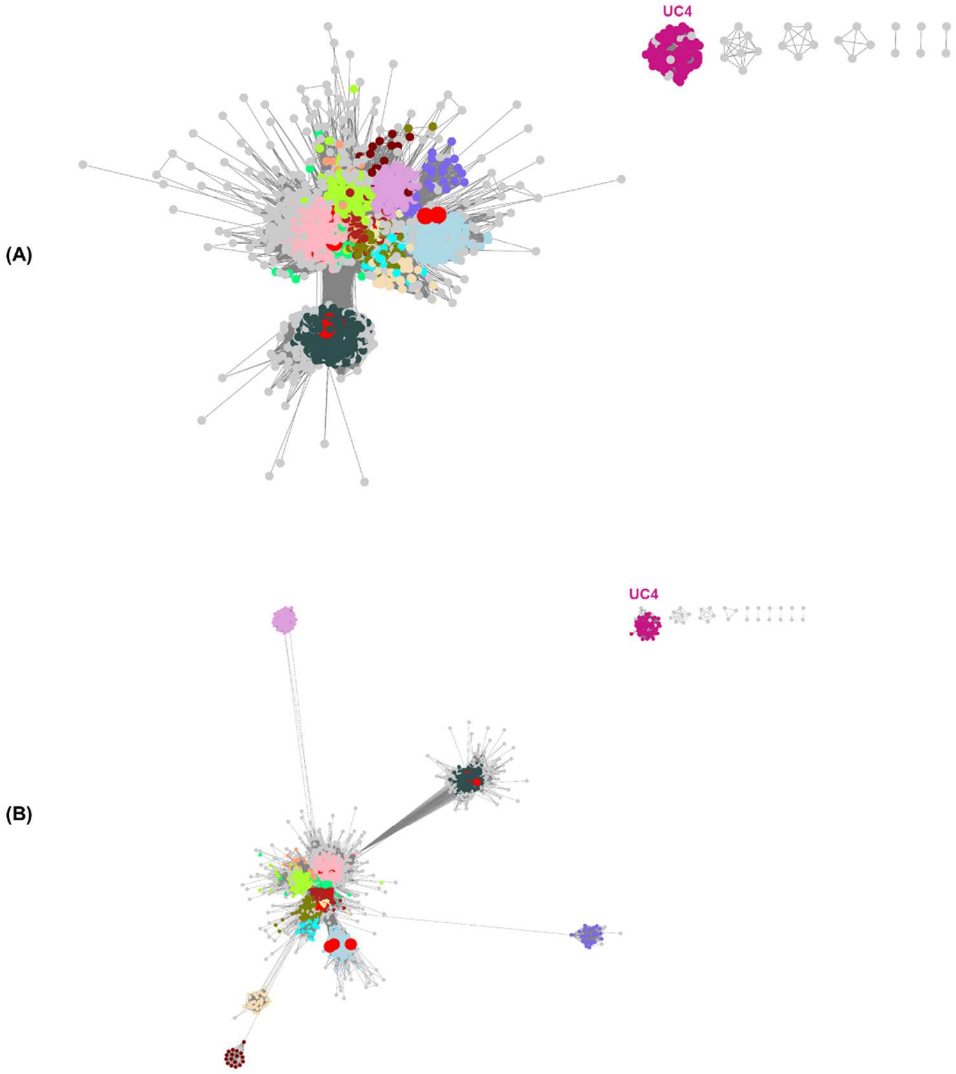
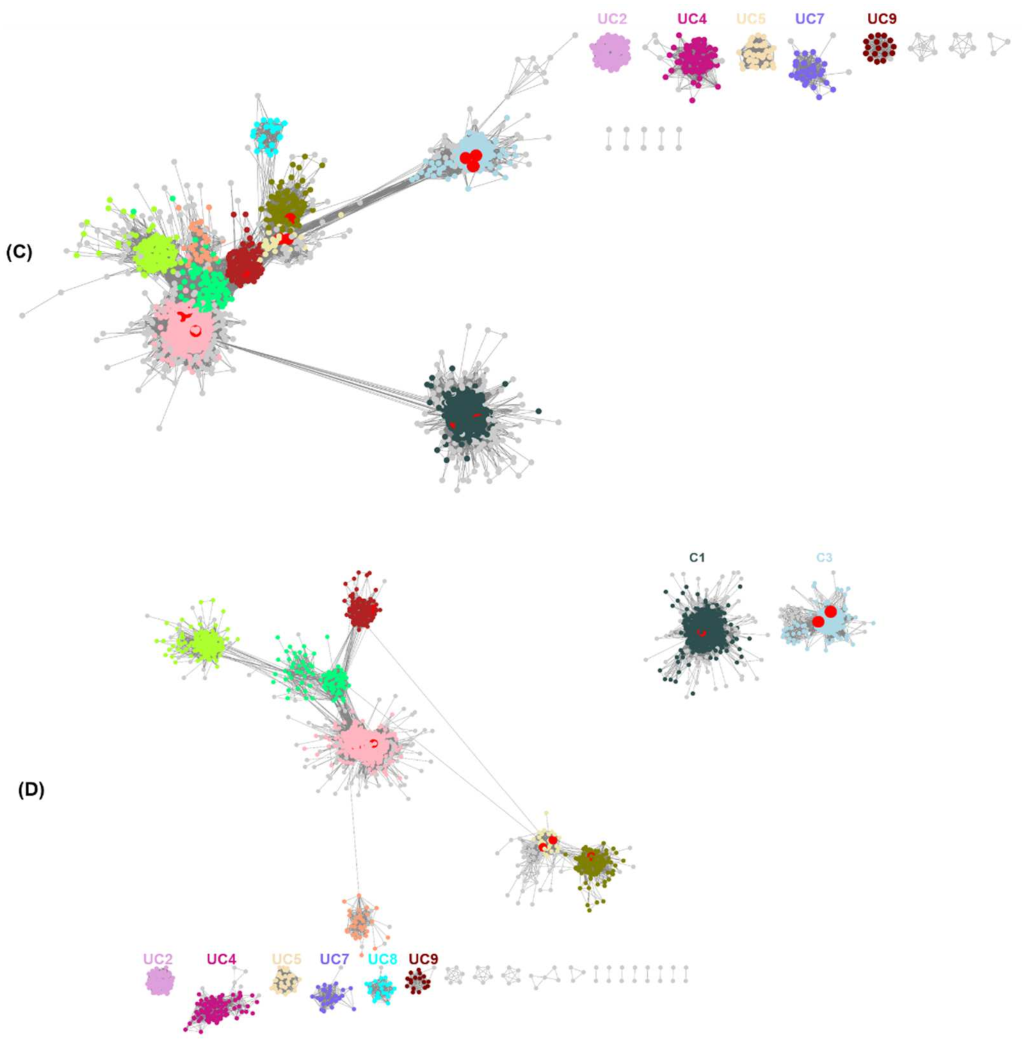
Supplementary Figures and Tables

Figure S1




(C)
UC2
UC4
UC5
UC7
UC9
(D)
C1
C3
UC2
UC4
UC5
UC7
UC8
UC9

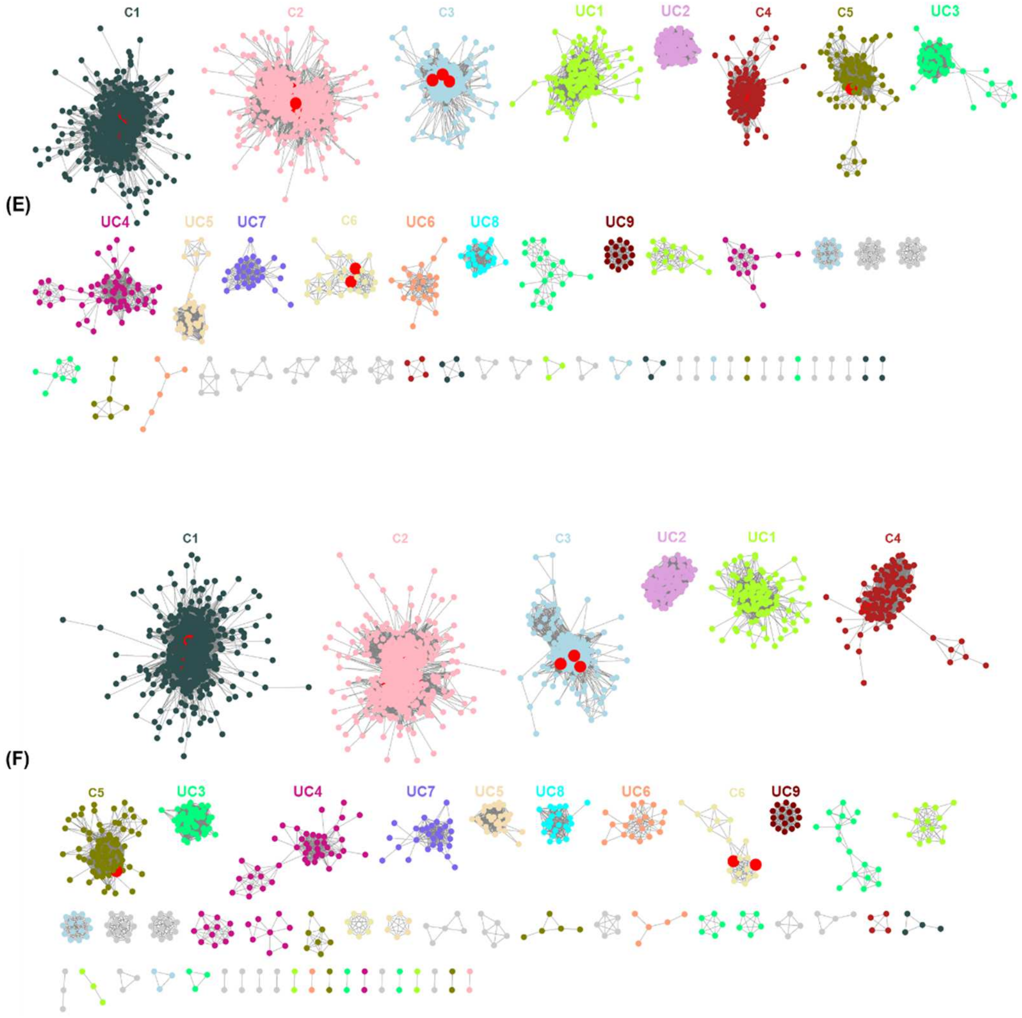
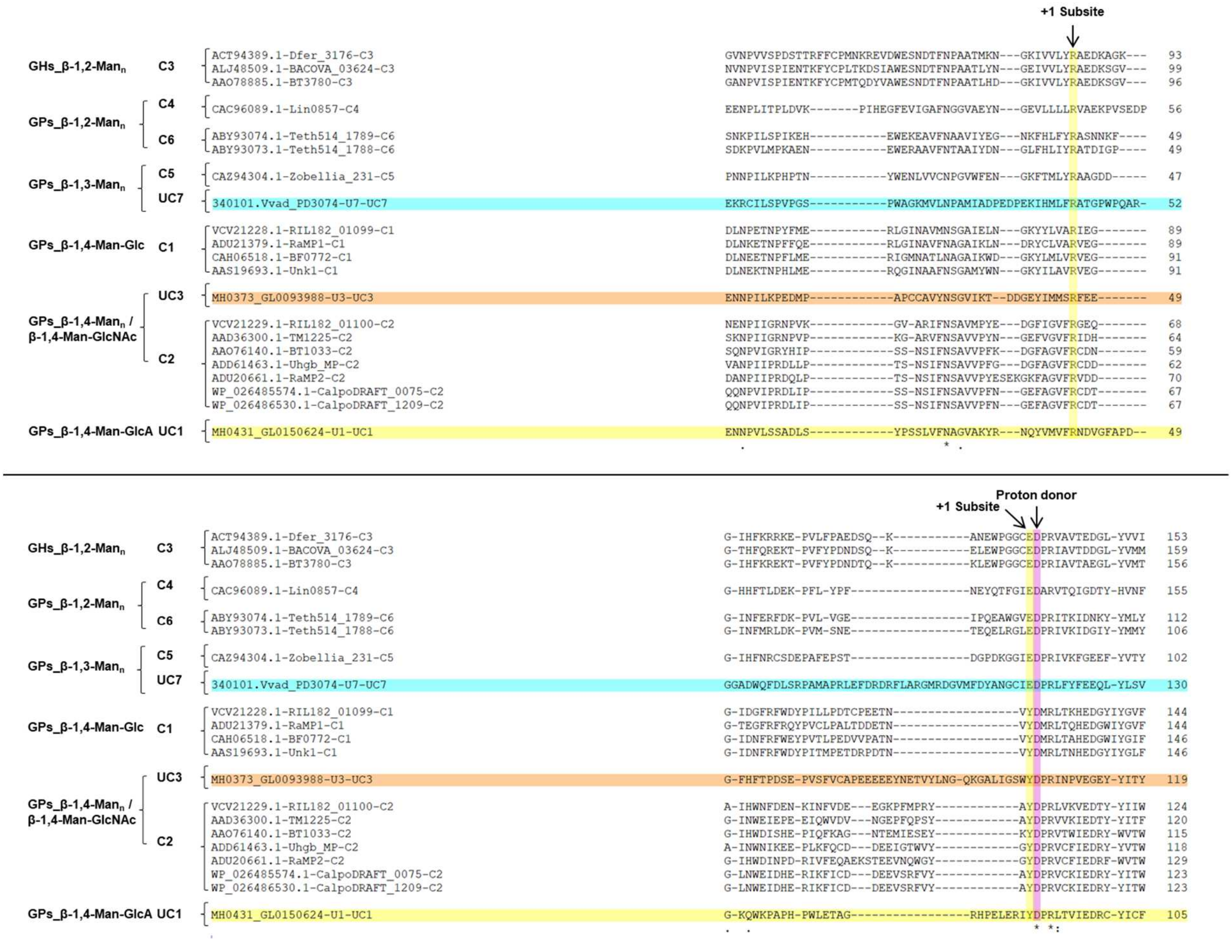


Figure S1: Protein sequence similarity networks (SSNs) of the 6,308 GH130 sequences from the CAZy database and from gut metagenomes, with various E-value thresholds. The 3,637 nodes contain sequences with more than 70% identity. Red nodes correspond to biochemically characterized members of the GH130 family. Other nodes are colored according to the meta-node they belong to in the optimal SSN, obtained with the E-value threshold 10^{-70}. (A), E-value threshold 10^{-30}, corresponding to 32% sequence identity; the 79 sequences appearing in 78 singletons have been omitted from the figure. (B), E-value threshold 10^{-40}, corresponding to 41% sequence identity; the 189 sequences appearing in 177 singletons have been omitted from the figure. (C), E-value threshold 10^{-50}, corresponding to 53% sequence identity; the 333 sequences appearing in 315 singletons have been omitted from the figure. (D), E-value threshold 10^{-60}, corresponding to 61% sequence identity; the 491 sequences appearing in 457 singletons have been omitted from the figure. (E), E-value threshold 10^{-80}, corresponding to 64% sequence identity; the 896 sequences appearing in 826 singletons have been omitted from the figure. (F), E-value threshold 10^{-90}, corresponding to 65% sequence identity; the 1130 sequences appearing in 1027 singletons have been omitted from the figure.

Figure S2



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ALJ48509.1-BACOVA_03624-C3                NVNPVISPIENTKFYCPLTKDSIAWESNDTFNPAATLYN---GEIVVLYRAEDKSGV---   99
AAO78885.1-BT3780-C3                      GANPVISPIENTKFYCPMTQDYVAWESNDTFNPAATLHD---GKIVVLYRAEDKSGV---   96

CAC96089.1-Lin0857-C4                     EENPLITPLDVK-------PIHEGFEVIGAFNGGVAEYN---GEVLLLLRVAEKPVSEDP   56

ABY93074.1-Teth514_1789-C6                SNKPILSPIKEH-----------EWEKEAVFNAAVIYEG---NKFHLFYRASNNKF----   49
ABY93073.1-Teth514_1788-C6                SDKPVLMPKAEN-----------EWERAAVFNTAAIYDN---GLFHLIYRATDIGP----   49

CAZ94304.1-Zobellia_231-C5                PNNPILKPHPTN-----------YWENLVVCNPGVWFEN---GKFTMLYRAAGDD-----   47
340101.Vvad_PD3074-U7-UC7                 EKRCILSPVPGS-----------PWAGKMVLNPAMIADPEDPEKIHMLFRATGPWPQAR-   52

VCV21228.1-RIL182_01099-C1                DLNPETNPYFME-----------RLGINAVMNSGAIELN---GKYYLVARIEG-------   89
ADU21379.1-RaMP1-C1                       DLNKETNPFFQE-----------RLGINAVFNAGAIKLN---DRYCLVARVEG-------   89
CAH06518.1-BF0772-C1                      DLNEETNPFLME-----------RIGMNATLNAGAIKWD---GKYLMLVRVEG-------   91
AAS19693.1-Unk1-C1                        DLNEKTNPHLME-----------RQGINAAFNSGAMYWN---GKYILAVRVEG-------   91

MH0373_GL0093988-U3-UC3                   ENNPILKPEDMP------------APCCAVYNSGVIKT--DDGEYIMMSRFEE-------   49

VCV21229.1-RIL182_01100-C2                NENPIIGRNPVK------------GV-ARIFNSAVMPYE---DGFIGVFRGEQ-------   68
AAD36300.1-TM1225-C2                      SKNPIIGRNPVP------------KG-ARVFNSAVVPYN---GEFVGVFRIDH-------   64
AAO76140.1-BT1033-C2                      SQNPVIGRYHIP------------SS-NSIFNSAVVPFK---DGFAGVFRCDN-------   59
ADD61463.1-Uhgb_MP-C2                     VANPIIPRDLLP------------TS-NSIFNSAVVPFG---DGFAGVFRCDD-------   62
ADU20661.1-RaMP2-C2                       DANPIIPRDQLP------------TS-NSIFNSAVVPYESEKGKFAGVFRVDD-------   70
WP_026485574.1-CalpoDRAFT_0075-C2         QQNPVIPRDLIP------------SS-NSIFNSAVVPFN---GEFAGVFRCDT-------   67
WP_026486530.1-CalpoDRAFT_1209-C2         QQNPVIPRDLIP------------SS-NSIFNSAVVPFN---GEFAGVFRCDT-------   67

MH0431_GL0150624-U1-UC1                   ENNPVLSSADLS------------YPSSLVFNAGVAKYR---NQYVMVFRNDVGFAPD--   49
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                                                                   +1 Subsite
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ALJ48509.1-BACOVA_03624-C3                G-THFQREKT-PVFYPDNDSQ--K-----------ELEWPGGCEDPRIAVTDDGL-YVMM   159
AAO78885.1-BT3780-C3                      G-IHFKREKT-PVFYPDNDTQ--K-----------KLEWPGGCEDPRIAVTAEGL-YVMT   156

CAC96089.1-Lin0857-C4                     G-HHFTLDEK-PFL-YPF-----------------NEYQTFGIEDARVTQIGDTY-HVNF   155

ABY93074.1-Teth514_1789-C6                G-INFERFDK-PVL-VGE-----------------IPQEAWGVEDPRITKIDNKY-YMLY   112
ABY93073.1-Teth514_1788-C6                G-INFMRLDK-PVM-SNE-----------------TEQELRGLEDPRIVKIDGIY-YMMY   106

CAZ94304.1-Zobellia_231-C5                G-IHFNRCSDEPAFEPST-----------------DGPDKGGIEDPRIVKFGEEF-YVTY   102
340101.Vvad_PD3074-U7-UC7                 GGADWQFDLSRPAMAPRLEFDRDRFLARGMRDGVMFDYANGCIEDPRLFYFEEQL-YLSV   130

VCV21228.1-RIL182_01099-C1                G-IDGFRFWDYPILLPDTCPEETN------------------VYDMRLTKHEDGYIYGVF   144
ADU21379.1-RaMP1-C1                       G-TEGFRFRQYPVCLPALTDDETN------------------VYDMRLTQHEDGWIYGVF   144
CAH06518.1-BF0772-C1                      G-IDNFRFWEYPVTLPEDVVPATN------------------VYDMRLTAHEDGWIYGIF   146
AAS19693.1-Unk1-C1                        G-IDNFRFWDYPITMPETDRPDTN------------------VYDMRLTNHEDGYIYGLF   146

MH0373_GL0093988-U3-UC3                   G-FHFTPDSE-PVSFVCAPEEEEEYNETVYLNG-QKGALIGSWYDPRINPVEGEY-YITY   119

VCV21229.1-RIL182_01100-C2                A-IHWNFDEN-KINFVDE---EGKPFMPRY------------AYDPRLVKVEDTY-YIIW   124
AAD36300.1-TM1225-C2                      G-INWEIEPE-EIQWVDV---NGEPFQPSY------------AYDPRVVKIEDTY-YITF   120
AAO76140.1-BT1033-C2                      G-IHWDISHE-PIQFKAG---NTEMIESEY------------KYDPRVTWIEDRY-WVTW   115
ADD61463.1-Uhgb_MP-C2                     A-INWNIKEE-PLKFQCD---DEEIGTWVY------------GYDPRVCFIEDRY-YVTW   118
ADU20661.1-RaMP2-C2                       G-IHWDINPD-RIVFEQAEKSTEEVNQWGY------------GYDPRVCFIEDRF-WVTW   129
WP_026485574.1-CalpoDRAFT_0075-C2         G-LNWEIDHE-RIKFICD---DEEVSRFVY------------AYDPRVCKIEDRY-YITW   123
WP_026486530.1-CalpoDRAFT_1209-C2         G-LNWEIDHE-RIKFICD---DEEVSRFVY------------AYDPRVCKIEDRY-YITW   123

MH0431_GL0150624-U1-UC1                   G-KQWKPAPH-PWLETAG-----------------RHPELERIYDPRLTVIEDRC-YICF   105
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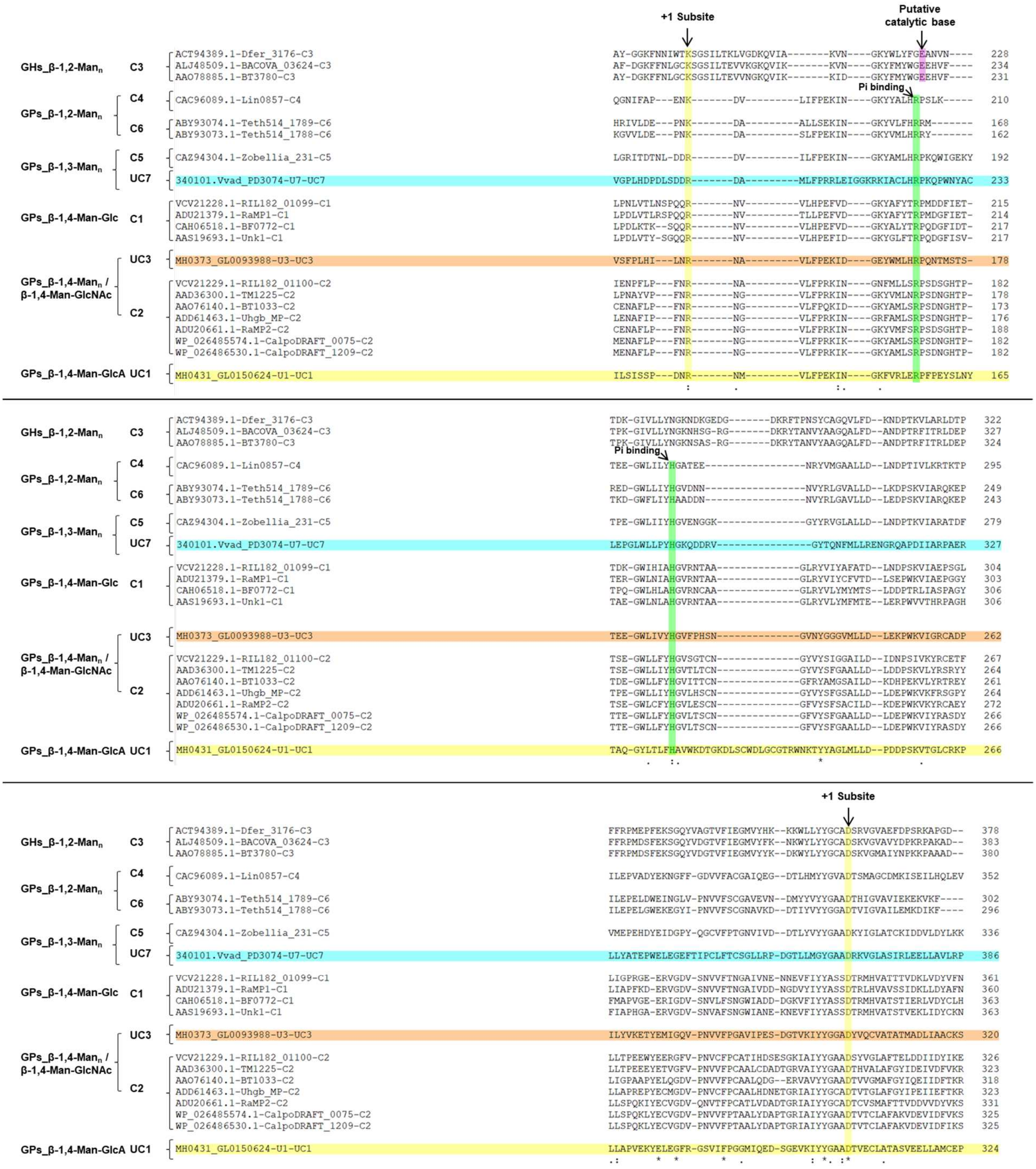

Figure S2: Multiple sequence alignment of all the characterized GH130 enzymes, including U1, U3 and U7.

Figure S3

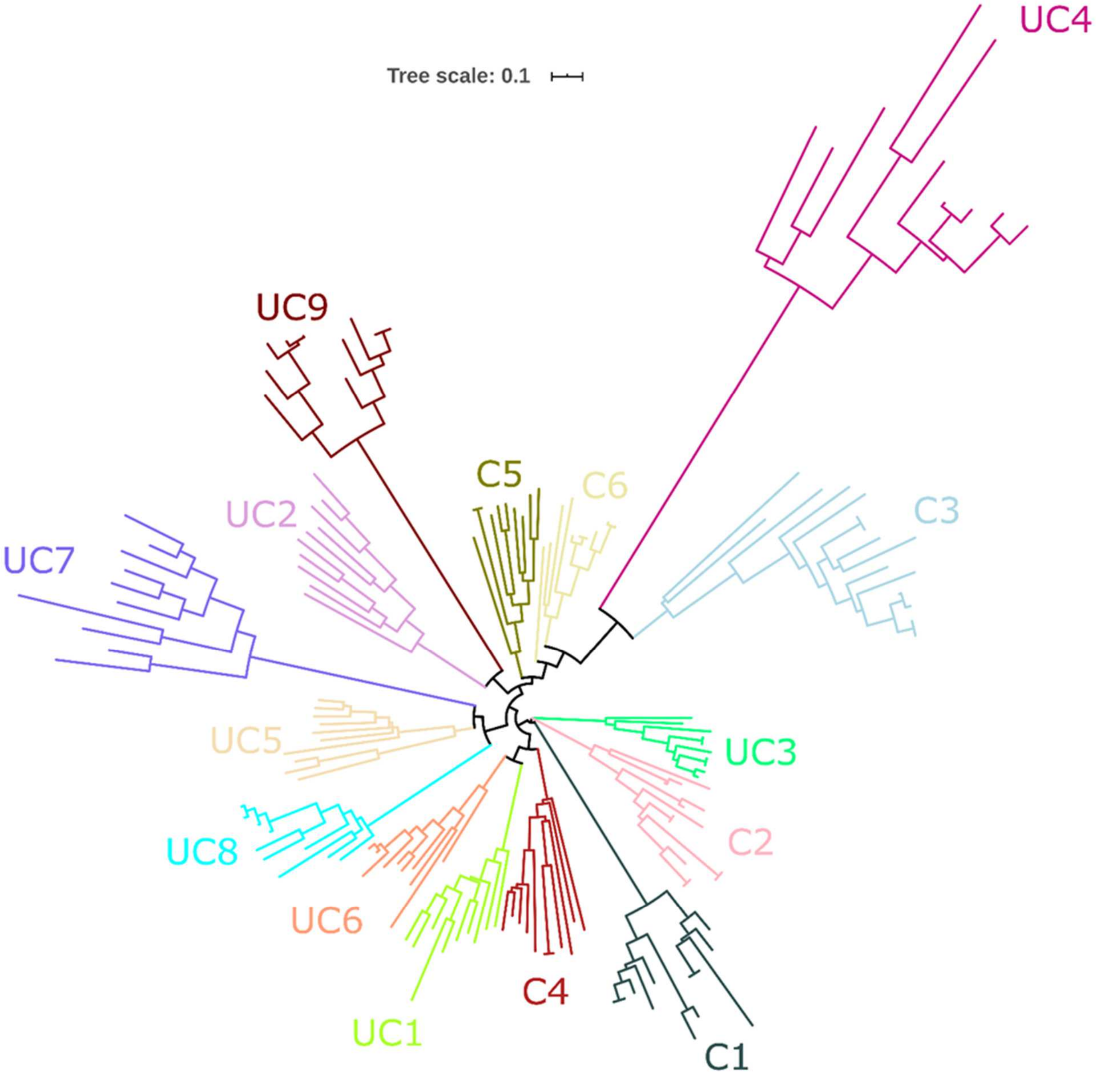

Figure S3: Maximum-likelihood phylogenetic tree, generated using 10 representative sequences for each SSN meta-node, defined with an E-value threshold of 10^{-70}.

Figure S4

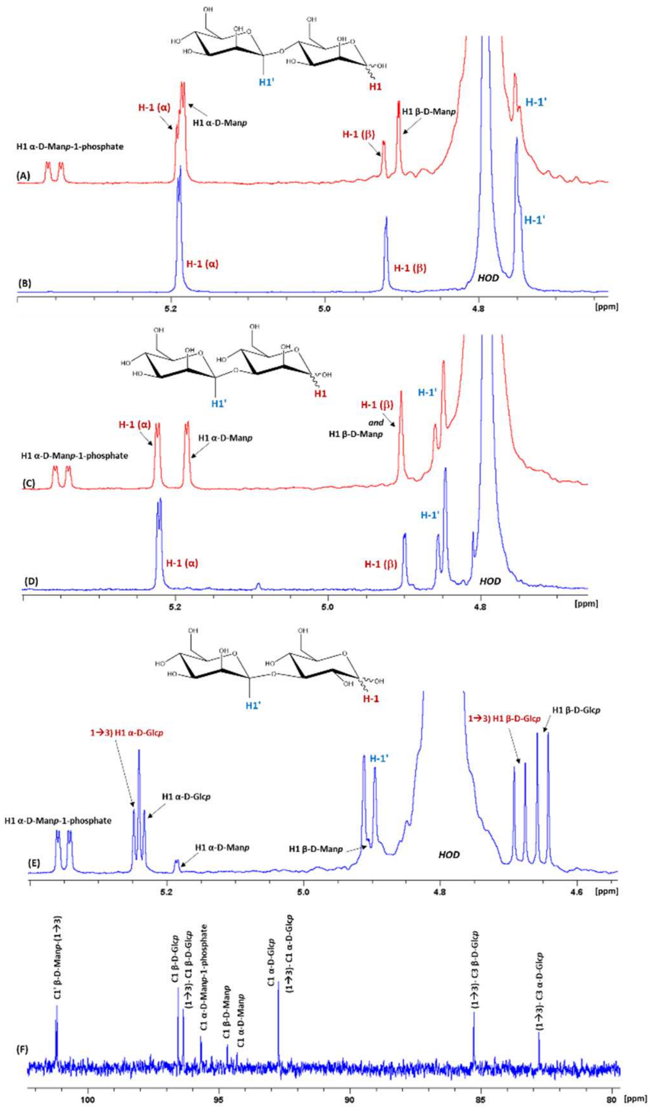

Figure S4: NMR analysis of the reverse-phosphorolysis reactional mixtures incubation for 24hrs with U3 and U7. The reactions were performed in the presence of 10 mM of αMan1P (glycosyl donor) and 10 mM Glc or Man (acceptors). (A, B, C, D, E) 500 MHz ^{1}H NMR spectra of the anomeric region (5.5-4.5 ppm) and (F) ^{13}C NMR spectra region (102-80 ppm). (A), U3 reaction medium: at 5.19 ppm (H1α), 4.92 ppm (H1β), 4.74 ppm (H1'). (B), β-1,4-mannobiose standard (Megazyme). (C), U7 reaction medium performed with Man as acceptor: at 5.22 ppm (H1α), 4.90 ppm (H1β), 4.85 ppm (H1').(D), β-1,3-mannobiose standard (Carbosynth). (E, F), U7 reaction medium performed with Glc as acceptor: at 5.24 ppm (H1α), 4.68 ppm (H1β), 4.90 ppm (H1') and 85.2 ppm (1→3)- C3 β-D-Glc*p,* 82,7 ppm (1→3)- C3 α-D-Glc*p*.

Figure S5

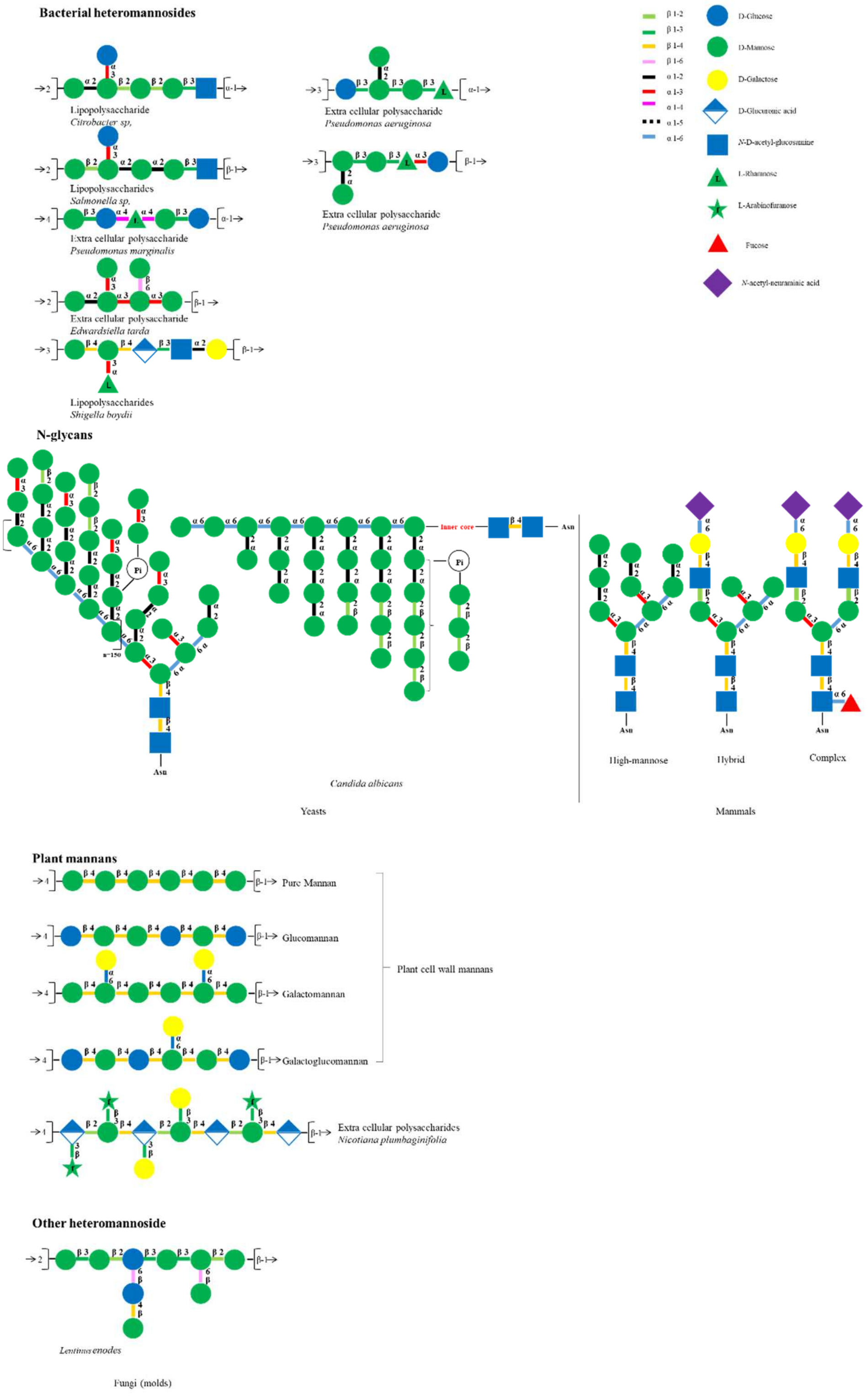

Figure S5: Examples of mannoside and heteromannoside structures containing the motifs targeted by GH130 enzymes.

Figure S6

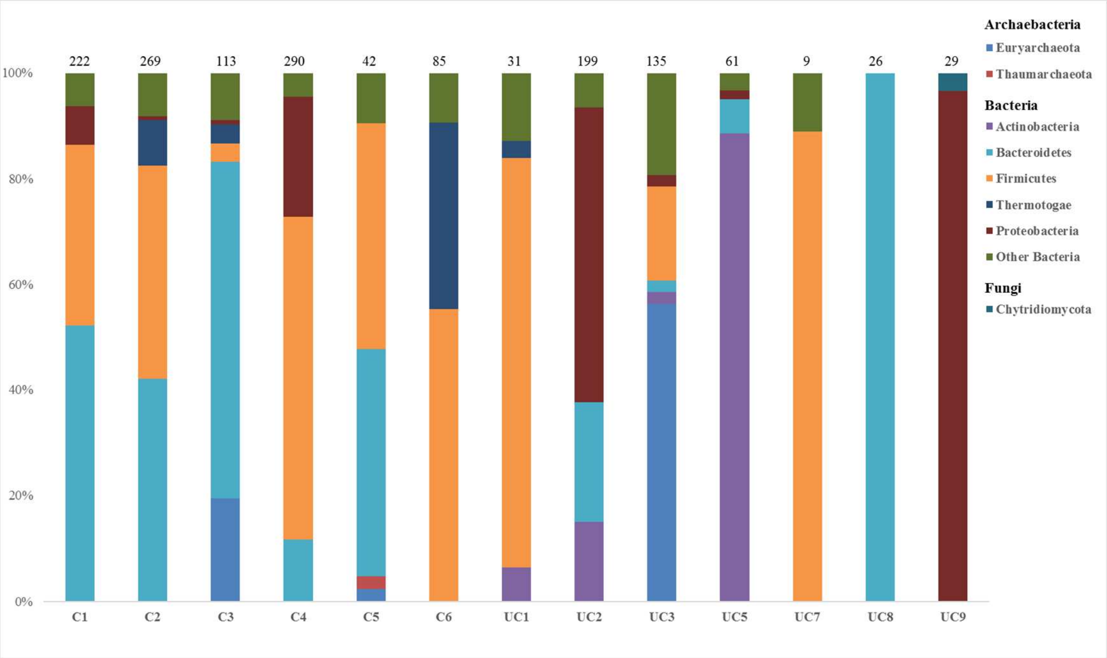

Figure S6: Taxonomical origin of the GH130 sequences listed in the CAZy database, for each SSN meta-node.

Table S1

Accession numbers of all the GH130 sequences used in this study, classified by meta-node. Each line corresponds to one node, which might contain several sequences. The accession numbers of the characterized enzymes are highlighted in green.

C1

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"cazygi|89949756|gb|ABD79771.1| glycosidase"," PH1107-related [Saccharophagus degradans 2-40]"]</td></tr>
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"pigPIG_192_GL0047528 [gene] locus=scaffold19611_5:411:1580:- [Complete] codon-table.11",
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"rumen583_GL0267624_1 [gene] locus=scaffold337529_1:5774:6943:-[Complete]",
"rumen583_GL0281287_1 [gene] locus=scaffold149356_5:1144:2313:+[Complete]",
"rumen583_GL0726185_1 [gene] locus=scaffold1286_4:100582:101751:-[Complete]",
"rumen554_GL1011952_1 [gene] locus=scaffold1761809_1:1001:2170:-[Complete]",
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"cazygi|389570925|gb|AFK87330.1| glycosidase related protein [Thermoanaerobacterium saccharolyticum JW/SL-YS485]",
"cazygi|302778862|gb|ADL69421.1| glycosidase-related [Thermoanaerobacterium thermosaccharolyticum DSM 571]",
"cazygi|433293730|gb|AGB19552.1| putative glycosylase [Thermoanaerobacterium thermosaccharolyticum M0795]"]</td></tr>
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"cazy|AQX03213.1 glycosidase [Elizabethkingia anophelis]",
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"cazy|ATC42505.1 glycosidase [Elizabethkingia anophelis]",
"cazy|ATC46181.1 glycosidase [Elizabethkingia anophelis]",
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"cazygi|1016602155|gb|AMX47452.1| glycosidase [Elizabethkingia anophelis]",
"cazygi|822872393|gb|AKH94617.1| glycosidase [Elizabethkingia anophelis FMS-007]",
"cazygi|675104779|gb|AIL46072.1| putative glycoside hydrolase [Elizabethkingia anophelis NUHP1]"]</td></tr>
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"cazygi|769869649|gb|AJW61891.1| 4-O-beta-D-mannosyl-D-glucose phosphorylase [Elizabethkingia miricola]"]</td></tr>
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"rumen554_GL0725053_1 [gene] locus=scaffold2187960_1:7:1191:-[Complete]",
"rumen0081_GL0541184_1 [gene] locus=scaffold699814_1:12309:13493:+[Complete]",
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["cazy|AWB65989.1 glycosidase [Catenovulum sp. CCB-QB4]"]
["cazy|AWG26847.1 glycosidase [Flavobacterium kingsejongi]"]
["cazy|AWM35262.1 glycosidase [Hymenobacter nivis]"]
["cazy|AXB29279.1 glycosidase [Faecalibacterium prausnitzii]", "humangutMH0004_GL0022947 [gene] locus=scaffold4876_6:5755:6945:+ [Complete] codon-table.11", "humangutMH0143_GL0066610 [gene] locus=scaffold10045_5:67698:68888:- [Complete] codon-table.11", "humangutMH0233_GL0007868 [gene] locus=scaffold65_1:7044:8234:- [Complete] codon-table.11", "humangut706846339-stool1_revised_scaffold23726_3_gene129107 strand:- start:1014 stop:2204 length:1191 start_codon:yes stop_codon:yes gene_type:complete [Complete] codon-table.11", "mouseMC-6-1_GL0107987 [gene] locus=scaffold75276_1:4575:5765:- [Complete] codon-table.11", "mouse10_GL0064298 [gene] locus=scaffold8820_2:15495:16685:- [Complete] codon-table.11", "pigPIG_173_GL0143313 [gene] locus=scaffold157290_1:3:1193:+ [Lack 5'-end] codon-table.11", "pigPIG-019_GL0065321 [gene] locus=scaffold11801_1:514:1704:+ [Complete] codon-table.11", "pigPIG-080_GL0106426 [gene] locus=scaffold141193_3:546:1736:+ [Complete] codon-table.11",

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["cazy|AYQ73088.1 glycosidase [Cohnella sp. 18JY8-7]"]
["cazy|BAX79320.1 glycosidase [Marinifilaceae bacterium SPP2]"]
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"cazygi|295085672|emb|CBK67195.1| Predicted glycosylase [Bacteroides xylanisolvens XB1A]"]</td></tr>
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"cazygi|336306901|gb|AEI50003.1| glycosidase related protein [Runella slithyformis DSM 19594]"]</td></tr>
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"rumen554_GL1874810_1 [gene] locus=scaffold55901_2:3151:4308:-[Complete]",
"rumen100058_GL1181547_1 [gene] locus=scaffold2365842_1:241:1398:+[Complete]",
"rumen2009040_GL2571842_1 [gene] locus=scaffold1302178_1:1404:2561:-[Complete]"]</td></tr>
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"mouseMC-0-1_GL0086094 [gene] locus=scaffold75211_2:844:2025:- [Complete] codon-table.11",
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["humangutMH0003_GL0040210 [gene] locus=scaffold9278_1:4837:6006:- [Complete] codon-table.11", "humangut763982056-stool1_revised_scaffold33383_4_gene91709 strand:- start:1361 stop:2530 length:1170 start_codon:yes stop_codon:yes gene_type:complete [Complete] codon-table.11"]
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["humangutMH0046_GL0006703 [gene] locus=scaffold16924_6:476:1084:+ [Lack 3'-end] codon-table.11"]
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["humangutMH0071_GL0050647 [gene] locus=scaffold13703_7:12209:13426:+ [Complete] codon-table.11", "humangutO2.UC50-0_GL0126452 [gene] locus=scaffold87365_4:6651:7868:- [Complete] codon-table.11", "humangut765094712-stool1_revised_scaffold5918_1_gene43451 strand:+ start:3918 stop:5135 length:1218 start_codon:yes stop_codon:yes gene_type:complete [Complete] codon-table.11", "humangut411476.BACOVA_02090 [Complete]:- codon-table.11"]
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["humangutMH0077_GL0069156 [gene] locus=C1110387_1:1:759:+ [Lack both ends] codon-table.11"]
["humangutMH0086_GL0043702 [gene] locus=scaffold3420_19:149:1336:- [Complete] codon-table.11", "humangutMH0169_GL0014591 [gene] locus=scaffold90896_3:5721:6908:+ [Complete] codon-table.11", "mouseG1-5A_GL0181295 [gene] locus=scaffold134836_1:10977:12164:- [Complete] codon-table.11", "mouse2-3_GL0031397 [gene] locus=scaffold235_3:7064:8251:- [Complete] codon-table.11", "pigPIG_115_GL0135634 [gene] locus=scaffold144786_1:209:1396:- [Complete] codon-table.11", "rumen2009040_GL2733267_1 [gene] locus=scaffold679350_1:2268:3455:+[Complete]"]
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["humangutMH0150_GL0029065 [gene] locus=scaffold26200_7:3:1046:+ [Lack both ends] codon-table.11"]
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"humangutT2D-57A_GL0089819 [gene] locus=scaffold37237_2:48502:49671:- [Complete] codon-table.11", "mouseS-Fe10_GL0020481 [gene] locus=scaffold62188_1:15006:16175:- [Complete] codon-table.11", "mouseMC-0-1_GL0000741 [gene] locus=scaffold182_2:1677:2846:+ [Complete] codon-table.11", "mouseMC-0-1_GL0097520 [gene] locus=scaffold86236_8:883:2052:+ [Complete] codon-table.11", "mouseMC-6-2_GL0172729 [gene] locus=scaffold131564_1:27302:28471:+ [Complete] codon-table.11", "mouseMC-6-3_GL0073206 [gene] locus=scaffold51250_1:1502:2671:- [Complete] codon-table.11", "mouseG1-1A_GL0086557 [gene] locus=scaffold69184_2:28379:29548:- [Complete] codon-table.11", "mouse1A-dyr2-07_GL0077917 [gene] locus=scaffold30795_6:18113:19282:- [Complete] codon-table.11", "mouse4-1_GL0047775 [gene] locus=scaffold62147_1:73815:74984:+ [Complete] codon-table.11", "pigPIG-031_GL0058312 [gene] locus=scaffold110073_3:2:1171:+ [Lack 5'-end] codon-table.11", "rumen553_GL0098295_1 [gene] locus=scaffold295983_2:2588:3757:+[Complete]", "rumen553_GL0293893_1 [gene] locus=scaffold354547_1:12051:13220:+[Complete]", "rumen553_GL0533049_1 [gene] locus=scaffold81146_1:24886:26055:-[Complete]", "rumen553_GL0770667_1 [gene] locus=scaffold119161_1:16572:17741:-[Complete]", "rumen553_GL0805459_1 [gene] locus=scaffold183561_1:1086:2255:+[Complete]", "rumen552_GL0986920_1 [gene] locus=scaffold127796_2:7380:8549:-[Complete]", "rumen552_GL1043400_1 [gene] locus=scaffold209443_2:5010:6179:-[Complete]", "rumen552_GL1104510_1 [gene] locus=scaffold1115005_1:25884:27053:+[Complete]", "rumen583_GL0766550_1 [gene] locus=scaffold280980_1:26443:27612:-[Complete]", "rumen554_GL0710234_1 [gene] locus=scaffold320099_2:4450:5619:-[Complete]", "rumen554_GL0903399_1 [gene] locus=scaffold360775_1:16715:17884:-[Complete]", "rumen554_GL1512054_1 [gene] locus=scaffold144087_3:211:1380:+[Complete]", "rumen554_GL2005306_1 [gene] locus=scaffold18673_1:97:1266:-[Complete]", "rumen554_GL2346766_1 [gene] locus=scaffold84744_2:1230:2399:-[Complete]", "rumen555_GL0739033_1 [gene] locus=scaffold168963_2:11384:12553:+[Complete]", "rumen555_GL2164851_1 [gene] locus=scaffold1262900_1:12081:13250:+[Complete]", "rumen0081_GL0834214_1 [gene] locus=scaffold1778304_1:216:1385:+[Complete]", "rumen0081_GL0861054_1 [gene] locus=scaffold102262_2:2898:4067:+[Complete]", "rumen0081_GL2320442_1 [gene] locus=scaffold697257_1:53555:54724:-[Complete]", "rumen100058_GL0730810_1 [gene] locus=scaffold3230704_2:1372:2541:-[Complete]", "rumen100058_GL1140795_1 [gene] locus=scaffold3123978_2:2:1171:+[Lack 5'-end]", "rumen100058_GL1382710_1 [gene] locus=scaffold1446962_3:12479:13648:-[Complete]", "rumen100058_GL1713671_1 [gene] locus=scaffold3260277_1:1017:2186:-[Complete]", "rumen100058_GL1870643_1 [gene] locus=scaffold831521_2:3236:4405:-[Complete]", "rumen100058_GL2879678_1 [gene] locus=scaffold2011468_1:77:1246:-[Complete]", "rumen100058_GL2882754_1 [gene] locus=scaffold2160084_1:97:1266:+[Complete]", "rumen100058_GL3753782_1 [gene] locus=scaffold519037_1:1585:2754:+[Complete]", "rumen2009040_GL0755339_1 [gene] locus=scaffold134393_1:1164:2333:-[Complete]", "rumen2009040_GL2002423_1 [gene] locus=scaffold638974_6:23852:25021:-[Complete]", "rumen3042_GL2710176_1 [gene] locus=scaffold456468_4:1590:2759:-[Complete]"]
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["humangutMH0197_GL0097441 [gene] locus=C1904641_1:217:744:- [Lack 5'-end] codon-table.11"]
["humangutMH0197_GL0103303 [gene] locus=scaffold89255_1:3:653:- [Lack 3'-end] codon-table.11"]
["humangutMH0198_GL0043816 [gene] locus=scaffold44551_1:347:1261:+ [Lack 3'-end] codon-table.11"]
["humangutMH0200_GL0168561 [gene] locus=scaffold19653_1:10723:12000:- [Complete] codon-table.11"]
["humangutMH0203_GL0230351 [gene] locus=scaffold10958_6:967:2178:+ [Complete] codon-table.11", "mouseGroup2-3A_GL0127943 [gene] locus=scaffold74719_1:14518:15729:- [Complete] codon-table.11", "mouse2-2_GL0057371 [gene] locus=scaffold117963_5:22906:24117:+ [Complete] codon-table.11"]
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["humangutMH0229_GL0174354 [gene] locus=scaffold129056_1:1153:2364:+ [Complete] codon-table.11"]
["humangutMH0233_GL0001986 [gene] locus=scaffold24485_3:3:836:+ [Lack 5'-end] codon-table.11", "humangutV1.UC37-0_GL0072500 [gene] locus=scaffold19643_12:2:835:+ [Lack 5'-end] codon-table.11", "rumen100058_GL3508998_1 [gene] locus=scaffold491945_2:2:835:+[Lack 5'-end]"]
["humangutMH0234_GL0092685 [gene] locus=scaffold17765_28:1:1197:+ [Lack 5'-end] codon-table.11"]
["humangutMH0239_GL0155111 [gene] locus=scaffold10725_5:3212:4375:+ [Complete] codon-table.11", "rumen553_GL0025787_1 [gene] locus=scaffold425815_1:7629:8792:+[Complete]", "rumen0081_GL2522705_1 [gene] locus=scaffold1391530_3:119:1279:+[Lack 3'-end]"]
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["humangutMH0243_GL0087501 [gene] locus=scaffold76437_1:22166:22651:+ [Lack 3'-end] codon-table.11"]
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["humangutMH0250_GL0282662 [gene] locus=scaffold85700_1:3:533:- [Lack 3'-end] codon-table.11"]
["humangutMH0251_GL0042591 [gene] locus=scaffold19287_3:1:1500:- [Lack 3'-end] codon-table.11"]
["humangutMH0260_GL0038292 [gene] locus=scaffold87671_1:158:916:+ [Lack 3'-end] codon-table.11"]
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["humangutMH0266_GL0001165 [gene] locus=scaffold15158_8:163:639:- [Lack 5'-end] codon-table.11"]
["humangutMH0266_GL0022658 [gene] locus=scaffold29203_10:3373:4527:+ [Complete] codon-table.11"]
["humangutMH0266_GL0082076 [gene] locus=scaffold3083_15:2:625:- [Lack 3'-end] codon-table.11"]
["humangutMH0266_GL0106114 [gene] locus=scaffold29683_1:2:475:- [Lack 3'-end] codon-table.11",

