUCL. ACIDS RES. 14, 2407-2407
G450	D.R.WOLSTENHOLME ET AL. (1987) PROC. NATL. ACAD. SCI. USA 84, 1324-1328
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G454	H.-R.HAUCKE, G.GELLISSEN (1988) CURR. GENET. 14, 471-476
G456	D.T.DUBIN, C.C.HSUCHEN, L.E.TILLOTSON (1986) CURR. GENET. 10, 701-707
G457	D.R.WOLSTENHOLME, D.O.CLARY (1985) GENETICS 109, 725-744
G459	D.O.CLARY, D.R.WOLSTENHOLME (1985) J. MOL. EVOL. 22, 252-271
G464	P.CANTATORE ET AL. (1988) CURR. GENET. 13, 91-96
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G665	D.-P.MA, Y.-W.YANG (1988) NUCL. ACIDS RES. 16, 3588-3588
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G770	A.FOURNIER ET AL.(1984) EMBO-J. 3, 1547-1552
G780	N.D.HERSHEY, N.DAVIDSON (1980) NUCL. ACIDS RES. 8, 4899-4910
G781	Y.B.MENG ET AL. (1988) NUCL. ACIDS RES. 16, 7189-7189
G950	J.C.HU, B.D.COTE, E.LUND, J.E.DAHLBERG (1983) NUCL. ACIDS RES. 11, 4809-4821
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	A.ROSEN, S.SARID, V.DANIEL (1984) NUCL. ACIDS RES. 12, 4893-4906
G956	A.ROSEN, S.SARID, V.DANIEL (1984) NUCL. ACIDS RES. 12, 4893-4906
G995	I.L.PIRTLE, R.D.SHORTRIDGE, R.M.PIRTLE (1986) GENE 43, 155-167
G996	R.D.SHORTRIDGE, I.L.PIRTLE, R.M.PIRTLE (1985) GENE 33, 269-277
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H145	G.WICH, L.SIBOLD, A.BOECK (1986) SYSTEM. APPL. MICROBIOL. 7, 18-25
H235	E.F.WAWROUSEK, N.NARASIMHAN, J.N.HANSEN (1984) J. BIOL. CHEM. 259, 3694-3702
H236	C.J.GREEN, G.C.STEWART, M.A.HOLLIS, B.S.VOLD, K.F.BOTT (1985) GENE 37,261-266
H250	O.ORELLANA, L.COOLEY, D.SOELL (1986) MOL. CELL. BIOL. 6, 525-529
H255	L.BOSSI (1983) MOL. GEN. GENET. 192, 163-170
H258	S.GIROUX, R.CEDERGREN (1988) PROC. NATL. ACAD. SCI. USA 85, 9101-9105
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H320	Z.SCHWARZ, S.O.JOLLY, A.A.STEINMETZ, L.BOGORAD (1981) PROC. NATL. ACAD. SCI. USA 78, 3423-3427
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H355	D.R.SHAPIRO, K.K.TEWARI (1986) PLANT MOL. BIOL. 6, 1-12
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H407	Y.SUYAMA (1985) NUCL. ACIDS RES. 13, 3273-3284
H410	R.NETZKER, H.G.KOECHEL, N.BAZAK, H.KUENTZEL (1982) NUCL. ACIDS RES. 10, 4783-4794
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H452	D.R.WOLSTENHOLME ET AL. (1987) PROC. NATL. ACAD. SCI. USA 84, 1324-1328
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H491 W.M.BROWN, E.M.PRAGER, A.WANG, A.C.WILSON (1982)
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M327 H.WINTZ, H.-C.CHEN, D.T.N.PILLAY (1988) CURR. GENET. 13, 255-260
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X576	H.AMSTUTZ, P.MUNZ, W-D.HEYER, U.LEUPOLD, J.KOHLI (1985) CELL 40, 879-886
X635	J.M.PALMER, W.R.FOLK (1987) PLANT MOL. BIOL. 8, 47-51
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X831	W.R.FOLK, H.HOFFSTETTER (1983) CELL 33, 585-593
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F471	S.O.SOUTHERN, P.J.SOUTHERN, A.E.DIZON (1988) J. MOL. EVOL. 28, 32-42
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