

\*\*\*\*\* \* \* \* \* \*

Badolescentis	--TTTTGTGGAGGGTTCGATTCTGGCTCAGGATGAACGCTGGCGGCGTCTTAAACACATGCAAGTCGAACGGGATCGGC	78
Blongum	--TTTTGTGGAGGGTTCGATTCTGGCTCAGGATGAACGCTGGCGGCGTCTTAAACACATGCAAGTCGAACGGGATCCAT	78
Aaurecens	-----TCAGGATGAACGCTGGCGGCGTCTTAAACACATGCAAGTCGAACGATGATCCC	53
AFB24	-----AGAGTTTGATCCTGGCTCAGGATGAACGCTGGCGGCGTCTTAAACACATGCAAGTCGAACGATGATCCC	69
TTwist	--TTATTATGGAGAGTTTGATCCTGGCTCAGGACGAACGCTGGCGGCGTCTTAAACACATGCAAGTCGAACGGAAATCAG	78
TTW08/27	--TTATTATGGAGAGTTTGATCCTGGCTCAGGACGAACGCTGGCGGCGTCTTAAACACATGCAAGTCGAACGGAAATCAG	78
Lxlyl	-----CGAACGCTGGCGGCGTCTTAAACACATGCAAGTCGAACGATGAAACA	47
Savermitilis	--TTTACGGAGAGTTTGATCCTGGCTCAGGACGAACGCTGGCGGCGTCTTAAACACATGCAAGTCGAACGATGA	72
Scoelicolor	--CATTCACGGAGAGTTTGATCCTGGCTCAGGACGAACGCTGGCGGCGTCTTAAACACATGCAAGTCGAACGATGA	74
FalniACN14a	--TTGATGGAGAGTTTGATCCTGGCTCAGGACGAACGCTGGCGGCGTCTTAAACACATGCAAGTCGAGCGAGGGG	73
FCcI3	--TTGATGGAGAGTTTGATCCTGGCTCAGGACGAACGCTGGCGGCGTCTTAAACACATGCAAGTCGAGCGAGGGG	73
FEAN1pec	--TTGATGGAGAGTTTGATCCTGGCTCAGGACGAACGCTGGCGGCGTCTTAAACACATGCAAGTCGAGCGAGGGG	73
Acellulolyticus	-----GTTTGATCCTGGCTCAGGACGAACGCTGGCGGCGTCTTAAACACATGCAAGTCGAGCGAGGGG	66
MbovisAF2122/97	--TTTTGTTTGGAGAGTTTGATCCTGGCTCAGGACGAACGCTGGCGGCGTCTTAAACACATGCAAGTCGAACGGAAAGGTC	79
MtuberculosisH37Rv	--TTTTGTTTGGAGAGTTTGATCCTGGCTCAGGACGAACGCTGGCGGCGTCTTAAACACATGCAAGTCGAACGGAAAGGTC	79
MbovisPasteur	--TTTTGTTTGGAGAGTTTGATCCTGGCTCAGGACGAACGCTGGCGGCGTCTTAAACACATGCAAGTCGAACGGAAAGGTC	79
MtuberculosisCDC1551	--TTTTGTTTGGAGAGTTTGATCCTGGCTCAGGACGAACGCTGGCGGCGTCTTAAACACATGCAAGTCGAACGGAAAGGTC	78
Mulcerans	--TTTTGTTTGGAGAGTTTGATCCTGGCTCAGGACGAACGCTGGCGGCGTCTTAAACACATGCAAGTCGAACGGAAAGGTC	79
Mavium	-----AGTTTGATCCTGGCTCAGGACGAACGCTGGCGGCGTCTTAAACACATGCAAGTCGAACGGAAAGGTC	67
MaviumK-10	--TTTTGTTTGGAGAGTTTGATCCTGGCTCAGGACGAACGCTGGCGGCGTCTTAAACACATGCAAGTCGAACGGAAAGGTC	79
MlepraeTN	--TTTTGTTTGGAGAGTTTGATCCTGGCTCAGGACGAACGCTGGCGGCGTCTTAAACACATGCAAGTCGAACGGAAAGGTC	78
MJLS	-----AGAGTTTGATCTGGCTCAGGACGAACGCTGGCGGCGTCTTAAACACATGCAAGTCGAACGGAAAGGTC	69
MKMS	-----AGAGTTTGATCTGGCTCAGGACGAACGCTGGCGGCGTCTTAAACACATGCAAGTCGAACGGAAAGGTC	69
MMCS	-----GAGAGTTTGATCTGGCTCAGGACGAACGCTGGCGGCGTCTTAAACACATGCAAGTCGAACGGAAAGGTC	70
Msmegmatis	TTTTTGTGGAGAGTTTGATCCTGGCTCAGGACGAACGCTGGCGGCGTCTTAAACACATGCAAGTCGAACGGAAAGGTC	80
Mvanbaalenii	-----AGAGTTTGATCTGGCTCAGGACGAACGCTGGCGGCGTCTTAAACACATGCAAGTCGAACGGAAAGGTC	69
Nfarcinica	--TTTCAACGGAGAGTTTGATCCTGGCTCAGGACGAACGCTGGCGGCGTCTTAAACACATGCAAGTCGAGCGTAAAGGCC	79
RRH1	--TTTCAACGGAGAGTTTGATCCTGGCTCAGGACGAACGCTGGCGGCGTCTTAAACACATGCAAGTCGAGCGTAAAGGCC	78
Cdiphtheriae	-----ACGAACGCTGGCGGCGTCTTAAACACATGCAAGTCGAACGGAAAGGTC	47
Cjeikeium	-----TATGGAGAGTTTGATCCTGGCTCAGGACGAACGCTGGCGGCGTCTTAAACACATGCAAGTCGAACGGAAAGGTC	74
Cefficiens	-----CTGGCTCAGGACGAACGCTGGCGGCGTCTTAAACACATGCAAGTCGAACGATGAAGC	57
Cglutamicum	--TGTGGAGAGTTTGATCCTGGCTCAGGACGAACGCTGGCGGCGTCTTAAACACATGCAAGTCGAACGGAAAGGTC	73
Nocardioides	-----AGAGTTTGATCCTGGCTCAGGACGAACGCTGGCGGCGTCTTAAACACATGCAAGTCGAGCGAGGGG	69
Pacnes	-----AGAGTTTGATCCTGGCTCAGGACGAACGCTGGCGGCGTCTTAAACACATGCAAGTCGAACGGAAAGGTC	69
TfuscaYX	-----ACGAACGCTGGCGGCGTCTTAAACACATGCAAGTCGAGCGTAAAGGCC	48
Rxylanophilus	-----GACGAACGCTGGCGGCGTCTTAAAGCATGCAAGTCGAACGGAAAGGTC	49
ruler	1.....10.....20.....30.....40.....50.....60.....70.....80	