"humangutMH0403_GL0154505 [gene] locus=scaffold81282_1:2:475:- [Lack 3'-end] codon-table.11"]
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["humangutMH0271_GL0060042 [gene] locus=scaffold25955_5:85:771:+ [Lack 3'-end] codon-table.11"]
["humangutMH0276_GL0215010 [gene] locus=C1978076_1:1:561:- [Lack 3'-end] codon-table.11", "mouse20_GL0049333 [gene] locus=scaffold88136_5:2:562:- [Lack 3'-end] codon-table.11"]
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["humangutMH0302_GL0088302 [gene] locus=scaffold62124_1:9329:10327:+ [Complete] codon-table.11"]
["humangutMH0309_GL0064688 [gene] locus=scaffold37913_3:2:628:+ [Lack 5'-end] codon-table.11"]
["humangutMH0309_GL0096983 [gene] locus=scaffold37913_2:167:655:+ [Lack 3'-end] codon-table.11"]
["humangutMH0315_GL0027374 [gene] locus=scaffold15353_1:1:567:- [Lack 3'-end] codon-table.11"]
["humangutMH0318_GL0144813 [gene] locus=scaffold97586_2:3:809:- [Lack 3'-end] codon-table.11"]
["humangutMH0319_GL0012399 [gene] locus=scaffold73619_4:648:1886:+ [Complete] codon-table.11", "pigPIG_202_GL0230914 [gene] locus=scaffold237116_1:17896:19134:+ [Complete] codon-table.11"]
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["humangutMH0358_GL0063993 [gene] locus=scaffold7965_1:2:478:- [Lack 3'-end] codon-table.11"]
["humangutMH0362_GL0062124 [gene] locus=scaffold106578_1:5100:6281:- [Complete] codon-table.11"]
["humangutMH0363_GL0120444 [gene] locus=scaffold17645_9:1:930:+ [Lack both ends] codon-table.11"]
["humangutMH0364_GL0127490 [gene] locus=scaffold13251_4:1:813:- [Lack 3'-end] codon-table.11"]
["humangutMH0374_GL0078912 [gene] locus=scaffold82649_3:5617:6297:+ [Lack 3'-end] codon-table.11"]
["humangutMH0377_GL0151261 [gene] locus=scaffold73020_3:653:1129:+ [Lack 3'-end] codon-table.11", "pigZXZ-2B_GL0174477 [gene] locus=scaffold69697_1:367:843:+ [Lack 3'-end] codon-table.11"]
["humangutMH0382_GL0012715 [gene] locus=scaffold7953_12:2:913:+ [Lack 5'-end] codon-table.11"]
["humangutMH0394_GL0045810 [gene] locus=scaffold10293_15:2:499:+ [Lack 5'-end] codon-table.11", "rumen552_GL1380709_1 [gene] locus=scaffold503799_1:1:498:+[Lack 5'-end]"]
["humangutMH0402_GL0056181 [gene] locus=scaffold70513_3:223:1209:- [Complete] codon-table.11"]
["humangutMH0402_GL0221154 [gene] locus=scaffold10526_6:4980:6188:- [Complete] codon-table.11", "pigPIG-054_GL0165253 [gene] locus=scaffold157312_1:12154:13362:+ [Complete] codon-table.11", "pigPIG-055_GL0196683 [gene] locus=scaffold8432_2:22:1230:+ [Complete] codon-table.11"]
["humangutMH0404_GL0163934 [gene] locus=scaffold3587_11:156:944:+ [Lack 3'-end] codon-table.11"]
["humangutMH0411_GL0010782 [gene] locus=scaffold693_1:1884:2549:+ [Complete] codon-table.11"]
["humangutMH0414_GL0042138 [gene] locus=scaffold13440_8:187:1533:+ [Complete] codon-table.11"]
["humangutMH0416_GL0214784 [gene] locus=scaffold50630_5:4:954:- [Complete] codon-table.11"]
["humangutMH0419_GL0051194 [gene] locus=scaffold93199_1:1:498:- [Lack 3'-end] codon-table.11", "pigPIG_138_GL0080226 [gene] locus=scaffold147754_1:191:688:+ [Lack 3'-end] codon-table.11"]
["humangutMH0420_GL0064849 [gene] locus=scaffold5278_1:1369:4221:- [Complete] codon-table.11", "humangutO2.CD3-0-PT_GL0002951 [gene] locus=scaffold88260_1:12389:15241:+ [Complete] codon-table.11"]

["humangutMH0425_GL0001000 [gene] locus=scaffold110_8:1223:2149:- [Complete] codon-table.11"]
["humangutMH0426_GL0161889 [gene] locus=scaffold10744_4:1047:2252:- [Complete] codon-table.11", "humangutO2.UC6-0_GL0015540 [gene] locus=scaffold10453_2:37136:38338:+ [Lack 3'-end] codon-table.11"]
["humangutMH0428_GL0023013 [gene] locus=scaffold35487_1:3:767:- [Lack 3'-end] codon-table.11"]
["humangutMH0431_GL0054417 [gene] locus=scaffold115150_1:51638:52126:+ [Lack 3'-end] codon-table.11", "humangutNOF010_GL0094281 [gene] locus=scaffold48727_12:11853:12341:+ [Lack 3'-end] codon-table.11"]
["humangutMH0437_GL0054519 [gene] locus=scaffold9441_16:2026:3099:+ [Lack 3'-end] codon-table.11"]
["humangutMH0439_GL0071704 [gene] locus=scaffold116113_1:806:1951:- [Complete] codon-table.11", "rumen583_GL0325328_1 [gene] locus=scaffold76910_2:8503:9648:-[Lack 5'-end]", "rumen2009040_GL0533400_1 [gene] locus=scaffold336820_1:238:1383:+[Complete]", "rumen2009040_GL2980251_1 [gene] locus=scaffold132598_2:1235:2380:-[Lack 5'-end]", "rumen7049_GL1338378_1 [gene] locus=scaffold1587737_2:15:1160:-[Complete]"]
["humangutMH0439_GL0188834 [gene] locus=scaffold4226_2:140:1216:- [Lack 5'-end] codon-table.11"]
["humangutMH0443_GL0182786 [gene] locus=scaffold52476_4:1:1809:- [Lack 3'-end] codon-table.11"]
["humangutMH0447_GL0161554 [gene] locus=scaffold2816_1:2439:3596:- [Complete] codon-table.11"]
["humangutMH0454_GL0202719 [gene] locus=scaffold33667_1:1:633:+ [Lack 5'-end] codon-table.11", "humangut764588959-stool1_revised_scaffold37375_1_gene66956 strand:+ start:2 stop:634 length:633 start_codon:no stop_codon:yes gene_type:incomplete [Lack 5'-end] codon-table.11"]
["humangutMH0457_GL0023585 [gene] locus=scaffold51546_2:2:613:- [Lack both ends] codon-table.11"]
["humangutMH0457_GL0138585 [gene] locus=scaffold43943_7:316:798:+ [Lack 3'-end] codon-table.11", "mouse7_GL0070851 [gene] locus=scaffold4107_3:145:627:+ [Lack 3'-end] codon-table.11", "rumen7049_GL2519476_1 [gene] locus=scaffold2250314_2:1:483:-[Lack 3'-end]"]
["humangutN006A_GL0039158 [gene] locus=scaffold26845_5:1:702:+ [Lack 5'-end] codon-table.11"]
["humangutN006A_GL0056549 [gene] locus=scaffold61875_3:2:853:+ [Lack 5'-end] codon-table.11"]
["humangutN038A_GL0028817 [gene] locus=scaffold1158_2:682:1872:- [Complete] codon-table.11"]
["humangutN075A_GL0061161 [gene] locus=scaffold48837_1:25141:26328:- [Complete] codon-table.11", "humangut158337416-stool2_revised_C1037800_1_gene78616 strand:+ start:1721 stop:2908 length:1188 start_codon:yes stop_codon:yes gene_type:complete [Complete] codon-table.11", "rumen100058_GL3253793_1 [gene] locus=scaffold841137_1:2702:3889:+[Complete]", "rumen2009040_GL2731047_1 [gene] locus=scaffold432748_1:205:1392:-[Complete]"]
["humangutN085A_GL0029153 [gene] locus=scaffold8604_2:2:586:+ [Lack both ends] codon-table.11", "rumen3042_GL1835188_1 [gene] locus=scaffold590073_1:2:586:+[Lack both ends]"]
["humangutNLM015_GL0015696 [gene] locus=scaffold22524_2:4109:4981:+ [Complete] codon-table.11", "mouse1A-dyr4-07_GL0070332 [gene] locus=scaffold24038_1:371:1243:- [Complete] codon-table.11"]
["humangutNLM022_GL0049460 [gene] locus=scaffold43914_1:1:711:- [Lack 3'-end] codon-table.11"]
["humangutNLM023_GL0044946 [gene] locus=scaffold21510_4:3:989:- [Lack 3'-end] codon-table.11"]
["humangutNLM031_GL0013903 [gene] locus=scaffold21775_7:2976:5030:+ [Lack 3'-end] codon-table.11"]
["humangutNOF006_GL0036819 [gene] locus=scaffold9781_6:479:892:- [Lack 5'-end] codon-table.11"]
["humangutNOM020_GL0049765 [gene] locus=scaffold31130_2:2:928:- [Lack 3'-end] codon-table.11"]
["humangutNOM023_GL0036783 [gene] locus=scaffold8794_7:1:801:+ [Lack both ends] codon-table.11"]
["humangutO2.UC12-2_GL0120407 [gene] locus=scaffold2961_5:2:580:+ [Lack 5'-end] codon-table.11", "pigSYZ-481B_GL0086675 [gene] locus=scaffold28811_2:3:581:+ [Lack 5'-end] codon-table.11"]
["humangutO2.UC22-1_GL0118828 [gene] locus=scaffold9468_1:2:787:- [Lack both ends] codon-table.11"]

["humangutO2.UC28-1_GL0023149 [gene] locus=scaffold112925_2:3:644:- [Lack 3'-end] codon-table.11"]
["humangutO2.UC28-1_GL0171115 [gene] locus=scaffold112925_1:209:709:- [Lack 5'-end] codon-table.11", "humangutT2D-51A_GL0130607 [gene] locus=scaffold36233_1:2:502:+ [Lack 5'-end] codon-table.11", "rumen583_GL0522900_1 [gene] locus=C5102750_1:48:548:-[Lack 5'-end]"]
["humangutO2.UC3-0_GL0141339 [gene] locus=scaffold74815_2:4974:5621:+ [Complete] codon-table.11"]
["humangutO2.UC40-1_GL0087978 [gene] locus=scaffold6773_3:1:1533:+ [Lack both ends] codon-table.11"]
["humangutO2.UC40-2_GL0126302 [gene] locus=scaffold82685_2:4602:6173:- [Complete] codon-table.11"]
["humangutO2.UC41-0_GL0074405 [gene] locus=scaffold59061_9:3:662:- [Lack 3'-end] codon-table.11"]
["humangutO2.UC43-0_GL0024596 [gene] locus=scaffold4362_14:3340:4506:+ [Complete] codon-table.11"]
["humangutO2.UC47-1_GL0106516 [gene] locus=scaffold31155_4:560:1333:+ [Lack 3'-end] codon-table.11"]
["humangutO2.UC48-1_GL0200602 [gene] locus=scaffold21500_3:1:657:- [Lack both ends] codon-table.11"]
["humangutO2.UC52-0_GL0007460 [gene] locus=scaffold34267_4:3:749:+ [Lack both ends] codon-table.11"]
["humangutO2.UC58-0_GL0099707 [gene] locus=scaffold28582_3:1:507:+ [Lack both ends] codon-table.11"]
["humangutO2.UC58-0_GL0144409 [gene] locus=scaffold28582_4:1:540:+ [Lack both ends] codon-table.11"]
["humangutO2.UC9-1_GL0104818 [gene] locus=scaffold69048_7:3:1283:+ [Lack 5'-end] codon-table.11"]
["humangutSZEY-40A_GL0052629 [gene] locus=scaffold986_10:2:799:+ [Lack 5'-end] codon-table.11", "pigPIG_189_GL0107784 [gene] locus=scaffold39191_1:3:800:+ [Lack 5'-end] codon-table.11"]
["humangutSZEY-66A_GL0034879 [gene] locus=scaffold34398_2:1:651:- [Lack both ends] codon-table.11"]
["humangutSZEY-69A_GL0075907 [gene] locus=scaffold5091_8:404:1294:- [Lack 5'-end] codon-table.11"]
["humangutSZEY-79A_GL0078725 [gene] locus=scaffold32900_2:2:742:- [Lack 3'-end] codon-table.11"]
["humangutT2D-49A_GL0008767 [gene] locus=scaffold50534_1:5529:6788:+ [Complete] codon-table.11"]
["humangutT2D-62A_GL0033315 [gene] locus=scaffold1006_10:662:1849:+ [Complete] codon-table.11", "mouseG1-1A_GL0067551 [gene] locus=scaffold50327_3:1192:2379:- [Complete] codon-table.11", "mouse20_GL0137765 [gene] locus=scaffold37707_1:9311:10498:- [Complete] codon-table.11", "mouse2-2_GL0113805 [gene] locus=scaffold7847_23:1534:2721:+ [Complete] codon-table.11", "mouse35_GL0008207 [gene] locus=scaffold1654_3:2226:3413:+ [Complete] codon-table.11", "mouse6-2_GL0012583 [gene] locus=scaffold27665_1:85621:86808:- [Complete] codon-table.11", "pigPIG_155_GL0209039 [gene] locus=scaffold258678_1:893:2080:- [Lack 5'-end] codon-table.11", "pigPIG_203_GL0040935 [gene] locus=scaffold36594_20:6579:7766:+ [Complete] codon-table.11", "rumen583_GL0089164_1 [gene] locus=scaffold62306_4:3479:4666:+[Complete]", "rumen554_GL1823487_1 [gene] locus=scaffold1579573_1:2949:4136:-[Complete]", "rumen2009040_GL1448770_1 [gene] locus=scaffold1685413_3:281:1468:+[Complete]"]
["humangutT2D-63A_GL0039325 [gene] locus=scaffold25495_1:3:527:+ [Lack both ends] codon-table.11"]
["humangutV1.CD15-3_GL0028475 [gene] locus=scaffold15479_33:3328:4536:+ [Complete] codon-table.11"]
["humangutV1.CD2-0-PT_GL0057437 [gene] locus=scaffold8057_11:3687:4205:- [Lack 5'-end] codon-table.11"]
["humangutV1.CD38-0_GL0186310 [gene] locus=scaffold47721_3:5732:6916:+ [Complete] codon-table.11"]
["humangutV1.CD40-0_GL0148977 [gene] locus=scaffold16169_1:575:1327:- [Lack 5'-end] codon-table.11", "rumen7049_GL1876747_1 [gene] locus=scaffold688033_1:280:1032:-[Lack 5'-end]"]
["humangutV1.CD40-0_GL0163227 [gene] locus=scaffold16169_2:2:385:- [Lack 3'-end] codon-table.11", "rumen7049_GL1900126_1 [gene] locus=scaffold286734_1:2:385:-[Lack 3'-end]"]
["humangutV1.CD48-0_GL0049853 [gene] locus=scaffold21729_1:2:757:- [Lack both ends] codon-table.11"]
["humangutV1.CD53-0_GL0063667 [gene] locus=scaffold17550_7:7770:8960:+ [Complete] codon-table.11", "mouse1A-dyr3-06_GL0048311 [gene] locus=scaffold4151_1:56118:57308:- [Complete] codon-table.11",

"cazygi|938475461|gb|ALJ39693.1| 4-O-beta-D-mannosyl-D-glucose phosphorylase [Bacteroides thetaiotaomicron]", "cazygi|29340341|gb|AAO78134.1| putative glycosylase [Bacteroides thetaiotaomicron VPI-5482]"]
["humangutV1.CD6-0-PT_GL0073017 [gene] locus=scaffold127996_2:9399:10625:+ [Complete] codon-table.11", "rumen552_GL0764241_1 [gene] locus=scaffold492656_2:1179:2405:+[Complete]"]
["humangutV1.FI03_GL0003294 [gene] locus=C977374_1:2:394:- [Lack 3'-end] codon-table.11"]
["humangutV1.FI14_GL0257660 [gene] locus=scaffold84882_5:1:1053:- [Lack 3'-end] codon-table.11"]
["humangutV1.FI16_GL0184215 [gene] locus=scaffold3794_11:2:616:+ [Lack 5'-end] codon-table.11", "pigPIG_204_GL0014757 [gene] locus=scaffold104647_12:1:615:+ [Lack 5'-end] codon-table.11"]
["humangutV1.FI27_GL0059160 [gene] locus=scaffold234_7:9683:10894:- [Lack 5'-end] codon-table.11"]
["humangutV1.FI27_GL0066186 [gene] locus=scaffold83213_2:2:1183:+ [Lack 5'-end] codon-table.11", "humangut763536994-stool2_revised_scaffold69911_4_gene146893 strand:+ start:3 stop:1184 length:1182 start_codon:no stop_codon:yes gene_type:incomplete [Lack 5'-end] codon-table.11", "mouseS-Fe10_GL0165818 [gene] locus=scaffold65784_1:21413:22594:+ [Complete] codon-table.11"]
["humangutV1.FI28_GL0079660 [gene] locus=scaffold56031_13:1:615:+ [Lack 5'-end] codon-table.11"]
["humangutV1.FI28_GL0152998 [gene] locus=scaffold41976_2:6995:7672:- [Complete] codon-table.11"]
["humangutV1.UC10-2_GL0174527 [gene] locus=scaffold31422_1:4720:5499:+ [Complete] codon-table.11"]
["humangutV1.UC10-2_GL0175130 [gene] locus=scaffold12243_18:2991:4220:+ [Lack 3'-end] codon-table.11", "rumen554_GL1492779_1 [gene] locus=scaffold1360138_2:8350:9582:+[Complete]"]
["humangutV1.UC11-5_GL0014113 [gene] locus=scaffold14897_18:2462:3118:+ [Lack 3'-end] codon-table.11", "rumen2009040_GL0388548_1 [gene] locus=scaffold1851692_1:371:1027:+[Lack 3'-end]"]
["humangutV1.UC11-5_GL0059799 [gene] locus=scaffold5864_5:1:645:+ [Lack both ends] codon-table.11"]
["humangutV1.UC17-2_GL0111873 [gene] locus=scaffold51891_2:1:702:- [Lack both ends] codon-table.11", "rumen552_GL0685303_1 [gene] locus=scaffold854013_3:68:772:-[Lack 5'-end]"]
["humangutV1.UC26-4_GL0151511 [gene] locus=scaffold63765_2:1965:3146:- [Complete] codon-table.11"]
["humangutV1.UC34-0_GL0105732 [gene] locus=scaffold11144_1:7:1209:- [Lack 5'-end] codon-table.11", "mouse1-6_GL0039815 [gene] locus=scaffold13603_1:237:1439:+ [Complete] codon-table.11", "mouse3-8_GL0031525 [gene] locus=scaffold2846_10:4675:5877:+ [Complete] codon-table.11", "rumen555_GL0654298_1 [gene] locus=scaffold1034900_1:10147:11349:-[Complete]", "rumen555_GL2385602_1 [gene] locus=scaffold283062_4:5069:6271:-[Complete]"]
["humangutV1.UC40-1_GL0150341 [gene] locus=scaffold11381_7:2:514:- [Lack 3'-end] codon-table.11"]
["humangutV1.UC47-4_GL0163825 [gene] locus=scaffold11314_18:79:1275:- [Complete] codon-table.11", "mouse5-1_GL0006217 [gene] locus=scaffold12825_5:985:2181:- [Complete] codon-table.11", "mouse5-1_GL0032035 [gene] locus=scaffold24858_2:4732:5928:- [Complete] codon-table.11", "rumen553_GL0846782_1 [gene] locus=scaffold2814_1:18038:19234:-[Complete]", "rumen0081_GL0064711_1 [gene] locus=scaffold335362_3:1279:2475:+[Complete]"]
["mouse1-1_GL0104836 [gene] locus=scaffold12767_20:1545:2723:- [Complete] codon-table.11"]
["mouse1A-dyr4-07_GL0092877 [gene] locus=scaffold24445_1:1671:2780:+ [Lack 3'-end] codon-table.11"]
["mouse2-5_GL0068669 [gene] locus=scaffold23663_4:6848:8095:- [Complete] codon-table.11"]
["mouse20_GL0104041 [gene] locus=scaffold1396_4:57:581:+ [Lack 3'-end] codon-table.11"]
["mouse20_GL0150465 [gene] locus=scaffold13756_3:4154:5320:+ [Complete] codon-table.11", "rumen553_GL0707227_1 [gene] locus=scaffold102953_3:5352:6518:+[Complete]", "rumen552_GL0099297_1 [gene] locus=scaffold386055_1:171:1337:+[Complete]", "rumen552_GL0252065_1 [gene] locus=scaffold506907_1:373:1539:-[Complete]",

"rumen552_GL0841846_1 [gene] locus=scaffold210469_1:6959:8125:-[Complete]", "rumen554_GL1845448_1 [gene] locus=scaffold681740_1:3931:5097:+[Complete]", "rumen554_GL2479742_1 [gene] locus=scaffold26282_1:909:2075:-[Complete]", "rumen0081_GL1224068_1 [gene] locus=C39762997_1:65:1231:+[Complete]", "rumen100058_GL0167877_1 [gene] locus=scaffold3028_5:1451:2617:+[Complete]", "rumen100058_GL1244672_1 [gene] locus=scaffold3366082_1:1672:2838:-[Complete]", "rumen100058_GL3140985_1 [gene] locus=scaffold798435_2:57:1223:-[Complete]", "rumen100058_GL3835232_1 [gene] locus=scaffold1577825_2:672:1838:+[Complete]", "rumen2009040_GL1917829_1 [gene] locus=scaffold1594294_1:1937:3103:-[Complete]", "rumen2009040_GL2269736_1 [gene] locus=scaffold2329482_1:5312:6478:-[Complete]", "rumen2009040_GL2642793_1 [gene] locus=scaffold1358709_10:662:1828:+[Complete]", "rumen3042_GL0131095_1 [gene] locus=scaffold2454318_1:356:1522:+[Complete]", "rumen3042_GL1485888_1 [gene] locus=scaffold2612311_1:1189:2355:+[Complete]", "rumen3042_GL2268688_1 [gene] locus=scaffold1295952_5:2154:3320:-[Complete]"]
["mouse29_GL0095889 [gene] locus=scaffold46844_2:157:540:- [Lack 5'-end] codon-table.11"]
["mouse3-6_GL0009578 [gene] locus=scaffold63212_1:6391:7623:- [Complete] codon-table.11"]
["mouse37_GL0036091 [gene] locus=scaffold36633_1:3:590:+ [Lack both ends] codon-table.11"]
["mouse4-3_GL0027379 [gene] locus=scaffold23007_5:1:666:- [Lack 3'-end] codon-table.11", "rumen2009040_GL0697873_1 [gene] locus=scaffold2007056_1:2:667:+[Lack both ends]"]
["mouse4-7_GL0053583 [gene] locus=scaffold24657_2:1473:2186:+ [Complete] codon-table.11"]
["mouse40_GL0003047 [gene] locus=scaffold3733_5:2:871:+ [Lack 5'-end] codon-table.11"]
["mouse52_GL0066171 [gene] locus=C1229355_1:1236:2558:- [Complete] codon-table.11"]
["mouse7-5_GL0099089 [gene] locus=scaffold62478_1:1999:3198:- [Complete] codon-table.11"]
["mouse8-1_GL0096154 [gene] locus=scaffold21121_4:3:887:- [Lack both ends] codon-table.11"]
["mouse8-2_GL0031752 [gene] locus=scaffold30695_2:1:642:+ [Lack 5'-end] codon-table.11"]
["mouse8-2_GL0086414 [gene] locus=scaffold30695_1:1313:1804:+ [Lack 3'-end] codon-table.11"]
["mouse8-3_GL0003506 [gene] locus=scaffold64522_1:9192:10358:+ [Complete] codon-table.11", "pigPIG_161_GL0158104 [gene] locus=scaffold37546_2:2713:3879:+ [Complete] codon-table.11", "pigDB-11B_GL0076554 [gene] locus=scaffold24_2:33303:34469:+ [Complete] codon-table.11", "pigDB-511B_GL0014654 [gene] locus=scaffold67850_2:1964:3130:- [Complete] codon-table.11", "pigEYZ-120B_GL0301365 [gene] locus=scaffold51536_3:3060:4226:- [Complete] codon-table.11", "rumen583_GL0021794_1 [gene] locus=C5676937_1:4700:5866:+[Complete]", "rumen3042_GL2088050_1 [gene] locus=scaffold525157_3:49:1212:+[Lack 3'-end]", "cazygi|326543192|gb|ADZ85051.1| glycosidase related protein [Clostridium lentocellum DSM 5427]"]
["mouseG1-1A_GL0035773 [gene] locus=scaffold23651_3:32:697:- [Lack 5'-end] codon-table.11", "rumen2009040_GL1823158_1 [gene] locus=scaffold2243758_1:2418:3083:-[Lack 5'-end]"]
["mouseG1-2A_GL0065747 [gene] locus=scaffold47004_3:1:561:- [Lack 3'-end] codon-table.11"]
["mouseG1-3A_GL0079207 [gene] locus=scaffold49653_6:1:858:+ [Lack 5'-end] codon-table.11"]
["mouseG1-6A_GL0052078 [gene] locus=scaffold27249_7:1024:1536:- [Lack 5'-end] codon-table.11", "rumen100058_GL0670777_1 [gene] locus=scaffold2791858_1:1:513:+[Lack 5'-end]"]
["mouseG1-6A_GL0052079 [gene] locus=scaffold27249_8:1:549:- [Lack 3'-end] codon-table.11"]
["mouseG1-6A_GL0074666 [gene] locus=scaffold41234_6:2:790:- [Lack 3'-end] codon-table.11"]
["mouseGroup2-2A_GL0060717 [gene] locus=scaffold39236_3:2263:3501:- [Complete] codon-table.11"]

["mouseGroup2-3A_GL0015006 [gene] locus=scaffold3514_12:60:842:- [Lack 5'-end] codon-table.11"]
["mouseGroup2-3A_GL0026300 [gene] locus=scaffold9194_7:1:609:- [Lack 3'-end] codon-table.11"]
["mouseGroup2-4A_GL0130929 [gene] locus=scaffold114663_1:1:513:+ [Lack 5'-end] codon-table.11"]
["mouseGroup2-5A_GL0103129 [gene] locus=scaffold70021_2:2:925:- [Lack 3'-end] codon-table.11", "rumen2009040_GL1397020_1 [gene] locus=scaffold626237_1:3:926:-[Lack 3'-end]"]
["mouseGroup2-8A_GL0147181 [gene] locus=scaffold121907_8:1339:1806:- [Lack 5'-end] codon-table.11", "rumen553_GL0852252_1 [gene] locus=scaffold112080_3:2:469:+[Lack 5'-end]", "rumen554_GL2300168_1 [gene] locus=scaffold792886_4:3:470:+[Lack 5'-end]"]
["mouseGroup2-8A_GL0147182 [gene] locus=scaffold121907_9:2:688:- [Lack 3'-end] codon-table.11", "mouse8-6_GL0028013 [gene] locus=scaffold62741_1:47:733:+ [Lack 3'-end] codon-table.11"]
["mouseMC-0-1_GL0110427 [gene] locus=scaffold96537_1:2:598:- [Lack both ends] codon-table.11", "rumen552_GL1573339_1 [gene] locus=scaffold785128_1:2:598:+[Lack both ends]"]
["mouseMC-6-1_GL0074889 [gene] locus=scaffold49658_1:281:1348:+ [Lack 3'-end] codon-table.11", "rumen553_GL0598341_1 [gene] locus=scaffold368919_2:1130:2200:-[Lack 5'-end]"]
["mouseMC-6-2_GL0115419 [gene] locus=scaffold91199_2:2:652:- [Lack both ends] codon-table.11"]
["mouseMC-6-2_GL0152441 [gene] locus=scaffold122298_1:1:663:+ [Lack 5'-end] codon-table.11", "rumen554_GL0411802_1 [gene] locus=scaffold1143481_1:1:663:+[Lack 5'-end]", "rumen0081_GL0859080_1 [gene] locus=scaffold697899_2:2:664:+[Lack 5'-end]"]
["mouseMC-6-3_GL0095494 [gene] locus=scaffold70992_2:8783:9967:+ [Complete] codon-table.11"]
["mouseMC-6-4_GL0117573 [gene] locus=scaffold83323_2:2:550:+ [Lack 5'-end] codon-table.11", "rumen100058_GL3004017_1 [gene] locus=scaffold1710841_1:2:550:+[Lack 5'-end]"]
["mouseMH-6-2_GL0099477 [gene] locus=scaffold78797_3:6912:8150:+ [Complete] codon-table.11"]
["mouseS-Fe11_GL0022259 [gene] locus=scaffold14952_1:3063:4277:- [Complete] codon-table.11", "rumen0081_GL1908540_1 [gene] locus=scaffold4735_6:1749:2963:+[Complete]"]
["mouseS-Fe12_GL0125823 [gene] locus=scaffold37891_1:1:507:- [Lack 3'-end] codon-table.11"]
["mouseS-Fe20_GL0157906 [gene] locus=scaffold87368_1:2:643:+ [Lack both ends] codon-table.11", "pigPIG_144_GL0269360 [gene] locus=scaffold71900_2:3:644:+ [Lack both ends] codon-table.11", "rumen7049_GL0142595_1 [gene] locus=scaffold374494_2:2:646:+[Lack 5'-end]"]
["mouseS-Fe20_GL0184469 [gene] locus=scaffold103466_2:3:581:- [Lack both ends] codon-table.11"]
["mouseS-Fe2_GL0149456 [gene] locus=scaffold6259_8:1:981:- [Lack 3'-end] codon-table.11", "mouseG1-5A_GL0120339 [gene] locus=scaffold84034_12:1:984:+ [Lack 5'-end] codon-table.11"]
["mouseS-Fe3_GL0012630 [gene] locus=scaffold109608_3:2:457:- [Lack 3'-end] codon-table.11"]
["mouseS-Fe3_GL0182180 [gene] locus=scaffold5576_11:291:743:- [Lack 5'-end] codon-table.11"]
["mouseS-Fe8_GL0062201 [gene] locus=C1788575_1:2:754:+ [Lack both ends] codon-table.11"]
["mouseS-Fe8_GL0076295 [gene] locus=scaffold4585_1:12619:14178:+ [Complete] codon-table.11"]
["mouseS-Fe9_GL0254040 [gene] locus=scaffold105458_7:1:627:- [Lack both ends] codon-table.11"]
["pigBHZ-10B_GL0256708 [gene] locus=scaffold5679_1:1304:2524:+ [Complete] codon-table.11"]
["pigBHZ-11B_GL0034540 [gene] locus=scaffold196728_2:128305:129498:+ [Complete] codon-table.11"]
["pigBHZ-2B_GL0075359 [gene] locus=scaffold166132_1:1:945:- [Lack 3'-end] codon-table.11", "rumen2009040_GL1807090_1 [gene] locus=scaffold2927015_1:1:945:+[Lack both ends]"]
["pigBHZ-4B_GL0153379 [gene] locus=scaffold164132_1:214:951:- [Lack 5'-end] codon-table.11"]
["pigBHZ-4B_GL0202887 [gene] locus=scaffold22706_2:2:562:+ [Lack 5'-end] codon-table.11", "rumen554_GL2975678_1 [gene] locus=scaffold2182415_1:1:561:+[Lack 5'-end]"]

["pigBHZ-6B_GL0161101 [gene] locus=scaffold99203_1:2:1084:- [Lack both ends] codon-table.11"]
["pigBHZ-9B_GL0092637 [gene] locus=scaffold5837_1:1:1107:- [Lack 3'-end] codon-table.11"]
["pigBMZ-17B_GL0022145 [gene] locus=scaffold116002_7:430:1446:+ [Lack 3'-end] codon-table.11"]
["pigBMZ-17B_GL0100030 [gene] locus=scaffold91060_1:2:724:- [Lack both ends] codon-table.11"]
["pigBMZ-2B_GL0014517 [gene] locus=scaffold50928_4:3:719:- [Lack 3'-end] codon-table.11"]
["pigDB-510B_GL0212637 [gene] locus=scaffold32625_4:1595:2266:- [Lack 5'-end] codon-table.11"]
["pigDB-517B_GL0101001 [gene] locus=scaffold127221_1:75:512:+ [Lack 3'-end] codon-table.11"]
["pigEYZ-183B_GL0159281 [gene] locus=scaffold18455_2:1:555:+ [Lack both ends] codon-table.11", "rumen100058_GL1180685_1 [gene] locus=scaffold1351010_1:3:557:-[Lack both ends]", "rumen100058_GL3225001_1 [gene] locus=scaffold1584546_2:2:556:+[Lack both ends]", "rumen2009040_GL0483093_1 [gene] locus=C53189378_1:1:555:-[Lack both ends]"]
["pigEYZ-192B_GL0066258 [gene] locus=scaffold123997_1:819:2030:- [Complete] codon-table.11"]
["pigEYZ-378B_GL0169238 [gene] locus=scaffold93268_4:1:903:- [Lack both ends] codon-table.11"]
["pigEYZ-381B_GL0163816 [gene] locus=scaffold205315_1:426:896:- [Lack 5'-end] codon-table.11"]
["pigEYZ-468B_GL0016892 [gene] locus=scaffold59667_1:1:576:- [Lack both ends] codon-table.11", "rumen555_GL0499687_1 [gene] locus=scaffold1402685_1:3:581:+[Lack 5'-end]", "rumen2009040_GL3653300_1 [gene] locus=scaffold2933610_1:1:579:+[Lack 5'-end]"]
["pigEYZ-566B_GL0134779 [gene] locus=C1416983_1:3:815:- [Lack 3'-end] codon-table.11"]
["pigEYZ-592B_GL0151096 [gene] locus=scaffold37532_1:1:549:+ [Lack both ends] codon-table.11", "rumen2009040_GL1991920_1 [gene] locus=scaffold764530_6:3:551:-[Lack both ends]"]
["pigEYZ-611B_GL0059729 [gene] locus=scaffold133290_2:3:647:- [Lack 3'-end] codon-table.11"]
["pigEYZ-615B_GL0085856 [gene] locus=scaffold39063_1:33:638:+ [Lack 3'-end] codon-table.11"]
["pigEYZ-652B_GL0050351 [gene] locus=scaffold127622_2:780:1364:- [Lack 5'-end] codon-table.11"]
["pigPIG-001_GL0084092 [gene] locus=scaffold112621_2:23174:24376:+ [Complete] codon-table.11", "pigPIG-027_GL0132459 [gene] locus=scaffold13426_11:2576:3778:- [Lack 5'-end] codon-table.11", "rumen552_GL1686014_1 [gene] locus=scaffold446346_1:657:1859:+[Complete]", "rumen554_GL2104050_1 [gene] locus=scaffold102241_1:336:1538:-[Complete]", "rumen0081_GL1300854_1 [gene] locus=scaffold1788767_2:1976:3178:+[Complete]", "rumen7049_GL2676190_1 [gene] locus=scaffold766563_7:6575:7777:+[Complete]"]
["pigPIG-006_GL0003381 [gene] locus=scaffold79667_1:3:761:- [Lack 3'-end] codon-table.11"]
["pigPIG-006_GL0107362 [gene] locus=scaffold102332_1:1:774:- [Lack both ends] codon-table.11", "rumen553_GL0437579_1 [gene] locus=scaffold66463_1:5117:5893:-[Lack 5'-end]"]
["pigPIG-007_GL0170892 [gene] locus=scaffold36575_5:2:367:+ [Lack 5'-end] codon-table.11"]
["pigPIG-007_GL0195730 [gene] locus=scaffold36575_3:369:887:+ [Lack 3'-end] codon-table.11"]
["pigPIG-011_GL0208843 [gene] locus=scaffold104732_1:3:527:+ [Lack both ends] codon-table.11"]
["pigPIG-011_GL0212040 [gene] locus=scaffold8823_3:5184:6383:- [Complete] codon-table.11", "rumen554_GL0552620_1 [gene] locus=scaffold2138255_1:199:1398:-[Complete]", "rumen554_GL0776369_1 [gene] locus=scaffold28152_2:6087:7286:+[Complete]", "rumen100058_GL3148890_1 [gene] locus=scaffold478250_2:747:1946:+[Complete]", "rumen2009040_GL3531659_1 [gene] locus=scaffold283956_1:47:1246:-[Complete]", "rumen3042_GL2020338_1 [gene] locus=scaffold2076113_1:2611:3810:-[Complete]"]
["pigPIG-012_GL0150881 [gene] locus=scaffold35901_1:1:729:+ [Lack both ends] codon-table.11", "rumen100058_GL1430674_1 [gene] locus=scaffold1928015_2:409:1137:+[Lack 3'-end]"]

["pigPIG-017_GL0017516 [gene] locus=scaffold1616_2:2136:3302:- [Complete] codon-table.11", "rumen553_GL0501507_1 [gene] locus=scaffold34527_2:1421:2587:-[Complete]", "rumen552_GL1485570_1 [gene] locus=scaffold626980_2:57117:58283:+[Complete]", "rumen554_GL2211671_1 [gene] locus=scaffold33847_1:259:1425:-[Complete]", "rumen554_GL2600831_1 [gene] locus=scaffold204795_1:106:1272:-[Complete]", "rumen554_GL2810335_1 [gene] locus=scaffold231054_2:583:1749:+[Complete]", "rumen554_GL2910917_1 [gene] locus=scaffold542701_1:195:1361:-[Complete]", "rumen554_GL3157872_1 [gene] locus=scaffold2075507_2:3659:4825:+[Complete]", "rumen555_GL1580309_1 [gene] locus=scaffold1536785_1:11780:12946:-[Complete]", "rumen0081_GL0263207_1 [gene] locus=scaffold99592_1:7085:8251:-[Complete]", "rumen0081_GL0480546_1 [gene] locus=scaffold156774_3:149:1315:+[Complete]", "rumen0081_GL2110370_1 [gene] locus=scaffold786666_4:1519:2685:-[Complete]", "rumen0081_GL2298606_1 [gene] locus=scaffold34203_1:538:1704:+[Complete]", "rumen100058_GL1773084_1 [gene] locus=scaffold740572_1:843:2009:-[Complete]", "rumen100058_GL2010090_1 [gene] locus=scaffold1257179_4:532:1698:-[Complete]", "rumen100058_GL2011063_1 [gene] locus=C60783253_1:304:1470:+[Complete]", "rumen100058_GL2237142_1 [gene] locus=scaffold1037187_1:3721:4887:-[Complete]", "rumen2009040_GL0521284_1 [gene] locus=scaffold147283_2:24:1190:+[Complete]", "rumen2009040_GL1349272_1 [gene] locus=scaffold530263_1:1070:2236:-[Complete]", "rumen2009040_GL3530282_1 [gene] locus=scaffold23780_1:1175:2341:+[Complete]", "rumen3042_GL1010274_1 [gene] locus=scaffold2404816_1:6147:7313:+[Complete]"]
["pigPIG-017_GL0172359 [gene] locus=scaffold29954_2:919:2100:- [Lack 5'-end] codon-table.11", "rumen552_GL1525844_1 [gene] locus=scaffold131085_2:215:1396:-[Complete]", "rumen554_GL1096797_1 [gene] locus=scaffold1746292_1:892:2073:+[Complete]", "rumen555_GL0162025_1 [gene] locus=scaffold479522_1:1260:2441:+[Complete]", "rumen0081_GL0761903_1 [gene] locus=scaffold55494_2:553:1734:+[Complete]", "rumen100058_GL1839944_1 [gene] locus=scaffold12460_1:2683:3864:-[Lack 5'-end]", "rumen2009040_GL0867123_1 [gene] locus=scaffold2352423_1:6:1187:-[Complete]", "rumen3042_GL0391091_1 [gene] locus=scaffold10271_2:481:1662:+[Complete]", "rumen3042_GL1303090_1 [gene] locus=scaffold370611_1:53:1234:-[Lack 5'-end]", "rumen3042_GL1591543_1 [gene] locus=scaffold1583907_4:399:1580:-[Complete]"]
["pigPIG-018_GL0014696 [gene] locus=scaffold119816_1:3:533:- [Lack 3'-end] codon-table.11"]
["pigPIG-020_GL0005672 [gene] locus=scaffold105618_4:3794:4963:+ [Complete] codon-table.11", "rumen3042_GL2582720_1 [gene] locus=scaffold484113_2:12530:13699:-[Complete]", "rumen7049_GL1546302_1 [gene] locus=scaffold92776_6:167:1336:+[Complete]"]
["pigPIG-020_GL0035751 [gene] locus=scaffold174384_1:3:584:+ [Lack both ends] codon-table.11"]
["pigPIG-023_GL0023071 [gene] locus=scaffold65895_1:1:573:- [Lack both ends] codon-table.11", "rumen100058_GL0477677_1 [gene] locus=C58269829_1:3:575:-[Lack 3'-end]"]
["pigPIG-026_GL0007526 [gene] locus=scaffold105900_1:1:651:+ [Lack 5'-end] codon-table.11", "rumen553_GL0303320_1 [gene] locus=scaffold398815_2:2:652:+[Lack 5'-end]", "rumen2009040_GL3153638_1 [gene] locus=scaffold764681_1:1:651:+[Lack 5'-end]", "rumen3042_GL2518797_1 [gene] locus=scaffold1571394_1:1:651:+[Lack 5'-end]"]
["pigPIG-026_GL0013259 [gene] locus=scaffold81048_2:2:1159:+ [Lack 5'-end] codon-table.11", "rumen552_GL1221272_1 [gene] locus=scaffold619406_1:5513:6670:-[Complete]",

"rumen2009040_GL2065926_1 [gene] locus=scaffold1065072_1:518:1675:-[Lack 5'-end]"]
["pigPIG-026_GL0130063 [gene] locus=scaffold112759_1:1:564:+ [Lack 5'-end] codon-table.11"]
["pigPIG-026_GL0193814 [gene] locus=scaffold114_12:4262:5008:+ [Lack 3'-end] codon-table.11"]
["pigPIG-026_GL0248028 [gene] locus=scaffold60158_1:2357:3580:+ [Complete] codon-table.11"]
["pigPIG-027_GL0041928 [gene] locus=scaffold80042_1:3:476:+ [Lack 5'-end] codon-table.11", "rumen3042_GL2172007_1 [gene] locus=scaffold1967034_1:77:550:-[Lack 5'-end]"]
["pigPIG-029_GL0031350 [gene] locus=scaffold22653_6:3:530:+ [Lack both ends] codon-table.11"]
["pigPIG-031_GL0065486 [gene] locus=scaffold100115_3:690:1664:+ [Lack 3'-end] codon-table.11"]
["pigPIG-031_GL0184492 [gene] locus=scaffold4264_2:3:578:+ [Lack 5'-end] codon-table.11", "pigPIG-034_GL0183281 [gene] locus=scaffold104881_1:3:575:+ [Lack both ends] codon-table.11"]
["pigPIG-033_GL0201605 [gene] locus=scaffold39444_1:3:818:+ [Lack both ends] codon-table.11"]
["pigPIG-034_GL0075039 [gene] locus=scaffold145714_2:8552:9391:+ [Complete] codon-table.11"]
["pigPIG-035_GL0076964 [gene] locus=scaffold4108_2:5911:6447:- [Lack 5'-end] codon-table.11"]
["pigPIG-035_GL0142973 [gene] locus=scaffold113295_1:2:940:- [Lack 3'-end] codon-table.11", "rumen555_GL2185050_1 [gene] locus=scaffold1241617_1:1:939:+[Lack both ends]"]
["pigPIG-035_GL0143396 [gene] locus=C1702293_1:1:747:+ [Lack 5'-end] codon-table.11", "rumen3042_GL1313175_1 [gene] locus=scaffold12436_3:1181:1927:-[Lack 5'-end]", "rumen3042_GL2802106_1 [gene] locus=scaffold1587930_1:7803:8549:-[Lack 5'-end]"]
["pigPIG-036_GL0166384 [gene] locus=scaffold107511_2:196:633:- [Lack 5'-end] codon-table.11", "rumen100058_GL0050368_1 [gene] locus=scaffold675000_3:2:439:+[Lack 5'-end]"]
["pigPIG-037_GL0127005 [gene] locus=scaffold82022_5:177:971:+ [Lack 3'-end] codon-table.11"]
["pigPIG-038_GL0128508 [gene] locus=scaffold208995_2:1244:2473:+ [Complete] codon-table.11", "pigPIG-082_GL0061069 [gene] locus=scaffold48565_2:2246:3475:- [Complete] codon-table.11"]
["pigPIG-038_GL0157334 [gene] locus=scaffold205231_3:3:800:+ [Lack 5'-end] codon-table.11"]
["pigPIG-038_GL0173146 [gene] locus=scaffold108992_2:23406:24671:+ [Complete] codon-table.11"]
["pigPIG-044_GL0139262 [gene] locus=scaffold51992_17:2573:3235:- [Lack 5'-end] codon-table.11"]
["pigPIG-044_GL0160786 [gene] locus=scaffold51992_18:2:469:- [Lack 3'-end] codon-table.11"]
["pigPIG-045_GL0086006 [gene] locus=scaffold120143_1:1379:2458:+ [Lack 3'-end] codon-table.11"]
["pigPIG-045_GL0165944 [gene] locus=scaffold45985_4:713:1708:- [Complete] codon-table.11"]
["pigPIG-046_GL0076681 [gene] locus=scaffold103983_1:1:456:+ [Lack 5'-end] codon-table.11"]
["pigPIG-046_GL0190036 [gene] locus=scaffold132072_3:117:602:+ [Lack 3'-end] codon-table.11"]
["pigPIG-058_GL0014194 [gene] locus=scaffold204438_2:2:589:+ [Lack both ends] codon-table.11", "rumen554_GL1020366_1 [gene] locus=scaffold1719517_1:3:590:+[Lack both ends]"]
["pigPIG-058_GL0242172 [gene] locus=scaffold213269_2:2:505:- [Lack both ends] codon-table.11"]
["pigPIG-079_GL0015783 [gene] locus=scaffold78110_4:3:632:+ [Lack both ends] codon-table.11"]
["pigPIG-081_GL0069460 [gene] locus=scaffold54785_1:15372:16550:- [Complete] codon-table.11"]
["pigPIG-081_GL0070629 [gene] locus=scaffold49609_1:5474:6700:- [Complete] codon-table.11"]
["pigPIG-082_GL0156754 [gene] locus=scaffold68717_3:3:707:+ [Lack both ends] codon-table.11", "rumen555_GL0384859_1 [gene] locus=scaffold884172_1:2:706:-[Lack both ends]"]
["pigPIG-083_GL0170487 [gene] locus=scaffold63230_21:2:1129:+ [Lack 5'-end] codon-table.11", "rumen100058_GL0775549_1 [gene] locus=scaffold2096722_1:120:1244:+[Lack 3'-end]"]
["pigPIG-084_GL0114584 [gene] locus=scaffold13539_18:1:933:- [Lack 3'-end] codon-table.11", "rumen553_GL0859605_1 [gene] locus=scaffold100021_1:9385:10317:+[Lack 3'-end]"]

["pigPIG-085_GL0107466 [gene] locus=scaffold130200_1:3:563:+ [Lack both ends] codon-table.11"]
["pigPIG-091_GL0053548 [gene] locus=scaffold161822_1:14463:15920:- [Complete] codon-table.11"]
["pigPIG-093_GL0033145 [gene] locus=scaffold65710_1:10422:11711:- [Complete] codon-table.11"]
["pigPIG-094_GL0136337 [gene] locus=scaffold151664_2:1456:2307:- [Lack 5'-end] codon-table.11"]
["pigPIG-094_GL0195080 [gene] locus=scaffold4599_7:2:955:+ [Lack 5'-end] codon-table.11"]
["pigPIG-095_GL0141942 [gene] locus=scaffold42740_4:3668:4963:+ [Complete] codon-table.11"]
["pigPIG-097_GL0062624 [gene] locus=scaffold87566_1:3:794:+ [Lack both ends] codon-table.11", "rumen100058_GL0632391_1 [gene] locus=scaffold1560285_3:3:797:+[Lack 5'-end]"]
["pigPIG-097_GL0075270 [gene] locus=scaffold85507_1:657:1229:+ [Lack 3'-end] codon-table.11"]
["pigPIG-103_GL0008850 [gene] locus=scaffold175724_1:3:656:- [Lack 3'-end] codon-table.11", "pigPIG-103_GL0269847 [gene] locus=scaffold175723_1:3:656:- [Lack 3'-end] codon-table.11", "pigBMZ-1B_GL0037337 [gene] locus=scaffold76326_1:1:654:- [Lack both ends] codon-table.11", "rumen0081_GL1284696_1 [gene] locus=scaffold1769067_1:1:654:-[Lack 3'-end]", "rumen3042_GL2115542_1 [gene] locus=C52164284_1:3:656:-[Lack 3'-end]"]
["pigPIG-106_GL0188443 [gene] locus=scaffold67583_1:1570:3729:+ [Lack 3'-end] codon-table.11"]
["pigPIG-108_GL0134942 [gene] locus=scaffold41440_2:2:1132:- [Lack 3'-end] codon-table.11"]
["pigPIG-109_GL0075251 [gene] locus=scaffold15250_2:21:500:- [Lack 5'-end] codon-table.11"]
["pigPIG-110_GL0001971 [gene] locus=scaffold57452_8:23299:24480:- [Complete] codon-table.11"]
["pigPIG-110_GL0147213 [gene] locus=scaffold22146_4:1:675:+ [Lack 5'-end] codon-table.11", "rumen2009040_GL1194740_1 [gene] locus=scaffold2792895_5:199:873:-[Lack 5'-end]"]
["pigPIG_111_GL0048555 [gene] locus=scaffold145756_2:1:531:+ [Lack both ends] codon-table.11"]
["pigPIG_114_GL0016970 [gene] locus=scaffold9464_4:2:553:- [Lack both ends] codon-table.11"]
["pigPIG_120_GL0208425 [gene] locus=C2070008_1:12:884:- [Lack 5'-end] codon-table.11"]
["pigPIG_123_GL0290744 [gene] locus=scaffold33_1:3:515:- [Complete] codon-table.11"]
["pigPIG_124_GL0253480 [gene] locus=scaffold127978_1:2055:2555:+ [Complete] codon-table.11"]
["pigPIG_125_GL0120815 [gene] locus=scaffold71681_1:842:2026:- [Complete] codon-table.11", "rumen0081_GL0510562_1 [gene] locus=scaffold200904_3:2016:3200:+[Complete]", "rumen7049_GL1461122_1 [gene] locus=scaffold903821_14:408:1592:-[Complete]"]
["pigPIG_126_GL0031494 [gene] locus=scaffold78398_1:3291:3761:+ [Complete] codon-table.11"]
["pigPIG_127_GL0155405 [gene] locus=C2337582_1:249:707:+ [Complete] codon-table.11"]
["pigPIG_128_GL0080714 [gene] locus=scaffold15833_2:355:1005:+ [Lack 3'-end] codon-table.11"]
["pigPIG_133_GL0082333 [gene] locus=scaffold114942_2:1:615:- [Lack 3'-end] codon-table.11"]
["pigPIG_135_GL0053887 [gene] locus=scaffold48752_2:2:811:+ [Lack 5'-end] codon-table.11", "rumen2009040_GL0202502_1 [gene] locus=scaffold1050783_1:1:810:+[Lack 5'-end]"]
["pigPIG_138_GL0203883 [gene] locus=scaffold59906_3:124:669:+ [Lack 3'-end] codon-table.11"]
["pigPIG_151_GL0084007 [gene] locus=scaffold188087_9:2:796:- [Lack both ends] codon-table.11"]
["pigPIG_151_GL0327709 [gene] locus=scaffold254836_6:2:1033:- [Lack 3'-end] codon-table.11"]
["pigPIG_155_GL0140171 [gene] locus=scaffold71559_1:1:582:+ [Lack both ends] codon-table.11"]
["pigPIG_156_GL0222712 [gene] locus=scaffold125562_2:2487:3239:- [Complete] codon-table.11"]
["pigPIG_157_GL0113023 [gene] locus=scaffold92247_5:2:916:- [Lack 3'-end] codon-table.11"]
["pigPIG_162_GL0239358 [gene] locus=C3366578_1:568:1551:- [Lack 5'-end] codon-table.11", "rumen3042_GL2148850_1 [gene] locus=scaffold1281627_1:1628:2611:-[Complete]"]
["pigPIG_173_GL0175765 [gene] locus=scaffold230225_4:1537:2787:- [Complete] codon-table.11",

"pigPIG-019_GL0155432 [gene] locus=scaffold48980_3:1255:2505:- [Complete] codon-table.11"]
["pigPIG_173_GL0198560 [gene] locus=scaffold181858_4:3:932:+ [Lack 5'-end] codon-table.11", "rumen7049_GL2020500_1 [gene] locus=scaffold2252006_1:3:932:+[Lack 5'-end]"]
["pigPIG_175_GL0060567 [gene] locus=scaffold108852_1_1:1563:2015:- [Lack 5'-end] codon-table.11"]
["pigPIG_176_GL0069010 [gene] locus=scaffold204640_1:2:655:+ [Lack both ends] codon-table.11"]
["pigPIG_186_GL0168224 [gene] locus=scaffold18482_2:2:565:+ [Lack both ends] codon-table.11"]
["pigPIG_187_GL0057039 [gene] locus=C2545629_1:3:410:- [Lack 3'-end] codon-table.11"]
["pigPIG_190_GL0017562 [gene] locus=scaffold141127_3:2:505:+ [Lack 5'-end] codon-table.11", "rumen100058_GL0269459_1 [gene] locus=scaffold56688_1:3:506:+[Lack 5'-end]"]
["pigPIG_196_GL0038436 [gene] locus=scaffold233365_1:3:515:- [Lack both ends] codon-table.11"]
["pigPIG_197_GL0000064 [gene] locus=C3418714_1:3310:4551:- [Complete] codon-table.11", "rumen100058_GL2992077_1 [gene] locus=scaffold434594_7:2498:3739:+[Complete]"]
["pigPIG_198_GL0088713 [gene] locus=scaffold254369_1:3:563:+ [Lack both ends] codon-table.11"]
["pigPIG_198_GL0261592 [gene] locus=scaffold559_5:2415:3431:+ [Complete] codon-table.11"]
["pigPIG_201_GL0250193 [gene] locus=scaffold68270_4:2:739:+ [Lack both ends] codon-table.11"]
["pigPIG_204_GL0024241 [gene] locus=scaffold104647_11:961:1479:+ [Lack 3'-end] codon-table.11"]
["pigPIG_205_GL0135979 [gene] locus=scaffold176768_5:3:467:+ [Lack 5'-end] codon-table.11", "pigPIG-001_GL0200696 [gene] locus=scaffold24103_2:102:566:- [Lack 5'-end] codon-table.11"]
["pigPIG_207_GL0143531 [gene] locus=scaffold8278_9:22:798:+ [Lack 3'-end] codon-table.11"]
["pigPIG_208_GL0114492 [gene] locus=scaffold224521_2:2:784:+ [Lack both ends] codon-table.11"]
["pigSYZ-428B_GL0135299 [gene] locus=scaffold104686_1:2:640:- [Lack both ends] codon-table.11"]
["pigSYZ-428B_GL0190954 [gene] locus=scaffold77153_1:1:774:- [Lack both ends] codon-table.11"]
["pigZXZ-7B_GL0151617 [gene] locus=scaffold119190_2:23:511:- [Lack 5'-end] codon-table.11"]
["rumen0081_GL0065389_1 [gene] locus=scaffold555547_1:1:516:+[Lack both ends]", "rumen2009040_GL0561469_1 [gene] locus=scaffold1535209_1:2:517:-[Lack both ends]"]
["rumen0081_GL0127716_1 [gene] locus=scaffold1034514_2:2:844:+[Lack 5'-end]"]
["rumen0081_GL0338636_1 [gene] locus=scaffold412998_5:1269:1973:+[Lack 3'-end]"]
["rumen0081_GL0411089_1 [gene] locus=scaffold1487438_1:3:599:-[Lack both ends]"]
["rumen0081_GL0460747_1 [gene] locus=scaffold112280_2:2:1036:+[Lack 5'-end]"]
["rumen0081_GL0488420_1 [gene] locus=C38714956_1:3:599:-[Lack 3'-end]", "rumen100058_GL1539564_1 [gene] locus=scaffold493414_3:3:599:-[Lack 3'-end]"]
["rumen0081_GL0553385_1 [gene] locus=scaffold804545_7:390:1268:+[Lack 3'-end]"]
["rumen0081_GL0612888_1 [gene] locus=scaffold1949880_1:52:705:+[Lack 3'-end]"]
["rumen0081_GL0618138_1 [gene] locus=scaffold485236_1:2:640:+[Lack both ends]"]
["rumen0081_GL0642831_1 [gene] locus=scaffold1832181_1:25:840:-[Lack 5'-end]", "rumen100058_GL3367416_1 [gene] locus=scaffold1731703_2:2:817:+[Lack 5'-end]"]
["rumen0081_GL0654196_1 [gene] locus=scaffold23987_2:1014:1817:-[Lack 5'-end]"]
["rumen0081_GL0717890_1 [gene] locus=scaffold1925290_2:2:910:+[Lack both ends]"]
["rumen0081_GL0766424_1 [gene] locus=scaffold659499_2:303:854:+[Lack 3'-end]", "rumen100058_GL1730935_1 [gene] locus=scaffold2642523_2:129:680:+[Lack 3'-end]"]
["rumen0081_GL0822409_1 [gene] locus=scaffold860226_2:182:1081:+[Lack 3'-end]", "rumen7049_GL2418659_1 [gene] locus=scaffold1619286_1:3:902:-[Lack 3'-end]"]
["rumen0081_GL0914263_1 [gene] locus=scaffold1651922_1:656:1327:-[Lack 5'-end]",

"rumen100058_GL3795401_1 [gene] locus=scaffold80547_5:1:669:-[Lack both ends]"]
["rumen0081_GL0932054_1 [gene] locus=scaffold1308780_1:1:567:+[Lack 5'-end]", "rumen7049_GL2755930_1 [gene] locus=scaffold113374_1:1:567:+[Lack 5'-end]"]
["rumen0081_GL0935094_1 [gene] locus=scaffold1960186_3:3:683:+[Lack 5'-end]", "rumen100058_GL3376008_1 [gene] locus=scaffold3274052_1:2:682:+[Lack 5'-end]"]
["rumen0081_GL0959534_1 [gene] locus=scaffold675900_2:224:1381:+[Complete]"]
["rumen0081_GL1081048_1 [gene] locus=scaffold1792095_1:3:692:+[Lack 5'-end]"]
["rumen0081_GL1287041_1 [gene] locus=scaffold821699_4:571:1071:-[Lack 5'-end]", "rumen2009040_GL1630589_1 [gene] locus=scaffold2545047_1:1:501:+[Lack 5'-end]"]
["rumen0081_GL1294364_1 [gene] locus=scaffold1486322_1:290:886:+[Lack 3'-end]"]
["rumen0081_GL1333276_1 [gene] locus=scaffold543317_1:928:1971:+[Lack 3'-end]"]
["rumen0081_GL1465181_1 [gene] locus=scaffold1486322_2:2:454:+[Lack 5'-end]"]
["rumen0081_GL1475424_1 [gene] locus=scaffold1740690_1:659:1420:+[Lack 3'-end]"]
["rumen0081_GL1600238_1 [gene] locus=scaffold491436_1:332:1285:-[Lack 5'-end]"]
["rumen0081_GL1693393_1 [gene] locus=scaffold1779572_1:445:906:+[Lack 3'-end]"]
["rumen0081_GL1742662_1 [gene] locus=scaffold72493_8:1:438:-[Lack 3'-end]"]
["rumen0081_GL1809516_1 [gene] locus=scaffold1960186_2:141:590:+[Lack 3'-end]"]
["rumen0081_GL1935353_1 [gene] locus=scaffold1125193_1:2:697:-[Lack both ends]"]
["rumen0081_GL1978628_1 [gene] locus=scaffold1601377_1:3:566:-[Lack both ends]"]
["rumen0081_GL2055008_1 [gene] locus=C39340957_1:3:731:-[Lack 3'-end]"]
["rumen0081_GL2122343_1 [gene] locus=scaffold1075911_5:3:800:-[Lack 3'-end]"]
["rumen0081_GL2136272_1 [gene] locus=scaffold739655_1:3:635:-[Lack both ends]"]
["rumen0081_GL2300849_1 [gene] locus=scaffold1124614_2:120:620:+[Lack 3'-end]"]
["rumen0081_GL2407674_1 [gene] locus=scaffold980628_1:3356:4189:-[Lack 5'-end]"]
["rumen0081_GL2446631_1 [gene] locus=scaffold929589_1:3:560:+[Lack both ends]"]
["rumen0081_GL2453009_1 [gene] locus=scaffold717067_1:3:569:-[Lack 3'-end]"]
["rumen0081_GL2484873_1 [gene] locus=C39086163_1:307:846:+[Lack 3'-end]", "rumen100058_GL2238021_1 [gene] locus=scaffold2718570_2:3:542:-[Lack both ends]", "rumen100058_GL2526240_1 [gene] locus=scaffold1296534_9:1:540:-[Lack 3'-end]"]
["rumen100058_GL0004149_1 [gene] locus=scaffold1160113_1:3:728:+[Lack both ends]"]
["rumen100058_GL0027684_1 [gene] locus=scaffold2981749_3:1:705:-[Lack 3'-end]"]
["rumen100058_GL0079033_1 [gene] locus=scaffold1645549_2:1:618:-[Lack both ends]"]
["rumen100058_GL0198858_1 [gene] locus=scaffold1730225_3:2:931:+[Lack both ends]"]
["rumen100058_GL0266682_1 [gene] locus=scaffold1013398_2:2984:3499:-[Lack 5'-end]"]
["rumen100058_GL0277713_1 [gene] locus=scaffold348243_2:34:1170:-[Lack 5'-end]"]
["rumen100058_GL0284935_1 [gene] locus=scaffold620998_1:1:774:+[Lack 5'-end]"]
["rumen100058_GL0316493_1 [gene] locus=scaffold3132681_1:44:586:+[Lack 3'-end]"]
["rumen100058_GL0321424_1 [gene] locus=scaffold2801014_1:1:495:+[Lack 5'-end]"]
["rumen100058_GL0393593_1 [gene] locus=scaffold1896703_3:1:435:-[Lack 3'-end]"]
["rumen100058_GL0395059_1 [gene] locus=scaffold71213_2:758:1360:+[Lack 3'-end]"]
["rumen100058_GL0421491_1 [gene] locus=scaffold3263654_1:2:535:+[Lack both ends]"]
["rumen100058_GL0434644_1 [gene] locus=scaffold2706756_1:3:590:-[Lack 3'-end]"]
["rumen100058_GL0462394_1 [gene] locus=scaffold150431_3:431:1024:-[Lack 5'-end]"]

["rumen100058_GL0575058_1 [gene] locus=scaffold3082305_1:222:1433:+[Lack 3'-end]", "rumen2009040_GL1003917_1 [gene] locus=scaffold31292_2:1817:3031:+[Complete]"]
["rumen100058_GL0578732_1 [gene] locus=C59582458_1:3:833:-[Lack both ends]"]
["rumen100058_GL0671260_1 [gene] locus=scaffold2654340_1:99:602:+[Lack 3'-end]"]
["rumen100058_GL0684755_1 [gene] locus=scaffold2188772_3:1:546:-[Lack 3'-end]", "rumen2009040_GL3028990_1 [gene] locus=scaffold473151_1:3:548:-[Lack 3'-end]"]
["rumen100058_GL0697017_1 [gene] locus=scaffold1340323_1:147:1112:-[Lack 5'-end]"]
["rumen100058_GL0791227_1 [gene] locus=scaffold447185_1:1:528:+[Lack both ends]"]
["rumen100058_GL0900473_1 [gene] locus=scaffold2613189_2:1145:2335:+[Complete]"]
["rumen100058_GL0934105_1 [gene] locus=C59009796_1:3:686:-[Lack both ends]", "rumen3042_GL0279852_1 [gene] locus=scaffold377932_1:3:686:-[Lack 3'-end]"]
["rumen100058_GL0944679_1 [gene] locus=scaffold1815004_1:1:585:+[Lack 5'-end]"]
["rumen100058_GL0986726_1 [gene] locus=scaffold1543466_1:3:770:-[Lack both ends]"]
["rumen100058_GL1004470_1 [gene] locus=scaffold471899_1:3:554:+[Lack both ends]"]
["rumen100058_GL1027453_1 [gene] locus=scaffold2325489_1:1:621:+[Lack 5'-end]"]
["rumen100058_GL1057231_1 [gene] locus=scaffold1947780_3:1:594:-[Lack both ends]"]
["rumen100058_GL1077138_1 [gene] locus=scaffold11652_2:1:738:-[Lack both ends]"]
["rumen100058_GL1131842_1 [gene] locus=scaffold1602790_2:1:669:+[Lack both ends]", "rumen100058_GL3833831_1 [gene] locus=scaffold2507506_1:816:1484:+[Lack 3'-end]"]
["rumen100058_GL1163277_1 [gene] locus=scaffold2470163_1:1:501:+[Lack both ends]"]
["rumen100058_GL1306731_1 [gene] locus=scaffold1053781_1:1:1086:+[Lack 5'-end]"]
["rumen100058_GL1334981_1 [gene] locus=C59411520_1:373:780:+[Lack 3'-end]"]
["rumen100058_GL1341542_1 [gene] locus=scaffold965193_2:1:972:-[Lack 3'-end]"]
["rumen100058_GL1371219_1 [gene] locus=scaffold2723488_1:1:504:+[Lack both ends]"]
["rumen100058_GL1477150_1 [gene] locus=scaffold2280115_4:3:1055:-[Lack 3'-end]", "rumen100058_GL2631011_1 [gene] locus=scaffold2686552_1:225:1277:+[Lack 3'-end]"]
["rumen100058_GL1525332_1 [gene] locus=scaffold191575_5:848:2032:-[Complete]"]
["rumen100058_GL1527366_1 [gene] locus=scaffold3269640_1:202:729:+[Lack 3'-end]"]
["rumen100058_GL1610277_1 [gene] locus=C58477178_1:1:600:+[Lack both ends]"]
["rumen100058_GL1672120_1 [gene] locus=scaffold51761_1:1999:2880:+[Lack 3'-end]", "rumen3042_GL1999019_1 [gene] locus=scaffold1526490_3:1:882:-[Lack both ends]"]
["rumen100058_GL1733252_1 [gene] locus=scaffold1969723_1:1:432:+[Lack 5'-end]", "rumen2009040_GL0377437_1 [gene] locus=scaffold643565_2:123:554:-[Lack 5'-end]"]
["rumen100058_GL1742050_1 [gene] locus=scaffold2118762_1:3:614:-[Lack both ends]"]
["rumen100058_GL1832360_1 [gene] locus=scaffold4654_1:1:960:-[Lack both ends]"]
["rumen100058_GL1863710_1 [gene] locus=scaffold735331_2:2:847:+[Lack 5'-end]"]
["rumen100058_GL1942038_1 [gene] locus=scaffold1704790_1:1:807:+[Lack 5'-end]"]
["rumen100058_GL1966424_1 [gene] locus=scaffold1699302_1:231:1298:-[Lack 5'-end]"]
["rumen100058_GL2002393_1 [gene] locus=scaffold2632189_2:2:640:-[Lack both ends]"]
["rumen100058_GL2044991_1 [gene] locus=C59153038_1:1:717:+[Lack both ends]"]
["rumen100058_GL2093037_1 [gene] locus=scaffold1802786_4:1:750:-[Lack both ends]"]
["rumen100058_GL2119256_1 [gene] locus=scaffold491945_1:57:554:+[Lack 3'-end]"]
["rumen100058_GL2124701_1 [gene] locus=scaffold903292_1:1:1467:+[Lack both ends]"]

["rumen100058_GL2154870_1 [gene] locus=scaffold2411437_1:2:577:-[Lack both ends]", "rumen3042_GL2123395_1 [gene] locus=scaffold2337499_2:740:1315:+[Lack 3'-end]"]
["rumen100058_GL2161628_1 [gene] locus=scaffold1091202_10:2443:3210:-[Lack 5'-end]", "rumen7049_GL1201810_1 [gene] locus=scaffold1800922_1:1:765:+[Lack both ends]"]
["rumen100058_GL2223364_1 [gene] locus=scaffold797009_2:82:1173:-[Lack 5'-end]"]
["rumen100058_GL2284088_1 [gene] locus=scaffold1927667_1:280:1044:-[Lack 5'-end]"]
["rumen100058_GL2284288_1 [gene] locus=C59357534_1:1:765:+[Lack both ends]", "rumen7049_GL1233574_1 [gene] locus=scaffold702118_1:3:767:-[Lack both ends]"]
["rumen100058_GL2306076_1 [gene] locus=scaffold3338912_1:2:985:-[Lack both ends]"]
["rumen100058_GL2313150_1 [gene] locus=scaffold428931_3:1:498:-[Lack both ends]"]
["rumen100058_GL2365617_1 [gene] locus=scaffold462401_1:3:731:-[Lack both ends]"]
["rumen100058_GL2418955_1 [gene] locus=scaffold639873_4:1:507:+[Lack both ends]"]
["rumen100058_GL2423702_1 [gene] locus=scaffold2748936_1:1:1071:+[Lack 5'-end]"]
["rumen100058_GL2519575_1 [gene] locus=scaffold2762265_3:2:634:+[Lack 5'-end]"]
["rumen100058_GL2676087_1 [gene] locus=scaffold661069_1:3:761:+[Lack both ends]"]
["rumen100058_GL2686420_1 [gene] locus=scaffold837914_2:1593:2132:-[Lack 5'-end]", "rumen100058_GL2781152_1 [gene] locus=scaffold1985187_1:2:541:+[Lack 5'-end]", "rumen100058_GL3309756_1 [gene] locus=scaffold363913_2_1:2:541:+[Lack 5'-end]", "rumen2009040_GL3107657_1 [gene] locus=scaffold1949313_1:1:540:+[Lack 5'-end]"]
["rumen100058_GL2822485_1 [gene] locus=scaffold1219105_2:3055:3753:+[Lack 3'-end]"]
["rumen100058_GL2901305_1 [gene] locus=scaffold57323_3:3:527:+[Lack both ends]"]
["rumen100058_GL2999709_1 [gene] locus=scaffold2889118_1:2:544:+[Lack both ends]"]
["rumen100058_GL3013027_1 [gene] locus=scaffold2805555_1:1:573:-[Lack both ends]", "rumen3042_GL2705622_1 [gene] locus=scaffold1332620_1:2:574:-[Lack both ends]"]
["rumen100058_GL3051751_1 [gene] locus=scaffold1406293_7:566:1837:-[Complete]"]
["rumen100058_GL3144445_1 [gene] locus=scaffold1670612_1:2:535:-[Lack both ends]"]
["rumen100058_GL3221420_1 [gene] locus=scaffold2843119_1:2:409:-[Lack 3'-end]"]
["rumen100058_GL3356970_1 [gene] locus=scaffold189592_1:2:862:-[Lack both ends]"]
["rumen100058_GL3520852_1 [gene] locus=scaffold3335149_1:3:734:+[Lack 5'-end]"]
["rumen100058_GL3529071_1 [gene] locus=scaffold504382_1:1:1005:+[Lack 5'-end]"]
["rumen100058_GL3536391_1 [gene] locus=scaffold1916298_8:396:827:+[Lack 3'-end]"]
["rumen100058_GL3596268_1 [gene] locus=scaffold998408_2:1500:1928:+[Lack 3'-end]"]
["rumen100058_GL3684077_1 [gene] locus=scaffold1020301_2:2:463:+[Lack 5'-end]"]
["rumen100058_GL3761704_1 [gene] locus=scaffold3344023_1:1:618:+[Lack 5'-end]"]
["rumen100058_GL3859024_1 [gene] locus=scaffold485768_2:1:555:+[Lack both ends]"]
["rumen2009040_GL0019714_1 [gene] locus=scaffold2196920_1:1:651:+[Lack 5'-end]"]
["rumen2009040_GL0033547_1 [gene] locus=scaffold2996455_1:3:704:-[Lack 3'-end]"]
["rumen2009040_GL0148138_1 [gene] locus=scaffold728582_1:56:766:-[Lack 5'-end]"]
["rumen2009040_GL0160630_1 [gene] locus=scaffold1253254_3:3:494:+[Lack 5'-end]"]
["rumen2009040_GL0218699_1 [gene] locus=scaffold1339460_1:3:440:-[Lack 3'-end]"]
["rumen2009040_GL0224302_1 [gene] locus=scaffold2988751_1:2:811:-[Lack 3'-end]", "rumen7049_GL1713502_1 [gene] locus=scaffold1801653_3:2:811:+[Lack both ends]"]
["rumen2009040_GL0270988_1 [gene] locus=scaffold1454338_3:2:559:+[Lack both ends]"]

["rumen2009040_GL0357720_1 [gene] locus=scaffold1779755_3:1:588:+[Lack both ends]"]
["rumen2009040_GL0474796_1 [gene] locus=scaffold2421990_1:2:1006:+[Lack both ends]"]
["rumen2009040_GL0480478_1 [gene] locus=scaffold897786_1:2:763:-[Lack 3'-end]"]
["rumen2009040_GL0488748_1 [gene] locus=scaffold409690_2:303:998:+[Lack 3'-end]", "rumen3042_GL1408264_1 [gene] locus=scaffold1569385_3:30:725:+[Lack 3'-end]"]
["rumen2009040_GL0498920_1 [gene] locus=scaffold416704_2:2:661:+[Lack 5'-end]"]
["rumen2009040_GL0551496_1 [gene] locus=scaffold1667458_2:147:572:-[Lack 5'-end]", "rumen2009040_GL1985329_1 [gene] locus=scaffold624415_1:341:766:-[Lack 5'-end]"]
["rumen2009040_GL0607240_1 [gene] locus=scaffold2281443_8:2:799:+[Lack 5'-end]"]
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["rumen2009040_GL1163272_1 [gene] locus=scaffold705478_1:1:831:+[Lack 5'-end]"]
["rumen2009040_GL1215461_1 [gene] locus=scaffold1334207_1:845:1318:+[Lack 3'-end]"]
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["rumen2009040_GL2393911_1 [gene] locus=scaffold2981852_1:1:663:+[Lack both ends]"]
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["rumen2009040_GL3238168_1 [gene] locus=scaffold1928698_1:1:579:+[Lack both ends]"]
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["rumen3042_GL1611192_1 [gene] locus=scaffold1102841_4:1:393:+[Lack 5'-end]"]
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["rumen553_GL0387359_1 [gene] locus=scaffold335962_2:45:1277:-[Lack 5'-end]"]
["rumen553_GL0579940_1 [gene] locus=scaffold192080_2:2:559:+[Lack both ends]"]
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["rumen554_GL0300352_1 [gene] locus=scaffold1652984_1:2:745:-[Lack 3'-end]"]
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["rumen554_GL0354756_1 [gene] locus=C40912160_1:3:980:+[Lack both ends]"]
["rumen554_GL0396792_1 [gene] locus=scaffold162544_1:3309:4517:+[Complete]"]
["rumen554_GL0401470_1 [gene] locus=scaffold919471_1:2:691:-[Lack 3'-end]"]
["rumen554_GL0500642_1 [gene] locus=scaffold1202093_1:3:695:+[Lack 5'-end]"]
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["rumen554_GL0672460_1 [gene] locus=scaffold208804_1:3:500:+[Lack 5'-end]", "rumen0081_GL2431247_1 [gene] locus=scaffold341010_2:124:621:-[Lack 5'-end]"]
["rumen554_GL0708177_1 [gene] locus=scaffold2154111_1:2:754:-[Lack 3'-end]"]
["rumen554_GL0727547_1 [gene] locus=scaffold193632_3:3230:4390:-[Complete]", "rumen555_GL1401098_1 [gene] locus=scaffold783584_1:26596:27756:+[Complete]", "rumen7049_GL1553500_1 [gene] locus=scaffold983776_2:7381:8541:-[Complete]"]

["rumen554_GL0758983_1 [gene] locus=scaffold1120851_1:1455:2231:-[Lack 5'-end]", "rumen555_GL1872305_1 [gene] locus=C28685599_1:347:1123:-[Lack 5'-end]"]
["rumen554_GL0778519_1 [gene] locus=scaffold2116913_2:3:896:+[Lack both ends]", "rumen0081_GL1264715_1 [gene] locus=scaffold125895_1:436:1329:+[Lack 3'-end]"]
["rumen554_GL0806989_1 [gene] locus=scaffold1758895_1:2:634:-[Lack both ends]"]
["rumen554_GL0836579_1 [gene] locus=scaffold755456_1:546:1154:+[Lack 3'-end]"]
["rumen554_GL0851428_1 [gene] locus=scaffold1896722_1:1583:2515:-[Lack 5'-end]"]
["rumen554_GL0890659_1 [gene] locus=scaffold749086_3:328:1029:-[Lack 5'-end]"]
["rumen554_GL0911586_1 [gene] locus=scaffold462637_7:778:1446:-[Lack 5'-end]"]
["rumen554_GL0958608_1 [gene] locus=scaffold787818_2:1473:2315:+[Lack 3'-end]", "rumen0081_GL2325519_1 [gene] locus=scaffold1988499_1:149:991:+[Lack 3'-end]", "rumen100058_GL1509214_1 [gene] locus=scaffold79783_1:3:845:-[Lack both ends]", "rumen2009040_GL1742284_1 [gene] locus=scaffold661798_1:3:845:-[Lack both ends]", "rumen7049_GL1224206_1 [gene] locus=scaffold2079380_2:1:843:-[Lack 3'-end]"]
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["rumen554_GL1061123_1 [gene] locus=scaffold2134084_2:1:675:+[Lack both ends]"]
["rumen554_GL1074776_1 [gene] locus=scaffold311408_3:3:869:+[Lack 5'-end]"]
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["rumen554_GL1132063_1 [gene] locus=scaffold657036_2:2:523:-[Lack 3'-end]", "rumen7049_GL1194147_1 [gene] locus=scaffold857149_2:4142:4663:+[Lack 3'-end]"]
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["rumen554_GL1171239_1 [gene] locus=C40964752_1:2:679:-[Lack 3'-end]"]
["rumen554_GL1208580_1 [gene] locus=scaffold1415190_1:3:839:+[Lack 5'-end]"]
["rumen554_GL1280624_1 [gene] locus=scaffold1336613_1:18447:19637:-[Complete]"]
["rumen554_GL1300648_1 [gene] locus=scaffold619368_3:1944:2609:+[Lack 3'-end]", "rumen100058_GL1913305_1 [gene] locus=scaffold675000_2:184:849:+[Lack 3'-end]"]
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["rumen554_GL1412696_1 [gene] locus=C40619984_1:441:830:+[Lack 3'-end]"]
["rumen554_GL1421284_1 [gene] locus=scaffold426545_1:2:553:-[Lack both ends]"]
["rumen554_GL1650053_1 [gene] locus=scaffold937640_1:2:481:-[Lack 3'-end]"]
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["rumen554_GL1957605_1 [gene] locus=scaffold267550_10:3:632:+[Lack both ends]"]
["rumen554_GL2085541_1 [gene] locus=scaffold2042893_7:872:1465:+[Lack 3'-end]"]
["rumen554_GL2092833_1 [gene] locus=scaffold3184_1:1:648:+[Lack both ends]"]

["rumen554_GL2119682_1 [gene] locus=scaffold1385282_1:1:585:-[Lack both ends]"]
["rumen554_GL2218541_1 [gene] locus=scaffold59206_4:1:414:+[Lack 5'-end]"]
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["rumen554_GL2848765_1 [gene] locus=scaffold115438_6:10680:11390:+[Lack 3'-end]"]
["rumen554_GL2884883_1 [gene] locus=scaffold633_1:1:621:+[Lack both ends]", "rumen3042_GL1065810_1 [gene] locus=scaffold1435381_1:1:621:-[Lack 3'-end]"]
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["rumen555_GL0080071_1 [gene] locus=scaffold666065_2:2:1123:-[Lack 3'-end]"]
["rumen555_GL0104764_1 [gene] locus=scaffold935166_1:3:923:+[Lack both ends]"]
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["rumen555_GL0170867_1 [gene] locus=scaffold731622_1:2:505:-[Lack both ends]"]
["rumen555_GL0314564_1 [gene] locus=scaffold1305566_2:1:789:-[Lack 3'-end]"]
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["rumen555_GL0858113_1 [gene] locus=scaffold709998_1:575:1765:-[Complete]"]
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["rumen555_GL1367432_1 [gene] locus=scaffold1293417_3:153:953:-[Lack 5'-end]"]
["rumen555_GL1418540_1 [gene] locus=scaffold41798_2:1:693:-[Lack 3'-end]"]
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["rumen555_GL1691522_1 [gene] locus=scaffold1028955_1:294:1319:+[Lack 3'-end]"]
["rumen555_GL1918429_1 [gene] locus=scaffold748424_1:374:925:-[Lack 5'-end]"]
["rumen555_GL1982210_1 [gene] locus=scaffold895244_1:123:1037:-[Lack 5'-end]"]
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["rumen7049_GL0635957_1 [gene] locus=scaffold722081_2:1257:1841:-[Lack 5'-end]"]
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["rumen7049_GL0874726_1 [gene] locus=scaffold883397_2:1830:2708:+[Lack 3'-end]"]
["rumen7049_GL0991234_1 [gene] locus=scaffold66671_4:242:1267:-[Lack 5'-end]"]
["rumen7049_GL1119867_1 [gene] locus=scaffold941244_4:386:916:-[Lack 5'-end]"]
["rumen7049_GL1221953_1 [gene] locus=scaffold504049_3:264:716:+[Lack 3'-end]"]
["rumen7049_GL1261530_1 [gene] locus=scaffold374494_1:1:1098:+[Lack both ends]"]
["rumen7049_GL1342434_1 [gene] locus=scaffold1452838_3:2:823:+[Lack both ends]"]
["rumen7049_GL1413700_1 [gene] locus=scaffold908729_2:1207:1842:-[Lack 5'-end]", "rumen7049_GL1873633_1 [gene] locus=scaffold1229850_4:1:636:+[Lack 5'-end]"]
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["rumen7049_GL1449797_1 [gene] locus=C51701869_1:130:588:-[Lack 5'-end]"]
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["rumen7049_GL1521773_1 [gene] locus=scaffold1170887_1:622:999:-[Lack 5'-end]"]
["rumen7049_GL1574378_1 [gene] locus=C53010378_1:1:696:-[Lack 3'-end]"]
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["rumen7049_GL2123004_1 [gene] locus=scaffold738795_1:3:551:-[Lack 3'-end]"]
["rumen7049_GL2128689_1 [gene] locus=C51355634_1:3:533:+[Lack both ends]"]
["rumen7049_GL2182956_1 [gene] locus=scaffold289278_3:2:595:+[Lack both ends]"]
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"cazy|ASO06391.1 1","4-beta-mannosyl-N-acetylglucosamine phosphorylase [Arenibacter algicola]",
"cazy|AUC86603.1 glycosidase [Polaribacter sp. ALD11]",
"cazy|AWK06410.1 glycosidase [Flavobacterium sp. HYN0056]",
"cazy|AXB58136.1 glycosidase [Flavobacterium sp. HYN0086]",
"cazy|AXP81458.1 Beta-1-2C4-mannooligosaccharide phosphorylase [Mariniflexile sp. TRM1-10]",
"cazy|SNV15478.1 Domain of uncharacterised function (DUF377) [Capnocytophaga haemolytica]",
"mouseMH-6-5_GL0077448 [gene] locus=scaffold46635_4:2:967:+ [Lack 5'-end] codon-table.11",
"pigPIG-035_GL0077892 [gene] locus=scaffold14328_3:1498:2463:+ [Complete] codon-table.11",
"pigPIG-108_GL0039825 [gene] locus=scaffold57191_1:13352:14317:+ [Complete] codon-table.11",
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"cazygi|146299793|ref|ABQ05065.1 protein of unknown function [Flavobacterium johnsoniae UW101]",
"cazygi|295136005|ref|YP_003586681.1| glycosidase"," PH1107-related protein [Zunongwangia profunda SM-A87]"]</td></tr>
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"mouse7-1_GL0006877 [gene] locus=scaffold28884_1:13416:14399:+ [Complete] codon-table.11"]</td></tr>
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"cazy|AQW92214.1 glycosidase [Elizabethkingia anophelis]",
"cazy|AQW95541.1 glycosidase [Elizabethkingia anophelis]",
"cazy|AQW99395.1 glycosidase [Elizabethkingia anophelis]",
"cazy|AQX03135.1 glycosidase [Elizabethkingia anophelis]",
"cazy|AQX05903.1 glycosidase [Elizabethkingia meningoseptica]",
"cazy|AQX07161.1 glycosidase [Elizabethkingia ursingii]",
"cazy|AQX13441.1 glycosidase [Elizabethkingia meningoseptica]",
"cazy|AQX47946.1 glycosidase [Elizabethkingia meningoseptica]",
"cazy|AQX51719.1 glycosidase [Elizabethkingia anophelis]",
"cazy|AQX84796.1 glycosidase [Elizabethkingia bruuniana]",
"cazy|AQX89941.1 glycosidase [Elizabethkingia anophelis]",
"cazy|ASF42136.1 glycosidase [Capnocytophaga sp. ChDC OS43]",
"cazy|ASM66972.1 glycosidase [Bacteroides caccae]",
"cazy|ASV79260.1 glycosidase [Elizabethkingia anophelis]",
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"cazy|ATA84218.1 glycosidase [Capnocytophaga sputigena]",

"cazy|ATC35103.1 glycosidase [Elizabethkingia anophelis R26]",

"cazy|ATC38743.1 glycosidase [Elizabethkingia anophelis Ag1]",

"cazy|ATC42423.1 glycosidase [Elizabethkingia anophelis]",

"cazy|ATC46099.1 glycosidase [Elizabethkingia anophelis]",

"cazy|ATL42797.1 glycosidase [Elizabethkingia miricola]",

"cazy|AVF48974.1 glycosidase [Elizabethkingia anophelis]",

"cazy|AVF52970.1 glycosidase [Elizabethkingia anophelis]",

"cazy|AVM50848.1 glycosidase [Capnocytophaga sp. oral taxon 878]",

"cazy|AVM52247.1 glycosidase [Bacteroides zoogleoformans]",

"cazy|AVM55807.1 glycosidase [Capnocytophaga sp. oral taxon 864]",

"cazy|AVM57240.1 glycosidase [Bacteroides heparinolyticus]",

"cazy|AXT60144.1 glycosidase [Aquimarina sp. AD10]",

"cazy|BAX82697.1 glycosidase [Marinifilaceae bacterium SPP2]",

"cazy|SQG05129.1 Domain of uncharacterised function (DUF377) [Elizabethkingia meningoseptica]",

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"mouse1A-dyr2-07_GL0039762    [gene]    locus=scaffold31161_8:3072:4040:- [Complete] codon-table.11",

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"pigPIG-012_GL0107830    [gene]    locus=scaffold39655_5:3:971:+ [Lack 5'-end] codon-table.11",

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"cazygi|938481019|gb|ALJ45250.1| Beta-1",

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"cazygi|324317535|gb|ADY35426.1| glycosidase related protein [Bacteroides salanitronis DSM 18170]",

"cazygi|1045272850|gb|ANU57541.1| glycosidase [Bacteroides sp. I48]",

"cazygi|938477956|gb|ALJ42188.1| Beta-1","4-mannooligosaccharide phosphorylase [Bacteroides thetaiotaomicron]",

"cazygi|925194212|gb|ALC97496.1| glycosidase [Capnocytophaga sp. oral taxon 323]",

"cazygi|1016605761|gb|AMX50831.1| glycosidase [Elizabethkingia anophelis]",

"cazygi|1008914301|gb|AMR40735.1| glycosidase [Elizabethkingia anophelis]",

"cazygi|1016609433|gb|AMX54223.1| glycosidase [Elizabethkingia anophelis]",
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"cazygi|1016602074|gb|AMX47371.1| glycosidase [Elizabethkingia anophelis]",
"cazygi|822872313|gb|AKH94537.1| glycosidase [Elizabethkingia anophelis FMS-007]",
"cazygi|675104695|gb|AIL45988.1| putative glycoside hydrolase [Elizabethkingia anophelis NUHP1]",
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"humangutV1.UC28-0_GL0123124 [gene] locus=scaffold14894_6:2515:3522:- [Complete] codon-table.11",
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"rumen555_GL2013701_1 [gene] locus=scaffold871485_2:30014:31021:-[Complete]",
"rumen0081_GL0613719_1 [gene] locus=scaffold142497_1:5484:6491:+[Complete]"]

["cazyCCgi|651373346|ref|WP_026485574.1|β-1","4-mannooligosaccharide phosphorylase_glycosidase [Caldanaerobius polysaccharolyticus]",
"cazy|SYX87324.1 Beta-1","4-mannooligosaccharide phosphorylase [Paenibacillus alvei]",
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["cazygi|1027790250|emb|CUS05925.1| Beta-1","4-mannooligosaccharide phosphorylase [Ardenticatena]"]
["cazygi|1033477965|dbj|BAV13072.1| glycosidase PH1107-related [Clostridium cellulovorans]"]
["cazygi|1049076866|gb|ANX01044.1| glycosylase [[Clostridium] stercorarium subsp. leptospartum DSM 9219]", "cazygi|472398958|gb|AGI39157.1| mannosylglucose phosphorylase [[Clostridium] stercorarium subsp. stercorarium DSM 8532]", "cazygi|1049074312|gb|ANW98510.1| glycosylase [[Clostridium] stercorarium subsp. thermolacticum DSM 2910]"]
["cazygi|160428527|gb|ABX42090.1| glycosidase PH1107-related [Lachnoclostridium phytofermentans ISDg]"]
["cazygi|217337279|gb|ACK43072.1| glycosidase PH1107-related [Dictyoglomus turgidum DSM 6724]"]
["cazygi|220000694|gb|ACL77295.1| glycosidase PH1107-related [[Clostridium] cellulolyticum H10]", "cazygi|373946951|gb|AEY67872.1| putative glycosylase [Clostridium sp. BNL1100]"]
["cazygi|221572710|gb|ACM23522.1| Glycosidase [Thermotoga neapolitana DSM 4359]", "cazygi|752580911|gb|AJG41424.1| glycosylase [Thermotoga sp. RQ7]"]
["cazygi|222457361|gb|ACM61623.1| glycosidase PH1107-related [Caldicellulosiruptor bescii DSM 6725]", "cazygi|311776547|gb|ADQ06033.1| glycosidase related protein [Caldicellulosiruptor hydrothermalis 108]", "cazygi|312181485|gb|ADQ41655.1| glycosidase related protein [Caldicellulosiruptor kristjanssonii I77R1B]", "cazygi|312201880|gb|ADQ45207.1| glycosidase related protein [Caldicellulosiruptor kronotskyensis 2002]",

"cazygi|343963799|gb|AEM72946.1| glycosidase related protein [Caldicellulosiruptor lactoaceticus 6A]", "cazygi|302575635|gb|ADL43426.1| glycosidase related protein [Caldicellulosiruptor obsidiansis OB47]", "cazygi|145408938|gb|ABP65942.1| glycosidase"," PH1107-related protein [Caldicellulosiruptor saccharolyticus DSM 8903]"]
["cazygi|256581110|gb|ACU92245.1| glycosidase PH1107-related [Capnocytophaga ochracea DSM 7271]"]
["cazygi|290770046|gb|ADD61810.1| putative protein [uncultured organism]", "rumen553_GL0441395_1 [gene] locus=scaffold84340_2:101227:102339:+[Complete]", "cazygi|291541075|emb|CBL14186.1| Predicted glycosylase [Roseburia intestinalis XB6B4]"]
["cazygi|302578870|gb|ADL52882.1| glycosidase related protein [Clostridium cellulovorans 743B]"]
["cazygi|306531529|gb|ADN01063.1| putative glycosylase [Spirochaeta thermophila DSM 6192]"]
["cazygi|315473032|gb|ADU29635.1| glycosidase related protein [Bacillus cellulosilyticus DSM 2522]", "cazygi|1000297352|gb|AML27054.1| putative glycosidase [Bacillus sp. N16-5]"]
["cazygi|332181648|gb|AEE17336.1| glycosidase related protein [Treponema brennaborense DSM 12168]"]
["cazygi|332699916|gb|AEE96857.1| glycosidase related protein [Mahella australiensis 50-1 BON]"]
["cazygi|339410796|gb|AEJ60361.1| glycosidase related protein [Spirochaeta thermophila DSM 6578]"]
["cazygi|339903322|gb|AEK24401.1| Hypothetical protein Ccan_22860 [Capnocytophaga canimorsus Cc5]"]
["cazygi|374843357|emb|CCF12061.1| hypothetical protein [Paenibacillus sp. Q8]"]
["cazygi|383110288|gb|AFG35891.1| putative glycosylase [Fervidobacterium pennivorans DSM 9078]", "cazygi|1028458698|gb|ANE41631.1| glycosidase [Fervidobacterium pennivorans]", "cazygi|217036715|gb|ACJ75237.1| conserved hypothetical protein [Thermosipho africanus TCF52B]"]
["cazygi|395812581|gb|AFN75330.1| glycosidase PH1107-related protein [Melioribacter roseus P3M-2]"]
["cazygi|407728372|dbj|BAM48370.1| hypothetical protein AXY_22380 [Amphibacillus xylanus NBRC 15112]", "cazygi|686549368|gb|AIQ60064.1| glycosylase [Paenibacillus borealis]", "cazygi|686557139|gb|AIQ67833.1| glycosylase [Paenibacillus graminis]", "cazygi|806911815|emb|CQR54423.1| Beta-1","4-mannooligosaccharide phosphorylase [Paenibacillus riograndensis SBR5]", "cazygi|686520597|gb|AIQ31298.1| glycosylase [Paenibacillus sp. FSL P4-0081]"]
["cazygi|430024079|gb|AGA35561.1| glycoside hydrolase family 43"," partial [Caldanaerobius polysaccharolyticus]"]
["cazygi|663097319|gb|AIF25974.1| putative glycosidase related protein [uncultured bacterium Ad_095_K16_contig2]"]
["cazygi|673067760|emb|CDZ25115.1| Beta-1","4-mannooligosaccharide phosphorylase [[Clostridium] cellulosi]"]
["cazygi|686549812|gb|AIQ60508.1| glycosylase [Paenibacillus borealis]"]
["cazygi|744796446|gb|AJC74022.1| glycosylase [Pseudothermotoga hypogea DSM 11164 = NBRC 106472]", "cazygi|157314894|gb|ABV33993.1| glycosidase PH1107-related [Pseudothermotoga lettingae TMO]", **"cazygi|4981779|gb|AAD36300.1|AE001779_2 conserved hypothetical protein [Thermotoga maritima MSB8]",** "cazygi|811642464|gb|AKE30873.1| glycosylase [Thermotoga maritima]", "cazygi|811630537|gb|AKE27136.1| glycosylase [Thermotoga maritima]", "cazygi|281374081|gb|ADA67643.1| glycosidase PH1107-related protein [Thermotoga naphthophila RKU-10]", "cazygi|147736211|gb|ABQ47551.1| glycosidase"," PH1107-related [Thermotoga petrophila RKU-1]", "cazygi|728865928|gb|AIY87108.1| glycosidase PH1107-related protein [Thermotoga sp. 2812B]", "cazygi|728867658|gb|AIY88837.1| glycosidase PH1107-related protein [Thermotoga sp. Cell2]", "cazygi|170176877|gb|ACB09929.1| glycosidase PH1107-related [Thermotoga sp. RQ2]"]
["cazygi|991824681|gb|AMF93030.1| glycosylase [Vibrio fluvialis]", "cazygi|1042390254|gb|ANQ24661.1| glycosylase [Vibrio natriegens]"]
["cazy|AOK90367.1 glycosylase [Paenibacillus polymyxa]", "cazy|APB69117.1 glycosylase [Paenibacillus polymyxa]",

"cazy|APB73775.1 glycosylase [Paenibacillus polymyxa]", "cazy|APQ61721.1 glycosylase [Paenibacillus polymyxa]", "cazy|ASR45398.1 glycosylase [Paenibacillus kribbensis]", "cazy|AUO06681.1 glycosylase [Paenibacillus sp. lzh-N1]", "cazy|AUS29142.1 glycosylase [Paenibacillus polymyxa]", "cazygi|920791914|gb|ALA44433.1| glycosylase [Paenibacillus peoriae]", "cazygi|723615828|gb|AIY09201.1| glycosylase [Paenibacillus polymyxa]", "cazygi|565677752|gb|AHC22322.1| glycosylase [Paenibacillus polymyxa CR1]", "cazygi|305860619|gb|ADM72407.1| glycosylase [Paenibacillus polymyxa E681]", "cazygi|392305246|emb|CCI71609.1| glycosidase [Paenibacillus polymyxa M1]", "cazygi|748408394|gb|AJE51910.1| glycosylase [Paenibacillus polymyxa]", "cazygi|309249531|gb|ADO59098.1| glycosylase [Paenibacillus polymyxa SC2]", "cazygi|595636226|gb|AHM68484.1| glycosidase like protein [Paenibacillus polymyxa SQR-21]", "cazygi|954043275|gb|ALP37040.1| glycosylase [Paenibacillus sp. IHB B 3084]", "cazygi|357200019|gb|AET57916.1| glycosidase like protein [Paenibacillus terrae HPL-003]"]
["cazy|AOR95091.1 glycosylase [Clostridium butyricum]", "cazy|APF24412.1 hypothetical protein NPD4_1003 [Clostridium butyricum]", "cazy|AQR97693.1 beta-1","4-mannooligosaccharide phosphorylase [Clostridium saccharoperbutylacetonicum]", "cazy|AXB83879.1 glycosylase [Clostridium butyricum]", "cazy|SNX53913.1 beta-1","4-mannooligosaccharide/beta-1","4-mannosyl-N-acetylglucosamine phosphorylase [Thermoanaerobacterium sp. RBIITD]", "humangutMH0277_GL0042744 [gene] locus=scaffold19815_1:40231:41247:- [Complete] codon-table.11", "cazygi|961431628|gb|ALS17957.1| glycosylase [Clostridium butyricum]", "cazygi|959156843|gb|ALP91461.1| glycosylase [Clostridium butyricum]", "cazygi|1028925582|gb|ANF15082.1| glycosylase [Clostridium butyricum]", "cazygi|451788055|gb|AGF59023.1| putative glycosylase [Clostridium saccharoperbutylacetonicum N1-4(HMT)]", "cazygi|389569314|gb|AFK85719.1| glycosidase related protein [Thermoanaerobacterium saccharolyticum JW/SL-YS485]", "cazygi|302777167|gb|ADL67726.1| glycosidase-related [Thermoanaerobacterium thermosaccharolyticum DSM 571]"]
["cazy|AOS43555.1 Beta-1","4-mannooligosaccharide phosphorylase [Lacunisphaera limnophila]", "cazygi|177841343|gb|ACB75595.1| glycosidase PH1107-related [Opitutus terrae PB90-1]"]
["cazy|AOZ94170.1 glycosylase [Paenibacillus crassostreae]", "cazy|ASA19960.1 glycosylase [Paenibacillus donghaensis]", "cazy|AWB46380.1 glycosylase [Paenibacillus sp. CAA11]", "cazygi|686546540|gb|AIQ57236.1| glycosylase [Paenibacillus borealis]", "cazygi|690615652|gb|AIQ16865.1| glycosylase [Paenibacillus sp. FSL H7-0357]", "cazygi|690616322|gb|AIQ17535.1| glycosylase [Paenibacillus sp. FSL H7-0357]", "cazygi|686517733|gb|AIQ28434.1| glycosylase [Paenibacillus sp. FSL P4-0081]", "cazygi|686536688|gb|AIQ47386.1| glycosylase [Paenibacillus sp. FSL R7-0273]", "cazygi|686542219|gb|AIQ52916.1| glycosylase [Paenibacillus sp. FSL R7-0331]", "cazygi|686552475|gb|AIQ63170.1| glycosylase [Paenibacillus stellifer]"]
["cazy|APC39750.1 glycosylase [Clostridium estertheticum subsp. estertheticum]", "cazygi|82523802|emb|CAI78545.1| hypothetical protein [uncultured Chloroflexi bacterium]"]
["cazy|APO42885.1 glycosylase [Paenibacillus xylanexedens]"]
["cazy|APS39188.1 glycosidase [Salegentibacter sp. T436]", "cazy|ASE18319.1 glycosidase [Prevotella melaninogenica]",

"cazy|ATA77353.1 glycosidase [Capnocytophaga canimorsus]",
"cazy|ATA91837.1 glycosidase [Capnocytophaga canimorsus]",
"cazy|ATA94100.1 glycosidase [Capnocytophaga canimorsus]",
"cazy|AUI56627.1 glycosidase [Prevotella jejuni]",
"cazy|AWL78816.1 glycosidase [Capnocytophaga canimorsus]",
"cazy|AXV49873.1 glycosidase [Prevotella denticola]",
"cazy|BBA29964.1 1","4-beta-mannosyl-N-acetylglucosamine phosphorylase [Prevotella melaninogenica]",
"humangutMH0166_GL0018134 [gene] locus=scaffold11391_1:34077:35051:+ [Complete] codon-table.11",
"humangut158924089-stool1_revised_scaffold16799_1_gene36849 strand:- start:4086 stop:5060 length:975 start_codon:no stop_codon:yes gene_type:incomplete [Lack 5'-end] codon-table.11",
"humangut553171.HMPREF0648_0792 [Complete]:- codon-table.11",
"mouseMH-0-3_GL0040838 [gene] locus=scaffold24246_3:1738:2712:- [Complete] codon-table.11",
"mouseG1-4A_GL0001880 [gene] locus=scaffold99_2:27529:28503:+ [Complete] codon-table.11",
"mouse20_GL0104310 [gene] locus=scaffold95191_23:188:1162:+ [Complete] codon-table.11",
"cazygi|610422242|gb|AHW59446.1| glycosidase [Draconibacterium orientale]",
"cazygi|326944893|gb|AEA20778.1| hypothetical protein HMPREF9137_2294 [Prevotella denticola F0289]",
"cazygi|913019237|gb|AKU70190.1| glycosidase [Prevotella fusca JCM 17724]",
"cazygi|302150791|gb|ADK97052.1| hypothetical protein HMPREF0659_A6441 [Prevotella melaninogenica ATCC 25845]",
"cazygi|1043184170|gb|ANR73902.1| glycosidase [Prevotella scopos JCM 17725]",
"cazygi|288332494|gb|EFC70974.1| hypothetical protein HMPREF0669_00679 (plasmid) [Prevotella sp. oral taxon 299 str. F0039]"]

["cazy|APT73993.1 glycosidase [Thermosipho melanesiensis]",
"cazygi|217037215|gb|ACJ75737.1| unknwon conserved protein [Thermosipho africanus TCF52B]",
"cazygi|149793426|gb|ABR30874.1| glycosidase"," PH1107-related [Thermosipho melanesiensis BI429]"]

["cazy|APT76001.1 glycosidase [Marinitoga sp. 1137]"]

["cazy|AQQ69862.1 Beta-1","4-mannooligosaccharide phosphorylase [Phycisphaerae bacterium SM-Chi-D1]"]

["cazy|AQQ71744.1 Beta-1","4-mannooligosaccharide phosphorylase [Phycisphaerae bacterium SM-Chi-D1]"]

["cazy|AQT68108.1 Beta-1","4-mannooligosaccharide phosphorylase [Phycisphaerae bacterium ST-NAGAB-D1]"]

["cazy|ASB38139.1 glycosidase [Muribaculum intestinale]",
"mouseS-Fe10_GL0132028 [gene] locus=C955776_1:29603:30559:+ [Complete] codon-table.11",
"pigPIG-001_GL0217556 [gene] locus=scaffold20914_2:432:1388:+ [Complete] codon-table.11",
"pigPIG-011_GL0085855 [gene] locus=scaffold12435_3:133:1089:+ [Complete] codon-table.11",
"cazygi|1045279095|gb|ANU63776.1| glycosidase [Parabacteroides sp. YL27]"]

["cazy|ASB41841.1 glycosidase [Acutalibacter muris]",
"humangutV1.UC13-0_GL0061527 [gene] locus=scaffold24550_2:9491:10492:- [Complete] codon-table.11",
"mouseS-Fe1_GL0086041 [gene] locus=scaffold9659_1:241:1242:+ [Complete] codon-table.11",
"mouseS-Fe9_GL0239525 [gene] locus=scaffold7813_4:3386:4387:- [Lack 5'-end] codon-table.11",
"mouse2-2_GL0055864 [gene] locus=scaffold122201_1:1830:2831:- [Complete] codon-table.11",
"rumen583_GL0273127_1 [gene] locus=scaffold51578_2:12391:13392:-[Complete]",
"cazygi|1045270240|gb|ANU54932.1| glycosidase [Ruminiclostridium sp. KB18]"]

["cazy|ASE63461.1 glycosidase [Chryseobacterium indologenes]",
"cazy|ASK31449.1 glycosidase [Chryseobacterium sp. T16E-39]",
"cazy|ASW75147.1 glycosidase [Chryseobacterium piperi]",
"cazy|ATA68024.1 glycosidase [Capnocytophaga cynodegmi]",
"cazy|ATA89573.1 glycosidase [Capnocytophaga stomatis]",

"cazy|ATN07456.1 glycosidase [Chryseobacterium indologenes]",

"humangutMH0003_GL0075746 [gene] locus=scaffold17037_1:3556:4527:- [Complete] codon-table.11",

"humangutMH0004_GL0033557 [gene] locus=scaffold48841_2:72:1043:+ [Complete] codon-table.11",

"humangutMH0006_GL0073708 [gene] locus=scaffold102740_1:9518:10489:+ [Complete] codon-table.11",

"humangutMH0011_GL0031624 [gene] locus=scaffold6982_4:53:1024:+ [Complete] codon-table.11",

"humangutMH0038_GL0023413 [gene] locus=scaffold14633_3:21944:22915:+ [Complete] codon-table.11",

"humangutMH0046_GL0032276 [gene] locus=scaffold45316_2:186:1157:- [Complete] codon-table.11",

"humangutMH0047_GL0000100 [gene] locus=scaffold9606_1:7600:8571:- [Complete] codon-table.11",

"humangutMH0052_GL0052339 [gene] locus=scaffold24048_2:334:1305:- [Complete] codon-table.11",

"humangutMH0055_GL0020468 [gene] locus=scaffold43568_1:105:1076:- [Complete] codon-table.11",

"humangutMH0055_GL0034072 [gene] locus=scaffold2797_1:618:1589:- [Complete] codon-table.11",

"humangutMH0101_GL0081430 [gene] locus=scaffold26934_4:197:1168:- [Complete] codon-table.11",

"humangutMH0116_GL0138390 [gene] locus=scaffold93220_1:8256:9227:- [Complete] codon-table.11",

"humangutMH0126_GL0121407 [gene] locus=scaffold133197_1:12424:13395:+ [Complete] codon-table.11",

"humangutMH0140_GL0083856 [gene] locus=scaffold94387_1:12435:13406:+ [Complete] codon-table.11",

"humangutMH0281_GL0165041 [gene] locus=scaffold38155_1:2892:3863:- [Complete] codon-table.11",

"humangutMH0302_GL0082303 [gene] locus=scaffold34643_9:5730:6701:+ [Complete] codon-table.11",

"humangutMH0314_GL0108231 [gene] locus=scaffold62845_1:286:1257:- [Complete] codon-table.11",

"humangutMH0321_GL0007378 [gene] locus=scaffold101808_6:542:1513:- [Complete] codon-table.11",

"humangutMH0333_GL0010365 [gene] locus=scaffold26160_1:79693:80664:+ [Complete] codon-table.11",

"humangutMH0381_GL0169932 [gene] locus=scaffold63368_5:715:1686:- [Complete] codon-table.11",

"humangutMH0402_GL0171617 [gene] locus=scaffold82462_1:600:1571:+ [Complete] codon-table.11",

"humangutMH0435_GL0062501 [gene] locus=scaffold79199_1:19153:20124:+ [Complete] codon-table.11",

"humangutO2.UC24-1_GL0121919 [gene] locus=scaffold96768_1:596:1567:- [Complete] codon-table.11",

"humangutO2.UC31-1_GL0148553 [gene] locus=scaffold47996_1:8964:9935:- [Complete] codon-table.11",

"humangutN001A_GL0039907 [gene] locus=scaffold52055_1:11991:12962:+ [Complete] codon-table.11",

"humangutN085A_GL0030918 [gene] locus=C534392_1:50:1021:- [Complete] codon-table.11",

"humangut158256496-stool1_revised_C965981_1_gene88806 strand:- start:1110 stop:2081 length:972 start_codon:yes stop_codon:yes gene_type:complete [Complete] codon-table.11",

"humangut765560005-stool1_revised_scaffold23582_1_gene63099 strand:+ start:17288 stop:18259 length:972 start_codon:yes stop_codon:yes gene_type:complete [Complete] codon-table.11",

"mouseGroup2-5A_GL0021665 [gene] locus=scaffold9730_7:244:1215:- [Complete] codon-table.11",

"mouse10_GL0099266 [gene] locus=scaffold30593_1:26097:27068:- [Complete] codon-table.11",

"mouse2B-dyr19-06_GL0008674 [gene] locus=scaffold6602_8:2261:3232:- [Complete] codon-table.11",

"pigPIG_119_GL0347395 [gene] locus=scaffold142087_9:19322:20293:- [Complete] codon-table.11",

"rumen555_GL0373485_1 [gene] locus=scaffold156620_7:3306:4277:+[Complete]",

"cazygi|939203325|gb|ALJ61498.1| Beta-1","4-mannooligosaccharide phosphorylase [Bacteroides cellulosilyticus]",

"cazygi|319416378|gb|ADV43489.1| glycosidase related protein [Bacteroides helcogenes P 36-108]",

"cazygi|570741375|gb|AHF12135.1| glycosidase [Barnesiella viscericola DSM 18177]",

"cazygi|828458824|gb|AKK72745.1| glycosidase [Chryseobacterium gallinarum]",

"cazygi|674269942|dbj|BAP29335.1| glycosidase [Chryseobacterium sp. StRB126]"]

["cazy|ASM70687.1 glycosidase [Blautia hansenii DSM 20583]",

"humangutMH0010_GL0000927 [gene] locus=scaffold579_12:2396:3382:+ [Complete] codon-table.11",

"humangutMH0372_GL0052869 [gene] locus=scaffold80648_1:8151:9137:- [Complete] codon-table.11",

"humangutMH0373_GL0083014 [gene] locus=scaffold4398_14:1479:2465:- [Complete] codon-table.11", "humangutV1.CD12-3_GL0040072 [gene] locus=scaffold26822_2:25571:26557:+ [Complete] codon-table.11", "humangutDLM013_GL0046706 [gene] locus=scaffold3678_7:1871:2857:+ [Complete] codon-table.11", "mouseMC-0-3_GL0005804 [gene] locus=scaffold2810_2:2716:3702:- [Complete] codon-table.11", "mouseG1-5A_GL0007008 [gene] locus=scaffold1620_3:9842:10828:- [Complete] codon-table.11", "mouse1-1_GL0058502 [gene] locus=scaffold63511_9:1433:2419:+ [Complete] codon-table.11", "mouse1-1_GL0105382 [gene] locus=scaffold33983_1:9839:10825:+ [Complete] codon-table.11", "mouse1-1_GL0143778 [gene] locus=scaffold320_1:568:1554:- [Complete] codon-table.11", "mouse1-2_GL0060243 [gene] locus=scaffold42352_1:11675:12661:+ [Complete] codon-table.11", "mouse13_GL0004655 [gene] locus=scaffold51777_1:888:1874:- [Complete] codon-table.11", "mouse2-3_GL0096850 [gene] locus=scaffold59790_1:64775:65761:+ [Complete] codon-table.11", "mouse4-1_GL0051115 [gene] locus=scaffold40970_1:1024:2010:- [Complete] codon-table.11", "mouse6-2_GL0024360 [gene] locus=scaffold14875_2:46984:47970:- [Complete] codon-table.11", "pigPIG_119_GL0171139 [gene] locus=scaffold190017_2:160:1146:+ [Complete] codon-table.11", "pigDB-512B_GL0151230 [gene] locus=scaffold208408_1:239:1225:- [Complete] codon-table.11", "pigDB-517B_GL0133330 [gene] locus=scaffold7355_1:53:1039:+ [Complete] codon-table.11", "pigSYZ-448B_GL0114656 [gene] locus=scaffold56409_1:565:1551:- [Complete] codon-table.11", "pigZXZ-8B_GL0242426 [gene] locus=scaffold182904_1:899:1885:+ [Complete] codon-table.11", "rumen555_GL1091079_1 [gene] locus=scaffold730046_1:2368:3354:+[Complete]", "cazygi|291541206|emb|CBL14317.1| Predicted glycosylase [Roseburia intestinalis XB6B4]"]
["cazy|AST53133.1 glycosidase [Parabacteroides sp. CT06]", "cazy|AUI45868.1 glycosidase [Bacteroides fragilis]", "cazy|BAD48081.1 conserved hypothetical protein [Bacteroides fragilis YCH46]", "humangutMH0006_GL0038257 [gene] locus=scaffold31109_4:10469:11467:+ [Complete] codon-table.11", "humangutMH0009_GL0004248 [gene] locus=scaffold36082_1:7444:8442:+ [Complete] codon-table.11", "humangutMH0041_GL0063443 [gene] locus=scaffold14739_8:354:1352:+ [Complete] codon-table.11", "humangutMH0090_GL0006072 [gene] locus=scaffold32146_4:2418:3416:- [Complete] codon-table.11", "humangutMH0101_GL0076321 [gene] locus=scaffold20113_4:6408:7406:+ [Complete] codon-table.11", "humangutMH0118_GL0029001 [gene] locus=scaffold39394_2:19067:20065:+ [Complete] codon-table.11", "humangutMH0138_GL0004080 [gene] locus=scaffold2292_5:177:1175:+ [Complete] codon-table.11", "humangutMH0158_GL0053814 [gene] locus=scaffold49547_5:7904:8902:+ [Complete] codon-table.11", "humangutMH0229_GL0055276 [gene] locus=scaffold569_3:11097:12095:- [Complete] codon-table.11", "humangutMH0309_GL0132661 [gene] locus=scaffold411_12:14013:15011:- [Complete] codon-table.11", "humangutMH0374_GL0074973 [gene] locus=scaffold6906_4:765:1763:+ [Complete] codon-table.11", "humangutMH0400_GL0011364 [gene] locus=scaffold62787_1:260:1258:- [Complete] codon-table.11", "humangutO2.CD2-0_GL0013926 [gene] locus=scaffold22628_1:41883:42881:+ [Complete] codon-table.11", "humangutT2D-109A_GL0010527 [gene] locus=scaffold27792_1:3383:4381:- [Complete] codon-table.11", "humangut160765029-stool1_revised_scaffold20596_1_gene110346 strand:- start:1088 stop:2086 length:999 start_codon:yes stop_codon:yes gene_type:complete [Complete] codon-table.11", "humangut679189.HMPREF9019_2256 [Complete]:- codon-table.11", "mouseS-Fe1_GL0016303 [gene] locus=scaffold1736_1:85704:86702:- [Complete] codon-table.11", "mouseGroup2-7A_GL0107291 [gene] locus=scaffold63922_9:525:1523:+ [Complete] codon-table.11", "pigPIG-003_GL0043079 [gene] locus=scaffold88790_11:2555:3553:+ [Complete] codon-table.11", "pigPIG-006_GL0134772 [gene] locus=scaffold124202_5:2132:3130:+ [Complete] codon-table.11",

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"rumen553_GL0208890_1 [gene] locus=scaffold368380_1:10895:11893:+[Complete]",
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"rumen555_GL1179928_1 [gene] locus=scaffold1172364_12:9197:10195:-[Complete]",
"rumen555_GL1208700_1 [gene] locus=scaffold25095_2:2304:3302:+[Complete]",
"rumen555_GL1860074_1 [gene] locus=scaffold155906_2:32477:33475:+[Complete]",
"rumen2009040_GL1348356_1 [gene] locus=scaffold574579_5:2330:3328:+[Complete]",
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"cazygi|794205266|gb|AKA51257.1| glycosidase [Bacteroides fragilis]",
"cazygi|1042800252|gb|ANQ59899.1| glycosidase [Bacteroides fragilis]",
"cazygi|159890459|gb|ABX03539.1| glycosidase PH1107-related [Herpetosiphon aurantiacus DSM 785]",
"cazygi|149935713|gb|ABR42410.1| conserved hypothetical protein [Parabacteroides distasonis ATCC 8503]",
"cazygi|433302576|gb|AGB28392.1| putative glycosylase [Prevotella dentalis DSM 3688]",
"cazygi|953019838|gb|ALO49545.1| glycosidase [Prevotella enoeca]",
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"mouse2-1_GL0075368 [gene] locus=scaffold5530_3:189:1184:+ [Complete] codon-table.11",
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"humangutT2D-22A_GL0097388 [gene] locus=scaffold30195_1:14784:15773:+ [Complete] codon-table.11",
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"mouse1A-dyr4-07_GL0106525 [gene] locus=scaffold51198_3:410:1399:- [Complete] codon-table.11",</td></tr>
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["cazy|AXB29277.1 glycosylase [Faecalibacterium prausnitzii]", "humangutMH0193_GL0079555 [gene] locus=scaffold80193_1:8807:9826:- [Complete] codon-table.11", "humangutMH0434_GL0140597 [gene] locus=scaffold83331_17:877:1896:- [Complete] codon-table.11", "humangutO2.UC21-2_GL0102009 [gene] locus=scaffold17595_1:33:1052:- [Complete] codon-table.11", "humangut706846339-stool1_revised_scaffold23726_3_gene129109 strand:- start:3386 stop:4405 length:1020 start_codon:yes stop_codon:yes gene_type:complete [Complete] codon-table.11", "mouseMC-0-1_GL0064823 [gene] locus=scaffold53168_13:7491:8510:- [Complete] codon-table.11", "mouseMC-0-1_GL0086097 [gene] locus=scaffold75211_4:225:1244:- [Complete] codon-table.11", "mouseMC-6-1_GL0107989 [gene] locus=scaffold75276_1:7108:8127:- [Complete] codon-table.11", "pigPIG_144_GL0061430 [gene] locus=scaffold282677_1:886:1905:+ [Complete] codon-table.11", "pigPIG-009_GL0138986 [gene] locus=scaffold3128_3:383:1402:+ [Complete] codon-table.11", "pigPIG-017_GL0190980 [gene] locus=scaffold105253_2:863:1882:- [Complete] codon-table.11", "pigPIG-034_GL0075037 [gene] locus=scaffold145714_2:6349:7368:+ [Complete] codon-table.11", "pigPIG-059_GL0145572 [gene] locus=scaffold21026_6:1306:2325:- [Complete] codon-table.11", "pigPIG-061_GL0061185 [gene] locus=scaffold150548_2:61:1080:+ [Complete] codon-table.11", "pigBHZ-10B_GL0178364 [gene] locus=scaffold94497_9:2950:3969:- [Complete] codon-table.11", "pigEYZ-592B_GL0198908 [gene] locus=scaffold45536_2:65969:66988:+ [Complete] codon-table.11", "rumen553_GL0062626_1 [gene] locus=scaffold65877_2:603:1622:+[Complete]", "rumen553_GL0289551_1 [gene] locus=scaffold227037_4:2407:3426:-[Complete]", "rumen552_GL0163252_1 [gene] locus=scaffold156556_4:634:1653:-[Complete]", "rumen583_GL0160972_1 [gene] locus=scaffold139414_1:2651:3670:+[Complete]", "rumen583_GL0709304_1 [gene] locus=scaffold196890_1:2693:3712:+[Complete]", "rumen583_GL0824088_1 [gene] locus=scaffold316177_1:142:1161:+[Complete]", "rumen554_GL0769507_1 [gene] locus=scaffold1153488_1:465:1484:+[Complete]", "rumen554_GL1748617_1 [gene] locus=scaffold462637_8:1625:2644:-[Complete]", "rumen554_GL2286209_1 [gene] locus=scaffold407690_3:118:1137:-[Complete]", "rumen554_GL2590785_1 [gene] locus=scaffold94633_5:3:1019:-[Lack both ends]", "rumen555_GL1294659_1 [gene] locus=scaffold755112_1:13012:14031:-[Complete]", "rumen555_GL1894784_1 [gene] locus=scaffold1146238_1:140:1159:+[Complete]", "rumen555_GL2262294_1 [gene] locus=scaffold561072_3:195:1214:-[Complete]", "rumen100058_GL0162288_1 [gene] locus=scaffold1342822_1:11998:13017:-[Complete]", "rumen2009040_GL1491257_1 [gene] locus=scaffold36167_4:443:1462:+[Complete]", "rumen2009040_GL1560257_1 [gene] locus=scaffold3072615_1:280:1299:-[Complete]",

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["cazy|AYF38257.1 glycosylase [Ethanoligenens harbinense]",

"cazy|AYF41003.1 glycosylase [Ethanoligenens harbinense]",

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"rumen100058_GL3613107_1 [gene] locus=scaffold1858877_1:1:1026:+[Lack 5'-end]",

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"rumen2009040_GL3557692_1 [gene] locus=scaffold872905_4:3590:4615:-[Complete]",
"rumen7049_GL0522168_1 [gene] locus=scaffold426564_3:399:1424:-[Complete]",
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"rumen2009040_GL3580840_1 [gene] locus=scaffold2454716_1:117:1115:+[Complete]",
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"cazygi|686532065|gb|AIQ42764.1| glycosidase [Paenibacillus sp. FSL R5-0912]",
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"cazygi|387859280|gb|AFK07371.1| putative glycosylase [Mesotoga prima MesG1.Ag.4.2]"]</td></tr>
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"rumen583_GL0572358_1 [gene] locus=scaffold335058_1:123985:125019:-[Complete]",
"rumen0081_GL1164626_1 [gene] locus=scaffold2012364_1:291:1325:+[Complete]",
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["humangutMH0077_GL0064107 [gene] locus=scaffold30884_2:4060:5295:+ [Complete] codon-table.11"]
["humangutMH0091_GL0103697 [gene] locus=scaffold41416_11:207:1037:- [Lack 5'-end] codon-table.11"]
["humangutMH0113_GL0096944 [gene] locus=scaffold39885_3:27249:28211:+ [Complete] codon-table.11", "mouse10_GL0047205 [gene] locus=scaffold56474_1:14525:15487:+ [Complete] codon-table.11"]
["humangutMH0116_GL0149865 [gene] locus=scaffold78008_1:1:954:+ [Lack 5'-end] codon-table.11"]
["humangutMH0125_GL0107874 [gene] locus=scaffold9295_9:1331:2371:- [Complete] codon-table.11"]
["humangutMH0131_GL0124864 [gene] locus=scaffold52942_5:5191:6336:+ [Complete] codon-table.11"]
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"rumen554_GL0668499_1 [gene] locus=C41165291_1:140:1138:+[Complete]",
"rumen555_GL0499302_1 [gene] locus=scaffold755544_2:1509:2507:-[Complete]",
"rumen555_GL1686954_1 [gene] locus=scaffold1131879_2:7001:7999:+[Complete]",
"rumen0081_GL1720882_1 [gene] locus=scaffold76176_13:863:1861:+[Complete]",
"rumen2009040_GL3655194_1 [gene] locus=scaffold1232779_3:57:1055:-[Complete]",
"rumen7049_GL0409848_1 [gene] locus=scaffold1618727_1:230:1228:+[Complete]",
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"mouseMC-0-1_GL0081617 [gene] locus=scaffold70529_1:7132:8175:- [Complete] codon-table.11",
"mouseGroup2-5A_GL0067020 [gene] locus=scaffold39731_17:2777:3820:- [Complete] codon-table.11",
"mouse2B-dyr23-07_GL0027859 [gene] locus=C454172_1:1632:2675:+ [Complete] codon-table.11",
"rumen554_GL1095844_1 [gene] locus=scaffold247511_2:47:1090:+[Complete]",
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"pigPIG-049_GL0071696 [gene] locus=scaffold23465_2:12:989:+ [Complete] codon-table.11",
"pigPIG-052_GL0054588 [gene] locus=scaffold129083_2:3793:4770:- [Complete] codon-table.11",
"pigBHZ-8B_GL0117323 [gene] locus=scaffold67234_2:1249:2226:- [Complete] codon-table.11",
"pigDB-510B_GL0002338 [gene] locus=scaffold165928_2:313:1290:+ [Complete] codon-table.11",
"pigEYZ-381B_GL0030405 [gene] locus=scaffold229025_1:2041:3018:- [Complete] codon-table.11",
"rumen553_GL0593875_1 [gene] locus=scaffold381191_2:1174:2151:-[Complete]",
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"cazygi|686513339|gb|AIP99884.1| glycosidase [Ornithobacterium rhinotracheale ORT-UMN 88]"]</td></tr>
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"pigBMZ-17B_GL0086225 [gene] locus=scaffold116002_6:360:1388:+ [Complete] codon-table.11",
"rumen554_GL1338143_1 [gene] locus=scaffold1192500_2:1327:2355:+[Complete]",
"rumen554_GL2517352_1 [gene] locus=scaffold5297_1:2844:3872:+[Complete]",
"rumen555_GL0884603_1 [gene] locus=scaffold199175_1:6769:7797:+[Complete]",
"rumen555_GL0998754_1 [gene] locus=scaffold721890_1:29:1057:-[Complete]",
"rumen555_GL1367176_1 [gene] locus=scaffold1160883_1:665:1693:+[Complete]",
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["humangutMH0262_GL0030555 [gene] locus=scaffold6436_5:1:759:- [Lack 3'-end] codon-table.11"]
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["humangutMH0400_GL0110506 [gene] locus=scaffold25753_1:195:1136:- [Lack 5'-end] codon-table.11"]
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["humangutMH0457_GL0165653 [gene] locus=C2199620_1:3:599:- [Lack 3'-end] codon-table.11"]
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["humangutO2.UC19-2_GL0032028 [gene] locus=scaffold42319_8:879:1490:- [Lack 5'-end] codon-table.11"]
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["humangutO2.UC51-0_GL0092079 [gene] locus=scaffold16611_18:4537:5577:- [Complete] codon-table.11"]
["humangutO2.UC52-0_GL0088588 [gene] locus=C1307293_1:1261:2283:- [Lack 5'-end] codon-table.11"]
["humangutO2.UC60-0_GL0087539 [gene] locus=scaffold43748_3:1:582:- [Lack 3'-end] codon-table.11"]
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["humangutT2D-52A_GL0017199 [gene] locus=scaffold3660_3:3:773:+ [Lack 5'-end] codon-table.11"]
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["humangutT2D-62A_GL0057777 [gene] locus=scaffold2778_13:3257:4228:+ [Complete] codon-table.11"]
["humangutT2D-76A_GL0073077 [gene] locus=scaffold26695_1:3:620:+ [Lack both ends] codon-table.11"]
["humangutV1.CD15-3_GL0085774 [gene] locus=scaffold15479_34:9712:10683:- [Complete] codon-table.11"]
["humangutV1.CD25-4_GL0009661 [gene] locus=scaffold7865_2:408:902:- [Lack 5'-end] codon-table.11"]

["humangutV1.CD3-0-PN_GL0015918 [gene] locus=scaffold6292_3:3:611:- [Lack 3'-end] codon-table.11"]
["humangutV1.CD30-0_GL0021637 [gene] locus=scaffold43682_3:3:617:- [Lack both ends] codon-table.11"]
["humangutV1.CD42-0_GL0076323 [gene] locus=scaffold3497_11:15799:16815:+ [Complete] codon-table.11"]
["humangutV1.CD55-0_GL0211473 [gene] locus=scaffold70538_3:2:562:+ [Lack both ends] codon-table.11", "rumen554_GL3158057_1 [gene] locus=scaffold1529397_1:1:561:+[Lack both ends]"]
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["humangutV1.FI28_GL0086913 [gene] locus=scaffold70262_3:1:381:+ [Lack 5'-end] codon-table.11"]
["humangutV1.UC11-5_GL0014111 [gene] locus=scaffold14897_18:201:1238:+ [Complete] codon-table.11", "humangut159753524-stool1_revised_scaffold17260_2_gene39433 strand:+ start:1 stop:1038 length:1038 start_codon:no stop_codon:yes gene_type:incomplete [Lack 5'-end] codon-table.11", "humangutMH0364_GL0058645 [gene] locus=scaffold51576_25:140:1174:+ [Lack 3'-end] codon-table.11", "mouseGroup2-6A_GL0009990 [gene] locus=scaffold5386_5:1097:2134:- [Lack 5'-end] codon-table.11", "mouse20_GL0137763 [gene] locus=scaffold37707_1:7070:8107:- [Complete] codon-table.11", "mouse7-1_GL0034864 [gene] locus=scaffold72_16:6021:7058:+ [Complete] codon-table.11"]
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["humangutV1.UC11-5_GL0195187 [gene] locus=scaffold85150_3:2:739:+ [Lack 5'-end] codon-table.11", "mouse7-2_GL0041940 [gene] locus=scaffold35517_6:81:818:- [Complete] codon-table.11"]
["humangutV1.UC16-0_GL0069329 [gene] locus=scaffold16876_1:2:670:- [Lack 3'-end] codon-table.11"]
["humangutV1.UC17-2_GL0015894 [gene] locus=scaffold28094_1:1:660:+ [Lack both ends] codon-table.11"]
["humangutV1.UC17-2_GL0083726 [gene] locus=scaffold41122_4:2:649:- [Lack 3'-end] codon-table.11", "rumen3042_GL0504186_1 [gene] locus=scaffold223018_2:3:650:+[Lack both ends]"]
["humangutV1.UC38-4_GL0166133 [gene] locus=scaffold21280_8:12277:13332:- [Complete] codon-table.11", "mouse2-3_GL0031396 [gene] locus=scaffold235_3:6008:7063:- [Complete] codon-table.11", "pigPIG-065_GL0007788 [gene] locus=scaffold15243_8:454:1509:+ [Complete] codon-table.11", "rumen553_GL0553273_1 [gene] locus=C7637698_1:538:1593:-[Complete]", "rumen100058_GL3245499_1 [gene] locus=scaffold608862_5:1049:2104:+[Complete]"]
["humangutV1.UC40-1_GL0067979 [gene] locus=scaffold56606_4:2:427:+ [Lack 5'-end] codon-table.11"]
["humangutV1.UC51-0_GL0038735 [gene] locus=scaffold18193_46:8332:8898:- [Lack 5'-end] codon-table.11"]
["humangutV1.UC54-0_GL0149599 [gene] locus=scaffold7166_6:3402:4475:+ [Complete] codon-table.11", "humangut160765029-stool1_revised_C1097260_1_gene98143 strand:- start:1314 stop:2387 length:1074 start_codon:no stop_codon:yes gene_type:incomplete [Lack 5'-end] codon-table.11", "rumen583_GL0668725_1 [gene] locus=scaffold85441_1:1:1071:+[Lack both ends]"]
["humangutV1.UC6-0_GL0083590 [gene] locus=scaffold85180_1:82:786:- [Lack 5'-end] codon-table.11"]
["mouse1-1_GL0013755 [gene] locus=scaffold85905_2:3182:4222:- [Complete] codon-table.11"]
["mouse1-1_GL0124139 [gene] locus=scaffold12413_10:656:1843:- [Lack 5'-end] codon-table.11"]
["mouse1-6_GL0082804 [gene] locus=scaffold37174_4:1031:2068:- [Complete] codon-table.11"]
["mouse11_GL0028995 [gene] locus=scaffold80892_2:3:602:+ [Lack both ends] codon-table.11"]
["mouse11_GL0063366 [gene] locus=scaffold67069_1:2766:3758:+ [Complete] codon-table.11", "mouse1-2_GL0086073 [gene] locus=scaffold17958_3:18710:19702:+ [Complete] codon-table.11",

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"mouse8-1_GL0054971 [gene] locus=scaffold2906_5:2179:3171:- [Complete] codon-table.11",
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"mouse29_GL0069267 [gene] locus=scaffold57287_3:6072:7076:+ [Complete] codon-table.11",
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["mouseG1-5A_GL0021287 [gene] locus=scaffold10354_4:9023:10015:+ [Complete] codon-table.11"]
["mouseG1-5A_GL0171673 [gene] locus=scaffold128990_1:3:500:- [Lack 3'-end] codon-table.11"]
["mouseG1-6A_GL0009418 [gene] locus=scaffold1871_1:60:500:- [Lack 5'-end] codon-table.11", "pigPIG_122_GL0065820 [gene] locus=scaffold1943_2:737:1177:- [Lack 5'-end] codon-table.11"]
["mouseG1-6A_GL0009419 [gene] locus=scaffold1871_2:1:477:- [Lack 3'-end] codon-table.11"]
["mouseG1-6A_GL0023704 [gene] locus=scaffold9642_9:2458:3471:+ [Complete] codon-table.11", "mouseGroup2-3A_GL0194463 [gene] locus=scaffold125876_2:59483:60496:- [Complete] codon-table.11", "mouse2-2_GL0096018 [gene] locus=scaffold90474_7:388:1401:+ [Complete] codon-table.11", "mouse6-3_GL0066399 [gene] locus=scaffold85639_4:36:1049:+ [Complete] codon-table.11", "mouse7-5_GL0122105 [gene] locus=scaffold31774_1:31:1044:+ [Complete] codon-table.11", "pigPIG_142_GL0319933 [gene] locus=scaffold239052_8:2400:3413:- [Complete] codon-table.11", "rumen555_GL1093153_1 [gene] locus=C29059764_1:1:1014:+[Lack 5'-end]"]
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["mouseG1-7A_GL0121857 [gene] locus=scaffold88864_13:2:901:+ [Lack 5'-end] codon-table.11"]
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["mouseGroup2-3A_GL0155033 [gene] locus=scaffold97533_1:1:705:+ [Lack both ends] codon-table.11"]
["mouseGroup2-8A_GL0028085 [gene] locus=scaffold15469_8:470:1015:+ [Lack 3'-end] codon-table.11"]
["mouseGroup2-8A_GL0040043 [gene] locus=scaffold24786_2:2:571:+ [Lack both ends] codon-table.11"]
["mouseMC-0-1_GL0020728 [gene] locus=scaffold15693_7:1:957:+ [Lack 5'-end] codon-table.11"]
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["mouseMC-6-2_GL0114086 [gene] locus=scaffold89911_3:2230:2691:- [Lack 5'-end] codon-table.11"]
["mouseMC-6-2_GL0145123 [gene] locus=scaffold117289_1:3:842:+ [Lack 5'-end] codon-table.11", "rumen100058_GL1632487_1 [gene] locus=scaffold2307440_2:366:1205:-[Lack 5'-end]", "rumen2009040_GL1107729_1 [gene] locus=scaffold1102455_2:1:840:+[Lack 5'-end]"]
["mouseMC-6-2_GL0179822 [gene] locus=scaffold132865_1:10272:11327:+ [Complete] codon-table.11", "rumen554_GL3065378_1 [gene] locus=scaffold2055200_2:19498:20553:+[Complete]"]
["mouseMC-6-2_GL0183036 [gene] locus=scaffold132992_1:101978:103096:+ [Complete] codon-table.11"]

["mouseMC-6-3_GL0104116 [gene] locus=scaffold78176_1:1:513:+ [Lack both ends] codon-table.11"]
["mouseMH-0-3_GL0039014 [gene] locus=scaffold22789_5:1:1026:+ [Lack 5'-end] codon-table.11"]
["mouseMH-6-5_GL0037067 [gene] locus=scaffold21339_2:14:574:- [Lack 5'-end] codon-table.11"]
["mouseS-Fe10_GL0046194 [gene] locus=scaffold3537_5:349:1317:- [Complete] codon-table.11", "pigEYZ-120B_GL0303698 [gene] locus=scaffold14900_6:149:1117:- [Complete] codon-table.11"]
["mouseS-Fe12_GL0052729 [gene] locus=scaffold2727_5:484:1566:+ [Complete] codon-table.11", "rumen555_GL1460227_1 [gene] locus=scaffold1378456_1:15028:16110:+[Complete]"]
["mouseS-Fe12_GL0146061 [gene] locus=scaffold79297_6:336:1319:+ [Complete] codon-table.11"]
["mouseS-Fe12_GL0191054 [gene] locus=scaffold7461_20:1732:2280:- [Complete] codon-table.11"]
["mouseS-Fe20_GL0180053 [gene] locus=scaffold102347_1:25922:26662:- [Complete] codon-table.11"]
["mouseS-Fe3_GL0010927 [gene] locus=scaffold99806_5:1174:1887:+ [Lack 3'-end] codon-table.11"]
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["mouseS-Fe6_GL0106658 [gene] locus=scaffold60443_2:576:1382:+ [Lack 3'-end] codon-table.11", "rumen554_GL2325094_1 [gene] locus=scaffold1503866_3:1:807:-[Lack 3'-end]"]
["mouseS-Fe8_GL0203068 [gene] locus=scaffold59716_1:487:1332:- [Lack 5'-end] codon-table.11"]
["mouseS-Fe9_GL0153613 [gene] locus=scaffold46730_4:3:530:- [Lack both ends] codon-table.11"]
["mouseS-Fe9_GL0294675 [gene] locus=scaffold15614_7:2:487:- [Lack 3'-end] codon-table.11"]
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["pigBHZ-11B_GL0090194 [gene] locus=scaffold167910_1:1:477:- [Lack 3'-end] codon-table.11"]
["pigBHZ-4B_GL0090287 [gene] locus=scaffold91530_1:3532:3927:- [Lack 5'-end] codon-table.11"]
["pigBHZ-5B_GL0033276 [gene] locus=scaffold209243_3:253:777:- [Lack 5'-end] codon-table.11"]
["pigBHZ-5B_GL0222855 [gene] locus=scaffold171737_1:1:516:- [Lack both ends] codon-table.11"]
["pigBHZ-7B_GL0204072 [gene] locus=scaffold187695_2:622:1620:+ [Lack 3'-end] codon-table.11"]
["pigBHZ-8B_GL0096113 [gene] locus=scaffold33234_10:68:1132:- [Lack 5'-end] codon-table.11"]
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["pigBMZ-17B_GL0114194 [gene] locus=scaffold32995_1:2:565:+ [Lack both ends] codon-table.11"]
["pigBMZ-17B_GL0171035 [gene] locus=scaffold102262_4:1:756:+ [Lack 5'-end] codon-table.11"]

["pigBMZ-7B_GL0005440 [gene] locus=scaffold27109_1:2:733:+ [Lack both ends] codon-table.11"]
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["pigDB-510B_GL0116829 [gene] locus=scaffold4072_1:460:1323:- [Lack 5'-end] codon-table.11"]
["pigDB-510B_GL0203636 [gene] locus=scaffold133867_4:1064:1780:+ [Lack 3'-end] codon-table.11"]
["pigDB-512B_GL0130519 [gene] locus=scaffold23936_1:1:717:+ [Lack 5'-end] codon-table.11"]
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["pigEYZ-120B_GL0313316 [gene] locus=scaffold188948_5:575:1540:- [Complete] codon-table.11"]
["pigEYZ-254B_GL0131965 [gene] locus=scaffold15125_3:2:730:- [Lack 3'-end] codon-table.11"]
["pigEYZ-353B_GL0258768 [gene] locus=scaffold172929_2:1:759:- [Lack both ends] codon-table.11"]
["pigEYZ-378B_GL0004433 [gene] locus=scaffold60190_1:2888:3583:+ [Lack 3'-end] codon-table.11", "rumen0081_GL1024715_1 [gene] locus=scaffold922929_2:3:698:-[Lack 3'-end]"]
["pigEYZ-381B_GL0306685 [gene] locus=scaffold205698_2:2:817:+ [Lack both ends] codon-table.11"]
["pigEYZ-468B_GL0069605 [gene] locus=scaffold76583_2:2:601:+ [Lack 5'-end] codon-table.11", "rumen0081_GL2416987_1 [gene] locus=scaffold845286_7:2:601:+[Lack 5'-end]"]
["pigPIG-001_GL0169555 [gene] locus=scaffold31187_9:3604:4605:+ [Lack 3'-end] codon-table.11", "rumen100058_GL0132315_1 [gene] locus=scaffold1516124_2:479:1483:-[Lack 5'-end]", "rumen100058_GL2269814_1 [gene] locus=scaffold4654_2:3:1004:-[Lack 3'-end]", "rumen3042_GL1490754_1 [gene] locus=scaffold542093_2:421:1422:+[Lack 3'-end]", "rumen3042_GL1972449_1 [gene] locus=scaffold470323_8:2140:3144:-[Complete]"]
["pigPIG-001_GL0228666 [gene] locus=scaffold122346_4:1:651:+ [Lack both ends] codon-table.11"]
["pigPIG-004_GL0019300 [gene] locus=scaffold96885_3:3242:4357:- [Lack 5'-end] codon-table.11"]
["pigPIG-005_GL0153503 [gene] locus=scaffold121017_1:313:954:+ [Lack 3'-end] codon-table.11"]
["pigPIG-006_GL0112184 [gene] locus=scaffold122780_1:3:542:+ [Lack both ends] codon-table.11", "rumen2009040_GL2275139_1 [gene] locus=scaffold1696944_1:1:540:-[Lack both ends]"]
["pigPIG-011_GL0150563 [gene] locus=scaffold44416_1:38:514:- [Lack 5'-end] codon-table.11"]
["pigPIG-017_GL0093868 [gene] locus=scaffold147351_9:1:645:+ [Lack 5'-end] codon-table.11"]
["pigPIG-018_GL0091264 [gene] locus=scaffold143363_11:586:1314:+ [Lack 3'-end] codon-table.11"]
["pigPIG-022_GL0080548 [gene] locus=scaffold59559_7:1:864:- [Lack 3'-end] codon-table.11"]
["pigPIG-023_GL0056374 [gene] locus=scaffold148285_1:3:668:- [Lack both ends] codon-table.11"]
["pigPIG-024_GL0218414 [gene] locus=scaffold117167_5:320:1414:- [Complete] codon-table.11"]
["pigPIG-026_GL0071880 [gene] locus=scaffold104889_1:6433:7443:+ [Complete] codon-table.11"]
["pigPIG-026_GL0116698 [gene] locus=scaffold1878_2:158:1339:+ [Complete] codon-table.11"]
["pigPIG-027_GL0261576 [gene] locus=scaffold178107_1:339:1322:- [Complete] codon-table.11"]
["pigPIG-031_GL0026806 [gene] locus=scaffold20325_4:2:745:- [Lack 3'-end] codon-table.11"]
["pigPIG-031_GL0070146 [gene] locus=scaffold12058_1:3:734:- [Lack 3'-end] codon-table.11"]
["pigPIG-031_GL0109326 [gene] locus=scaffold104274_1:11586:12590:- [Complete] codon-table.11"]
["pigPIG-031_GL0138975 [gene] locus=scaffold128840_1:1:675:- [Lack 3'-end] codon-table.11", "rumen552_GL0647860_1 [gene] locus=scaffold104244_2:3:677:+[Lack both ends]"]
["pigPIG-031_GL0158070 [gene] locus=scaffold30741_4:2:526:+ [Lack 5'-end] codon-table.11"]
["pigPIG-031_GL0183583 [gene] locus=scaffold35012_2:2:859:+ [Lack both ends] codon-table.11"]
["pigPIG-032_GL0156946 [gene] locus=scaffold51801_10:1609:2601:+ [Complete] codon-table.11"]
["pigPIG-033_GL0032022 [gene] locus=C1607875_1:3:629:- [Lack both ends] codon-table.11"]
["pigPIG-034_GL0056463 [gene] locus=scaffold67620_6:1476:2234:- [Lack 5'-end] codon-table.11"]

["pigPIG-034_GL0086619 [gene] locus=scaffold24268_6:1955:3046:- [Complete] codon-table.11"]
["pigPIG-034_GL0130359 [gene] locus=scaffold11643_2:587:1123:+ [Lack 3'-end] codon-table.11"]
["pigPIG-035_GL0001096 [gene] locus=scaffold90148_2:2:826:- [Lack 3'-end] codon-table.11"]
["pigPIG-035_GL0017485 [gene] locus=scaffold86648_2:137:775:- [Lack 5'-end] codon-table.11"]
["pigPIG-035_GL0022303 [gene] locus=scaffold79779_2:1:627:+ [Lack 5'-end] codon-table.11"]
["pigPIG-036_GL0020839 [gene] locus=scaffold127014_1:431:1129:+ [Lack 3'-end] codon-table.11"]
["pigPIG-038_GL0021185 [gene] locus=scaffold112665_2:2:613:- [Lack both ends] codon-table.11"]
["pigPIG-038_GL0131957 [gene] locus=scaffold87099_2:2:517:+ [Lack both ends] codon-table.11"]
["pigPIG-038_GL0228101 [gene] locus=scaffold51839_3:226:822:+ [Lack 3'-end] codon-table.11"]
["pigPIG-039_GL0020000 [gene] locus=scaffold109634_1:1335:2129:- [Complete] codon-table.11"]
["pigPIG-042_GL0146265 [gene] locus=scaffold15812_22:349:1347:+ [Complete] codon-table.11"]
["pigPIG-043_GL0176010 [gene] locus=scaffold125895_1:19:627:- [Lack 5'-end] codon-table.11"]
["pigPIG-045_GL0165943 [gene] locus=scaffold45985_4:3:674:- [Lack 3'-end] codon-table.11"]
["pigPIG-046_GL0121324 [gene] locus=scaffold124352_2:2:685:+ [Lack 5'-end] codon-table.11"]
["pigPIG-046_GL0162651 [gene] locus=scaffold147028_1:10280:11035:- [Complete] codon-table.11"]
["pigPIG-048_GL0106673 [gene] locus=scaffold88520_1:1:879:+ [Lack 5'-end] codon-table.11"]
["pigPIG-052_GL0033206 [gene] locus=scaffold77968_1:3:626:- [Lack both ends] codon-table.11"]
["pigPIG-053_GL0226587 [gene] locus=scaffold172312_1:3:653:+ [Lack both ends] codon-table.11"]
["pigPIG-076_GL0066297 [gene] locus=scaffold177549_2:2:835:- [Lack 3'-end] codon-table.11"]
["pigPIG-084_GL0078495 [gene] locus=scaffold145976_1:427:1179:+ [Lack 3'-end] codon-table.11"]
["pigPIG-086_GL0168234 [gene] locus=scaffold48952_1:3:530:+ [Lack 5'-end] codon-table.11"]
["pigPIG-086_GL0170780 [gene] locus=scaffold39925_2:428:940:+ [Lack 3'-end] codon-table.11"]
["pigPIG-094_GL0069997 [gene] locus=scaffold55492_3:127:744:- [Lack 5'-end] codon-table.11"]
["pigPIG-094_GL0107435 [gene] locus=scaffold16034_12:1:663:- [Lack 3'-end] codon-table.11"]
["pigPIG-103_GL0226005 [gene] locus=scaffold62430_1:266:757:- [Lack 5'-end] codon-table.11"]
["pigPIG-105_GL0105545 [gene] locus=scaffold22207_3:3:782:+ [Lack 5'-end] codon-table.11"]
["pigPIG-107_GL0188439 [gene] locus=scaffold18356_1:2:508:- [Lack 3'-end] codon-table.11"]
["pigPIG-108_GL0002701 [gene] locus=scaffold114361_1:231:1055:- [Lack 5'-end] codon-table.11"]
["pigPIG-110_GL0136177 [gene] locus=scaffold22146_5:2:418:+ [Lack 5'-end] codon-table.11"]
["pigPIG-110_GL0147214 [gene] locus=scaffold22146_4:780:1427:+ [Lack 3'-end] codon-table.11"]
["pigPIG-110_GL0176009 [gene] locus=scaffold92729_5:2:631:- [Lack both ends] codon-table.11", "rumen7049_GL1501887_1 [gene] locus=C51935206_1:1:630:-[Lack both ends]"]
["pigPIG_112_GL0043743 [gene] locus=scaffold180654_1:46:597:- [Lack 5'-end] codon-table.11"]
["pigPIG_112_GL0046752 [gene] locus=C2909405_1:155:688:+ [Lack 3'-end] codon-table.11"]
["pigPIG_113_GL0228033 [gene] locus=scaffold208174_1:43:690:- [Lack 5'-end] codon-table.11"]
["pigPIG_114_GL0139742 [gene] locus=scaffold107545_3:90:1073:- [Lack 5'-end] codon-table.11"]
["pigPIG_114_GL0184431 [gene] locus=scaffold149440_1:66:674:+ [Lack 3'-end] codon-table.11"]
["pigPIG_115_GL0148003 [gene] locus=scaffold168813_3:129:938:- [Lack 5'-end] codon-table.11"]
["pigPIG_117_GL0190473 [gene] locus=scaffold262986_1:9237:10058:+ [Lack 3'-end] codon-table.11"]
["pigPIG_120_GL0063343 [gene] locus=scaffold47651_1:3:578:- [Lack 3'-end] codon-table.11"]
["pigPIG_120_GL0202954 [gene] locus=C2021344_1:3:653:- [Lack both ends] codon-table.11"]
["pigPIG_121_GL0018361 [gene] locus=scaffold3077_1:3:557:- [Lack both ends] codon-table.11"]
["pigPIG_121_GL0340510 [gene] locus=scaffold238125_1:2:856:+ [Lack both ends] codon-table.11"]

["pigPIG_124_GL0162375 [gene] locus=C3077170_1:3:626:- [Lack both ends] codon-table.11"]
["pigPIG_124_GL0246913 [gene] locus=scaffold236658_1:493:1155:+ [Lack 3'-end] codon-table.11"]
["pigPIG_125_GL0120814 [gene] locus=scaffold71681_1:2:811:- [Lack 3'-end] codon-table.11"]
["pigPIG_134_GL0004942 [gene] locus=C3182390_1:63:770:- [Lack 5'-end] codon-table.11"]
["pigPIG_147_GL0060621 [gene] locus=scaffold5827_2:179:727:- [Lack 5'-end] codon-table.11"]
["pigPIG_147_GL0120521 [gene] locus=scaffold191187_3:3:569:+ [Lack both ends] codon-table.11"]
["pigPIG_151_GL0062620 [gene] locus=scaffold282726_3:2133:2702:+ [Lack 3'-end] codon-table.11", "pigPIG-019_GL0077816 [gene] locus=scaffold61368_1:3:572:- [Lack 3'-end] codon-table.11"]
["pigPIG_151_GL0235159 [gene] locus=scaffold160179_4:875:1855:- [Complete] codon-table.11", "rumen554_GL1214101_1 [gene] locus=scaffold210164_7:1586:2566:-[Complete]", "rumen3042_GL1252232_1 [gene] locus=scaffold1581218_3:655:1635:+[Complete]", "rumen7049_GL2016357_1 [gene] locus=scaffold547177_1:13771:14751:-[Complete]"]
["pigPIG_151_GL0296431 [gene] locus=scaffold15482_2:2083:3141:- [Complete] codon-table.11", "rumen552_GL0039217_1 [gene] locus=scaffold1080482_1:2078:3136:-[Complete]"]
["pigPIG_161_GL0112306 [gene] locus=scaffold75100_2:2:529:- [Lack 3'-end] codon-table.11", "rumen100058_GL0343992_1 [gene] locus=scaffold1850228_1:3:530:-[Lack 3'-end]"]
["pigPIG_161_GL0203859 [gene] locus=scaffold48755_4:7030:8076:- [Complete] codon-table.11", "pigPIG-004_GL0134388 [gene] locus=scaffold116127_3:6122:7168:+ [Complete] codon-table.11", "pigPIG-084_GL0029807 [gene] locus=scaffold3479_2:1353:2399:- [Complete] codon-table.11", "pigBHZ-2B_GL0168420 [gene] locus=scaffold108509_3:1719:2765:- [Complete] codon-table.11", "pigBHZ-8B_GL0156557 [gene] locus=scaffold121381_2:49:1095:- [Complete] codon-table.11", "pigDB-11B_GL0045004 [gene] locus=scaffold168309_1:22693:23739:+ [Complete] codon-table.11", "pigEYZ-120B_GL0231006 [gene] locus=scaffold227465_1:1931:2977:+ [Complete] codon-table.11", "rumen553_GL0221646_1 [gene] locus=scaffold33195_7:14679:15725:-[Complete]", "rumen583_GL0637373_1 [gene] locus=scaffold61989_5:9256:10302:-[Complete]"]
["pigPIG_173_GL0086508 [gene] locus=scaffold244695_1:1:1083:+ [Lack 5'-end] codon-table.11"]
["pigPIG_173_GL0089538 [gene] locus=scaffold35130_1:1:1056:+ [Lack 5'-end] codon-table.11"]
["pigPIG_174_GL0160487 [gene] locus=scaffold73905_3:139:921:+ [Lack 3'-end] codon-table.11"]
["pigPIG_177_GL0142182 [gene] locus=scaffold128873_1:199:915:+ [Lack 3'-end] codon-table.11"]
["pigPIG_182_GL0017741 [gene] locus=scaffold15184_3:2:706:+ [Lack both ends] codon-table.11"]
["pigPIG_186_GL0068966 [gene] locus=scaffold265203_1:2:799:+ [Lack 5'-end] codon-table.11"]
["pigPIG_186_GL0089332 [gene] locus=scaffold156153_2:3:1040:+ [Lack 5'-end] codon-table.11"]
["pigPIG_186_GL0277490 [gene] locus=C4249751_1:390:1460:- [Complete] codon-table.11"]
["pigPIG_186_GL0371351 [gene] locus=scaffold124949_7:7309:8262:- [Complete] codon-table.11"]
["pigPIG_189_GL0091475 [gene] locus=scaffold188452_2:1:645:- [Lack 3'-end] codon-table.11"]
["pigPIG_191_GL0209904 [gene] locus=scaffold50212_4:1494:2339:+ [Lack 3'-end] codon-table.11"]
["pigPIG_192_GL0214797 [gene] locus=scaffold58621_1:3:983:+ [Lack 5'-end] codon-table.11"]
["pigPIG_196_GL0082817 [gene] locus=scaffold218260_2:1:846:- [Lack both ends] codon-table.11"]
["pigPIG_196_GL0196824 [gene] locus=scaffold145779_3:2:442:- [Lack 3'-end] codon-table.11"]
["pigPIG_201_GL0074903 [gene] locus=C3028022_1:2:544:- [Lack both ends] codon-table.11"]
["pigPIG_201_GL0107757 [gene] locus=scaffold138844_1:1:915:+ [Lack 5'-end] codon-table.11", "rumen3042_GL2448260_1 [gene] locus=scaffold2096147_1:2:913:-[Lack 3'-end]"]
["pigPIG_204_GL0190733 [gene] locus=scaffold20761_5:3:1112:- [Lack 3'-end] codon-table.11"]

["pigSYZ-388B_GL0068383 [gene] locus=scaffold182951_1:794:1381:+ [Lack 3'-end] codon-table.11"]
["pigSYZ-388B_GL0161697 [gene] locus=scaffold5891_3:95:1126:- [Complete] codon-table.11"]
["pigSYZ-426B_GL0135420 [gene] locus=scaffold142921_1:1:663:+ [Lack both ends] codon-table.11"]
["pigZXZ-10B_GL0067174 [gene] locus=scaffold178907_1:5449:6438:+ [Complete] codon-table.11"]
["pigZXZ-1B_GL0217716 [gene] locus=scaffold90253_2:2:775:- [Lack 3'-end] codon-table.11"]
["pigZXZ-3B_GL0006464 [gene] locus=scaffold871_2:2:889:+ [Lack 5'-end] codon-table.11", "rumen555_GL1691731_1 [gene] locus=scaffold786534_2:2:886:+[Lack both ends]"]
["pigZXZ-4B_GL0176666 [gene] locus=scaffold8454_1:5769:6815:+ [Complete] codon-table.11"]
["pigZXZ-7B_GL0179188 [gene] locus=scaffold31732_1:3529:4506:- [Lack 5'-end] codon-table.11"]
["pigZXZ-8B_GL0117670 [gene] locus=C2182832_1:2:508:- [Lack both ends] codon-table.11"]
["pigZXZ-8B_GL0244838 [gene] locus=scaffold26205_1:1:633:+ [Lack 5'-end] codon-table.11", "rumen554_GL0332524_1 [gene] locus=scaffold1493107_1:1835:2467:-[Lack 5'-end]"]
["pigZXZ-9B_GL0114291 [gene] locus=scaffold179798_1:2:514:+ [Lack 5'-end] codon-table.11"]
["rumen0081_GL0064712_1 [gene] locus=scaffold335362_3:2513:3172:+[Lack 3'-end]", "rumen100058_GL2408121_1 [gene] locus=scaffold3036593_1:3:662:-[Lack 3'-end]"]
["rumen0081_GL0180557_1 [gene] locus=scaffold1726079_2:1457:1981:+[Lack 3'-end]"]
["rumen0081_GL0219362_1 [gene] locus=scaffold1711638_1:427:1014:-[Lack 5'-end]"]
["rumen0081_GL0320729_1 [gene] locus=scaffold22173_5:10552:11130:+[Lack 3'-end]"]
["rumen0081_GL0450092_1 [gene] locus=scaffold948276_1:2:664:-[Lack 3'-end]"]
["rumen0081_GL0466755_1 [gene] locus=scaffold104428_3:1667:2581:-[Lack 5'-end]"]
["rumen0081_GL0496130_1 [gene] locus=scaffold928199_1:1:405:+[Lack 5'-end]"]
["rumen0081_GL0506602_1 [gene] locus=scaffold1885440_2:1:768:-[Lack both ends]"]
["rumen0081_GL0514438_1 [gene] locus=scaffold519995_2:3:518:-[Lack 3'-end]"]
["rumen0081_GL0591288_1 [gene] locus=scaffold695432_2:131:505:-[Lack 5'-end]"]
["rumen0081_GL0622563_1 [gene] locus=scaffold349208_1:1:468:-[Lack 3'-end]", "rumen3042_GL1267162_1 [gene] locus=scaffold1560219_1:206:673:+[Lack 3'-end]"]
["rumen0081_GL0635854_1 [gene] locus=scaffold1129532_1:12771:13778:+[Complete]"]
["rumen0081_GL0647534_1 [gene] locus=C38313395_1:3:437:-[Lack 3'-end]"]
["rumen0081_GL0722202_1 [gene] locus=scaffold1960186_1:3:836:+[Lack both ends]"]
["rumen0081_GL0787985_1 [gene] locus=scaffold411888_2:1:816:-[Lack 3'-end]"]
["rumen0081_GL0837490_1 [gene] locus=scaffold356149_2:2:637:-[Lack 3'-end]", "rumen7049_GL0851061_1 [gene] locus=scaffold2139164_1:3:638:-[Lack 3'-end]"]
["rumen0081_GL1022157_1 [gene] locus=scaffold1342277_3:304:840:+[Lack 3'-end]"]
["rumen0081_GL1036706_1 [gene] locus=scaffold860226_1:1461:2237:+[Lack 3'-end]", "rumen100058_GL0614671_1 [gene] locus=scaffold667058_3:296:1072:+[Lack 3'-end]"]
["rumen0081_GL1060731_1 [gene] locus=scaffold317383_6:262:1125:-[Lack 5'-end]"]
["rumen0081_GL1138368_1 [gene] locus=scaffold888200_2:50:613:-[Lack 5'-end]", "rumen2009040_GL1064927_1 [gene] locus=scaffold1779755_1:1:564:+[Lack 5'-end]", "rumen2009040_GL3211683_1 [gene] locus=scaffold2032426_3:1377:1940:-[Lack 5'-end]"]
["rumen0081_GL1148546_1 [gene] locus=scaffold279507_1:1:618:+[Lack both ends]"]
["rumen0081_GL1259314_1 [gene] locus=scaffold1479207_1:3:683:+[Lack 5'-end]"]
["rumen0081_GL1498862_1 [gene] locus=scaffold1916965_1:3:794:+[Lack both ends]"]
["rumen0081_GL1569460_1 [gene] locus=scaffold1237992_2:1:522:-[Lack both ends]"]

["rumen0081_GL1894171_1 [gene] locus=scaffold1729023_1:336:773:+[Lack 3'-end]"]
["rumen0081_GL2032736_1 [gene] locus=scaffold643617_1:2:658:+[Lack both ends]", "rumen2009040_GL0725324_1 [gene] locus=scaffold921679_7:419:1075:+[Lack 3'-end]"]
["rumen0081_GL2207767_1 [gene] locus=scaffold68961_5:34:780:+[Lack 3'-end]"]
["rumen0081_GL2264799_1 [gene] locus=scaffold570051_3:395:1288:-[Lack 5'-end]"]
["rumen0081_GL2294332_1 [gene] locus=scaffold303130_2:46:1032:-[Complete]", "rumen7049_GL2837273_1 [gene] locus=scaffold23373_2:622:1608:+[Complete]"]
["rumen0081_GL2367573_1 [gene] locus=scaffold1744014_1:2:874:+[Lack both ends]"]
["rumen0081_GL2504313_1 [gene] locus=scaffold1829874_2:463:870:-[Lack 5'-end]"]
["rumen0081_GL2511108_1 [gene] locus=scaffold1835477_4:526:1272:+[Lack 3'-end]"]
["rumen0081_GL2516639_1 [gene] locus=scaffold272372_3:1:546:-[Lack 3'-end]"]
["rumen100058_GL0079654_1 [gene] locus=scaffold2482952_1:287:907:+[Lack 3'-end]", "rumen7049_GL2697687_1 [gene] locus=scaffold1189584_1:530:1150:+[Lack 3'-end]"]
["rumen100058_GL0081051_1 [gene] locus=scaffold669218_1:133:933:-[Lack 5'-end]"]
["rumen100058_GL0261337_1 [gene] locus=C58467978_1:64:600:-[Lack 5'-end]", "rumen100058_GL1879101_1 [gene] locus=scaffold2482952_2:2:538:+[Lack 5'-end]"]
["rumen100058_GL0380841_1 [gene] locus=scaffold287968_2:2:721:+[Lack 5'-end]"]
["rumen100058_GL0421245_1 [gene] locus=C60063984_1:144:1070:-[Lack 5'-end]"]
["rumen100058_GL0465739_1 [gene] locus=C59653742_1:2:859:+[Lack both ends]"]
["rumen100058_GL0478693_1 [gene] locus=scaffold2427909_2:1:501:+[Lack both ends]"]
["rumen100058_GL0506470_1 [gene] locus=scaffold701222_3:2:535:+[Lack 5'-end]"]
["rumen100058_GL0525691_1 [gene] locus=scaffold3220036_1:3:539:-[Lack both ends]"]
["rumen100058_GL0526834_1 [gene] locus=C59209324_1:2:565:-[Lack 3'-end]"]
["rumen100058_GL0557509_1 [gene] locus=scaffold1150310_1:3:674:-[Lack 3'-end]"]
["rumen100058_GL0582312_1 [gene] locus=scaffold1584502_1:3:635:-[Lack 3'-end]"]
["rumen100058_GL0625438_1 [gene] locus=scaffold841425_2:1:522:+[Lack 5'-end]"]
["rumen100058_GL0636960_1 [gene] locus=scaffold2401224_3:3519:4220:-[Lack 5'-end]"]
["rumen100058_GL0682011_1 [gene] locus=scaffold1062049_3:237:917:-[Lack 5'-end]"]
["rumen100058_GL0683357_1 [gene] locus=scaffold304188_6:1:693:+[Lack both ends]"]
["rumen100058_GL0695139_1 [gene] locus=scaffold148552_6:101:634:+[Lack 3'-end]"]
["rumen100058_GL0792543_1 [gene] locus=scaffold2044073_2:1:558:+[Lack 5'-end]"]
["rumen100058_GL0845169_1 [gene] locus=scaffold1747050_1:3:566:-[Lack both ends]"]
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["rumen100058_GL0973147_1 [gene] locus=scaffold1383390_2:3:815:+[Lack 5'-end]"]
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["rumen100058_GL1037585_1 [gene] locus=scaffold2177230_6:2:583:+[Lack 5'-end]"]
["rumen100058_GL1104505_1 [gene] locus=scaffold219305_8:1:885:-[Lack 3'-end]"]
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["rumen100058_GL1235318_1 [gene] locus=scaffold2116946_2:3:659:-[Lack both ends]"]
["rumen100058_GL1456035_1 [gene] locus=scaffold1144469_2:2750:3187:+[Lack 3'-end]"]

["rumen100058_GL1457706_1 [gene] locus=scaffold504761_8:5491:6477:-[Complete]"]
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["rumen100058_GL1672632_1 [gene] locus=scaffold1097695_1:1:615:-[Lack both ends]"]
["rumen100058_GL1762175_1 [gene] locus=C59653100_1:2:460:-[Lack 3'-end]"]
["rumen100058_GL1798831_1 [gene] locus=scaffold1034605_2:265:765:-[Lack 5'-end]"]
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["rumen100058_GL1918829_1 [gene] locus=scaffold460743_1:190:930:-[Lack 5'-end]"]
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["rumen100058_GL2988089_1 [gene] locus=scaffold1422792_4:3:554:+[Lack both ends]"]
["rumen100058_GL3012780_1 [gene] locus=scaffold1851187_1:3:974:-[Lack 3'-end]"]
["rumen100058_GL3029535_1 [gene] locus=scaffold2288317_1:1:516:-[Lack 3'-end]"]
["rumen100058_GL3089023_1 [gene] locus=scaffold1751573_2:3:854:-[Lack 3'-end]"]
["rumen100058_GL3158956_1 [gene] locus=scaffold2997315_1:2:502:-[Lack both ends]"]
["rumen100058_GL3180428_1 [gene] locus=scaffold1532957_1:1:750:-[Lack both ends]"]
["rumen100058_GL3312332_1 [gene] locus=scaffold449044_3:11479:12450:+[Complete]"]
["rumen100058_GL3672783_1 [gene] locus=scaffold303729_1:3:497:+[Lack 5'-end]"]
["rumen100058_GL3687739_1 [gene] locus=scaffold560984_6:8814:9773:-[Complete]"]
["rumen100058_GL3783820_1 [gene] locus=scaffold3335926_1:3:530:-[Lack 3'-end]"]
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["rumen2009040_GL0044390_1 [gene] locus=scaffold1685100_6:2:484:+[Lack 5'-end]"]
["rumen2009040_GL0053895_1 [gene] locus=scaffold2248574_5:142:702:-[Lack 5'-end]"]
["rumen2009040_GL0120670_1 [gene] locus=scaffold534733_1:2:739:-[Lack 3'-end]"]

["rumen2009040_GL0224376_1 [gene] locus=scaffold1970846_1:1:504:+[Lack both ends]"]
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["rumen2009040_GL0398315_1 [gene] locus=scaffold496817_1:3:704:-[Lack 3'-end]"]
["rumen2009040_GL0401806_1 [gene] locus=scaffold1884788_1:3:431:-[Lack 3'-end]"]
["rumen2009040_GL0471805_1 [gene] locus=scaffold2019961_2:158:688:-[Lack 5'-end]"]
["rumen2009040_GL0483013_1 [gene] locus=scaffold2990488_1:57:557:+[Lack 3'-end]"]
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["rumen2009040_GL0718615_1 [gene] locus=scaffold2375838_3:2486:3619:-[Complete]"]
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["rumen2009040_GL1021674_1 [gene] locus=scaffold1083537_5:318:779:+[Lack 3'-end]"]
["rumen2009040_GL1031267_1 [gene] locus=scaffold1634141_1:3:611:-[Lack 3'-end]"]
["rumen2009040_GL1101606_1 [gene] locus=scaffold1841291_1:3:737:-[Lack both ends]"]
["rumen2009040_GL1154903_1 [gene] locus=scaffold1660524_1:3:584:-[Lack both ends]"]
["rumen2009040_GL1221597_1 [gene] locus=scaffold1544424_1:1:603:-[Lack both ends]"]
["rumen2009040_GL1226175_1 [gene] locus=scaffold1371129_1:48:830:-[Lack 5'-end]"]
["rumen2009040_GL1499537_1 [gene] locus=scaffold608886_3:1588:2031:+[Lack 3'-end]"]
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["rumen2009040_GL1641623_1 [gene] locus=scaffold3013358_1:526:1218:-[Lack 5'-end]"]
["rumen2009040_GL1752955_1 [gene] locus=scaffold3070662_1:2:529:+[Lack 5'-end]"]
["rumen2009040_GL1856502_1 [gene] locus=scaffold2694207_1:691:1164:+[Lack 3'-end]"]
["rumen2009040_GL1884793_1 [gene] locus=scaffold486018_9:2:988:+[Lack 5'-end]", "rumen2009040_GL2358267_1 [gene] locus=scaffold568460_3:2867:3853:+[Complete]"]
["rumen2009040_GL1934422_1 [gene] locus=scaffold834553_1:3:398:-[Lack 3'-end]"]
["rumen2009040_GL1939598_1 [gene] locus=scaffold1973934_1:346:852:-[Lack 5'-end]"]
["rumen2009040_GL2038368_1 [gene] locus=scaffold797035_2:3:746:-[Lack both ends]"]
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["rumen2009040_GL2681750_1 [gene] locus=scaffold965356_2:2:541:-[Lack 3'-end]"]
["rumen2009040_GL2749566_1 [gene] locus=scaffold1391674_2:2:382:-[Lack 3'-end]"]
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["rumen2009040_GL2886490_1 [gene] locus=scaffold399958_1:45:641:-[Lack 5'-end]"]

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["rumen2009040_GL3092996_1 [gene] locus=scaffold1065072_5:2:799:-[Lack both ends]"]
["rumen2009040_GL3122018_1 [gene] locus=scaffold2228259_1:1:417:+[Lack 5'-end]"]
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["rumen2009040_GL3500043_1 [gene] locus=scaffold132598_3:555:1229:-[Complete]"]
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["rumen3042_GL0855634_1 [gene] locus=scaffold1691162_1:2:598:+[Lack both ends]"]
["rumen3042_GL1100163_1 [gene] locus=scaffold2090320_1:1:531:-[Lack both ends]"]
["rumen3042_GL1199332_1 [gene] locus=scaffold464338_1:4103:5077:+[Lack 3'-end]"]
["rumen3042_GL1361504_1 [gene] locus=scaffold2133872_1:2251:3225:-[Complete]"]
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["rumen3042_GL2298145_1 [gene] locus=scaffold538723_3:446:1459:-[Complete]"]
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["rumen552_GL1191896_1 [gene] locus=scaffold293306_1:1:759:+[Lack both ends]"]
["rumen552_GL1197944_1 [gene] locus=scaffold536502_1:1:693:+[Lack 5'-end]"]
["rumen552_GL1201600_1 [gene] locus=scaffold310905_2:98:706:-[Lack 5'-end]"]
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["rumen552_GL1440013_1 [gene] locus=scaffold203264_1:1:525:+[Lack both ends]"]
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<tr><td>["cazygi|239505942|gb|ACR79429.1| glycosidase PH1107-related [Kosmotoga olearia TBF 19.5.1]"]</td></tr>
<tr><td>["cazygi|239911180|gb|ACS34071.1| Glycosylase [Thermococcus gammatolerans EJ3]"]</td></tr>
<tr><td>["cazygi|256040022|gb|ACU63566.1| glycosidase PH1107-related [Chitinophaga pinensis DSM 2588]"]</td></tr>
<tr><td>["cazygi|260062546|ref|EAR15283.1 hypothetical protein RB2501_13184 [Robiginitalea biformata HTCC2501]"]</td></tr>
<tr><td>["cazygi|294980338|gb|ADF50803.1| glycosidase"," PH1107-related protein [Zunongwangia profunda SM-A87]"]</td></tr>
<tr><td>["cazygi|296849618|gb|ADH62633.1| glycosidase PH1107-related protein [Meiothermus silvanus DSM 9946]"]</td></tr>
<tr><td>["cazygi|305667514|ref|YP_003863801.1| hypothetical protein FB2170_14743 [Maribacter sp. HTCC2170]"]</td></tr>
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<tr><td>["cazygi|319927679|gb|ADV84754.1| glycosidase related protein [Terriglobus saanensis SP1PR4]"]</td></tr>
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<tr><td>["cazygi|326552918|gb|ADZ81303.1| glycosidase related protein [Sphingobacterium sp. 21]"]</td></tr>
<tr><td>["cazygi|332333126|gb|AEE50227.1| glycosidase related protein [Haliscomenobacter hydrossis DSM 1100]"]</td></tr>
<tr><td>["cazygi|343954774|gb|AEM70573.1| glycosidase related protein [Muricauda ruestringensis DSM 13258]"]</td></tr>
<tr><td>["cazygi|361059038|gb|AEV98029.1| glycosidase related protein [Niastella koreensis GR20-10]"]</td></tr>
<tr><td>["cazygi|378567994|gb|AFC28304.1| glycosidase PH1107-like protein [Paenibacillus mucilaginosus 3016]",
"cazygi|384089041|gb|AFH60477.1| glycosidase [Paenibacillus mucilaginosus K02]",
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<tr><td>["cazygi|388249740|gb|AFK22593.1| putative Glycosidase [Pyrococcus sp. ST04]"]</td></tr>
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"cazygi|374742097|gb|EHR78506.1| glycosidase [Thermococcus litoralis DSM 5473]",
"cazygi|971361817|gb|ALV61989.1| Glycoside hydrolase 130 family enzyme"," beta-1","4 mannooligosaccharide phosphorilase [Thermococcus sp. 2319x1]"]</td></tr>
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<tr><td>["cazygi|827413726|gb|AKI98278.1| glycosidase [Kosmotoga pacifica]"]</td></tr>
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["cazygi|926468532|gb|ALD22883.1| glycosidase [Hymenobacter sp. DG25A]"]
["cazygi|94549995|gb|ABF39919.1| glycosidase"," PH1107-related protein [Candidatus Koribacter versatilis Ellin345]"]
["cazygi|946529133|gb|ALM09124.1| hypothetical protein SB49_02230 [Sediminicola sp. YIK13]"]
["cazygi|996010572|gb|AMJ67963.1| hypothetical protein AXW84_01505 [Hymenobacter sp. PAMC 26628]"]
["cazygi|998619775|dbj|BAU55708.1| Beta-1","4-mannooligosaccharide phosphorylase [Mucilaginibacter gotjawali]"]
["cazy|APG61045.1 pesticidal protein Cry15Aa [Gramella salexigens]"]
["cazy|APQ16221.1 hypothetical protein BTR34_02150 [Maribacter sp. T28]"]
["cazy|APU67835.1 putative glycoside hydrolase [Gramella flava JLT2011]"]
["cazy|APU97438.1 hypothetical protein BV902_14695 [Sphingobacterium sp. B29]"]
["cazy|ARK09600.1 glycosidase [Fibrella sp. ES10-3-2-2]"]
["cazy|ASA78004.1 glycosidase [Thermococcus sp. 5-4]", "cazy|ASJ14742.1 glycosidase [Thermococcus radiotolerans]", "cazygi|340810641|gb|AEK73798.1| Glycosylase [Thermococcus sp. 4557]"]
["cazy|ASJ05082.1 glycosidase [Thermococcus barossii]"]
["cazy|ASJ07914.1 glycosidase [Thermococcus siculi]"]
["cazy|ASJ13038.1 glycosidase [Thermococcus thioreducens]"]
["cazy|ASJ17080.1 glycosidase [Thermococcus chitonophagus]", "cazygi|1001992192|gb|AMM53793.1| glycosidase [Pyrococcus sp. NCB100]", "cazygi|1019365031|emb|CUX77680.1| COG2152 predicted glycoside hydrolase [Thermococcus chitonophagus]"]
["cazy|AST55815.1 hypothetical protein CI960_21960 [Parabacteroides sp. CT06]", "humangutMH0012_GL0065470 [gene] locus=scaffold7537_4:1953:3101:- [Complete] codon-table.11", "mouseS-Fe1_GL0174490 [gene] locus=scaffold80917_1:43528:44676:- [Complete] codon-table.11"]
["cazy|ASU31942.1 hypothetical protein MuYL_0039 [Mucilaginibacter sp. BJC16-A31]"]
["cazy|ASV31696.1 hypothetical protein CJ263_16555 [Maribacter cobaltidurans]"]
["cazy|ASZ10702.1 glycosidase [Chitinophaga sp. MD30]"]
["cazy|ATL49712.1 hypothetical protein COR50_03215 [Chitinophaga caeni]"]
["cazy|ATP57941.1 hypothetical protein CPT03_16470 [Pedobacter ginsengisoli]"]
["cazy|AUD04348.1 glycosidase [Spirosoma pollinicola]", "cazygi|283818071|gb|ADB39909.1| glycosidase PH1107-related protein [Spirosoma linguale DSM 74]"]
["cazy|AVI52417.1 glycosidase [Aureitalea sp. RR4-38]"]
["cazy|AVR44446.1 pesticidal protein Cry15Aa [Gramella sp. SH35]"]
["cazy|AWL09983.1 Beta-1","4-mannooligosaccharide phosphorylase [Pseudarcicella sp. HME7025]"]
["cazy|AWM35477.1 glycosidase [Hymenobacter nivis]"]
["cazy|AXC09738.1 putative glycoside hydrolase [Acidobacteriaceae bacterium SBC82]"]
["cazy|AXE19877.1 glycosidase [Runella sp. HYN0085]", "cazygi|336305538|gb|AEI48640.1| glycosidase related protein [Runella slithyformis DSM 19594]"]
["cazy|AYB30495.1 glycosidase [Chryseolinea sp. KIS68-18]"]
["cazy|AYD47492.1 hypothetical protein D6B99_07660 [Arachidicoccus sp. KIS59-12]"]
["cazy|AYL95667.1 hypothetical protein HYN43_010370 [Mucilaginibacter sp. HYN0043]"]
["cazy|AYQ36400.1 glycosidase [Runella sp. SP2]"]
["cazy|SCD19903.1 Glycosyl hydrolase families 32 and 68 [Proteiniphilum saccharofermentans]"]
["cazy|SCV07002.1 glycosyl hydrolase [Bacteroides ovatus V975]",

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["cazy|SCV08357.1 glycosyl hydrolase"," family 32 protein [Bacteroides ovatus V975]", "humangutMH0010_GL0029842 [gene] locus=scaffold7356_38:62:1195:+ [Complete] codon-table.11", "humangutMH0041_GL0070376 [gene] locus=scaffold1298_16:5317:6450:- [Complete] codon-table.11", "humangutMH0106_GL0099321 [gene] locus=scaffold44499_2:850:1983:- [Complete] codon-table.11", "humangutMH0199_GL0030986 [gene] locus=scaffold5142_1:1117:2250:- [Complete] codon-table.11", "humangutV1.CD7-0_GL0082857 [gene] locus=C639715_1:137:1270:+ [Complete] codon-table.11", "humangutT2D-118A_GL0058838 [gene] locus=scaffold2929_3:845:1978:- [Complete] codon-table.11", "humangut159146620-stool1_revised_scaffold7674_1_gene7987 strand:- start:610 stop:1743 length:1134 start_codon:yes stop_codon:yes gene_type:complete [Complete] codon-table.11", "humangut159227541-stool1_revised_scaffold11082_1_gene13325 strand:- start:125 stop:1258 length:1134 start_codon:yes stop_codon:yes gene_type:complete [Complete] codon-table.11", "mouse1A-dyr3-06_GL0043666 [gene] locus=scaffold8255_5:62656:63789:+ [Complete] codon-table.11", "cazygi|938484706|gb|ALJ48937.1| Beta-1","4-mannooligosaccharide phosphorylase [Bacteroides ovatus]", "cazygi|938479426|gb|ALJ43658.1| 4-O-beta-D-mannosyl-D-glucose phosphorylase [Bacteroides thetaiotaomicron]", "cazygi|29341411|gb|AAO79199.1| glycosidase [Bacteroides thetaiotaomicron VPI-5482]", "cazygi|295086662|emb|CBK68185.1| Predicted glycosylase [Bacteroides xylanisolvens XB1A]"]
["cazy|SDB32688.1 Predicted glycosyl hydrolase"," GH43/DUF377 family [Flavobacteriaceae bacterium MAR_2010_188]"]
["cazy|SDS05868.1 Predicted glycosyl hydrolase"," GH43/DUF377 family [Gramella sp. MAR_2010_147]"]
["cazy|SMD42156.1 Predicted glycosyl hydrolase"," GH43/DUF377 family [Aquiflexum balticum DSM 16537]"]
["cazy|SNV50569.1 Beta-xylosidase [Sphingobacterium mizutaii]"]
["cazy|SOE20032.1 Predicted glycosyl hydrolase"," GH43/DUF377 family [Cytophagales bacterium TFI 002]"]
["cazy|SSC12643.1 putative glycosylase [Mesotoga infera]", "cazygi|387859460|gb|AFK07551.1| putative glycosylase [Mesotoga prima MesG1.Ag.4.2]"]
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["humangutN035A_GL0060277 [gene] locus=scaffold1299_6:51752:52900:+ [Complete] codon-table.11"]
["humangutN038A_GL0085108 [gene] locus=scaffold17346_5:203:1378:- [Lack 5'-end] codon-table.11"]
["humangutNOM023_GL0008696 [gene] locus=scaffold6280_11:14774:15997:+ [Complete] codon-table.11"]
["humangutO2.CD2-0_GL0013688 [gene] locus=scaffold15209_1:3407:4612:+ [Complete] codon-table.11", "pigPIG-008_GL0060387 [gene] locus=scaffold142563_2:2247:3452:- [Complete] codon-table.11"]

["humangutO2.UC11-2_GL0042558 [gene] locus=scaffold39495_3:1637:2773:- [Complete] codon-table.11"]
["humangutO2.UC2-2_GL0005274 [gene] locus=scaffold20781_1:7374:8471:+ [Complete] codon-table.11"]
["humangutO2.UC21-2_GL0054119 [gene] locus=scaffold50675_22:3:1172:+ [Lack 5'-end] codon-table.11"]
["humangutO2.UC44-0_GL0005851 [gene] locus=scaffold50768_10:3:995:+ [Lack both ends] codon-table.11"]
["humangutO2.UC48-0_GL0055178 [gene] locus=scaffold132969_1:1085:2236:- [Complete] codon-table.11"]
["humangutT2D-11A_GL0139780 [gene] locus=scaffold31288_2:2:850:+ [Lack both ends] codon-table.11"]
["humangutT2D-135A_GL0017292 [gene] locus=scaffold7557_5:5284:6399:- [Complete] codon-table.11"]
["humangutT2D-48A_GL0072608 [gene] locus=scaffold33749_3:10367:11497:+ [Complete] codon-table.11", "humangut764487809-stool1_revised_scaffold44332_1_gene14323 strand:- start:1 stop:1128 length:1128 start_codon:yes stop_codon:no gene_type:incomplete [Lack 3'-end] codon-table.11"]
["humangutT2D-70A_GL0056825 [gene] locus=scaffold1160_4:29:862:+ [Lack 3'-end] codon-table.11"]
["humangutT2D-8A_GL0016983 [gene] locus=scaffold1359_13:1:669:+ [Lack 5'-end] codon-table.11"]
["humangutV1.CD3-3-PN_GL0023210 [gene] locus=scaffold39892_3:6392:7543:- [Complete] codon-table.11", "humangut160765029-stool1_revised_scaffold21574_1_gene29821 strand:+ start:4252 stop:5403 length:1152 start_codon:yes stop_codon:yes gene_type:complete [Complete] codon-table.11"]
["humangutV1.FI28_GL0230259 [gene] locus=scaffold100310_8:2:622:- [Lack both ends] codon-table.11"]
["humangutV1.FI34_GL0128785 [gene] locus=scaffold59159_3:821:1816:+ [Lack 3'-end] codon-table.11"]
["humangutV1.UC17-0_GL0023683 [gene] locus=scaffold14974_3:776:1324:- [Lack 5'-end] codon-table.11"]
["humangutV1.UC4-5_GL0061566 [gene] locus=scaffold1889_5:1:804:- [Lack 3'-end] codon-table.11"]
["mouse16_GL0106917 [gene] locus=scaffold69501_2:23081:24208:+ [Complete] codon-table.11"]
["mouse4-1_GL0056131 [gene] locus=scaffold43684_1:221390:224281:- [Complete] codon-table.11"]
["mouseG1-1A_GL0001040 [gene] locus=scaffold120_1:57678:58793:+ [Complete] codon-table.11"]
["mouseG1-4A_GL0012400 [gene] locus=scaffold7238_4:2:511:- [Lack 3'-end] codon-table.11"]
["mouseG1-4A_GL0065519 [gene] locus=scaffold51446_1:353:1492:+ [Lack 3'-end] codon-table.11"]
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["mouseS-Fe10_GL0055926 [gene] locus=scaffold57598_1:20125:22446:+ [Complete] codon-table.11"]
["mouseS-Fe10_GL0084620 [gene] locus=scaffold64647_1:40469:41668:- [Complete] codon-table.11"]
["mouseS-Fe10_GL0130324 [gene] locus=scaffold327_6:31001:32179:+ [Complete] codon-table.11"]
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["pigBMZ-17B_GL0054550 [gene] locus=scaffold62536_5:686:1801:- [Complete] codon-table.11"]
["pigDB-537B_GL0095012 [gene] locus=scaffold88829_8:51:1169:+ [Complete] codon-table.11"]
["pigDB-537B_GL0107503 [gene] locus=scaffold3109_3:2351:4654:- [Complete] codon-table.11"]
["pigEYZ-353B_GL0228570 [gene] locus=scaffold148936_1:86:1069:+ [Complete] codon-table.11"]
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["pigPIG-018_GL0009170 [gene] locus=scaffold115433_2:3:839:- [Lack 3'-end] codon-table.11"]
["pigPIG-023_GL0161560 [gene] locus=scaffold132720_2:2:505:+ [Lack both ends] codon-table.11"]
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["pigPIG-052_GL0008222 [gene] locus=scaffold121254_1:4272:6683:- [Complete] codon-table.11", "rumen553_GL0779074_1 [gene] locus=C7766909_1:34895:37306:+[Complete]"]
["pigPIG-052_GL0134708 [gene] locus=scaffold187325_3:7603:8691:- [Complete] codon-table.11"]
["pigPIG-052_GL0231560 [gene] locus=scaffold161331_1:11503:12633:+ [Complete] codon-table.11", "rumen553_GL0186123_1 [gene] locus=scaffold29911_3:29968:31098:-[Complete]"]
["pigPIG-093_GL0025039 [gene] locus=C1915055_1:2:955:- [Lack 3'-end] codon-table.11"]
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["pigPIG_114_GL0056339 [gene] locus=scaffold36302_2:2:1201:+ [Lack 5'-end] codon-table.11"]
["pigPIG_124_GL0137253 [gene] locus=scaffold112837_1:4633:7080:- [Complete] codon-table.11", "pigPIG-026_GL0232589 [gene] locus=scaffold177914_1:7954:10401:- [Complete] codon-table.11"]
["pigPIG_130_GL0244308 [gene] locus=scaffold154735_2:2:991:+ [Lack both ends] codon-table.11"]
["pigPIG_151_GL0226406 [gene] locus=scaffold190994_1:3:575:- [Lack both ends] codon-table.11"]
["pigPIG_151_GL0245739 [gene] locus=scaffold213322_1:3:1328:+ [Lack 5'-end] codon-table.11"]
["pigPIG_171_GL0207592 [gene] locus=scaffold230377_1:1075:2079:+ [Lack 3'-end] codon-table.11"]
["pigPIG_175_GL0210073 [gene] locus=scaffold153980_1:3:914:- [Lack both ends] codon-table.11"]
["pigPIG_189_GL0023829 [gene] locus=scaffold145928_3:2:2152:+ [Lack 5'-end] codon-table.11"]
["pigPIG_190_GL0064267 [gene] locus=scaffold19076_2:2:937:- [Lack both ends] codon-table.11"]
["pigPIG_200_GL0045959 [gene] locus=scaffold157948_2:317:946:+ [Lack 3'-end] codon-table.11"]
["pigPIG_200_GL0174839 [gene] locus=scaffold50705_2:686:3208:+ [Complete] codon-table.11"]
["pigSYZ-635B_GL0188356 [gene] locus=scaffold774_1:2:2317:- [Lack both ends] codon-table.11"]
["pigSYZ-639B_GL0079434 [gene] locus=scaffold83973_1:3:1706:+ [Lack both ends] codon-table.11"]
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["rumen0081_GL0217456_1 [gene] locus=scaffold936411_1:1:4941:+[Lack 5'-end]"]
["rumen0081_GL0564217_1 [gene] locus=C37935053_1:1:525:+[Lack both ends]"]
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["rumen0081_GL1500808_1 [gene] locus=scaffold1219931_6:2:511:-[Lack both ends]"]
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["rumen0081_GL2263554_1 [gene] locus=scaffold1701902_1:230:685:+[Lack 3'-end]"]
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["rumen100058_GL0403439_1 [gene] locus=scaffold1138840_4:2:1195:+[Lack 5'-end]"]
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["rumen100058_GL3404804_1 [gene] locus=C59223072_1:174:731:+[Lack 3'-end]"]
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["rumen2009040_GL1278742_1 [gene] locus=scaffold908923_1:299636:302218:-[Complete]"]
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["rumen2009040_GL3390821_1 [gene] locus=scaffold1683667_3:53:2179:+[Complete]"]
["rumen3042_GL0122552_1 [gene] locus=scaffold860228_2:3:536:-[Lack 3'-end]"]
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["rumen3042_GL0286054_1 [gene] locus=scaffold1634175_1:212:895:+[Lack 3'-end]"]
["rumen3042_GL0456759_1 [gene] locus=scaffold928852_1:3:767:-[Lack 3'-end]"]
["rumen3042_GL1567465_1 [gene] locus=scaffold1448515_1:3:749:-[Lack 3'-end]"]
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["rumen3042_GL2068048_1 [gene] locus=scaffold533713_2:3:761:+[Lack 5'-end]"]
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["rumen3042_GL2588302_1 [gene] locus=C50500639_1:1:429:+[Lack 5'-end]"]
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["rumen555_GL2441297_1 [gene] locus=scaffold1119893_1:2:553:-[Lack both ends]"]
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["rumen7049_GL0859720_1 [gene] locus=scaffold1646031_3:57:1661:-[Complete]"]
["rumen7049_GL0939381_1 [gene] locus=scaffold1728221_2:2:1777:+[Lack both ends]"]
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["rumen7049_GL1225084_1 [gene] locus=scaffold2075975_1:218:1384:+[Complete]"]
["rumen7049_GL1834282_1 [gene] locus=scaffold2118351_1:1:552:-[Lack both ends]"]
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["rumen7049_GL2592886_1 [gene] locus=scaffold389306_1:1:1149:+[Lack 5'-end]"]
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C4

["Ncazy|AOC93207.1 Beta-1","4-mannooligosaccharide phosphorylase [Flavobacterium anhuiense]", "Ncazy|AOE51475.1 glycosidase [Flavobacterium psychrophilum]", "cazy|AWK05320.1 glycosidase [Flavobacterium sp. HYN0056]", "cazygi|947264313|gb|ALM47851.1| glycosidase [Flavobacterium psychrophilum]", "cazygi|255346869|gb|ACU06195.1| glycosidase PH1107-related [Pedobacter heparinus DSM 2366]"]
["Ncazy|AOE51603.1 glycosidase [Flavobacterium psychrophilum]", "cazy|AWH86432.1 glycosidase [Flavobacterium sp. HYN0059]", "cazygi|947264444|gb|ALM47982.1| glycosidase [Flavobacterium psychrophilum]"]
["cazyCCgi|16413308|emb|CAC96089.1|β-1","2-mannobiose phosphorylase_lin0857 [Listeria innocua Clip11262]", "cazy|APH75866.1 Putative glycosylase [Listeria monocytogenes]", "cazy|APH78842.1 Putative glycosylase [Listeria monocytogenes]", "cazy|APO61046.1 glycosidase [Listeria monocytogenes]", "cazy|APQ09030.1 glycosidase [Listeria monocytogenes]", "cazy|APV02038.1 glycosidase [Listeria monocytogenes]", "cazy|APV05006.1 glycosidase [Listeria monocytogenes]", "cazy|APV08055.1 glycosidase [Listeria monocytogenes]", "cazy|APV11155.1 glycosidase [Listeria monocytogenes]", "cazy|AQY50881.1 glycosidase [Listeria weihenstephanensis]", "cazy|AUB53497.1 glycosidase [Enterococcus mundtii]", "cazy|SNV21540.1 Domain of uncharacterised function (DUF377) [Listeria welshimeri]",

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"cazy|SNV39278.1 Domain of uncharacterised function (DUF377) [Listeria ivanovii subsp. ivanovii]",

"cazy|SNV87103.1 Domain of uncharacterised function (DUF377) [Listeria ivanovii subsp. ivanovii]",

"cazygi|346981339|emb|CBW85288.1| Hypothetical protein of unknown function [Listeria ivanovii subsp. ivanovii PAM 55]",

"cazygi|694158253|gb|AIS64822.1| glycosidase [Listeria ivanovii subsp. ivanovii]",

"cazygi|694155550|gb|AIS62120.1| glycosidase [Listeria ivanovii subsp. londoniensis]",

"cazygi|694152715|gb|AIS59286.1| glycosidase [Listeria ivanovii subsp. londoniensis]",

"cazygi|583837501|gb|AHI55363.1| glycosidase [Listeria ivanovii WSLC3009]",

"cazygi|384390376|gb|AFH79446.1| hypothetical protein MUO_04580 [Listeria monocytogenes 07PF0776]",

"cazygi|284056755|gb|ADB67696.1| hypothetical protein LM5578_0943 [Listeria monocytogenes 08-5578]",

"cazygi|284059802|gb|ADB70741.1| hypothetical protein LM5923_0897 [Listeria monocytogenes 08-5923]",

"cazygi|345536422|gb|AEO05862.1| hypothetical protein LMRG_02287 [Listeria monocytogenes 10403S]",

"cazygi|987005979|gb|AMD51570.1| glycosidase [Listeria monocytogenes]",

"cazygi|1009069741|gb|AMR53417.1| glycosidase [Listeria monocytogenes]",

"cazygi|584270596|emb|CDM19439.1| conserved protein of unknown function [Listeria monocytogenes 6179]",

"cazygi|957750430|gb|ALQ20171.1| glycosidase [Listeria monocytogenes]",

"cazygi|957746227|gb|ALQ15969.1| glycosidase [Listeria monocytogenes]",

"cazygi|404218417|emb|CBY69781.1| glycosylase"," putative [Listeria monocytogenes ATCC 19117]",

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"cazygi|630374582|gb|AHY98922.1| glycosidase [Listeria monocytogenes]",

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"cazygi|985617591|gb|AMD23908.1| glycosidase [Listeria monocytogenes]",

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"cazygi|873259059|gb|AKP38021.1| glycosidase [Listeria monocytogenes]",

"cazygi|543860150|emb|CDG44729.1| COG2152 predicted glycoside hydrolase [Listeria monocytogenes EGD]",

"cazygi|16410267|emb|CAC98942.1| lmo0864 [Listeria monocytogenes EGD-e]",

"cazygi|346645782|gb|AEO38407.1| conserved hypothetical protein [Listeria monocytogenes Finland 1998]",

"cazygi|346423637|gb|AEO25162.1| conserved hypothetical protein [Listeria monocytogenes FSL R2-561]",

"cazygi|1028455793|gb|ANE38727.1| glycosidase [Listeria monocytogenes]",

"cazygi|217334311|gb|ACK40105.1| conserved hypothetical protein [Listeria monocytogenes HCC23]",

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["cazy|AWA31523.1 glycosidase [Flavobacterium sp. HYN0048]"]
["cazy|AWI10611.1 glycosidase [Ereboglobus luteus]"]
["cazy|AXP79353.1 Beta-1-2C4-mannooligosaccharide phosphorylase [Mariniflexile sp. TRM1-10]"]
["cazy|AXY72757.1 glycosidase [Pseudoflavitalea sp. 5GH32-13]"]
["cazy|AYA09469.1 glycosidase [Rahnella aquatilis]",

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["cazy|AYB35551.1 glycosidase [Chryseolinea sp. KIS68-18]"]
["cazy|AYF99945.1 glycosidase [Lactococcus sp. 1JSPR-7]"]
["cazy|BAX79962.1 glycosidase [Marinifilaceae bacterium SPP2]", "humangutMH0014_GL0051264 [gene] locus=scaffold54938_2:3608:4654:+ [Complete] codon-table.11", "humangutMH0037_GL0005385 [gene] locus=scaffold47410_3:5545:6591:+ [Complete] codon-table.11", "humangutMH0335_GL0084958 [gene] locus=scaffold33310_4:54850:55896:- [Complete] codon-table.11", "humangutT2D-109A_GL0063585 [gene] locus=scaffold60146_4:129:1175:+ [Complete] codon-table.11", "humangut764588959-stool1_revised_scaffold38709_2_gene87075 strand:+ start:15730 stop:16776 length:1047 start_codon:yes stop_codon:yes gene_type:complete [Complete] codon-table.11", "mouseS-Fe12_GL0087179 [gene] locus=scaffold23004_1:5238:6284:+ [Complete] codon-table.11", "mouseMC-0-1_GL0004796 [gene] locus=scaffold2636_8:8463:9509:- [Complete] codon-table.11", "mouse1A-dyr2-07_GL0030949 [gene] locus=scaffold11171_4:8010:9056:- [Complete] codon-table.11"]
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["pigPIG-006_GL0221372 [gene] locus=scaffold53550_3:1406:2050:+ [Complete] codon-table.11"]
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["pigPIG-033_GL0111560 [gene] locus=scaffold146717_1:3179:3592:+ [Lack 3'-end] codon-table.11"]
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C5

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["cazy|APU67656.1 glycosidase [Gramella flava JLT2011]"]
["cazy|APZ44771.1 glycosidase [Polaribacter reichenbachii]", "cazy|AUC18635.1 glycosidase [Polaribacter reichenbachii]", "cazy|SDR76681.1 Predicted glycosyl hydrolase"," GH43/DUF377 family [Polaribacter sp. KT25b]", "cazy|SDS17865.1 Predicted glycosyl hydrolase"," GH43/DUF377 family [Winogradskyella sp. RHA_55]"]
["cazy|AQQ69861.1 Beta-1","4-mannooligosaccharide phosphorylase [Phycisphaerae bacterium SM-Chi-D1]"]
["cazy|ARV07990.1 glycosidase [Polaribacter sp. SA4-10]", "humangutMH0302_GL0042500 [gene] locus=scaffold44658_4:10707:11720:+ [Complete] codon-table.11", "humangutNLM023_GL0107797 [gene] locus=scaffold7778_4:8646:9659:+ [Complete] codon-table.11", "mouseGroup2-5A_GL0019481 [gene] locus=scaffold8542_25:2043:3056:- [Complete] codon-table.11"]
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C6

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["cazy|AYB44207.1 glycosidase [Paenibacillus lautus]", "cazygi|806911723|emb|CQR54331.1| glycosidase PH1107-like protein [Paenibacillus riograndensis SBR5]", "cazygi|261283676|gb|ACX65647.1| glycosidase PH1107-related protein [Paenibacillus sp. Y412MC10]"]
["cazy|SDR97174.1 beta-1","4-mannooligosaccharide/beta-1","4-mannosyl-N-acetylglucosamine phosphorylase [Microlunatus soli]"]
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["humangut159551223-stool1_revised_scaffold43769_1_gene35004 strand:- start:2 stop:508 length:507 start_codon:yes stop_codon:no gene_type:incomplete [Lack 3'-end] codon-table.11"]
["humangut159571453-stool2_revised_C1054305_1_gene27241 strand:+ start:3 stop:392 length:390 start_codon:no stop_codon:yes gene_type:incomplete [Lack 5'-end] codon-table.11"]
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["humangut763860675-stool1_revised_scaffold25687_1_gene80256 strand:- start:3158 stop:4159 length:1002 start_codon:yes stop_codon:yes gene_type:complete [Complete] codon-table.11"]
["humangutMH0063_GL0054584 [gene] locus=scaffold27192_5:1012:2076:+ [Complete] codon-table.11"]
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["humangutMH0262_GL0124216 [gene] locus=scaffold29483_4:518:1501:+ [Complete] codon-table.11", "pigBHZ-10B_GL0265814 [gene] locus=scaffold53263_4:624:1607:- [Complete] codon-table.11", "rumen100058_GL1687178_1 [gene] locus=scaffold1731614_5:2129:3112:+[Complete]", "rumen100058_GL2709543_1 [gene] locus=scaffold1462025_2:340:1323:-[Complete]", "rumen100058_GL2832159_1 [gene] locus=scaffold1857139_1:412:1395:+[Complete]", "rumen7049_GL2266359_1 [gene] locus=scaffold1768654_1:359:1342:+[Complete]"]
["humangutMH0280_GL0194891 [gene] locus=scaffold22230_3:105:1103:+ [Complete] codon-table.11", "humangut158802708-stool2_revised_C1062115_1_gene170068 strand:+ start:241 stop:1239 length:999 start_codon:yes stop_codon:yes gene_type:complete [Complete] codon-table.11", "pigPIG-011_GL0096946 [gene] locus=scaffold34023_2:73773:74771:+ [Complete] codon-table.11"]
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["humangutMH0389_GL0081058 [gene] locus=scaffold47280_7:3:599:+ [Lack 5'-end] codon-table.11"]
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["humangutMH0415_GL0208058 [gene] locus=scaffold113323_4:1038:1616:+ [Lack 3'-end] codon-table.11"]
["humangutMH0426_GL0152356 [gene] locus=scaffold70372_3:1641:2387:- [Lack 5'-end] codon-table.11"]
["humangutMH0431_GL0150624 [gene] locus=scaffold48508_1:162:1193:- [Complete] codon-table.11"]
["humangutMH0454_GL0218883 [gene] locus=scaffold32134_2:3:905:- [Lack 3'-end] codon-table.11"]
["humangutO2.UC18-0_GL0002941 [gene] locus=scaffold24479_5:1130:2125:- [Complete] codon-table.11"]
["humangutO2.UC40-1_GL0043667 [gene] locus=scaffold113353_5:526:1038:- [Lack 5'-end] codon-table.11"]
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["humangutO2.UC58-0_GL0154017 [gene] locus=scaffold92913_2:3:416:- [Lack 3'-end] codon-table.11"]
["humangutT2D-51A_GL0099954 [gene] locus=scaffold9328_6:1:771:+ [Lack 5'-end] codon-table.11"]
["humangutV1.FI14_GL0166326 [gene] locus=scaffold97924_1:2254:3243:+ [Complete] codon-table.11"]
["humangutV1.FI14_GL0201044 [gene] locus=scaffold65910_3:536:1390:+ [Lack 3'-end] codon-table.11"]
["humangutV1.FI17_GL0038393 [gene] locus=scaffold56763_3:349:1350:- [Complete] codon-table.11"]
["humangutV1.UC14-1_GL0099520 [gene] locus=scaffold18051_3:9664:10695:+ [Complete] codon-table.11"]
["humangutV1.UC52-0_GL0119016 [gene] locus=scaffold45779_2:3:503:- [Lack both ends] codon-table.11"]
["mouse29_GL0012345 [gene] locus=scaffold12062_11:1021:2025:- [Complete] codon-table.11"]
["pigBHZ-7B_GL0080054 [gene] locus=scaffold142141_1:1:720:+ [Lack 5'-end] codon-table.11"]
["pigBMZ-17B_GL0166977 [gene] locus=scaffold88433_2:1:525:+ [Lack 5'-end] codon-table.11"]
["pigDB-512B_GL0166967 [gene] locus=scaffold65887_2:3:632:+ [Lack both ends] codon-table.11"]
["pigEYZ-120B_GL0131454 [gene] locus=scaffold14870_3:1:462:+ [Lack 5'-end] codon-table.11"]
["pigPIG-004_GL0134140 [gene] locus=scaffold53576_2:1903:2481:+ [Lack 3'-end] codon-table.11"]
["pigPIG-008_GL0185116 [gene] locus=scaffold9783_10:4216:5184:+ [Complete] codon-table.11"]
["pigPIG-012_GL0060903 [gene] locus=scaffold150081_3:1065:1895:+ [Lack 3'-end] codon-table.11"]
["pigPIG-014_GL0106503 [gene] locus=scaffold105721_2:220:1296:+ [Complete] codon-table.11"]
["pigPIG-026_GL0093671 [gene] locus=scaffold175883_1:10384:11400:+ [Complete] codon-table.11"]
["pigPIG-027_GL0244087 [gene] locus=scaffold114785_1:1:678:- [Lack 3'-end] codon-table.11"]
["pigPIG-031_GL0171674 [gene] locus=scaffold97864_2:29:1135:- [Lack 5'-end] codon-table.11"]

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["pigPIG-091_GL0066511 [gene] locus=scaffold155169_1:5965:6960:+ [Complete] codon-table.11"]
["pigPIG_123_GL0179481 [gene] locus=scaffold109245_2:3:665:+ [Lack both ends] codon-table.11"]
["pigSYZ-426B_GL0182759 [gene] locus=scaffold167211_1:3:542:+ [Lack both ends] codon-table.11"]
["pigSYZ-441B_GL0127622 [gene] locus=scaffold100124_1:2:562:+ [Lack both ends] codon-table.11"]
["pigZXZ-3B_GL0023913 [gene] locus=scaffold94759_2:1:606:- [Lack 3'-end] codon-table.11"]
["pigZXZ-8B_GL0155172 [gene] locus=scaffold121846_4:3:635:- [Lack both ends] codon-table.11"]
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["rumen0081_GL0914779_1 [gene] locus=scaffold559002_3:2076:3092:-[Complete]"]
["rumen0081_GL1763932_1 [gene] locus=scaffold843398_10:1498:2511:+[Complete]"]
["rumen0081_GL1968913_1 [gene] locus=scaffold1870805_1:2933:4003:-[Complete]"]
["rumen0081_GL2018936_1 [gene] locus=scaffold443506_2:1:972:+[Lack 5'-end]"]
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["rumen100058_GL0752386_1 [gene] locus=scaffold2669260_1:3:608:+[Lack 5'-end]"]
["rumen100058_GL0795452_1 [gene] locus=scaffold940039_6:3:542:-[Lack both ends]"]
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["rumen100058_GL2876265_1 [gene] locus=scaffold935118_1:350:1336:-[Complete]", "rumen7049_GL1880481_1 [gene] locus=scaffold937463_1:1098:2084:+[Complete]", "rumen7049_GL2581625_1 [gene] locus=scaffold742976_2:1011:1997:-[Complete]"]
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UC2

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["cazygi|395811041|gb|AFN73790.1| Glycosidase [Melioribacter roseus P3M-2]"]
["cazygi|409171345|gb|AFV25220.1| hypothetical protein Mpsy_3021 [Methanolobus psychrophilus R15]"]
["cazygi|409171348|gb|AFV25223.1| hypothetical protein Mpsy_3024 [Methanolobus psychrophilus R15]"]
["cazygi|488451852|gb|AGK98554.1| putative glycosylase [Clostridium pasteurianum BC1]"]
["cazygi|573473034|gb|AHF90045.1| glycosidase [Opitutaceae bacterium TAV5]"]
["cazygi|673066667|emb|CDZ24022.1| glycosidase-like protein [[Clostridium] cellulosi]"]
["cazygi|763683253|gb|AJQ25503.1| glycosidase related protein [Pelosinus fermentans JBW45]"]
["cazygi|805336947|gb|AKB18229.1| hypothetical protein MSWHS_1366 [Methanosarcina sp. WWM596]"]
["cazygi|805340529|gb|AKB21554.1| hypothetical protein MSWH1_1283 [Methanosarcina sp. WH1]", "cazygi|19916827|gb|AAM06213.1| conserved hypothetical protein [Methanosarcina acetivorans C2A]"]
["cazygi|805352552|gb|AKB32867.1| hypothetical protein MSSIH_2177 [Methanosarcina siciliae HI350]"]
["cazygi|805356935|gb|AKB37006.1| hypothetical protein MSSAC_2416 [Methanosarcina siciliae C2J]", "cazygi|805352369|gb|AKB32684.1| hypothetical protein MSSIH_1994 [Methanosarcina siciliae HI350]", "cazygi|805348346|gb|AKB28968.1| hypothetical protein MSSIT_2249 [Methanosarcina siciliae T4/M]", "cazygi|805348139|gb|AKB28761.1| hypothetical protein MSSIT_2042 [Methanosarcina siciliae T4/M]", "cazygi|19916327|gb|AAM05768.1| conserved hypothetical protein [Methanosarcina acetivorans C2A]"]
["cazygi|805357115|gb|AKB37186.1| hypothetical protein MSSAC_2596 [Methanosarcina siciliae C2J]"]
["cazygi|805358024|gb|AKB38095.1| hypothetical protein MSSAC_3505 [Methanosarcina siciliae C2J]", "cazygi|805333708|gb|AKB15341.1| hypothetical protein MSTHC_1023 [Methanosarcina thermophila CHTI-55]", "cazygi|805332062|gb|AKB14015.1| hypothetical protein MSTHT_2257 [Methanosarcina thermophila TM-1]"]
["cazygi|805377250|gb|AKB73322.1| hypothetical protein MSLAZ_0061 [Methanosarcina lacustris Z-7289]"]
["cazygi|805378839|gb|AKB74911.1| hypothetical protein MSLAZ_1650 [Methanosarcina lacustris Z-7289]", "cazygi|805340853|gb|AKB21878.1| hypothetical protein MSWH1_1607 [Methanosarcina sp. WH1]", "cazygi|805337275|gb|AKB18557.1| hypothetical protein MSWHS_1694 [Methanosarcina sp. WWM596]", "cazygi|805385618|gb|AKB81199.1| hypothetical protein MSBR3_0621 [Methanosarcina barkeri 3]"]
["cazygi|805382850|gb|AKB78727.1| hypothetical protein MSHOH_2244 [Methanosarcina horonobensis HB-1 = JCM 15518]"]
["cazygi|805383064|gb|AKB78941.1| hypothetical protein MSHOH_2458 [Methanosarcina horonobensis HB-1 = JCM 15518]"]
["cazygi|805383132|gb|AKB79009.1| hypothetical protein MSHOH_2526 [Methanosarcina horonobensis HB-1 = JCM 15518]"]
["cazygi|805383620|gb|AKB79497.1| hypothetical protein MSHOH_3014 [Methanosarcina horonobensis HB-1 = JCM 15518]"]
["cazygi|805386140|gb|AKB81721.1| hypothetical protein MSBR3_1143 [Methanosarcina barkeri 3]"]

["cazygi|805395560|gb|AKB46392.1| hypothetical protein MSKOL_0615 [Methanosarcina sp. Kolksee]", "cazygi|805330281|gb|AKB12234.1| hypothetical protein MSTHT_0476 [Methanosarcina thermophila TM-1]", "cazygi|805391804|gb|AKB42902.1| hypothetical protein MSVAZ_0633 [Methanosarcina vacuolata Z-761]"]
["cazygi|827039147|gb|AKJ63706.1| putative glycoside hydrolase [Verrucomicrobia bacterium L21-Fru-AB]"]
["cazygi|827397648|gb|AKJ37809.1| glycoside hydrolase GH130 family [Methanosarcina barkeri CM1]", "cazygi|805404860|gb|AKB54666.1| hypothetical protein MSBRM_1668 [Methanosarcina barkeri MS]", "cazygi|805400966|gb|AKB51486.1| hypothetical protein MSBRW_2233 [Methanosarcina barkeri str. Wiesmoor]", "cazygi|805382254|gb|AKB78131.1| hypothetical protein MSHOH_1648 [Methanosarcina horonobensis HB-1 = JCM 15518]", "cazygi|805374689|gb|AKB71059.1| hypothetical protein MSMAC_1169 [Methanosarcina mazei C16]", "cazygi|805374875|gb|AKB71245.1| hypothetical protein MSMAC_1355 [Methanosarcina mazei C16]", "cazygi|20907400|gb|AAM32467.1| conserved protein [Methanosarcina mazei Go1]", "cazygi|805371788|gb|AKB68522.1| hypothetical protein MSMAL_1979 [Methanosarcina mazei LYC]", "cazygi|805371248|gb|AKB67982.1| hypothetical protein MSMAL_1439 [Methanosarcina mazei LYC]", "cazygi|805368039|gb|AKB65151.1| hypothetical protein MSMAS_1955 [Methanosarcina mazei S-6]", "cazygi|805364558|gb|AKB61832.1| hypothetical protein MSMAP_1847 [Methanosarcina mazei SarPi]", "cazygi|452101160|gb|AGF98100.1| hypothetical protein MmTuc01_2818 [Methanosarcina mazei Tuc01]", "cazygi|805361070|gb|AKB40859.1| hypothetical protein MSMAW_1868 [Methanosarcina mazei WWM610]", "cazygi|805396668|gb|AKB47500.1| hypothetical protein MSKOL_1723 [Methanosarcina sp. Kolksee]", "cazygi|805392925|gb|AKB44023.1| hypothetical protein MSVAZ_1754 [Methanosarcina vacuolata Z-761]", "cazygi|805408088|gb|AKB57251.1| hypothetical protein MSBR2_0735 [Methanosarcina barkeri 227]"]
["cazygi|85722651|gb|ABC77594.1| hypothetical cytosolic protein [Syntrophus aciditrophicus SB]"]
["cazygi|921146216|dbj|BAS29302.1| glycosidase [Limnochorda pilosa]"]
["cazygi|973198458|gb|ALX07675.1| glycosidase related protein [Ruminiclostridium thermocellum AD2]", "cazygi|125715815|gb|ABN54307.1| glycosidase related protein [Ruminiclostridium thermocellum ATCC 27405]", "cazygi|316939711|gb|ADU73745.1| glycosidase related protein [Ruminiclostridium thermocellum DSM 1313]", "cazygi|1046311829|gb|ANV75417.1| glycosidase related protein [Ruminiclostridium thermocellum DSM 2360]"]
["cazy|AOP33799.1 glycosidase [Leptospira alstonii]"]
["cazy|APF17755.1 putative glycosyl hydrolase"," GH43/DUF377 family [Caldithrix abyssi DSM 13497]"]
["cazy|APF19181.1 putative glycosyl hydrolase"," GH43/DUF377 family [Caldithrix abyssi DSM 13497]"]
["cazy|APZ94252.1 Beta-1","4-mannooligosaccharide phosphorylase [Fuerstia marisgermanicae]"]
["cazy|AQQ69851.1 Beta-1","4-mannooligosaccharide phosphorylase [Phycisphaerae bacterium SM-Chi-D1]"]
["cazy|AQQ75139.1 hypothetical protein [uncultured bacterium]"]
["cazy|AQT67267.1 Beta-1","4-mannooligosaccharide phosphorylase [Phycisphaerae bacterium ST-NAGAB-D1]"]
["cazy|AQT69233.1 Beta-1","4-mannooligosaccharide phosphorylase [Phycisphaerae bacterium ST-NAGAB-D1]"]
["cazy|ARU40590.1 glycosidase [Armatimonadetes bacterium Uphvl-Ar1]"]
["cazy|AVM45738.1 glycosidase [Victivallales bacterium CCUG 44730]", "humangut340101.Vvad_PD1643 [Complete]:-   codon-table.11"]
["cazy|AVM46485.1 glycosidase [Victivallales bacterium CCUG 44730]"]
["cazy|AWB09627.1 putative glycosyl hydrolase"," GH43/DUF377 family [Thermodesulfobium acidiphilum]", "cazygi|332178210|gb|AEE13899.1| glycosidase related protein [Thermodesulfobium narugense DSM 14796]"]
["cazy|AWB09634.1 putative glycosyl hydrolase"," GH43/DUF377 family [Thermodesulfobium acidiphilum]", "cazygi|332178216|gb|AEE13905.1| glycosidase related protein [Thermodesulfobium narugense DSM 14796]"]
["cazy|AXC09803.1 putative glycoside hydrolase [Acidobacteriaceae bacterium SBC82]"]

["cazy|AYK13833.1 glycosidase [Methanosarcina flavescens]", "cazy|BAW29818.1 conserved hypothetical protein [Methanosarcina thermophila]", "cazygi|827397862|gb|AKJ38023.1| glycoside hydrolase GH130 family [Methanosarcina barkeri CM1]", "cazygi|805404638|gb|AKB54444.1| hypothetical protein MSBRM_1446 [Methanosarcina barkeri MS]", "cazygi|72397404|gb|AAZ71677.1| conserved hypothetical protein [Methanosarcina barkeri str. Fusaro]", "cazygi|805400684|gb|AKB51204.1| hypothetical protein MSBRW_1951 [Methanosarcina barkeri str. Wiesmoor]", "cazygi|940663404|gb|ALK06238.1| glycosidase [Methanosarcina sp. 795]", "cazygi|805396749|gb|AKB47581.1| hypothetical protein MSKOL_1804 [Methanosarcina sp. Kolksee]", "cazygi|805332992|gb|AKB14625.1| hypothetical protein MSTHC_0307 [Methanosarcina thermophila CHTI-55]", "cazygi|805330219|gb|AKB12172.1| hypothetical protein MSTHT_0414 [Methanosarcina thermophila TM-1]", "cazygi|805392998|gb|AKB44096.1| hypothetical protein MSVAZ_1827 [Methanosarcina vacuolata Z-761]", "cazygi|805408310|gb|AKB57473.1| hypothetical protein MSBR2_0957 [Methanosarcina barkeri 227]"]
["cazy|AYK14555.1 glycosidase [Methanosarcina flavescens]"]
["cazy|AYK15987.1 glycosidase [Methanosarcina flavescens]", "cazy|BAW29922.1 conserved hypothetical protein [Methanosarcina thermophila]", "cazygi|805385660|gb|AKB81241.1| hypothetical protein MSBR3_0663 [Methanosarcina barkeri 3]", "cazygi|827397595|gb|AKJ37756.1| glycoside hydrolase GH130 family [Methanosarcina barkeri CM1]", "cazygi|805404919|gb|AKB54725.1| hypothetical protein MSBRM_1727 [Methanosarcina barkeri MS]", "cazygi|72397752|gb|AAZ72025.1| conserved hypothetical protein [Methanosarcina barkeri str. Fusaro]", "cazygi|805400332|gb|AKB50852.1| hypothetical protein MSBRW_1599 [Methanosarcina barkeri str. Wiesmoor]", "cazygi|940663319|gb|ALK06153.1| glycosidase [Methanosarcina sp. 795]", "cazygi|805396382|gb|AKB47214.1| hypothetical protein MSKOL_1437 [Methanosarcina sp. Kolksee]", "cazygi|805332930|gb|AKB14563.1| hypothetical protein MSTHC_0245 [Methanosarcina thermophila CHTI-55]", "cazygi|805392665|gb|AKB43763.1| hypothetical protein MSVAZ_1494 [Methanosarcina vacuolata Z-761]", "cazygi|805408031|gb|AKB57194.1| hypothetical protein MSBR2_0678 [Methanosarcina barkeri 227]"]
["cazy|BAW29060.1 conserved hypothetical protein [Methanosarcina thermophila]"]
["cazy|SCD20033.1 Glycosyl hydrolase family 43 [Proteiniphilum saccharofermentans]", "cazygi|50877343|emb|CAG37183.1| conserved hypothetical protein [Desulfotalea psychrophila LSv54]"]
["cazy|SDE97465.1 Predicted glycosyl hydrolase"," GH43/DUF377 family [Terriglobus roseus]"]
["humangut158499257-stool2_revised_scaffold72074_1_gene141523 strand:+ start:690 stop:1607 length:918 start_codon:yes stop_codon:yes gene_type:complete [Complete] codon-table.11"]
["humangut159571453-stool2_revised_C1123888_1_gene199483 strand:+ start:362 stop:928 length:567 start_codon:yes stop_codon:no gene_type:incomplete [Lack 3'-end] codon-table.11"]
["humangut160400887-stool1_revised_C1477000_1_gene247217 strand:- start:446 stop:1270 length:825 start_codon:no stop_codon:yes gene_type:incomplete [Lack 5'-end] codon-table.11"]
["humangut340101.Vvad_PD1241 [Complete]:- codon-table.11"]
["humangut340101.Vvad_PD2400 [Complete]:- codon-table.11"]
["humangut764062976-stool1_revised_scaffold23685_2_gene105148 strand:+ start:4207 stop:5172 length:966 start_codon:yes stop_codon:yes gene_type:complete [Complete] codon-table.11"]
["humangut764062976-stool1_revised_scaffold27403_3_gene37791 strand:- start:76 stop:1032 length:957 start_codon:yes stop_codon:yes gene_type:complete [Complete] codon-table.11"]
["humangutMH0169_GL0139631 [gene] locus=scaffold64081_2:2:439:+ [Lack 5'-end] codon-table.11"]
["humangutMH0193_GL0131665 [gene] locus=scaffold32408_2:358:924:+ [Lack 3'-end] codon-table.11"]
["humangutMH0262_GL0072459 [gene] locus=scaffold88337_1:263:739:+ [Lack 3'-end] codon-table.11"]

["humangutMH0309_GL0085017 [gene] locus=scaffold22344_10:439:1359:- [Complete] codon-table.11"]
["humangutMH0354_GL0034140 [gene] locus=scaffold11732_2:2405:3403:+ [Complete] codon-table.11", "pigEYZ-353B_GL0113613 [gene] locus=scaffold101503_1:566:1564:+ [Complete] codon-table.11", "rumen552_GL0643663_1 [gene] locus=scaffold1113893_1:2767:3765:-[Complete]"]
["humangutMH0373_GL0093988 [gene] locus=scaffold47371_4:64:1038:- [Complete] codon-table.11", "humangut764062976-stool1_revised_scaffold9809_2_gene2100 strand:- start:3175 stop:4149 length:975 start_codon:yes stop_codon:yes gene_type:complete [Complete] codon-table.11"]
["humangutMH0406_GL0074073 [gene] locus=scaffold65977_5:374:904:+ [Lack 3'-end] codon-table.11"]
["humangutMH0409_GL0192637 [gene] locus=scaffold117421_1:1:468:- [Lack 3'-end] codon-table.11"]
["humangutMH0428_GL0177607 [gene] locus=scaffold57726_11:1695:2264:- [Lack 5'-end] codon-table.11"]
["humangutO2.UC40-1_GL0040994 [gene] locus=scaffold18544_1:2:892:+ [Lack 5'-end] codon-table.11"]
["humangutO2.UC58-0_GL0161340 [gene] locus=scaffold17208_5:228:1049:- [Lack 5'-end] codon-table.11"]
["humangutT2D-51A_GL0093383 [gene] locus=scaffold93772_1:2:556:- [Lack both ends] codon-table.11"]
["humangutV1.CD15-3_GL0040164 [gene] locus=scaffold49695_3:2:484:+ [Lack 5'-end] codon-table.11"]
["humangutV1.FI04_GL0203609 [gene] locus=scaffold17882_4:1:831:- [Lack 3'-end] codon-table.11"]
["humangutV1.FI14_GL0222358 [gene] locus=scaffold137474_3:3308:4282:- [Complete] codon-table.11", "cazygi|281315545|gb|EFA99573.1| glycosidase PH1107-related protein [Victivallis vadensis ATCC BAA-548]"]
["pigDB-515B_GL0232700 [gene] locus=scaffold150890_7:564:1295:- [Lack 5'-end] codon-table.11"]
["pigPIG-109_GL0047844 [gene] locus=C1990877_1:1:483:- [Lack 3'-end] codon-table.11"]
["rumen100058_GL0983401_1 [gene] locus=scaffold3190690_1:24:965:+[Complete]"]
["rumen3042_GL0702297_1 [gene] locus=scaffold35316_6:241:1191:-[Complete]"]
["rumen3042_GL0999342_1 [gene] locus=scaffold80553_1:1918:2763:+[Lack 3'-end]"]
["rumen553_GL0472450_1 [gene] locus=scaffold411084_3:1515:2471:+[Complete]"]
["rumen554_GL0240044_1 [gene] locus=scaffold1516873_2:6503:7441:+[Complete]"]
["rumen7049_GL0107992_1 [gene] locus=scaffold2024283_2:43:975:+[Complete]"]

UC4

["humangut158256496-stool1_revised_scaffold18980_2_gene38785 strand:+ start:341 stop:1132 length:792 start_codon:yes stop_codon:yes gene_type:complete [Complete] codon-table.11"]
["humangut764487809-stool1_revised_scaffold4689_2_gene42041 strand:+ start:6929 stop:7918 length:990 start_codon:yes stop_codon:yes gene_type:complete [Complete] codon-table.11", "rumen553_GL0826154_1 [gene] locus=scaffold435537_1:3775:4764:-[Complete]"]
["humangutDLF004_GL0016933 [gene] locus=scaffold19599_3:8945:9850:+ [Complete] codon-table.11"]
["humangutDLM008_GL0061961 [gene] locus=scaffold44391_5:188:1057:- [Lack 5'-end] codon-table.11"]
["humangutED50A_GL0000867 [gene] locus=scaffold25008_1:46810:47682:- [Complete] codon-table.11"]
["humangutMH0011_GL0029022 [gene] locus=scaffold7568_3:2672:3619:- [Complete] codon-table.11"]
["humangutMH0096_GL0061141 [gene] locus=scaffold22077_6:4857:5867:- [Complete] codon-table.11"]
["humangutMH0101_GL0067829 [gene] locus=scaffold4763_8:26:1069:- [Complete] codon-table.11"]
["humangutMH0138_GL0002739 [gene] locus=scaffold19519_1:3272:4231:+ [Complete] codon-table.11"]
["humangutMH0189_GL0091319 [gene] locus=scaffold110197_1:1:651:- [Lack 3'-end] codon-table.11"]
["humangutMH0229_GL0107614 [gene] locus=scaffold25401_13:56:1099:+ [Complete] codon-table.11"]
["humangutMH0233_GL0013042 [gene] locus=scaffold9523_29:3585:4604:+ [Complete] codon-table.11"]
["humangutMH0233_GL0013043 [gene] locus=scaffold9523_29:4595:5641:+ [Complete] codon-table.11",

"humangutMH0372_GL0056056 [gene] locus=scaffold81346_1:7107:8153:+ [Complete] codon-table.11"]
["humangutMH0233_GL0013044 [gene] locus=scaffold9523_29:5665:6690:+ [Complete] codon-table.11"]
["humangutMH0238_GL0120931 [gene] locus=scaffold18048_4:1:933:- [Lack 3'-end] codon-table.11"]
["humangutMH0276_GL0165020 [gene] locus=scaffold116114_1:580:1617:- [Complete] codon-table.11"]
["humangutMH0297_GL0042092 [gene] locus=scaffold24105_11:560:1507:- [Complete] codon-table.11"]
["humangutMH0326_GL0077808 [gene] locus=scaffold34917_6:2:562:+ [Lack 5'-end] codon-table.11"]
["humangutMH0432_GL0017216 [gene] locus=scaffold74274_2:677:1486:- [Complete] codon-table.11"]
["humangutMH0435_GL0128647 [gene] locus=scaffold48848_1:16702:17736:- [Complete] codon-table.11"]
["humangutMH0441_GL0072164 [gene] locus=scaffold106162_2:2:508:+ [Lack 5'-end] codon-table.11"]
["humangutMH0454_GL0224663 [gene] locus=scaffold167705_1:236:1120:- [Complete] codon-table.11"]
["humangutN037A_GL0076705 [gene] locus=scaffold96827_1:5901:6863:+ [Complete] codon-table.11"]
["humangutO2.UC12-2_GL0019987 [gene] locus=scaffold36507_5:3:1058:+ [Lack 5'-end] codon-table.11"]
["humangutO2.UC18-1_GL0145511 [gene] locus=scaffold115526_2:805:1779:- [Complete] codon-table.11"]
["humangutT2D-2A_GL0003884 [gene] locus=scaffold30816_1:16212:17159:+ [Complete] codon-table.11"]
["humangutT2D-52A_GL0026708 [gene] locus=scaffold15908_6:203:1180:- [Complete] codon-table.11"]
["humangutV1.CD6-0-PT_GL0147720 [gene] locus=scaffold69971_1:1:807:- [Lack 3'-end] codon-table.11"]
["humangutV1.FI02_GL0025090 [gene] locus=scaffold94077_2:2:880:- [Lack 3'-end] codon-table.11"]
["humangutV1.FI14_GL0038492 [gene] locus=scaffold50057_15:4786:5721:- [Complete] codon-table.11"]
["mouse10_GL0091524 [gene] locus=C802032_1:5542:6492:+ [Complete] codon-table.11"]
["mouse3-3_GL0099932 [gene] locus=scaffold6365_18:4177:5181:- [Complete] codon-table.11"]
["pigPIG-011_GL0184940 [gene] locus=scaffold11862_1:595:1548:+ [Complete] codon-table.11", "pigPIG-039_GL0245309 [gene] locus=scaffold203270_1:210:1163:- [Complete] codon-table.11"]
["pigPIG-017_GL0015599 [gene] locus=scaffold31147_1:1:624:- [Lack both ends] codon-table.11"]
["pigPIG-099_GL0057693 [gene] locus=scaffold18816_2:414:1427:- [Complete] codon-table.11"]
["pigPIG_197_GL0235305 [gene] locus=scaffold185672_1:2:748:+ [Lack 5'-end] codon-table.11"]
["rumen0081_GL0027620_1 [gene] locus=scaffold536563_4:510:2939:-[Complete]"]
["rumen0081_GL1034664_1 [gene] locus=scaffold1911713_1:79:1101:-[Complete]"]
["rumen0081_GL1803283_1 [gene] locus=scaffold257285_1:3:1214:-[Lack both ends]"]
["rumen0081_GL2504083_1 [gene] locus=scaffold96095_1:1488:2501:-[Complete]"]
["rumen100058_GL0373208_1 [gene] locus=scaffold2313431_1:2:523:-[Lack both ends]"]
["rumen100058_GL1078658_1 [gene] locus=scaffold177350_4:1:927:+[Lack 5'-end]"]
["rumen100058_GL1435802_1 [gene] locus=scaffold1536970_3:2:619:+[Lack both ends]"]
["rumen100058_GL1531659_1 [gene] locus=scaffold1737296_1:1703:2590:-[Complete]"]
["rumen100058_GL2234764_1 [gene] locus=scaffold2839642_2:5632:6543:+[Complete]"]
["rumen100058_GL2690309_1 [gene] locus=scaffold247893_2:798:1784:-[Complete]"]
["rumen100058_GL3224210_1 [gene] locus=scaffold1847454_2:2:1045:+[Lack 5'-end]"]
["rumen2009040_GL0393904_1 [gene] locus=scaffold1386324_1:2515:3567:+[Complete]"]
["rumen2009040_GL0435555_1 [gene] locus=scaffold22983_2:27115:28026:-[Complete]"]
["rumen2009040_GL0597183_1 [gene] locus=scaffold1642628_1:108:1010:+[Complete]", "rumen7049_GL0623453_1 [gene] locus=scaffold46047_2:3:905:+[Lack 5'-end]"]
["rumen2009040_GL0734912_1 [gene] locus=scaffold3035117_1:3:830:-[Lack both ends]"]
["rumen2009040_GL1002494_1 [gene] locus=scaffold2437775_1:2:2122:-[Lack both ends]"]
["rumen2009040_GL2571825_1 [gene] locus=scaffold768466_11:487:1413:-[Complete]"]

["rumen2009040_GL3531709_1 [gene] locus=scaffold1886671_1:2142:2930:-[Complete]"]
["rumen3042_GL0041832_1 [gene] locus=scaffold1574742_2:1:1044:+[Lack 5'-end]"]
["rumen3042_GL0756330_1 [gene] locus=scaffold1795046_1:808:1719:-[Lack 5'-end]"]
["rumen3042_GL1432874_1 [gene] locus=scaffold2032861_1:2:634:+[Lack 5'-end]"]
["rumen3042_GL1702200_1 [gene] locus=C52378453_1:3:986:-[Lack 3'-end]"]
["rumen552_GL0306419_1 [gene] locus=scaffold372819_1:11160:12134:+[Complete]"]
["rumen552_GL0725128_1 [gene] locus=scaffold25472_4:71:943:+[Lack 3'-end]"]
["rumen552_GL0980381_1 [gene] locus=scaffold844410_1:8463:9398:-[Complete]"]
["rumen552_GL1270477_1 [gene] locus=C21838829_1:1:843:+[Lack both ends]"]
["rumen552_GL1612692_1 [gene] locus=scaffold222006_1:5081:6076:-[Complete]"]
["rumen553_GL0125182_1 [gene] locus=scaffold31694_2:2:787:-[Lack both ends]"]
["rumen553_GL0195818_1 [gene] locus=scaffold297294_2:52:1029:-[Complete]"]
["rumen553_GL0432390_1 [gene] locus=scaffold311754_6:810:1688:-[Complete]"]
["rumen554_GL0058843_1 [gene] locus=scaffold2186748_1:1:1608:-[Lack 3'-end]"]
["rumen554_GL0242537_1 [gene] locus=C39321293_1:1:537:+[Lack both ends]"]
["rumen554_GL0767578_1 [gene] locus=scaffold692326_7:242:1228:+[Complete]"]
["rumen554_GL1013538_1 [gene] locus=scaffold867912_4:1:882:-[Lack 3'-end]"]
["rumen554_GL1726577_1 [gene] locus=scaffold343966_3:1:531:-[Lack both ends]"]
["rumen554_GL2509294_1 [gene] locus=scaffold1971782_2:3:932:-[Lack 3'-end]"]
["rumen555_GL0472243_1 [gene] locus=scaffold232364_3:1509:3149:+[Lack 3'-end]"]
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["rumen555_GL1941667_1 [gene] locus=scaffold624502_1:1:930:-[Lack 3'-end]"]
["rumen555_GL2055061_1 [gene] locus=scaffold426608_1:3:542:-[Lack both ends]"]
["rumen555_GL2075599_1 [gene] locus=scaffold1570648_1:3117:4145:-[Complete]"]
["rumen583_GL0511310_1 [gene] locus=scaffold35205_7:5214:6182:+[Complete]"]
["rumen7049_GL0076584_1 [gene] locus=C53231994_1:302:1351:-[Complete]"]
["rumen7049_GL0127006_1 [gene] locus=scaffold1138997_2:3:734:+[Lack both ends]"]
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["rumen7049_GL0871356_1 [gene] locus=scaffold12802_1:1:1062:-[Lack 3'-end]"]
["rumen7049_GL2287543_1 [gene] locus=scaffold459179_2:1:669:+[Lack both ends]"]
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UC5

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["cazygi|1008898328|gb|AMR29993.1| glycosidase [Mucilaginibacter sp. PAMC 26640]", "cazygi|1008898478|gb|AMR30143.1| glycosidase [Mucilaginibacter sp. PAMC 26640]"]
["cazygi|1042050605|gb|ANP72493.1| glycosidase [Cryobacterium arcticum]"]
["cazygi|116612543|gb|ABK05267.1| glycosidase", " PH1107-related protein [Arthrobacter sp. FB24]"]
["cazygi|283808896|gb|ADB30735.1| glycosidase PH1107-related protein [Kribbella flavida DSM 17836]"]

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<tr><td>["cazygi|430014651|gb|AGA26365.1| putative glycosylase [Singulisphaera acidiphila DSM 18658]"]</td></tr>
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<tr><td>["cazygi|927296265|gb|ALE07716.1| glycosidase [Arthrobacter sp. ERGS1:01]"]</td></tr>
<tr><td>["cazygi|941977275|gb|ALL08704.1| glycosidase [Pedobacter sp. PACM 27299]"]</td></tr>
<tr><td>["cazygi|971341525|gb|ALV41709.1| glycosidase [Pseudarthrobacter sulfonivorans]"]</td></tr>
<tr><td>["cazy|AQP47186.1 glycosidase [Tessaracoccus aquimaris]"]</td></tr>
<tr><td>["cazy|AQU71430.1 glycosidase [Streptomyces niveus]"]</td></tr>
<tr><td>["cazy|ARC55674.1 1","4-beta-mannosyl-N-acetylglucosamine phosphorylase [Frondihabitans sp. 762G35]",
"cazy|SDH28511.1 Predicted glycosyl hydrolase"," GH43/DUF377 family [Leifsonia sp. 197AMF]",
"cazy|SDJ09728.1 Predicted glycosyl hydrolase"," GH43/DUF377 family [Leifsonia sp. 466MF]",
"cazy|SDJ60848.1 Predicted glycosyl hydrolase"," GH43/DUF377 family [Leifsonia sp. 157MF]",
"cazy|SDN30974.1 Predicted glycosyl hydrolase"," GH43/DUF377 family [Leifsonia sp. 509MF]",
"cazy|SEM90328.1 Predicted glycosyl hydrolase"," GH43/DUF377 family [Leifsonia sp. 467MF]",
"cazy|SFM34653.1 Predicted glycosyl hydrolase"," GH43/DUF377 family [Leifsonia sp. 98AMF]",
"cazygi|1029984076|gb|ANF30333.1| glycosidase [Leifsonia xyli]"]</td></tr>
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"cazy|AWB90245.1 glycosidase [Salinibacterium sp. CGMCC 1.16371]",
"cazy|AXH34393.1 glycosidase [Humibacter sp. BT305]",
"cazy|SDH54002.1 Predicted glycosyl hydrolase"," GH43/DUF377 family [Microbacterium pygmaeum]"]</td></tr>
<tr><td>["cazy|ARU52422.1 glycosidase [Cellulosimicrobium cellulans]"]</td></tr>
<tr><td>["cazy|ASD21953.1 glycosidase [Cryobacterium sp. LW097]",
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<tr><td>["cazy|ATL88355.1 putative glycosidase [Streptomyces malaysiensis]",
"cazy|AUA08447.1 Beta-1","4-mannooligosaccharide phosphorylase [Streptomyces sp. M56]","cazygi|521355665|gb|AGP53982.1| hypothetical protein M271_11925 [Streptomyces rapamycinicus NRRL 5491]"<br>"cazygi|822597516|gb|AKH86411.1| glycosidase [Streptomyces sp. CNQ-509]"]</td></tr>
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"cazy|AVH60610.1 glycosidase [Streptomyces dengpaensis]",
"cazy|AWW41409.1 glycosidase [Streptomyces sp. ZFG47]",
"cazy|AWZ03955.1 glycosidase [Streptomyces sp. ICC4]",
"cazy|AWZ11467.1 glycosidase [Streptomyces sp. ICC1]"]</td></tr>
<tr><td>["cazy|AWB88056.1 glycosidase [Mycetocola sp. 449]"]</td></tr>
<tr><td>["cazy|SCF17406.1 Predicted glycosyl hydrolase"," GH43/DUF377 family [Micromonospora viridifaciens]"]</td></tr>
<tr><td>["cazy|SCY64477.1 Predicted glycosyl hydrolase"," GH43/DUF377 family [Microbacterium sp. LKL04]",
"cazygi|545576718|gb|AGW41830.1| glycosidase-related protein [Leifsonia xyli subsp. cynodontis DSM 46306]",
"cazygi|323273515|dbj|BAJ73660.1| predicted glycosylase [Microbacterium testaceum StLB037]"]</td></tr>
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["cazy|SDP38023.1 Predicted glycosyl hydrolase"," GH43/DUF377 family [Nakamurella panacisegetis]"]
["cazy|SDS31711.1 Predicted glycosyl hydrolase"," GH43/DUF377 family [Friedmanniella luteola]"]
["cazy|SDS49464.1 Predicted glycosyl hydrolase"," GH43/DUF377 family [Agromyces flavus]"]
["cazy|SDS60844.1 Predicted glycosyl hydrolase"," GH43/DUF377 family [Mucilaginibacter mallensis]"]
["cazy|SDT01232.1 Predicted glycosyl hydrolase"," GH43/DUF377 family [Actinopolymorpha singaporensis]"]
["cazy|SDU66583.1 Predicted glycosyl hydrolase"," GH43/DUF377 family [Jiangella alkaliphila]"]
["cazy|SDV02219.1 Predicted glycosyl hydrolase"," GH43/DUF377 family [Friedmanniella sagamiharensis]"]
["cazy|SEA91313.1 Predicted glycosyl hydrolase"," GH43/DUF377 family [Leifsonia sp. 21MFCrub1.1]"]

UC6

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["humangutMH0262_GL0139398 [gene] locus=scaffold85419_2:464:1021:- [Lack 5'-end] codon-table.11"]
["humangutMH0318_GL0049685 [gene] locus=scaffold118166_3:2:568:+ [Lack 5'-end] codon-table.11"]
["humangutMH0336_GL0012146 [gene] locus=scaffold109992_1:2:1000:- [Lack 3'-end] codon-table.11"]
["humangutMH0346_GL0101425 [gene] locus=scaffold14559_10:1:672:+ [Lack 5'-end] codon-table.11"]
["humangutMH0346_GL0103563 [gene] locus=C1364741_1:3:557:- [Lack both ends] codon-table.11"]
["humangutMH0409_GL0096961 [gene] locus=scaffold22078_3:531:1487:+ [Complete] codon-table.11"]
["humangutMH0409_GL0137711 [gene] locus=scaffold120846_1:2:1210:+ [Lack 5'-end] codon-table.11"]
["humangutMH0454_GL0227900 [gene] locus=scaffold62405_1:3:617:+ [Lack both ends] codon-table.11"]
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["humangutO2.UC40-1_GL0222073 [gene] locus=scaffold34346_1:2:622:+ [Lack both ends] codon-table.11"]
["humangutO2.UC47-1_GL0051376 [gene] locus=scaffold80731_1:3458:4300:- [Complete] codon-table.11"]
["humangutO2.UC52-0_GL0022652 [gene] locus=scaffold28367_2:644:1597:- [Complete] codon-table.11"]
["humangutO2.UC58-0_GL0126372 [gene] locus=scaffold45505_2:3:575:- [Lack both ends] codon-table.11"]
["humangutV1.FI14_GL0104269 [gene] locus=scaffold85970_10:338:1297:- [Complete] codon-table.11"]
["humangutV1.UC59-0_GL0148453 [gene] locus=scaffold69280_1:2:601:+ [Lack 5'-end] codon-table.11"]
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["rumen3042_GL1087710_1 [gene] locus=scaffold2375413_1:1:507:-[Lack both ends]"]
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["rumen3042_GL1910308_1 [gene] locus=scaffold2307581_1:1:609:-[Lack both ends]"]

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["rumen554_GL2903134_1 [gene] locus=scaffold597931_9:1172:1801:+[Lack 3'-end]"]
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UC7

["cazygi|378569207|gb|AFC29517.1| hypothetical protein PM3016_2635 [Paenibacillus mucilaginosus 3016]", "cazygi|384090260|gb|AFH61696.1| hypothetical protein B2K_13370 [Paenibacillus mucilaginosus K02]", "cazygi|336297832|gb|AEI40935.1| conserved hypothetical protein [Paenibacillus mucilaginosus KNP414]"]
["cazygi|573474722|gb|AHF91733.1| hypothetical protein OPIT5_17390 [Opitutaceae bacterium TAV5]"]
["cazygi|686517651|gb|AIQ28352.1| hypothetical protein P40081_09285 [Paenibacillus sp. FSL P4-0081]"]
["cazygi|686537905|gb|AIQ48603.1| hypothetical protein R70723_23855 [Paenibacillus sp. FSL R7-0273]", "cazygi|686543392|gb|AIQ54089.1| hypothetical protein R70331_22850 [Paenibacillus sp. FSL R7-0331]"]
["cazygi|686546435|gb|AIQ57131.1| hypothetical protein PBOR_09450 [Paenibacillus borealis]", "cazygi|686529384|gb|AIQ40083.1| hypothetical protein R50912_08590 [Paenibacillus sp. FSL R5-0912]"]
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["humangutMH0431_GL0078632 [gene] locus=scaffold30057_3:3:620:+ [Lack 5'-end] codon-table.11"]
["humangutO2.UC29-1_GL0090695 [gene] locus=scaffold46262_2:1:762:- [Lack 3'-end] codon-table.11"]
["humangutO2.UC41-0_GL0042946 [gene] locus=scaffold31328_15:3:1133:- [Lack 3'-end] codon-table.11"]
["mouseG1-8A_GL0038729 [gene] locus=scaffold17912_1:1303:2508:- [Complete] codon-table.11"]
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["pigPIG-046_GL0013240 [gene] locus=scaffold81578_4:125:1333:- [Complete] codon-table.11"]
["pigPIG-046_GL0176179 [gene] locus=scaffold14074_9:823:1977:+ [Complete] codon-table.11"]
["pigPIG-076_GL0179006 [gene] locus=scaffold125115_1:179:814:+ [Lack 3'-end] codon-table.11"]
["rumen0081_GL2147510_1 [gene] locus=scaffold1507797_2:605:1633:+[Lack 3'-end]"]
["rumen0081_GL2215322_1 [gene] locus=scaffold643617_3:2:916:+[Lack both ends]"]
["rumen3042_GL0867394_1 [gene] locus=scaffold1159051_2:399:1604:-[Complete]"]
["rumen3042_GL1213105_1 [gene] locus=scaffold828639_5:2:1075:-[Lack 3'-end]"]
["rumen3042_GL2237420_1 [gene] locus=scaffold311030_1:3:950:+[Lack 5'-end]"]
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UC8

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["cazygi|146156290|gb|ABQ07144.1| protein of unknown function [Flavobacterium johnsoniae UW101]"]
["cazygi|146156465|gb|ABQ07319.1| protein of unknown function [Flavobacterium johnsoniae UW101]"]
["cazygi|312444444|gb|ADQ80800.1| glycosidase related protein [Paludibacter propionicigenes WB4]"]
["cazygi|324972948|gb|ADY51932.1| glycosidase related protein [Pseudopedobacter saltans DSM 12145]"]
["cazygi|332336403|gb|AEE53504.1| glycosidase related protein [Haliscomenobacter hydrossis DSM 1100]"]
["cazygi|674273058|dbj|BAP32451.1| glycosidase [Chryseobacterium sp. StRB126]"]
["cazygi|941975621|gb|ALL07050.1| pesticidal protein Cry7Aa [Pedobacter sp. PACM 27299]", "cazygi|941974835|gb|ALL06264.1| pesticidal protein Cry7Aa [Pedobacter sp. PACM 27299]"]
["cazygi|998616991|dbj|BAU52924.1| Beta-1","4-mannooligosaccharide phosphorylase [Mucilaginibacter gotjawali]"]
["cazy|AQW94859.1 pesticidal protein Cry7Aa [Elizabethkingia anophelis]", "cazy|AQX07818.1 pesticidal protein Cry7Aa [Elizabethkingia ursingii]", "cazy|AQX83981.1 pesticidal protein Cry7Aa [Elizabethkingia bruuniana]", "cazy|ATL43456.1 pesticidal protein Cry7Aa [Elizabethkingia miricola]", "cazygi|769872902|gb|AJW65144.1| Beta-1","4-mannooligosaccharide phosphorylase [Elizabethkingia miricola]"]
["cazy|ARV12310.1 pesticidal protein Cry7Aa [Gilvibacter sp. SZ-19]"]
["cazy|ARV14799.1 pesticidal protein Cry7Aa [Polaribacter sp. SA4-12]"]
["cazy|ASS50864.1 pesticidal protein Cry7Aa [Candidatus Fluviicola riflensis]"]
["cazy|ASU33050.1 pesticidal protein Cry7Aa [Mucilaginibacter sp. BJC16-A31]"]
["cazy|AWA30851.1 pesticidal protein Cry7Aa [Flavobacterium sp. HYN0048]", "cazy|AWI26887.1 pesticidal protein Cry7Aa [Flavobacterium sp. HYN0049]"]
["cazy|AXE18829.1 pesticidal protein Cry7Aa [Runella sp. HYN0085]", "cazy|SHH93191.1 Probable glycosidase"," PH1107-related protein [Flavobacterium psychrophilum]"]
["cazy|SCD21651.1 Glycosyl hydrolase family 43 [Proteiniphilum saccharofermentans]"]
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UC9

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["cazygi|761899770|gb|AJP74139.1| glycosidase [Sphingomonas hengshuiensis]"]
["cazy|AOH86025.1 glycosidase [Sphingomonas panacis]", "cazy|ATY32282.1 glycosidase [Sphingomonas sp. Cra20]"]

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"cazygi|695171035|gb|AIT07125.1| glycosidase [Sphingomonas taxi]"]</td></tr>
<tr><td>["cazy|API59475.1 glycosidase [Sphingomonas sp. JJ-A5]"]</td></tr>
<tr><td>["cazy|APR51401.1 glycosidase [Sphingomonas koreensis]",
"cazy|APZ97396.1 glycosidase [Sphingopyxis sp. QXT-31]",
"cazygi|938157188|gb|ALJ13549.1| glycosidase [Sphingopyxis macrogoltabida]",
"cazygi|1015407702|gb|AMU89004.1| glycosidase [Sphingopyxis macrogoltabida]",
"cazygi|937289309|gb|ALH79855.1| glycosidase [Sphingopyxis macrogoltabida]"]</td></tr>
<tr><td>["cazy|APX66178.1 glycosidase [Sphingomonas sp. LK11]"]</td></tr>
<tr><td>["cazy|AQR74940.1 glycosidase [Sphingomonas sp. LM7]",
"cazygi|761898906|gb|AJP73275.1| glycosidase [Sphingomonas hengshuiensis]",
"cazygi|569540496|gb|AHE52113.1| hypothetical protein NX02_01755 [Sphingomonas sanxanigenens DSM 19645 = NX02]"]</td></tr>
<tr><td>["cazy|ATE66422.1 glycosidase [Rhizorhabdus dicambivorans]"]</td></tr>
<tr><td>["cazy|ATQ44417.1 glycosidase [Caulobacter mirabilis]"]</td></tr>
<tr><td>["cazy|ATY33401.1 glycosidase [Sphingomonas sp. Cra20]"]</td></tr>
<tr><td>["cazy|AUN32391.1 glycosidase [Niveispirillum cyanobacteriorum]",
"cazy|BBD98208.1 glycosidase [Sphingobium amiense]"]</td></tr>
<tr><td>["cazy|AUW56966.1 glycosidase [Sphingobium sp. SCG-1]"]</td></tr>
<tr><td>["cazy|AXB80036.1 glycosidase (plasmid) [Novosphingobium sp. P6W]",
"cazygi|1015414349|gb|AMU96142.1| glycosidase [Sphingopyxis terrae NBRC 15098]"]</td></tr>
<tr><td>["cazy|AXJ95617.1 glycosidase [Sphingomonas sp. FARSPH]"]</td></tr>
<tr><td>["cazy|SBV34078.1 conserved protein of unknown function [uncultured Sphingopyxis sp.]"]</td></tr>
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Small meta-nodes

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<tr><td>["cazygi|206739935|gb|ACI18993.1| conserved hypothetical protein [Dictyoglomus thermophilum H-6-12]"]</td></tr>
<tr><td>["cazygi|262335691|gb|ACY49488.1| glycosidase PH1107-related protein [Rhodothermus marinus DSM 4252]",
"cazygi|345113685|gb|AEN74517.1| glycosidase related protein [Rhodothermus marinus SG0.5JP17-172]"]</td></tr>
<tr><td>["cazygi|217336150|gb|ACK41943.1| glycosidase PH1107-related [Dictyoglomus turgidum DSM 6724]"]</td></tr>
<tr><td>["cazygi|837353939|gb|AKM83974.1| Glycosidase-related protein [Candidatus Campbellbacteria bacterium GW2011_OD1_34_28]"]</td></tr>
<tr><td>["cazygi|837348939|gb|AKM78124.1| Glycosidase-related protein [Candidatus Wolfebacteria bacterium GW2011_GWB1_47_1]"]</td></tr>
<tr><td>["cazygi|837348940|gb|AKM78125.1| Glycosidase-related protein [Candidatus Wolfebacteria bacterium GW2011_GWB1_47_1]"]</td></tr>
<tr><td>["cazy|AQS34661.1 hypothetical protein [uncultured bacterium]"]</td></tr>
<tr><td>["cazygi|311224651|gb|ADP77507.1| glycosidase PH1107-related protein [Methanothermus fervidus DSM 2088]"]</td></tr>
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<tr><td>["cazygi|837353937|gb|AKM83972.1| Glycosidase-related protein [Candidatus Campbellbacteria bacterium GW2011_OD1_34_28]"]</td></tr>
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<tr><td>["cazy|BAX79955.1 hypothetical protein ALGA_1579 [Marinifilaceae bacterium SPP2]"]</td></tr>
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<tr><td>["cazy|ARA94165.1 glycosidase [Rhodothermaceae bacterium RA]"]</td></tr>
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["cazy|AVH57250.1 hypothetical protein C4B68_17345 [Streptomyces dengpaensis]"]
["cazygi|573475668|gb|AHF92679.1| glycosidase [Opitutaceae bacterium TAV5]"]
["cazygi|1001868161|gb|AMM34647.1| hypothetical protein SA2016_3993 [Sinomonas atrocyanea]"]
["cazygi|359383778|emb|CCE79694.1| Piso0_001778 [Millerozyma farinosa CBS 7064]", "cazygi|359465278|emb|CCE88983.1| Piso0_001778 [Millerozyma farinosa CBS 7064]"]
["cazy|SGZ51348.1 CIC11C00000001274 [[Candida] intermedia]", "cazy|SGZ52548.1 CIC11C00000000424 [[Candida] intermedia]"]
["cazygi|199433069|emb|CAG88529.2| DEHA2E21890p [Debaryomyces hansenii CBS767]"]
["cazygi|256558512|gb|ACU84359.1| predicted glycosylase [Brachybacterium faecium DSM 4810]"]
["cazygi|262333469|gb|ACY47266.1| glycosidase PH1107-related protein [Rhodothermus marinus DSM 4252]", "cazygi|345111470|gb|AEN72302.1| glycosidase related protein [Rhodothermus marinus SG0.5JP17-172]"]
["cazygi|149387617|gb|ABN67904.2| glycosidase [Scheffersomyces stipitis CBS 6054]"]
["cazygi|223645453|emb|CAX40110.1| glycosyl hydrolase"," putative [Candida dubliniensis CD36]", "cazygi|380353874|emb|CCG23386.1| hypothetical protein CORT_0D05470 [Candida orthopsilosis]", "cazygi|354546163|emb|CCE42892.1| hypothetical protein CPAR2_205350 [Candida parapsilosis]", "cazy|AOW31291.1 hypothetical protein CAALFM_CR05750WA [Candida albicans SC5314]"]
["cazy|SDH28525.1 protein of unknown function [Leifsonia sp. 197AMF]", "cazy|SDJ09705.1 protein of unknown function [Leifsonia sp. 466MF]", "cazy|SDJ60880.1 protein of unknown function [Leifsonia sp. 157MF]", "cazy|SDN30956.1 protein of unknown function [Leifsonia sp. 509MF]", "cazy|SEA91288.1 protein of unknown function [Leifsonia sp. 21MFCrub1.1]", "cazy|SEM90351.1 protein of unknown function [Leifsonia sp. 467MF]", "cazy|SFM34619.1 protein of unknown function [Leifsonia sp. 98AMF]"]
["cazygi|1029984077|gb|ANF30334.1| hypothetical protein A0130_00330 [Leifsonia xyli]"]
["mouse4-1_GL0005498 [gene] locus=scaffold49332_1:2611:3633:+ [Complete] codon-table.11"]
["humangutMH0257_GL0045417 [gene] locus=scaffold23966_1:17250:18269:- [Complete] codon-table.11"]
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["humangutV1.CD40-0_GL0193429 [gene] locus=scaffold27959_4:5026:6036:+ [Complete] codon-table.11", "cazygi|757810268|dbj|BAQ31053.1| putative glycoside hydrolase [Bifidobacterium scardovii JCM 12489 = DSM 13734]"]
["cazygi|1032525890|emb|SBN62434.1| Predicted glycosyl hydrolase"," GH43/DUF377 family [Curtobacterium sp. 9128]"]
["cazy|ARA94161.1 glycosidase [Rhodothermaceae bacterium RA]"]
["cazy|AQY03092.1 glycosylase [Microbacterium foliorum]"]
["cazy|ATG50115.1 glycosylase [Brachybacterium sp. VM2412]"]
["cazy|APH46442.1 glycosylase [Microbacterium sp. 1.5R]"]
["cazy|AQS34659.1 hypothetical protein [uncultured bacterium]"]
["cazygi|229566671|gb|ACQ80522.1| glycosidase PH1107-related protein [Beutenbergia cavernae DSM 12333]"]
["humangutMH0220_GL0080902 [gene] locus=scaffold7359_33:439:1410:+ [Complete] codon-table.11"]
["humangut340101.Vvad_PD3403 [Complete]:- codon-table.11"]
["cazy|SDT30597.1 Predicted glycosyl hydrolase"," GH43/DUF377 family [Microlunatus soli]"]
["pigBHZ-5B_GL0031827 [gene] locus=scaffold140501_1:35:988:- [Complete] codon-table.11"]
["rumen553_GL0683180_1 [gene] locus=scaffold402048_1:74:1024:-[Complete]"]
["humangutMH0003_GL0030005 [gene] locus=scaffold37737_2:359:1309:+ [Complete] codon-table.11"]
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<tr><td>["cazygi|914700676|gb|AKV88118.1| glycosylase [Microbacterium sp. CGR1]"]</td></tr>
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"cazygi|332697821|gb|AEE92278.1| glycosidase related protein [Tepidanaerobacter acetatoxydans Re1]"]</td></tr>
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<tr><td>["cazygi|432179615|emb|CCP26588.1| Glycosidase related protein [Tepidanaerobacter acetatoxydans Re1]"]</td></tr>
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<tr><td>["cazygi|332700025|gb|AEE96966.1| glycosidase related protein [Mahella australiensis 50-1 BON]"]</td></tr>
<tr><td>["cazy|AYO32279.1 glycosidase [Thermoanaerobacterales bacterium SK-G1]"]</td></tr>
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["cazygi|332700567|gb|AEE97508.1| glycosidase related protein [Mahella australiensis 50-1 BON]"]
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Singletons

["cazy|AWH84733.1 hypothetical protein HYN59_06180 [Flavobacterium sp. HYN0059]"]
["cazy|AWI66994.1 Glycosyl hydrolase family 130"," partial [Chytridiomycota sp. NHY-2018]"]
["cazygi|256361128|gb|ACU74625.1| glycosidase PH1107-related [Catenulispora acidiphila DSM 44928]"]
["cazygi|256362158|gb|ACU75655.1| glycosidase PH1107-related [Catenulispora acidiphila DSM 44928]"]
["cazygi|288894249|gb|ADC65786.1| glycosidase PH1107-related protein [Ferroglobus placidus DSM 10642]"]
["cazygi|311224650|gb|ADP77506.1| glycosidase PH1107-related protein [Methanothermus fervidus DSM 2088]"]
["cazygi|395812064|gb|AFN74813.1| glycosidase PH1107-related protein [Melioribacter roseus P3M-2]"]
["cazygi|441473635|emb|CCQ23389.1| Undefined function [Listeria monocytogenes N53-1]"]
["cazygi|575462748|gb|AHG93799.1| glycosidase related protein (plasmid) [Gemmatirosa kalamazoonesis]"]
["cazygi|663075780|gb|AIE87935.1| glycosidase like protein [Fimbriimonas ginsengisoli Gsoil 348]"]
["cazygi|686529468|gb|AIQ40167.1| hypothetical protein R50912_09100 [Paenibacillus sp. FSL R5-0912]"]
["cazygi|805357112|gb|AKB37183.1| hypothetical protein MSSAC_2593 [Methanosarcina siciliae C2J]"]
["cazygi|910742045|dbj|BAS11445.1| glycosidase PH1107-related [Arthrobacter sp. Hiyo4]"]
["cazygi|910746573|dbj|BAS15972.1| L-arabinose transport system permease protein AraQ [Arthrobacter sp. Hiyo8]"]
["cazygi|941938696|gb|ALL00674.1| putative glycosylase [Pyrodictium delaneyi]"]
["cazygi|948529002|gb|ALM76546.1| hypothetical protein TBCH5v1_2658 [Thermococcus barophilus]"]
["cazygi|948529004|gb|ALM76548.1| hypothetical protein TBCH5v1_2660 [Thermococcus barophilus]"]
["cazygi|961671808|gb|ALS92213.1| protein of unknown function (DUF377)"," partial [uncultured bacterium]"]
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["humangutDOF008_GL0049325 [gene] locus=scaffold5558_25:2:304:+ [Lack 5'-end] codon-table.11"]
["humangutDOM012_GL0002710 [gene] locus=scaffold5297_3:985:1194:- [Lack 5'-end] codon-table.11"]
["humangutDOM012_GL0017444 [gene] locus=scaffold24111_2:322:624:- [Complete] codon-table.11"]
["humangutDOM025_GL0036051 [gene] locus=scaffold18744_1:1:867:- [Lack both ends] codon-table.11"]
["humangutED11A_GL0002445 [gene] locus=scaffold18900_1:676:852:- [Lack 5'-end] codon-table.11"]
["humangutHT14A_GL0076475 [gene] locus=scaffold20905_1:1:345:+ [Lack 5'-end] codon-table.11", "rumen554_GL0550693_1 [gene] locus=scaffold1139629_4:1182:1526:-[Lack 5'-end]"]
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["humangutMH0014_GL0001393 [gene] locus=C1167635_1:786:1820:+ [Complete] codon-table.11"]
["humangutMH0016_GL0077462 [gene] locus=scaffold6606_1:577:930:- [Lack 5'-end] codon-table.11"]
["humangutMH0024_GL0009042 [gene] locus=C684765_1:908:1084:- [Lack 5'-end] codon-table.11"]
["humangutMH0046_GL0044530 [gene] locus=scaffold6969_15:676:891:- [Lack 5'-end] codon-table.11"]
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["humangutMH0098_GL0007885 [gene] locus=scaffold20250_3:379:690:- [Lack 5'-end] codon-table.11"]
["humangutMH0121_GL0011395 [gene] locus=scaffold70_1:305:634:+ [Lack 3'-end] codon-table.11"]
["humangutMH0123_GL0022321 [gene] locus=scaffold41860_5:1206:1553:+ [Lack 3'-end] codon-table.11"]
["humangutMH0128_GL0082326 [gene] locus=scaffold20314_9:3:368:- [Lack 3'-end] codon-table.11"]
["humangutMH0143_GL0081219 [gene] locus=scaffold4032_2:202:567:+ [Lack 3'-end] codon-table.11"]
["humangutMH0143_GL0124264 [gene] locus=scaffold4032_5:2:364:+ [Lack 5'-end] codon-table.11"]
["humangutMH0168_GL0057763 [gene] locus=scaffold3169_3:335:559:- [Lack 5'-end] codon-table.11"]
["humangutMH0168_GL0103270 [gene] locus=scaffold113052_1:1:369:- [Lack 3'-end] codon-table.11"]
["humangutMH0189_GL0168280 [gene] locus=scaffold38117_1:364:708:+ [Lack 3'-end] codon-table.11", "rumen7049_GL2839234_1 [gene] locus=C52385712_1:3:347:-[Lack 3'-end]"]
["humangutMH0196_GL0117325 [gene] locus=scaffold58671_1:675:1052:+ [Lack 3'-end] codon-table.11"]
["humangutMH0197_GL0038811 [gene] locus=scaffold62716_1:2:382:- [Lack 3'-end] codon-table.11"]
["humangutMH0197_GL0107836 [gene] locus=scaffold92544_4:3:197:+ [Lack 5'-end] codon-table.11"]
["humangutMH0197_GL0182739 [gene] locus=scaffold92544_2:700:915:+ [Lack 3'-end] codon-table.11"]
["humangutMH0229_GL0028465 [gene] locus=scaffold41588_5:2:295:+ [Lack 5'-end] codon-table.11"]
["humangutMH0233_GL0074858 [gene] locus=scaffold20373_4:3:365:+ [Lack 5'-end] codon-table.11", "humangutMH0419_GL0062472 [gene] locus=scaffold36938_7:153:515:- [Lack 5'-end] codon-table.11"]
["humangutMH0233_GL0123407 [gene] locus=scaffold46519_5:124:747:+ [Lack 3'-end] codon-table.11"]
["humangutMH0243_GL0001251 [gene] locus=scaffold15770_16:1:267:- [Lack 3'-end] codon-table.11"]
["humangutMH0243_GL0017421 [gene] locus=scaffold15249_9:2:349:- [Lack 3'-end] codon-table.11"]
["humangutMH0245_GL0009488 [gene] locus=scaffold19950_15:9189:9509:- [Lack 5'-end] codon-table.11", "rumen0081_GL0391993_1 [gene] locus=scaffold938228_1:1:321:+[Lack 5'-end]"]
["humangutMH0250_GL0085360 [gene] locus=scaffold5947_4:438:698:+ [Lack 3'-end] codon-table.11"]
["humangutMH0251_GL0101220 [gene] locus=scaffold50228_1:3:221:+ [Lack 5'-end] codon-table.11"]
["humangutMH0257_GL0166458 [gene] locus=scaffold38642_1:1:516:- [Lack both ends] codon-table.11"]
["humangutMH0260_GL0057638 [gene] locus=scaffold85160_13:1670:2227:+ [Lack 3'-end] codon-table.11"]
["humangutMH0260_GL0139297 [gene] locus=scaffold87671_2:2:355:+ [Lack 5'-end] codon-table.11"]
["humangutMH0260_GL0141136 [gene] locus=scaffold35061_1:342:668:+ [Lack 3'-end] codon-table.11"]
["humangutMH0262_GL0133865 [gene] locus=scaffold12319_12:315:683:+ [Lack 3'-end] codon-table.11"]
["humangutMH0276_GL0235251 [gene] locus=scaffold127463_2:1:486:- [Lack 3'-end] codon-table.11"]
["humangutMH0286_GL0158074 [gene] locus=scaffold35417_3:1:318:+ [Lack 5'-end] codon-table.11"]
["humangutMH0293_GL0011214 [gene] locus=scaffold75357_2:3:242:+ [Lack 5'-end] codon-table.11"]
["humangutMH0303_GL0015638 [gene] locus=scaffold17511_14:314:628:- [Lack 5'-end] codon-table.11"]
["humangutMH0303_GL0051007 [gene] locus=scaffold35829_13:244:636:- [Lack 5'-end] codon-table.11"]
["humangutMH0303_GL0160402 [gene] locus=scaffold17511_16:2:517:- [Lack 3'-end] codon-table.11"]
["humangutMH0318_GL0061354 [gene] locus=scaffold94357_2:736:963:- [Lack 5'-end] codon-table.11"]
["humangutMH0318_GL0139096 [gene] locus=scaffold65132_1:170:538:+ [Lack 3'-end] codon-table.11"]
["humangutMH0318_GL0202644 [gene] locus=scaffold63258_1:3:449:+ [Lack 5'-end] codon-table.11"]
["humangutMH0318_GL0207266 [gene] locus=scaffold14436_8:2:265:+ [Lack 5'-end] codon-table.11"]
["humangutMH0329_GL0021822 [gene] locus=scaffold126498_1:2:628:+ [Lack both ends] codon-table.11"]
["humangutMH0329_GL0082370 [gene] locus=scaffold111403_3:3:599:- [Lack 3'-end] codon-table.11"]
["humangutMH0329_GL0138621 [gene] locus=scaffold112733_7:2946:3245:+ [Complete] codon-table.11"]

["humangutMH0329_GL0149676 [gene] locus=scaffold113332_2:481:819:+ [Lack 3'-end] codon-table.11"]
["humangutMH0346_GL0110027 [gene] locus=scaffold89974_1:572:1072:+ [Lack 3'-end] codon-table.11"]
["humangutMH0346_GL0162467 [gene] locus=scaffold7702_18:670:897:- [Lack 5'-end] codon-table.11"]
["humangutMH0357_GL0064342 [gene] locus=scaffold81132_2:187:504:+ [Lack 3'-end] codon-table.11"]
["humangutMH0357_GL0140850 [gene] locus=scaffold4369_2:3:269:+ [Lack 5'-end] codon-table.11"]
["humangutMH0368_GL0068373 [gene] locus=scaffold10102_6:475:855:- [Lack 5'-end] codon-table.11"]
["humangutMH0369_GL0047535 [gene] locus=scaffold9102_1:250:777:+ [Lack 3'-end] codon-table.11"]
["humangutMH0382_GL0027958 [gene] locus=scaffold35103_2:2:232:+ [Lack 5'-end] codon-table.11", "rumen100058_GL3102479_1 [gene] locus=scaffold2198624_3:2:232:+[Lack 5'-end]"]
["humangutMH0385_GL0104250 [gene] locus=scaffold749_13:1209:1442:- [Lack 5'-end] codon-table.11"]
["humangutMH0385_GL0132644 [gene] locus=scaffold53331_2:210:1139:- [Complete] codon-table.11"]
["humangutMH0389_GL0107452 [gene] locus=scaffold109432_4:19720:19914:+ [Complete] codon-table.11"]
["humangutMH0389_GL0171050 [gene] locus=scaffold47280_6:204:575:+ [Lack 3'-end] codon-table.11"]
["humangutMH0393_GL0009257 [gene] locus=scaffold37165_5:629:892:- [Lack 5'-end] codon-table.11"]
["humangutMH0398_GL0051839 [gene] locus=scaffold105642_5:2047:2310:- [Lack 5'-end] codon-table.11"]
["humangutMH0399_GL0082759 [gene] locus=scaffold58178_1:1:1032:+ [Lack 5'-end] codon-table.11"]
["humangutMH0403_GL0206053 [gene] locus=scaffold84639_2:1:243:+ [Lack 5'-end] codon-table.11"]
["humangutMH0404_GL0066200 [gene] locus=scaffold3587_12:3:341:+ [Lack 5'-end] codon-table.11"]
["humangutMH0411_GL0081080 [gene] locus=scaffold53319_5:3:443:- [Lack 3'-end] codon-table.11"]
["humangutMH0411_GL0204994 [gene] locus=scaffold53319_3:414:707:- [Lack 5'-end] codon-table.11"]
["humangutMH0412_GL0016753 [gene] locus=scaffold136420_1:1:192:+ [Lack 5'-end] codon-table.11"]
["humangutMH0412_GL0070194 [gene] locus=scaffold134926_1:1:318:- [Lack 3'-end] codon-table.11"]
["humangutMH0415_GL0122360 [gene] locus=scaffold36551_3:881:1219:+ [Lack 3'-end] codon-table.11"]
["humangutMH0419_GL0186502 [gene] locus=scaffold36938_4:1:384:- [Lack 3'-end] codon-table.11"]
["humangutMH0426_GL0166470 [gene] locus=scaffold4251_4:3:458:- [Lack 3'-end] codon-table.11"]
["humangutMH0436_GL0106385 [gene] locus=scaffold23900_2:1:240:- [Lack 3'-end] codon-table.11"]
["humangutMH0437_GL0089863 [gene] locus=scaffold41065_3:1248:1613:+ [Lack 3'-end] codon-table.11"]
["humangutMH0437_GL0259147 [gene] locus=scaffold34459_6:24138:26636:+ [Complete] codon-table.11"]
["humangutMH0439_GL0237845 [gene] locus=scaffold70555_6:1:318:- [Lack 3'-end] codon-table.11"]
["humangutMH0442_GL0069732 [gene] locus=scaffold131865_2:248:592:+ [Lack 3'-end] codon-table.11"]
["humangutMH0445_GL0174357 [gene] locus=scaffold92326_1:147:512:- [Lack 5'-end] codon-table.11"]
["humangutMH0447_GL0051147 [gene] locus=scaffold66916_1:873:1235:- [Lack 5'-end] codon-table.11"]
["humangutMH0447_GL0078042 [gene] locus=scaffold63630_3:608:1192:- [Complete] codon-table.11"]
["humangutMH0447_GL0220358 [gene] locus=scaffold83071_3:1:240:+ [Lack 5'-end] codon-table.11"]
["humangutMH0447_GL0236530 [gene] locus=scaffold29789_17:2:226:- [Lack 3'-end] codon-table.11"]
["humangutMH0447_GL0236531 [gene] locus=scaffold29789_17:216:776:- [Complete] codon-table.11"]
["humangutMH0454_GL0021889 [gene] locus=scaffold4028_4:230:589:- [Lack 5'-end] codon-table.11"]
["humangutMH0457_GL0039335 [gene] locus=scaffold43943_10:2:289:+ [Lack 5'-end] codon-table.11"]
["humangutMH0457_GL0154021 [gene] locus=scaffold178004_6:1:1287:+ [Lack 5'-end] codon-table.11"]
["humangutN020A_GL0010815 [gene] locus=C849507_1:3:425:- [Lack 3'-end] codon-table.11"]
["humangutN038A_GL0084844 [gene] locus=scaffold49879_2:1:282:- [Lack 3'-end] codon-table.11"]
["humangutNLF007_GL0037795 [gene] locus=scaffold12704_35:333:578:- [Lack 5'-end] codon-table.11"]
["humangutNLM010_GL0060849 [gene] locus=scaffold6721_1:3:347:- [Lack 3'-end] codon-table.11"]

["humangutNLM024_GL0004802 [gene] locus=scaffold1090_2:1:276:- [Lack 3'-end] codon-table.11", "rumen552_GL1342428_1 [gene] locus=C21370228_1:329:604:+[Lack 3'-end]"]
["humangutNOF008_GL0005032 [gene] locus=scaffold40245_1:2903:3022:- [Lack 5'-end] codon-table.11"]
["humangutNOM023_GL0012275 [gene] locus=scaffold8794_8:1:324:+ [Lack 5'-end] codon-table.11"]
["humangutNOM026_GL0020969 [gene] locus=scaffold6339_15:2:511:- [Lack both ends] codon-table.11"]
["humangutO2.UC14-1_GL0075951 [gene] locus=scaffold10916_1:2:145:+ [Lack 5'-end] codon-table.11"]
["humangutO2.UC18-2_GL0006426 [gene] locus=scaffold89177_7:617:913:- [Lack 5'-end] codon-table.11"]
["humangutO2.UC18-2_GL0143529 [gene] locus=scaffold89177_9:1216:1545:- [Lack 5'-end] codon-table.11"]
["humangutO2.UC29-1_GL0030376 [gene] locus=scaffold18749_4:2146:2517:+ [Complete] codon-table.11"]
["humangutO2.UC3-2_GL0091900 [gene] locus=scaffold18465_13:2:166:+ [Lack 5'-end] codon-table.11"]
["humangutO2.UC4-2_GL0090005 [gene] locus=scaffold56944_3:857:1201:- [Lack 5'-end] codon-table.11"]
["humangutO2.UC40-1_GL0224539 [gene] locus=scaffold141934_3:537:728:- [Lack 5'-end] codon-table.11"]
["humangutO2.UC44-2_GL0263974 [gene] locus=scaffold37118_14:3:200:+ [Lack 5'-end] codon-table.11"]
["humangutO2.UC47-1_GL0175948 [gene] locus=scaffold31155_5:2:343:+ [Lack 5'-end] codon-table.11"]
["humangutO2.UC48-1_GL0066184 [gene] locus=scaffold21500_4:1:450:- [Lack 3'-end] codon-table.11"]
["humangutO2.UC48-1_GL0146576 [gene] locus=scaffold45801_4:3:140:+ [Lack 5'-end] codon-table.11"]
["humangutO2.UC50-2_GL0004976 [gene] locus=scaffold96327_2:325:573:- [Lack 5'-end] codon-table.11"]
["humangutO2.UC53-0_GL0142653 [gene] locus=scaffold126471_1:2:493:+ [Lack 5'-end] codon-table.11"]
["humangutO2.UC53-0_GL0249722 [gene] locus=scaffold129671_3:228:545:+ [Lack 3'-end] codon-table.11"]
["humangutO2.UC58-0_GL0006881 [gene] locus=scaffold101956_4:2:553:+ [Lack 5'-end] codon-table.11"]
["humangutO2.UC58-0_GL0106275 [gene] locus=scaffold101956_3:1074:1481:+ [Lack 3'-end] codon-table.11"]
["humangutO2.UC58-0_GL0110180 [gene] locus=scaffold45318_2:577:825:- [Lack 5'-end] codon-table.11"]
["humangutSZEY-10A_GL0038183 [gene] locus=scaffold20329_1:3:218:+ [Lack 5'-end] codon-table.11", "rumen552_GL0949102_1 [gene] locus=scaffold370500_1:618:833:-[Lack 5'-end]", "rumen2009040_GL2301131_1 [gene] locus=scaffold1554320_1:446:661:-[Lack 5'-end]"]
["humangutSZEY-22A_GL0033591 [gene] locus=scaffold5290_2:3:209:- [Lack 3'-end] codon-table.11"]
["humangutSZEY-62A_GL0089677 [gene] locus=scaffold78306_1:1:522:+ [Lack both ends] codon-table.11"]
["humangutT2D-108A_GL0017687 [gene] locus=scaffold86502_1:97:564:- [Lack 5'-end] codon-table.11"]
["humangutT2D-118A_GL0042792 [gene] locus=C396885_1:1:177:+ [Lack 5'-end] codon-table.11"]
["humangutT2D-177A_GL0047681 [gene] locus=scaffold4254_3:16671:17177:+ [Lack 3'-end] codon-table.11"]
["humangutT2D-203A_GL0056743 [gene] locus=scaffold78733_1_2:3:212:+ [Lack 5'-end] codon-table.11"]
["humangutT2D-34A_GL0107992 [gene] locus=scaffold9114_7:3:401:- [Lack 3'-end] codon-table.11"]
["humangutT2D-48A_GL0030912 [gene] locus=scaffold15415_8:1:348:+ [Lack 5'-end] codon-table.11"]
["humangutT2D-51A_GL0083700 [gene] locus=scaffold82597_2:2:409:- [Lack 3'-end] codon-table.11"]
["humangutV1.CD43-0_GL0114439 [gene] locus=scaffold11857_7:3:188:+ [Lack 5'-end] codon-table.11"]
["humangutV1.CD51-0_GL0063834 [gene] locus=scaffold13102_6:1:552:- [Lack both ends] codon-table.11"]
["humangutV1.CD6-0-PT_GL0094869 [gene] locus=scaffold73099_1:1:333:- [Lack 3'-end] codon-table.11"]
["humangutV1.FI14_GL0207273 [gene] locus=scaffold65910_4:1:234:+ [Lack 5'-end] codon-table.11"]
["humangutV1.FI16_GL0209695 [gene] locus=C1703249_1:3:326:+ [Lack 5'-end] codon-table.11"]
["humangutV1.UC11-5_GL0005806 [gene] locus=scaffold5864_3:3:254:+ [Lack 5'-end] codon-table.11", "mouseG1-5A_GL0120335 [gene] locus=scaffold84034_10:1:252:+ [Lack 5'-end] codon-table.11", "rumen555_GL0927358_1 [gene] locus=scaffold603547_4:491:742:-[Lack 5'-end]"]
["humangutV1.UC11-5_GL0089600 [gene] locus=scaffold45835_1:82:504:- [Lack 5'-end] codon-table.11"]

["humangutV1.UC41-0_GL0015005 [gene] locus=scaffold57083_3:712:993:- [Lack 5'-end] codon-table.11"]
["humangutV1.UC41-0_GL0113065 [gene] locus=scaffold57083_5:1:294:- [Lack 3'-end] codon-table.11"]
["humangutV1.UC49-1_GL0105266 [gene] locus=scaffold56477_1:176:547:- [Lack 5'-end] codon-table.11", "rumen100058_GL1141971_1 [gene] locus=scaffold2010358_2:1:372:+[Lack 5'-end]"]
["humangutV1.UC49-1_GL0196061 [gene] locus=scaffold56477_3:3:344:- [Lack 3'-end] codon-table.11", "pigPIG-035_GL0055410 [gene] locus=scaffold86648_3:1:342:- [Lack 3'-end] codon-table.11"]
["humangutV1.UC52-0_GL0033844 [gene] locus=scaffold38680_1:3:275:+ [Lack 5'-end] codon-table.11"]
["humangutV1.UC52-0_GL0076910 [gene] locus=scaffold58297_4:724:1050:- [Lack 5'-end] codon-table.11"]
["humangutV1.UC52-1_GL0217357 [gene] locus=scaffold71732_5:3:323:- [Lack 3'-end] codon-table.11"]
["humangutV1.UC58-0_GL0010265 [gene] locus=C1344929_1:2:373:- [Lack 3'-end] codon-table.11"]
["humangutV1.UC63-0_GL0226429 [gene] locus=scaffold90032_1:1:135:+ [Lack 5'-end] codon-table.11"]
["humangutV1.UC64-0_GL0075621 [gene] locus=scaffold98556_3:292:516:- [Lack 5'-end] codon-table.11"]
["mouse1-1_GL0096491 [gene] locus=scaffold3628_1:197:583:- [Lack 5'-end] codon-table.11", "rumen100058_GL1762176_1 [gene] locus=C59653100_1:474:860:-[Lack 5'-end]"]
["mouse1-1_GL0117991 [gene] locus=scaffold46637_1:1:474:+ [Lack 5'-end] codon-table.11"]
["mouse1-7_GL0135936 [gene] locus=scaffold5470_3:2:421:- [Lack 3'-end] codon-table.11"]
["mouse1A-dyr4-07_GL0070331 [gene] locus=scaffold24038_1:66:335:- [Complete] codon-table.11"]
["mouse29_GL0000723 [gene] locus=scaffold79796_1:3074:3502:+ [Complete] codon-table.11"]
["mouse2A-dyr14-07_GL0041658 [gene] locus=scaffold64604_2:3:305:- [Lack 3'-end] codon-table.11"]
["mouse2A-dyr16-07_GL0084188 [gene] locus=scaffold27478_6:539:766:+ [Lack 3'-end] codon-table.11"]
["mouse3-5_GL0087646 [gene] locus=scaffold51054_3:3:377:- [Lack 3'-end] codon-table.11"]
["mouse31_GL0041785 [gene] locus=scaffold38423_1:2:343:- [Lack 3'-end] codon-table.11"]
["mouse31_GL0087261 [gene] locus=scaffold9451_3:719:940:+ [Lack 3'-end] codon-table.11", "rumen553_GL0862616_1 [gene] locus=scaffold105027_1:2:223:-[Lack 3'-end]"]
["mouse4-6_GL0101804 [gene] locus=scaffold2035_6:417:704:+ [Lack 3'-end] codon-table.11"]
["mouse5-8_GL0019899 [gene] locus=scaffold87431_2:271:636:+ [Lack 3'-end] codon-table.11"]
["mouse54_GL0000607 [gene] locus=scaffold73491_1:1:270:+ [Lack 5'-end] codon-table.11"]
["mouse6-1_GL0059324 [gene] locus=scaffold17903_6:36:635:+ [Complete] codon-table.11"]
["mouse6-5_GL0028346 [gene] locus=C1005479_1:315:644:- [Lack 5'-end] codon-table.11"]
["mouse8_GL0140135 [gene] locus=scaffold4385_3:1391:1759:+ [Lack 3'-end] codon-table.11"]
["mouse8-6_GL0006984 [gene] locus=scaffold62741_3:3:650:+ [Lack both ends] codon-table.11"]
["mouseG1-5A_GL0072854 [gene] locus=scaffold45912_7:1:324:+ [Lack 5'-end] codon-table.11"]
["mouseG1-5A_GL0120334 [gene] locus=scaffold84034_7:431:763:+ [Lack 3'-end] codon-table.11"]
["mouseGroup2-3A_GL0026299 [gene] locus=scaffold9194_6:843:1259:- [Lack 5'-end] codon-table.11"]
["mouseGroup2-6A_GL0092520 [gene] locus=scaffold78815_3:370:654:- [Lack 5'-end] codon-table.11"]
["mouseGroup2-7A_GL0056368 [gene] locus=scaffold30847_2:444:593:- [Lack 5'-end] codon-table.11"]
["mouseGroup2-7A_GL0123938 [gene] locus=scaffold75360_2:198:527:- [Lack 5'-end] codon-table.11"]
["mouseGroup2-8A_GL0028086 [gene] locus=scaffold15469_9:3:557:+ [Lack 5'-end] codon-table.11"]
["mouseGroup2-8A_GL0143788 [gene] locus=scaffold118207_6:544:834:+ [Complete] codon-table.11"]
["mouseMC-0-1_GL0090641 [gene] locus=scaffold79734_1:411:653:- [Lack 5'-end] codon-table.11"]
["mouseMC-6-1_GL0109569 [gene] locus=scaffold75917_2:1644:1898:+ [Lack 3'-end] codon-table.11"]
["mouseMC-6-2_GL0023171 [gene] locus=scaffold13217_1:478:747:- [Lack 5'-end] codon-table.11"]
["mouseMC-6-4_GL0116751 [gene] locus=scaffold82976_1:2:316:+ [Lack 5'-end] codon-table.11"]

["mouseMH-6-4_GL0057792 [gene] locus=scaffold29094_5:789:1085:+ [Lack 3'-end] codon-table.11"]
["mouseMH-6-5_GL0187250 [gene] locus=C1421343_1:1:360:+ [Lack 5'-end] codon-table.11"]
["mouseS-Fe12_GL0047612 [gene] locus=scaffold96729_4:2:394:+ [Lack 5'-end] codon-table.11"]
["mouseS-Fe20_GL0143757 [gene] locus=scaffold40175_6:2563:3003:- [Complete] codon-table.11"]
["pigBHZ-2B_GL0081036 [gene] locus=scaffold158413_1:595:804:- [Lack 5'-end] codon-table.11"]
["pigBHZ-2B_GL0184861 [gene] locus=C1791472_1:181:501:+ [Lack 3'-end] codon-table.11"]
["pigBMZ-11B_GL0030146 [gene] locus=C730619_1:2:388:+ [Lack 5'-end] codon-table.11"]
["pigBMZ-3B_GL0023917 [gene] locus=scaffold31904_2:2:400:+ [Lack 5'-end] codon-table.11", "rumen553_GL0697729_1 [gene] locus=scaffold294515_1:3:401:+[Lack 5'-end]", "rumen3042_GL2826746_1 [gene] locus=scaffold613841_8:2:400:+[Lack 5'-end]"]
["pigDB-510B_GL0107434 [gene] locus=scaffold13970_4:144:503:+ [Lack 3'-end] codon-table.11", "rumen3042_GL1813635_1 [gene] locus=scaffold1263564_1:3:362:-[Lack 3'-end]"]
["pigDB-511B_GL0113845 [gene] locus=scaffold143693_1:214:594:+ [Lack 3'-end] codon-table.11"]
["pigDB-515B_GL0054726 [gene] locus=scaffold16049_1:3:374:+ [Lack 5'-end] codon-table.11"]
["pigDB-537B_GL0163431 [gene] locus=scaffold101887_1:414:515:- [Lack 5'-end] codon-table.11"]
["pigEYZ-120B_GL0206302 [gene] locus=scaffold237029_2:664:1104:+ [Lack 3'-end] codon-table.11"]
["pigEYZ-120B_GL0294049 [gene] locus=C2860800_1:1:333:+ [Lack 5'-end] codon-table.11"]
["pigEYZ-120B_GL0321485 [gene] locus=scaffold14870_2:605:1066:+ [Lack 3'-end] codon-table.11"]
["pigEYZ-160B_GL0065439 [gene] locus=scaffold127538_2:720:986:- [Lack 5'-end] codon-table.11"]
["pigEYZ-183B_GL0093119 [gene] locus=C1902746_1:3:254:+ [Lack 5'-end] codon-table.11", "rumen554_GL1357027_1 [gene] locus=scaffold2116913_3:2:253:+[Lack 5'-end]"]
["pigEYZ-254B_GL0138696 [gene] locus=scaffold130898_3:2:316:- [Lack 3'-end] codon-table.11"]
["pigEYZ-468B_GL0121204 [gene] locus=scaffold111554_2:202:528:+ [Lack 3'-end] codon-table.11"]
["pigEYZ-566B_GL0058282 [gene] locus=scaffold23378_1:7685:8092:- [Lack 5'-end] codon-table.11", "rumen554_GL1394829_1 [gene] locus=scaffold115438_7:2:409:+[Lack 5'-end]"]
["pigEYZ-652B_GL0098387 [gene] locus=C2233085_1:299:505:- [Lack 5'-end] codon-table.11"]
["pigEYZ-652B_GL0150164 [gene] locus=scaffold176952_1:340:543:- [Lack 5'-end] codon-table.11"]
["pigPIG_111_GL0240613 [gene] locus=scaffold123134_4:3144:3302:- [Lack 5'-end] codon-table.11"]
["pigPIG_113_GL0122499 [gene] locus=scaffold108127_1:865:1062:- [Lack 5'-end] codon-table.11"]
["pigPIG_114_GL0134963 [gene] locus=scaffold102660_1:880:1083:- [Lack 5'-end] codon-table.11"]
["pigPIG_117_GL0145015 [gene] locus=scaffold262986_2:3:164:+ [Lack 5'-end] codon-table.11"]
["pigPIG_118_GL0313249 [gene] locus=scaffold186655_1:3:362:- [Lack 3'-end] codon-table.11"]
["pigPIG_127_GL0070920 [gene] locus=scaffold109974_2:1:435:+ [Lack 5'-end] codon-table.11"]
["pigPIG_132_GL0135900 [gene] locus=scaffold90934_2:1:426:- [Lack 3'-end] codon-table.11"]
["pigPIG_133_GL0231348 [gene] locus=C2983132_1:272:571:- [Lack 5'-end] codon-table.11", "rumen7049_GL2519477_1 [gene] locus=scaffold2250314_2:506:805:-[Lack 5'-end]"]
["pigPIG_138_GL0147636 [gene] locus=scaffold177634_3:1109:1411:+ [Lack 3'-end] codon-table.11"]
["pigPIG_152_GL0249489 [gene] locus=scaffold32872_1:644:913:- [Lack 5'-end] codon-table.11"]
["pigPIG_153_GL0162516 [gene] locus=scaffold159393_2:1:258:- [Lack 3'-end] codon-table.11"]
["pigPIG_157_GL0088951 [gene] locus=scaffold224945_1:3:311:- [Lack 3'-end] codon-table.11"]
["pigPIG_160_GL0213499 [gene] locus=scaffold180689_2:2:646:- [Lack both ends] codon-table.11"]
["pigPIG_167_GL0264842 [gene] locus=scaffold193421_1:1:246:+ [Lack 5'-end] codon-table.11"]
["pigPIG_184_GL0157776 [gene] locus=scaffold229490_1:2:301:+ [Lack 5'-end] codon-table.11"]

["pigPIG_186_GL0004825 [gene] locus=scaffold84602_2:1:255:+ [Lack 5'-end] codon-table.11"]
["pigPIG_197_GL0218858 [gene] locus=scaffold215673_2:1575:1871:+ [Lack 3'-end] codon-table.11"]
["pigPIG_208_GL0173811 [gene] locus=scaffold85110_4:2:358:+ [Lack 5'-end] codon-table.11"]
["pigPIG-001_GL0117069 [gene] locus=scaffold122346_3:381:635:+ [Lack 3'-end] codon-table.11"]
["pigPIG-003_GL0222283 [gene] locus=scaffold84423_1:2:424:- [Lack 3'-end] codon-table.11"]
["pigPIG-006_GL0020498 [gene] locus=scaffold142627_2:1:360:+ [Lack 5'-end] codon-table.11"]
["pigPIG-008_GL0016749 [gene] locus=scaffold22564_7:1:771:- [Lack both ends] codon-table.11"]
["pigPIG-011_GL0020761 [gene] locus=scaffold113987_5:996:1316:- [Complete] codon-table.11"]
["pigPIG-011_GL0170241 [gene] locus=scaffold104732_2:2:334:+ [Lack 5'-end] codon-table.11"]
["pigPIG-012_GL0163005 [gene] locus=scaffold150081_4:2:130:+ [Lack 5'-end] codon-table.11", "rumen100058_GL1209970_1 [gene] locus=scaffold1419203_3:1609:1737:-[Lack 5'-end]"]
["pigPIG-015_GL0265072 [gene] locus=scaffold151874_1:594:878:- [Lack 5'-end] codon-table.11"]
["pigPIG-017_GL0112081 [gene] locus=scaffold153992_2:2:184:+ [Lack 5'-end] codon-table.11"]
["pigPIG-018_GL0111462 [gene] locus=scaffold133034_2:2:349:+ [Lack 5'-end] codon-table.11"]
["pigPIG-018_GL0195533 [gene] locus=scaffold111815_1:1:258:+ [Lack 5'-end] codon-table.11"]
["pigPIG-018_GL0199020 [gene] locus=scaffold112197_1:3:227:+ [Lack 5'-end] codon-table.11"]
["pigPIG-019_GL0028926 [gene] locus=scaffold60304_1:3:299:- [Lack 3'-end] codon-table.11"]
["pigPIG-024_GL0024416 [gene] locus=scaffold47495_8:2:241:+ [Lack 5'-end] codon-table.11"]
["pigPIG-026_GL0092700 [gene] locus=scaffold85874_1:2:250:+ [Lack 5'-end] codon-table.11"]
["pigPIG-028_GL0034422 [gene] locus=scaffold158936_1:3:167:+ [Lack 5'-end] codon-table.11"]
["pigPIG-028_GL0090129 [gene] locus=scaffold31169_2:134:742:+ [Lack 3'-end] codon-table.11"]
["pigPIG-031_GL0019289 [gene] locus=scaffold127176_2:1:372:+ [Lack 5'-end] codon-table.11"]
["pigPIG-031_GL0041678 [gene] locus=scaffold4042_9:2030:2251:+ [Lack 3'-end] codon-table.11"]
["pigPIG-031_GL0116372 [gene] locus=scaffold104719_3:1:183:+ [Lack 5'-end] codon-table.11"]
["pigPIG-032_GL0055991 [gene] locus=scaffold55164_1:2:340:- [Lack 3'-end] codon-table.11"]
["pigPIG-033_GL0076027 [gene] locus=scaffold141581_1:1:318:- [Lack 3'-end] codon-table.11"]
["pigPIG-033_GL0130815 [gene] locus=scaffold105326_1:3:224:+ [Lack 5'-end] codon-table.11", "rumen554_GL2776972_1 [gene] locus=scaffold1334142_4:399:620:-[Lack 5'-end]"]
["pigPIG-033_GL0147033 [gene] locus=C1668203_1:641:904:+ [Lack 3'-end] codon-table.11"]
["pigPIG-034_GL0023999 [gene] locus=scaffold14305_4:1:369:+ [Lack 5'-end] codon-table.11"]
["pigPIG-034_GL0176454 [gene] locus=scaffold64564_1:3:389:- [Lack 3'-end] codon-table.11"]
["pigPIG-035_GL0022304 [gene] locus=scaffold79779_2:646:996:+ [Lack 3'-end] codon-table.11"]
["pigPIG-035_GL0080528 [gene] locus=scaffold100050_2:3:326:- [Lack 3'-end] codon-table.11"]
["pigPIG-035_GL0145693 [gene] locus=scaffold86648_8:2:337:- [Lack 3'-end] codon-table.11"]
["pigPIG-035_GL0158671 [gene] locus=scaffold57862_2:1:261:+ [Lack 5'-end] codon-table.11"]
["pigPIG-036_GL0072983 [gene] locus=C1974901_1:38:415:- [Complete] codon-table.11"]
["pigPIG-038_GL0106270 [gene] locus=scaffold24360_3:1177:1434:- [Lack 5'-end] codon-table.11"]
["pigPIG-041_GL0102979 [gene] locus=scaffold68019_2:13259:13489:- [Complete] codon-table.11"]
["pigPIG-041_GL0102980 [gene] locus=scaffold68019_2:13470:13904:- [Complete] codon-table.11"]
["pigPIG-044_GL0196258 [gene] locus=scaffold21536_4:3:305:+ [Lack 5'-end] codon-table.11"]
["pigPIG-046_GL0080358 [gene] locus=scaffold13760_5:3:389:- [Lack 3'-end] codon-table.11"]
["pigPIG-046_GL0102775 [gene] locus=scaffold132270_2:324:650:+ [Lack 3'-end] codon-table.11"]
["pigPIG-046_GL0108704 [gene] locus=scaffold120671_1:1:135:+ [Lack 5'-end] codon-table.11"]

["pigPIG-046_GL0223004 [gene] locus=scaffold12098_1:1:366:+ [Lack 5'-end] codon-table.11"]
["pigPIG-063_GL0161198 [gene] locus=scaffold59817_4:603:791:- [Lack 5'-end] codon-table.11"]
["pigPIG-084_GL0114288 [gene] locus=scaffold145976_2:3:173:+ [Lack 5'-end] codon-table.11"]
["pigPIG-085_GL0149522 [gene] locus=scaffold101103_6:990:1346:+ [Lack 3'-end] codon-table.11"]
["pigPIG-087_GL0007883 [gene] locus=scaffold64475_2:325:717:- [Complete] codon-table.11"]
["pigPIG-093_GL0097410 [gene] locus=scaffold10150_1:3:641:- [Lack 3'-end] codon-table.11"]
["pigPIG-098_GL0154563 [gene] locus=scaffold87102_1:1:264:- [Lack 3'-end] codon-table.11"]
["pigPIG-102_GL0083633 [gene] locus=scaffold60087_1:466:786:- [Lack 5'-end] codon-table.11"]
["pigPIG-105_GL0069463 [gene] locus=scaffold22999_2:282:548:+ [Complete] codon-table.11"]
["pigPIG-106_GL0167568 [gene] locus=scaffold69983_1:2:253:- [Lack 3'-end] codon-table.11"]
["pigPIG-106_GL0188441 [gene] locus=scaffold67583_1:3:386:+ [Lack 5'-end] codon-table.11"]
["pigSYZ-388B_GL0022359 [gene] locus=scaffold25372_1:685:828:- [Lack 5'-end] codon-table.11"]
["pigSYZ-423B_GL0126391 [gene] locus=scaffold120838_3:1:411:+ [Lack 5'-end] codon-table.11"]
["pigSYZ-477B_GL0143256 [gene] locus=scaffold139826_2:3:356:- [Lack 3'-end] codon-table.11"]
["pigZXZ-8B_GL0060071 [gene] locus=scaffold198339_2:407:829:+ [Lack 3'-end] codon-table.11"]
["pigZXZ-8B_GL0212337 [gene] locus=scaffold26205_2:651:1016:+ [Lack 3'-end] codon-table.11"]
["rumen0081_GL0025168_1 [gene] locus=scaffold1981889_1:515:772:-[Lack 5'-end]"]
["rumen0081_GL0068449_1 [gene] locus=scaffold22173_6:2:277:+[Lack 5'-end]"]
["rumen0081_GL0492384_1 [gene] locus=scaffold57901_2:493:723:+[Lack 3'-end]"]
["rumen0081_GL0526665_1 [gene] locus=scaffold446716_3:4533:4832:-[Lack 5'-end]"]
["rumen0081_GL0555004_1 [gene] locus=scaffold908016_3:766:957:-[Lack 5'-end]", "rumen100058_GL3309303_1 [gene] locus=scaffold3233303_1:2:193:+[Lack 5'-end]"]
["rumen0081_GL0596527_1 [gene] locus=scaffold1846311_1:2:364:+[Lack 5'-end]"]
["rumen0081_GL0687396_1 [gene] locus=scaffold1598019_2:2:262:+[Lack 5'-end]"]
["rumen0081_GL0816418_1 [gene] locus=scaffold68961_6:2:292:+[Lack 5'-end]"]
["rumen0081_GL0822408_1 [gene] locus=scaffold860226_2:2:145:+[Lack 5'-end]"]
["rumen0081_GL0913246_1 [gene] locus=scaffold1430310_1:1:243:-[Lack 3'-end]", "rumen100058_GL0542887_1 [gene] locus=scaffold3134266_1:683:925:+[Lack 3'-end]"]
["rumen0081_GL0929565_1 [gene] locus=scaffold526150_2:2:352:-[Lack 3'-end]"]
["rumen0081_GL0929566_1 [gene] locus=scaffold526150_2:349:714:-[Lack 5'-end]", "rumen3042_GL0034857_1 [gene] locus=scaffold2452405_4:239:604:-[Lack 5'-end]"]
["rumen0081_GL0943521_1 [gene] locus=scaffold804545_8:2:265:+[Lack 5'-end]"]
["rumen0081_GL0960161_1 [gene] locus=C38002635_1:3:191:+[Lack 5'-end]"]
["rumen0081_GL0977653_1 [gene] locus=scaffold1075911_4:971:1300:-[Lack 5'-end]"]
["rumen0081_GL0978695_1 [gene] locus=scaffold951404_1:1011:1346:-[Lack 5'-end]"]
["rumen0081_GL1050938_1 [gene] locus=scaffold2002823_1:3:341:-[Lack 3'-end]"]
["rumen0081_GL1063997_1 [gene] locus=scaffold1650903_1:3:392:-[Lack 3'-end]"]
["rumen0081_GL1156168_1 [gene] locus=scaffold1810593_2:2:160:+[Lack 5'-end]"]
["rumen0081_GL1434169_1 [gene] locus=scaffold437330_3:1:273:+[Lack 5'-end]"]
["rumen0081_GL1469283_1 [gene] locus=scaffold538318_4:3:404:-[Lack 3'-end]"]
["rumen0081_GL1535099_1 [gene] locus=scaffold1995295_1:1:447:-[Lack 3'-end]"]
["rumen0081_GL1563107_1 [gene] locus=scaffold1292164_1:593:871:+[Lack 3'-end]"]
["rumen0081_GL1570278_1 [gene] locus=scaffold1723398_2:1:321:-[Lack 3'-end]"]

["rumen0081_GL1674201_1 [gene] locus=scaffold65194_4:303:590:-[Lack 5'-end]"]
["rumen0081_GL1763635_1 [gene] locus=scaffold1486654_1:177:515:+[Lack 3'-end]"]
["rumen0081_GL1980800_1 [gene] locus=scaffold556784_3:3:179:+[Lack 5'-end]"]
["rumen0081_GL1984450_1 [gene] locus=scaffold272372_1:462:740:-[Lack 5'-end]"]
["rumen0081_GL1985915_1 [gene] locus=scaffold156778_2:563:991:+[Lack 3'-end]"]
["rumen0081_GL2131252_1 [gene] locus=scaffold412998_6:2:406:+[Lack 5'-end]", "rumen100058_GL1739690_1 [gene] locus=scaffold1196121_1:1:405:+[Lack 5'-end]"]
["rumen0081_GL2169682_1 [gene] locus=scaffold922929_1:227:559:-[Lack 5'-end]"]
["rumen0081_GL2310984_1 [gene] locus=scaffold902722_1:3:287:-[Lack 3'-end]"]
["rumen0081_GL2316711_1 [gene] locus=scaffold1177913_1:1:348:+[Lack 5'-end]"]
["rumen0081_GL2352002_1 [gene] locus=scaffold1576824_2:1:435:+[Lack 5'-end]"]
["rumen0081_GL2352340_1 [gene] locus=scaffold1973809_3:3220:3549:-[Lack 5'-end]"]
["rumen0081_GL2530018_1 [gene] locus=scaffold845286_6:1022:1417:+[Lack 3'-end]"]
["rumen0081_GL2555062_1 [gene] locus=scaffold181403_1:2:397:-[Lack 3'-end]"]
["rumen100058_GL0022013_1 [gene] locus=scaffold3198607_2:646:1062:+[Lack 3'-end]"]
["rumen100058_GL0079653_1 [gene] locus=scaffold2482952_1:1:273:+[Lack 5'-end]"]
["rumen100058_GL0089784_1 [gene] locus=scaffold743560_1:2426:2731:-[Lack 5'-end]"]
["rumen100058_GL0099082_1 [gene] locus=scaffold656461_5:249:587:-[Lack 5'-end]"]
["rumen100058_GL0159734_1 [gene] locus=scaffold80811_4:1817:2188:+[Lack 3'-end]"]
["rumen100058_GL0181973_1 [gene] locus=scaffold744079_1:3:323:-[Lack 3'-end]", "rumen2009040_GL3528128_1 [gene] locus=scaffold1511778_1:1011:1331:+[Lack 3'-end]"]
["rumen100058_GL0286299_1 [gene] locus=scaffold1165601_2:3:545:+[Lack both ends]"]
["rumen100058_GL0322092_1 [gene] locus=scaffold1356170_1:1:312:+[Lack 5'-end]"]
["rumen100058_GL0431768_1 [gene] locus=C60004488_1:805:1029:+[Lack 3'-end]"]
["rumen100058_GL0531429_1 [gene] locus=scaffold1392407_4:1170:1460:+[Lack 3'-end]"]
["rumen100058_GL0534021_1 [gene] locus=scaffold3171351_1:3:368:-[Lack 3'-end]"]
["rumen100058_GL0586047_1 [gene] locus=scaffold2616239_2:3:365:-[Lack 3'-end]"]
["rumen100058_GL0631258_1 [gene] locus=C59445710_1:374:790:-[Lack 5'-end]"]
["rumen100058_GL0633342_1 [gene] locus=scaffold930924_1:1:255:-[Lack 3'-end]"]
["rumen100058_GL0644812_1 [gene] locus=scaffold2605206_3:423:692:+[Lack 3'-end]"]
["rumen100058_GL0677781_1 [gene] locus=scaffold1316226_5:2208:2555:+[Complete]"]
["rumen100058_GL0734503_1 [gene] locus=scaffold51761_2:2:247:+[Lack 5'-end]"]
["rumen100058_GL0752936_1 [gene] locus=scaffold1928015_3:2:304:+[Lack 5'-end]", "rumen3042_GL1281026_1 [gene] locus=scaffold2375079_2:2:304:+[Lack 5'-end]"]
["rumen100058_GL0766909_1 [gene] locus=scaffold22185_3:2:214:+[Lack 5'-end]"]
["rumen100058_GL0866875_1 [gene] locus=scaffold2432313_1:1:336:+[Lack 5'-end]"]
["rumen100058_GL0956944_1 [gene] locus=scaffold3332839_1:1:198:+[Lack 5'-end]"]
["rumen100058_GL1056175_1 [gene] locus=scaffold2252074_1:1:186:+[Lack 5'-end]", "rumen3042_GL0211651_1 [gene] locus=scaffold2125478_2:361:546:-[Lack 5'-end]"]
["rumen100058_GL1186590_1 [gene] locus=scaffold2712369_3:3:377:-[Lack 3'-end]"]
["rumen100058_GL1260280_1 [gene] locus=scaffold3242967_1:356:523:-[Lack 5'-end]"]
["rumen100058_GL1277341_1 [gene] locus=scaffold3134266_4:1:240:+[Lack 5'-end]"]
["rumen100058_GL1507542_1 [gene] locus=scaffold529438_4:894:1070:+[Lack 3'-end]"]

["rumen100058_GL1521442_1 [gene] locus=scaffold1325861_2:2:202:+[Lack 5'-end]"]
["rumen100058_GL1532997_1 [gene] locus=scaffold1512339_1:297:545:-[Lack 5'-end]"]
["rumen100058_GL1546047_1 [gene] locus=scaffold2351752_4:876:1211:+[Lack 3'-end]"]
["rumen100058_GL1583839_1 [gene] locus=scaffold2751180_1:685:888:+[Lack 3'-end]"]
["rumen100058_GL1599682_1 [gene] locus=scaffold1900018_3:3:287:-[Lack 3'-end]"]
["rumen100058_GL1612120_1 [gene] locus=scaffold2154041_1:1:354:+[Lack 5'-end]"]
["rumen100058_GL1643378_1 [gene] locus=scaffold1233893_1:1:210:+[Lack 5'-end]", "rumen100058_GL2885838_1 [gene] locus=scaffold2415619_1:1:210:+[Lack 5'-end]"]
["rumen100058_GL1659862_1 [gene] locus=scaffold2136811_1:1:405:+[Lack 5'-end]", "rumen2009040_GL0791826_1 [gene] locus=scaffold2466552_1:323:727:-[Lack 5'-end]", "rumen2009040_GL2914999_1 [gene] locus=scaffold985728_2:279:683:-[Lack 5'-end]"]
["rumen100058_GL1822836_1 [gene] locus=scaffold357672_3:160:537:+[Lack 3'-end]"]
["rumen100058_GL1901186_1 [gene] locus=scaffold2569265_1:1034:1315:+[Lack 3'-end]"]
["rumen100058_GL1964487_1 [gene] locus=scaffold3095996_1:1:219:-[Lack 3'-end]"]
["rumen100058_GL2029115_1 [gene] locus=scaffold1998067_1:2265:2435:-[Lack 5'-end]"]
["rumen100058_GL2036481_1 [gene] locus=scaffold940039_5:2802:3149:-[Lack 5'-end]"]
["rumen100058_GL2180073_1 [gene] locus=scaffold355308_4:138:506:-[Lack 5'-end]"]
["rumen100058_GL2222493_1 [gene] locus=scaffold1798464_1:576:890:+[Lack 3'-end]"]
["rumen100058_GL2260244_1 [gene] locus=scaffold466119_4:2838:3167:+[Lack 3'-end]"]
["rumen100058_GL2377314_1 [gene] locus=C58474256_1:368:601:-[Lack 5'-end]"]
["rumen100058_GL2821626_1 [gene] locus=scaffold148270_1:2:346:-[Lack 3'-end]"]
["rumen100058_GL2862569_1 [gene] locus=scaffold2358813_2:2:139:+[Lack 5'-end]"]
["rumen100058_GL2888023_1 [gene] locus=scaffold2352961_2:239:556:+[Lack 3'-end]"]
["rumen100058_GL2899304_1 [gene] locus=C59020242_1:373:687:+[Lack 3'-end]"]
["rumen100058_GL2959246_1 [gene] locus=scaffold1367024_1:3:380:-[Lack 3'-end]"]
["rumen100058_GL2995843_1 [gene] locus=scaffold3058537_1:2:532:-[Lack 3'-end]"]
["rumen100058_GL3043600_1 [gene] locus=scaffold2179793_1:1:360:+[Lack 5'-end]", "rumen2009040_GL0831966_1 [gene] locus=scaffold251460_6:286:645:-[Lack 5'-end]"]
["rumen100058_GL3091063_1 [gene] locus=scaffold8500_2:6213:6593:+[Lack 3'-end]"]
["rumen100058_GL3131347_1 [gene] locus=scaffold2092912_5:3:347:-[Lack 3'-end]"]
["rumen100058_GL3136593_1 [gene] locus=scaffold762324_1:1063:1398:-[Lack 5'-end]"]
["rumen100058_GL3179586_1 [gene] locus=scaffold1757812_3:2:319:+[Lack 5'-end]"]
["rumen100058_GL3403594_1 [gene] locus=scaffold3217913_1:3226:3615:+[Lack 3'-end]"]
["rumen100058_GL3461589_1 [gene] locus=scaffold2608196_1:3:326:-[Lack 3'-end]"]
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["rumen100058_GL3616812_1 [gene] locus=scaffold3251965_1:1:366:+[Lack 5'-end]"]
["rumen100058_GL3622815_1 [gene] locus=scaffold1676918_1:2:574:-[Lack 3'-end]"]
["rumen100058_GL3735820_1 [gene] locus=scaffold2101219_2:272:643:+[Lack 3'-end]"]
["rumen100058_GL3736148_1 [gene] locus=scaffold2030091_1:425:664:-[Lack 5'-end]"]
["rumen2009040_GL0078744_1 [gene] locus=scaffold2896672_1:558:899:-[Lack 5'-end]", "rumen3042_GL0849564_1 [gene] locus=scaffold811678_1:886:1227:-[Lack 5'-end]"]
["rumen2009040_GL0091146_1 [gene] locus=scaffold2536092_2:145:534:-[Lack 5'-end]"]
["rumen2009040_GL0185634_1 [gene] locus=scaffold980264_1:645:959:-[Lack 5'-end]"]

["rumen2009040_GL0192501_1 [gene] locus=scaffold1137677_3:1163:1528:-[Lack 5'-end]", "rumen2009040_GL0883937_1 [gene] locus=scaffold951347_2:2:367:+[Lack 5'-end]"]
["rumen2009040_GL0217692_1 [gene] locus=scaffold2799247_1:1:369:-[Lack 3'-end]", "rumen2009040_GL1061855_1 [gene] locus=scaffold2664944_1:3:371:-[Lack 3'-end]"]
["rumen2009040_GL0240816_1 [gene] locus=scaffold993739_5:2:211:+[Lack 5'-end]"]
["rumen2009040_GL0388547_1 [gene] locus=scaffold1851692_1:2:283:+[Lack 5'-end]"]
["rumen2009040_GL0426471_1 [gene] locus=scaffold2986670_1:518:829:+[Lack 3'-end]", "rumen2009040_GL2875767_1 [gene] locus=scaffold838611_1:3:314:-[Lack 3'-end]"]
["rumen2009040_GL0462510_1 [gene] locus=scaffold1959291_1:1:378:+[Lack 5'-end]", "rumen2009040_GL3572450_1 [gene] locus=scaffold4938_2:1082:1459:-[Lack 5'-end]"]
["rumen2009040_GL0547865_1 [gene] locus=scaffold1675910_2:1:333:-[Lack 3'-end]"]
["rumen2009040_GL0608834_1 [gene] locus=scaffold2637331_1:1:360:-[Lack 3'-end]"]
["rumen2009040_GL0814568_1 [gene] locus=scaffold2576949_1:321:659:+[Lack 3'-end]"]
["rumen2009040_GL0879318_1 [gene] locus=scaffold2762198_1:769:1149:+[Lack 3'-end]", "rumen3042_GL0331167_1 [gene] locus=scaffold1631620_2:131:511:+[Lack 3'-end]"]
["rumen2009040_GL0939811_1 [gene] locus=scaffold568240_2:2:346:+[Lack 5'-end]"]
["rumen2009040_GL0950215_1 [gene] locus=scaffold1949330_2:434:667:+[Lack 3'-end]"]
["rumen2009040_GL0954223_1 [gene] locus=scaffold1387697_5:1:342:-[Lack 3'-end]"]
["rumen2009040_GL0984223_1 [gene] locus=scaffold1625450_1:289:630:+[Lack 3'-end]"]
["rumen2009040_GL0997165_1 [gene] locus=scaffold220049_1:1:348:+[Lack 5'-end]", "rumen2009040_GL3427521_1 [gene] locus=scaffold133033_4:317:664:-[Lack 5'-end]"]
["rumen2009040_GL1033074_1 [gene] locus=scaffold702423_1:3:341:-[Lack 3'-end]"]
["rumen2009040_GL1079553_1 [gene] locus=scaffold409690_4:223:504:+[Lack 3'-end]"]
["rumen2009040_GL1109961_1 [gene] locus=scaffold2635216_5:525:893:-[Lack 5'-end]"]
["rumen2009040_GL1260350_1 [gene] locus=scaffold142321_2:959:1072:-[Lack 5'-end]"]
["rumen2009040_GL1294987_1 [gene] locus=scaffold2114311_2:273:542:-[Lack 5'-end]"]
["rumen2009040_GL1327098_1 [gene] locus=scaffold2734079_1:1264:1644:-[Lack 5'-end]"]
["rumen2009040_GL1374063_1 [gene] locus=scaffold839853_4:3:356:-[Lack 3'-end]"]
["rumen2009040_GL1521253_1 [gene] locus=scaffold1250252_1:1:300:+[Lack 5'-end]"]
["rumen2009040_GL1598708_1 [gene] locus=scaffold571617_1:2:307:-[Lack 3'-end]"]
["rumen2009040_GL1679044_1 [gene] locus=scaffold1288072_1:523:870:-[Lack 5'-end]"]
["rumen2009040_GL1718379_1 [gene] locus=scaffold204805_1:1:261:+[Lack 5'-end]"]
["rumen2009040_GL1801902_1 [gene] locus=scaffold1839399_2:328:714:+[Lack 3'-end]"]
["rumen2009040_GL1938061_1 [gene] locus=scaffold2528382_1:1:207:+[Lack 5'-end]"]
["rumen2009040_GL1938873_1 [gene] locus=scaffold2716147_1:1:381:+[Lack 5'-end]"]
["rumen2009040_GL1951308_1 [gene] locus=scaffold2801546_1:2:289:-[Lack 3'-end]"]
["rumen2009040_GL2024789_1 [gene] locus=scaffold1742962_1:123:557:-[Lack 5'-end]"]
["rumen2009040_GL2159959_1 [gene] locus=scaffold1441602_1:2:358:+[Lack 5'-end]"]
["rumen2009040_GL2165755_1 [gene] locus=C53051945_1:305:541:-[Lack 5'-end]"]
["rumen2009040_GL2200785_1 [gene] locus=scaffold2372755_1:354:566:-[Lack 5'-end]"]
["rumen2009040_GL2286530_1 [gene] locus=scaffold1585469_1:377:790:+[Lack 3'-end]"]
["rumen2009040_GL2381555_1 [gene] locus=scaffold1472774_1:1:285:+[Lack 5'-end]"]
["rumen2009040_GL2400909_1 [gene] locus=scaffold27439_1:58:567:-[Lack 5'-end]"]

["rumen2009040_GL2500842_1 [gene] locus=scaffold2535259_1:360:572:-[Lack 5'-end]"]
["rumen2009040_GL2532651_1 [gene] locus=scaffold2404720_3:1:234:-[Lack 3'-end]"]
["rumen2009040_GL2535472_1 [gene] locus=scaffold1951967_1:295:558:-[Lack 5'-end]"]
["rumen2009040_GL2566513_1 [gene] locus=scaffold2998878_1:3:419:-[Lack 3'-end]"]
["rumen2009040_GL2582273_1 [gene] locus=scaffold992072_5:3:191:+[Lack 5'-end]"]
["rumen2009040_GL2672523_1 [gene] locus=scaffold701553_2:2:451:-[Lack 3'-end]"]
["rumen2009040_GL2756463_1 [gene] locus=scaffold939657_2:135:503:+[Lack 3'-end]"]
["rumen2009040_GL2758646_1 [gene] locus=scaffold938630_2:3:353:+[Lack 5'-end]"]
["rumen2009040_GL2773498_1 [gene] locus=scaffold1931446_6:1:234:+[Lack 5'-end]"]
["rumen2009040_GL2847452_1 [gene] locus=scaffold41258_5:2:331:-[Lack 3'-end]"]
["rumen2009040_GL2875492_1 [gene] locus=scaffold238312_3:2:367:-[Lack 3'-end]"]
["rumen2009040_GL3055096_1 [gene] locus=scaffold1333588_2:393:728:+[Lack 3'-end]"]
["rumen2009040_GL3082071_1 [gene] locus=scaffold2862968_2:1:390:+[Lack 5'-end]"]
["rumen2009040_GL3107942_1 [gene] locus=scaffold1798144_1:3:221:-[Lack 3'-end]"]
["rumen2009040_GL3155417_1 [gene] locus=scaffold1387697_3:410:706:-[Lack 5'-end]"]
["rumen2009040_GL3269873_1 [gene] locus=scaffold1148194_5:126:503:+[Lack 3'-end]"]
["rumen2009040_GL3276802_1 [gene] locus=scaffold448955_2:1:291:+[Lack 5'-end]"]
["rumen2009040_GL3326257_1 [gene] locus=scaffold2241552_1:144:581:+[Lack 3'-end]"]
["rumen2009040_GL3500042_1 [gene] locus=scaffold132598_3:200:535:-[Complete]"]
["rumen2009040_GL3501092_1 [gene] locus=scaffold2196175_1:756:1154:-[Complete]"]
["rumen2009040_GL3528901_1 [gene] locus=scaffold223775_1:839:1186:+[Lack 3'-end]"]
["rumen2009040_GL3531298_1 [gene] locus=scaffold2764935_1:2:391:-[Lack 3'-end]"]
["rumen2009040_GL3541435_1 [gene] locus=scaffold832351_2:2:370:-[Lack 3'-end]"]
["rumen2009040_GL3626590_1 [gene] locus=C53128917_1:355:549:-[Lack 5'-end]"]
["rumen2009040_GL3630757_1 [gene] locus=C53501220_1:1:312:+[Lack 5'-end]"]
["rumen3042_GL0059136_1 [gene] locus=scaffold695306_3:1587:1763:-[Lack 5'-end]"]
["rumen3042_GL0363961_1 [gene] locus=scaffold1314062_1:1:405:-[Lack 3'-end]"]
["rumen3042_GL0587160_1 [gene] locus=scaffold731980_1:1:492:+[Lack 5'-end]"]
["rumen3042_GL0822696_1 [gene] locus=scaffold1355477_3:1:390:+[Lack 5'-end]"]
["rumen3042_GL0833834_1 [gene] locus=scaffold2422269_1:1:363:+[Lack 5'-end]"]
["rumen3042_GL0846119_1 [gene] locus=scaffold1033519_1:3:260:-[Lack 3'-end]"]
["rumen3042_GL0860281_1 [gene] locus=scaffold804980_2:3:335:+[Lack 5'-end]"]
["rumen3042_GL0916107_1 [gene] locus=scaffold85108_1:6131:6484:+[Lack 3'-end]"]
["rumen3042_GL0946451_1 [gene] locus=scaffold1087221_6:1:282:-[Lack 3'-end]"]
["rumen3042_GL0955061_1 [gene] locus=scaffold2586303_1:3:455:-[Lack 3'-end]"]
["rumen3042_GL0981838_1 [gene] locus=scaffold1489189_1:2420:2575:-[Lack 5'-end]"]
["rumen3042_GL0994695_1 [gene] locus=scaffold2511542_1:1:372:+[Lack 5'-end]"]
["rumen3042_GL1081317_1 [gene] locus=scaffold63982_1:3:251:-[Lack 3'-end]"]
["rumen3042_GL1178291_1 [gene] locus=scaffold373936_3:208:525:+[Lack 3'-end]"]
["rumen3042_GL1208192_1 [gene] locus=scaffold10932_2:1:177:+[Lack 5'-end]"]
["rumen3042_GL1213106_1 [gene] locus=scaffold828639_5:1075:1281:-[Lack 5'-end]"]
["rumen3042_GL1361017_1 [gene] locus=scaffold1087221_4:293:802:-[Lack 5'-end]"]
["rumen3042_GL1469042_1 [gene] locus=scaffold1922261_1:1:471:+[Lack 5'-end]"]

["rumen3042_GL1494266_1 [gene] locus=scaffold15366_1:4080:4355:-[Lack 5'-end]"]
["rumen3042_GL1705099_1 [gene] locus=scaffold2401685_5:1:501:-[Lack 3'-end]"]
["rumen3042_GL1761385_1 [gene] locus=scaffold1369872_1:815:958:-[Lack 5'-end]"]
["rumen3042_GL1834328_1 [gene] locus=scaffold2313862_1:146:541:-[Lack 5'-end]"]
["rumen3042_GL1943551_1 [gene] locus=scaffold589701_1:1:243:+[Lack 5'-end]"]
["rumen3042_GL2029715_1 [gene] locus=scaffold1758679_2:1112:1279:-[Lack 5'-end]"]
["rumen3042_GL2082551_1 [gene] locus=scaffold1268850_4:5265:5447:-[Lack 5'-end]"]
["rumen3042_GL2090665_1 [gene] locus=scaffold1981975_1:656:916:+[Lack 3'-end]"]
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["rumen3042_GL2147114_1 [gene] locus=scaffold586307_5:480:788:-[Lack 5'-end]"]
["rumen3042_GL2177302_1 [gene] locus=scaffold98686_2:2:385:-[Lack 3'-end]"]
["rumen3042_GL2281281_1 [gene] locus=scaffold157141_3:3:197:-[Lack 3'-end]"]
["rumen3042_GL2333249_1 [gene] locus=scaffold2580510_1:378:686:+[Lack 3'-end]"]
["rumen3042_GL2373089_1 [gene] locus=scaffold851029_1:1:201:+[Lack 5'-end]"]
["rumen3042_GL2400089_1 [gene] locus=scaffold2401685_4:432:857:-[Lack 5'-end]"]
["rumen3042_GL2613267_1 [gene] locus=scaffold1933295_1:3:242:-[Lack 3'-end]"]
["rumen3042_GL2658947_1 [gene] locus=scaffold1076797_1:2:367:+[Lack 5'-end]"]
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["rumen552_GL0205558_1 [gene] locus=scaffold394049_1:3:509:+[Lack both ends]"]
["rumen552_GL0238773_1 [gene] locus=scaffold881856_1:1:180:+[Lack 5'-end]"]
["rumen552_GL0242063_1 [gene] locus=scaffold470503_2:1073:1399:-[Lack 5'-end]", "rumen2009040_GL2429135_1 [gene] locus=scaffold682176_2:1:327:+[Lack 5'-end]"]
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["rumen552_GL0749241_1 [gene] locus=scaffold713861_6:2:379:-[Lack 3'-end]"]
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["rumen552_GL1372244_1 [gene] locus=scaffold634987_3:265:663:-[Lack 5'-end]"]
["rumen552_GL1470768_1 [gene] locus=scaffold255115_1:298:600:-[Lack 5'-end]"]
["rumen552_GL1680869_1 [gene] locus=scaffold745815_2:627:782:-[Lack 5'-end]"]
["rumen552_GL1709277_1 [gene] locus=C21710250_1:3:275:-[Lack 3'-end]"]
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["rumen552_GL1748723_1 [gene] locus=C21253972_1:1:327:+[Lack 5'-end]"]
["rumen553_GL0082586_1 [gene] locus=scaffold44886_4:1009:1368:+[Lack 3'-end]"]
["rumen553_GL0098425_1 [gene] locus=scaffold319491_5:1:375:+[Lack 5'-end]"]
["rumen553_GL0160224_1 [gene] locus=scaffold69956_2:2:346:+[Lack 5'-end]"]
["rumen553_GL0202918_1 [gene] locus=scaffold274312_1:2:181:+[Lack 5'-end]"]
["rumen553_GL0490408_1 [gene] locus=scaffold372603_4:266:604:+[Lack 3'-end]"]
["rumen553_GL0543694_1 [gene] locus=scaffold194301_6:407:676:-[Lack 5'-end]"]

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["rumen553_GL0562574_1 [gene] locus=scaffold392100_1:3:185:+[Lack 5'-end]", "rumen583_GL0702223_1 [gene] locus=scaffold303135_1:781:963:-[Lack 5'-end]"]
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["rumen553_GL0678607_1 [gene] locus=scaffold145208_1:211:585:+[Lack 3'-end]"]
["rumen553_GL0718529_1 [gene] locus=scaffold362985_2:3:404:+[Lack 5'-end]"]
["rumen553_GL0865556_1 [gene] locus=scaffold13571_2:1:372:-[Lack 3'-end]"]
["rumen553_GL0865807_1 [gene] locus=scaffold195522_3:2:337:+[Lack 5'-end]", "rumen552_GL0376702_1 [gene] locus=scaffold370500_3:304:639:-[Lack 5'-end]"]
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["rumen554_GL0138870_1 [gene] locus=scaffold288892_1:2183:2407:-[Lack 5'-end]"]
["rumen554_GL0188842_1 [gene] locus=scaffold1360733_1:1145:1423:+[Lack 3'-end]"]
["rumen554_GL0365240_1 [gene] locus=scaffold1555248_1:1:246:+[Lack 5'-end]"]
["rumen554_GL0394083_1 [gene] locus=scaffold2148067_1:692:922:-[Lack 5'-end]"]
["rumen554_GL0397046_1 [gene] locus=scaffold679321_2:2:406:+[Lack 5'-end]", "rumen3042_GL1821535_1 [gene] locus=scaffold1264780_4:3:407:+[Lack 5'-end]"]
["rumen554_GL0410305_1 [gene] locus=scaffold1434111_2:1:207:+[Lack 5'-end]"]
["rumen554_GL0532025_1 [gene] locus=scaffold1503866_2:461:688:-[Lack 5'-end]"]
["rumen554_GL0907277_1 [gene] locus=scaffold2042893_9:3:305:+[Lack 5'-end]"]
["rumen554_GL1014034_1 [gene] locus=scaffold597931_10:1:285:+[Lack 5'-end]"]
["rumen554_GL1019426_1 [gene] locus=scaffold135260_1:3196:3411:-[Lack 5'-end]"]
["rumen554_GL1048462_1 [gene] locus=scaffold2076749_2:872:1165:+[Lack 3'-end]"]
["rumen554_GL1231103_1 [gene] locus=C40248868_1:241:708:+[Lack 3'-end]"]
["rumen554_GL1251878_1 [gene] locus=scaffold837034_2:2:190:+[Lack 5'-end]"]
["rumen554_GL1269965_1 [gene] locus=scaffold1279791_1:254:637:+[Lack 3'-end]"]
["rumen554_GL1400747_1 [gene] locus=scaffold357645_4:923:1123:-[Lack 5'-end]"]
["rumen554_GL1410982_1 [gene] locus=scaffold861386_5:540:947:-[Lack 5'-end]", "rumen2009040_GL2121181_1 [gene] locus=scaffold1829910_2:536:943:-[Lack 5'-end]"]
["rumen554_GL1541304_1 [gene] locus=scaffold519696_3:3:323:+[Lack 5'-end]", "rumen100058_GL1478275_1 [gene] locus=scaffold2792750_1:343:663:-[Lack 5'-end]"]
["rumen554_GL1657938_1 [gene] locus=scaffold1094179_2:369:686:+[Lack 3'-end]", "rumen555_GL2048171_1 [gene] locus=C28722804_1:848:1165:+[Lack 3'-end]"]
["rumen554_GL1669413_1 [gene] locus=scaffold787818_3:3:290:+[Lack 5'-end]", "rumen3042_GL1858140_1 [gene] locus=scaffold1990046_3:219:506:-[Lack 5'-end]"]
["rumen554_GL1748615_1 [gene] locus=scaffold462637_8:1:444:-[Lack 3'-end]"]
["rumen554_GL1766862_1 [gene] locus=scaffold1837363_1:3:689:-[Lack 3'-end]"]
["rumen554_GL1781225_1 [gene] locus=scaffold702412_4:1738:2037:+[Complete]", "rumen0081_GL0759067_1 [gene] locus=scaffold314097_1:1:300:+[Lack 5'-end]"]
["rumen554_GL1795507_1 [gene] locus=scaffold1884241_1:175:522:+[Lack 3'-end]"]
["rumen554_GL1877580_1 [gene] locus=scaffold319861_1:1:324:-[Lack 3'-end]"]
["rumen554_GL1932074_1 [gene] locus=scaffold664346_1:634:1005:+[Lack 3'-end]"]
["rumen554_GL2069886_1 [gene] locus=C39226807_1:3:389:-[Lack 3'-end]"]
["rumen554_GL2146420_1 [gene] locus=scaffold1274607_1:411:626:-[Lack 5'-end]"]

["rumen554_GL2179928_1 [gene] locus=scaffold981268_6:3:494:-[Lack 3'-end]"]
["rumen554_GL2185713_1 [gene] locus=scaffold1470618_3:2:151:+[Lack 5'-end]"]
["rumen554_GL2277224_1 [gene] locus=scaffold1137894_1:3:356:+[Lack 5'-end]"]
["rumen554_GL2377912_1 [gene] locus=scaffold1992475_3:539:730:-[Lack 5'-end]"]
["rumen554_GL2593257_1 [gene] locus=scaffold140049_2:1499:1711:+[Lack 3'-end]"]
["rumen554_GL2595288_1 [gene] locus=scaffold1257514_3:2:229:-[Lack 3'-end]"]
["rumen554_GL2725600_1 [gene] locus=scaffold2014638_1:3:398:-[Lack 3'-end]", "rumen2009040_GL0113933_1 [gene] locus=scaffold2685079_1:2:397:-[Lack 3'-end]"]
["rumen554_GL2862624_1 [gene] locus=scaffold627097_5:590:901:+[Lack 3'-end]"]
["rumen554_GL2884529_1 [gene] locus=scaffold1669682_1:2:232:+[Lack 5'-end]"]
["rumen554_GL3088331_1 [gene] locus=C39804361_1:2:331:+[Lack 5'-end]"]
["rumen554_GL3091637_1 [gene] locus=scaffold1981977_1:256:666:+[Lack 3'-end]"]
["rumen554_GL3117223_1 [gene] locus=scaffold12496_2:1:405:+[Lack 5'-end]"]
["rumen555_GL0027538_1 [gene] locus=scaffold131276_2:563:1003:+[Lack 3'-end]"]
["rumen555_GL0068504_1 [gene] locus=scaffold1418384_2:3:326:+[Lack 5'-end]"]
["rumen555_GL0072394_1 [gene] locus=C27352657_1:1:282:+[Lack 5'-end]"]
["rumen555_GL0227348_1 [gene] locus=scaffold162383_2:332:655:+[Lack 3'-end]"]
["rumen555_GL0268448_1 [gene] locus=scaffold1543841_1:325:678:-[Lack 5'-end]"]
["rumen555_GL0377058_1 [gene] locus=scaffold1214444_2:2773:3108:+[Lack 3'-end]"]
["rumen555_GL0398033_1 [gene] locus=scaffold1360590_1:3:392:+[Lack 5'-end]"]
["rumen555_GL0517934_1 [gene] locus=C27875116_1:3:314:+[Lack 5'-end]"]
["rumen555_GL0633901_1 [gene] locus=scaffold1502535_1:3:317:+[Lack 5'-end]"]
["rumen555_GL0651556_1 [gene] locus=scaffold308348_2:2:295:-[Lack 3'-end]"]
["rumen555_GL0652635_1 [gene] locus=scaffold1347373_3:532:735:+[Lack 3'-end]"]
["rumen555_GL0670004_1 [gene] locus=scaffold1324758_1:9029:9298:+[Lack 3'-end]"]
["rumen555_GL0922353_1 [gene] locus=scaffold666065_1:773:946:-[Lack 5'-end]"]
["rumen555_GL0956666_1 [gene] locus=scaffold1091563_2:1897:2226:-[Lack 5'-end]"]
["rumen555_GL1184849_1 [gene] locus=scaffold1557299_2:2:274:+[Lack 5'-end]"]
["rumen555_GL1224395_1 [gene] locus=scaffold193196_2:2:154:+[Lack 5'-end]"]
["rumen555_GL1406086_1 [gene] locus=scaffold929941_1:3:311:-[Lack 3'-end]"]
["rumen555_GL1858893_1 [gene] locus=C27598164_1:226:597:+[Lack 3'-end]"]
["rumen555_GL1876032_1 [gene] locus=scaffold7414_1:1:306:+[Lack 5'-end]"]
["rumen555_GL1992655_1 [gene] locus=C28343876_1:1:222:+[Lack 5'-end]"]
["rumen555_GL1995028_1 [gene] locus=scaffold317275_1:111:524:-[Lack 5'-end]"]
["rumen555_GL2118963_1 [gene] locus=scaffold329944_2:277:627:+[Lack 3'-end]"]
["rumen555_GL2180460_1 [gene] locus=scaffold1526821_1:1:393:+[Lack 5'-end]"]
["rumen555_GL2452583_1 [gene] locus=scaffold851016_2:339:710:+[Lack 3'-end]"]
["rumen555_GL2480943_1 [gene] locus=scaffold1347711_1:1117:1287:-[Lack 5'-end]"]
["rumen555_GL2509487_1 [gene] locus=scaffold1350860_1:3:359:+[Lack 5'-end]"]
["rumen583_GL0053729_1 [gene] locus=C5168210_1:2:244:+[Lack 5'-end]"]
["rumen583_GL0053730_1 [gene] locus=C5168210_1:373:603:+[Lack 3'-end]", "rumen2009040_GL0943771_1 [gene] locus=scaffold401680_1:3:233:-[Lack 3'-end]"]
["rumen583_GL0213114_1 [gene] locus=scaffold42773_5:3:260:-[Lack 3'-end]"]

["rumen583_GL0215888_1 [gene] locus=scaffold100224_5:1:312:+[Lack 5'-end]", "rumen0081_GL0689776_1 [gene] locus=scaffold335362_4:1:312:+[Lack 5'-end]"]
["rumen583_GL0228964_1 [gene] locus=scaffold155921_1:148:429:+[Complete]"]
["rumen583_GL0244099_1 [gene] locus=scaffold26514_7:2:343:-[Lack 3'-end]"]
["rumen583_GL0346722_1 [gene] locus=scaffold212105_4:557:715:-[Lack 5'-end]"]
["rumen583_GL0393253_1 [gene] locus=scaffold92131_1:1:411:-[Lack 3'-end]"]
["rumen583_GL0455644_1 [gene] locus=scaffold143659_1:1:345:+[Lack 5'-end]"]
["rumen583_GL0551175_1 [gene] locus=scaffold225563_1:1055:1315:-[Lack 5'-end]"]
["rumen583_GL0594447_1 [gene] locus=scaffold139170_2:3:140:+[Lack 5'-end]"]
["rumen583_GL0645943_1 [gene] locus=C5419234_1:1:141:+[Lack 5'-end]"]
["rumen7049_GL0001475_1 [gene] locus=C52796474_1:596:940:-[Lack 5'-end]"]
["rumen7049_GL0049077_1 [gene] locus=scaffold1146656_3:2:427:+[Lack 5'-end]"]
["rumen7049_GL0216554_1 [gene] locus=scaffold799511_1:663:833:+[Lack 3'-end]"]
["rumen7049_GL0220356_1 [gene] locus=scaffold2216306_1:426:692:-[Lack 5'-end]"]
["rumen7049_GL0493365_1 [gene] locus=scaffold848548_1:676:1020:+[Lack 3'-end]"]
["rumen7049_GL0534985_1 [gene] locus=scaffold1763776_1:3:347:+[Lack 5'-end]"]
["rumen7049_GL0857407_1 [gene] locus=scaffold1178704_1:482:790:-[Lack 5'-end]"]
["rumen7049_GL0888049_1 [gene] locus=scaffold867490_1:739:1062:-[Lack 5'-end]"]
["rumen7049_GL0989810_1 [gene] locus=scaffold970554_2:355:684:-[Lack 5'-end]"]
["rumen7049_GL1059735_1 [gene] locus=scaffold629855_5:3:305:+[Lack 5'-end]"]
["rumen7049_GL1283114_1 [gene] locus=scaffold1642442_1:421:618:-[Lack 5'-end]"]
["rumen7049_GL1314016_1 [gene] locus=scaffold1326008_1:175:507:+[Lack 3'-end]"]
["rumen7049_GL1367561_1 [gene] locus=scaffold2187250_1:3:527:-[Lack 3'-end]"]
["rumen7049_GL1409444_1 [gene] locus=scaffold844916_3:335:832:+[Lack 3'-end]"]
["rumen7049_GL1438087_1 [gene] locus=scaffold602757_1:3:326:-[Lack 3'-end]"]
["rumen7049_GL1458110_1 [gene] locus=scaffold532368_3:912:1145:-[Lack 5'-end]"]
["rumen7049_GL1544548_1 [gene] locus=C52778990_1:535:930:+[Lack 3'-end]"]
["rumen7049_GL1676226_1 [gene] locus=scaffold942407_1:2:316:-[Lack 3'-end]"]
["rumen7049_GL1899950_1 [gene] locus=scaffold1940712_1:389:604:-[Lack 5'-end]"]
["rumen7049_GL1961835_1 [gene] locus=scaffold1357629_3:2:331:-[Lack 3'-end]"]
["rumen7049_GL2118273_1 [gene] locus=scaffold1193657_2:1395:1556:+[Lack 3'-end]"]
["rumen7049_GL2276028_1 [gene] locus=scaffold185098_2:2033:2350:-[Lack 5'-end]"]
["rumen7049_GL2637773_1 [gene] locus=scaffold1432033_1:598:951:+[Lack 3'-end]"]
["rumen7049_GL2701731_1 [gene] locus=C52742654_1:788:910:-[Lack 5'-end]"]
["rumen7049_GL2729833_1 [gene] locus=C51342306_1:1:225:+[Lack 5'-end]"]
["rumen7049_GL2874857_1 [gene] locus=scaffold2079380_1:950:1180:-[Lack 5'-end]"]

Table S2

List of the multi-modular sequences containing a GH130 module, and their location in the meta-nodes.

Sequence ID	Modularity	SSN Cluster
CAZy DB		
ACY49488.1	GH130-GH130	small meta-node (<20 sequences)
AEN74517.1	GH130-GH130	small meta-node (<20 sequences)
AKM78124.1	GH130-GH130	small meta-node (<20 sequences)
AKM83974.1	GH130-GH130	small meta-node (<20 sequences)
CCP27154.1	GH130-GT81	small meta-node (<20 sequences)
AEE92278.1	GH130-GT81	small meta-node (<20 sequences)
Human metagenome		
DOM025_GL0036051	GH130-GH92	Singletons
MH0378_GL0079806	GH92-GH130	C3
MH0369_GL0053907	GH127-GH130_distantly related	small meta-node (<20 sequences)
Rumen metagenome		
0081_GL1521727	GH130-GH78	C3
3042_GL0231557	GH130-GH78	C3
0081_GL0217456	GH130-GH78	C3
7049_GL1068002	GH2-GH130	C3
554_GL2279888	GH92-GH130	C3
7049_GL1012174	GH92-GH130	C3
2009040_GL1278742	GH43-GH130	C3
555_GL0472243	GH130_dist-GH142	UC4
555_GL1429890	GH130_dist-GH142	UC4
0081_GL0027620	GH130_dist-GH142	UC4
0081_GL1803283	GH130_dist-GH142	UC4
2009040_GL1002494	GH130_dist-GH142	UC4
7049_GL0472254	GH130_dist-GH142	UC4
7049_GL0484382	GH130_dist-GH142	UC4
552_GL1270477	GH130_dist-GH142	UC4
554_GL0058843	GH130_dist-GH142	UC4

Table S3

Characteristics of the sequences chosen for biochemical characterization.

Meta-node	Sequence ID	Prevalence in the human gut metagenome (% of individuals)	Best Blast hit with a GH130 sequence from the CAZy DB		Best Blast hit with a characterized GH130		Activity
			Query coverage	**% Identity**	**Query coverage**	**% Identity**	
UC1	MH0431_GL0150624	17 %	AVM43672.1		AAO76140.1		β-1,4-mannosyl-glucuronic acid phosphorylase
			95%	59.8%	94%	33.1%	
UC3	MH0373_GL0093988	17 %	APF19181.1		WP_026485574.1		β-1,4-mannooligosaccharide phosphorylase
			95%	43.4%	97%	39.3%	
UC4	MH0011_GL0029022	53 %	AMM53793.1		ACT94389.1		/
			69%	31.1%	57%	30.0%	
UC6	MH0409_GL0096961	4 %	ADO84614.1		VCV21229.1		/
			98%	36.6%	98%	36.6%	
UC7	340101.Vvad_PD3074	12 %	AIQ48603.1		CAZ94304.1		β-1,3-mannosyl-glucose phosphorylase β-1,3-mannooligosaccharide phosphorylase

Table S4

Distribution of the predicted phosphorylases and hydrolases in the meta-nodes. The number of sequences includes full-length and truncated sequences.

SSN meta-nodes	C1	C2	C4	C5	C6	UC1	UC2	UC3	UC5	UC6	UC7	UC8	UC9	Total	C3	UC4	Total
Predicted mechanism	**GP**	**GP**	**GP**	**GP**	**GP**	**GP**	**GP**	**GP**	**GP**	**GP**	**GP**	**GP**	**GP**	**GP**	**GH**	**GH**	**GH**
CAZy	222	269	290	42	85	31	199	135	61	0	9	26	29	1398	113	0	113
Human mg	347	332	53	51	2	31	0	24	0	20	6	8	0	874	113	31	144
Mouse mg	149	227	18	5	0	1	0	0	0	0	1	2	0	403	26	2	28
Pig mg	235	244	13	13	0	24	0	3	0	1	4	0	0	537	39	5	44
Bovine mg	970	643	19	61	0	118	0	7	0	11	13	0	0	1842	78	53	131
Total	1923	1715	393	172	87	205	199	169	61	32	33	36	29	5054	369	91	460