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Badolescentis	TGGG-----GCTTGCCTCCGGCCGTGAGAGTGGCAACGGGTGAGTAAATGCGTGACCGACCTGCCCATACACC--GGAA	151
Blongum	CAGG-----CTTTGCTT--GGTGTGAGAGTGGCAACGGGTGAGTAAATGCGTGACCGACCTGCCCATACACC--GGAA	150
Aaurecens	T--GG-----CTTGCTGG--GGGGATTAGTGGCAACGGGTGAGTAAACAGTGAGTAACTGCCCTTGACTCT--GGGAT	122
AFB24	-----TTTGCTGG--GGG--ATTAGTGGCAACGGGTGAGTAAACAGTGAGTAACTGCCCTTAACCTCT--GGGAT	136
TTwist	GGAG-----CTTGCTCCCTGTGATTAGTGGCAACGGGTGAGTAAACAGTGAGTAACTGCCCTTAACCTTT--GGGAT	149
TTW08/27	GGAG-----CTTGCTCCCTGTGATTAGTGGCAACGGGTGAGTAAACAGTGAGTAACTGCCCTTAACCTTT--GGGAT	149
Lxlyl	GGAG-----CTTGCTCTTGGGAATTAGTGGCAACGGGTGAGTAAACAGTGAGTAACTGCCCTTGACTCT--GGGAT	118
Savermitilis	--AG-----CCCTTCGGGGTGGATTAGTGGCAACGGGTGAGTAAACAGTGAGTAACTGCCCTTGACTCT--GGGAC	141
Scoelicolor	--AC-----CACTTCGGTGGGGATTAGTGGCAACGGGTGAGTAAACAGTGAGTAACTGCCCTTGACTCT--GGGAC	143
FalniACN14a	CTTC-----GGC---TCCTAGCCGGCAACGGGTGAGTAAACAGTGAGTAACTGCCCGAGCTCT--GGAA	135
FCcI3	CTTC-----GGC---TCTCAGCCGGCAACGGGTGAGTAAACAGTGAGTAACTGCCCGAGCTCT--GGAA	135
FEAN1pec	CTT-----GC---TCCTAGCCGGCAACGGGTGAGTAAACAGTGAGTAACTGCCCAAGCTCT--GGAA	133
Acellulolyticus	CTTC-----GGGGTACTCGAGCCGGCAACGGGTGAGTAAACAGTGAGTAACTGCCCGAGCTCT--GGGAT	131
MbovisAF2122/97	TCT-----TCGGAGATACTCGAGTGGCAACGGGTGAGTAAACAGTGAGTAACTGCCCTGCACCTC--GGGAT	146
MtuberculosisH37Rv	TCT-----TCGGAGATACTCGAGTGGCAACGGGTGAGTAAACAGTGAGTAACTGCCCTGCACCTC--GGGAT	146
MbovisPasteur	TCT-----TCGGAGATACTCGAGTGGCAACGGGTGAGTAAACAGTGAGTAACTGCCCTGCACCTC--GGGAT	146
MtuberculosisCDC1551	TCT-----TCGGAGATACTCGAGTGGCAACGGGTGAGTAAACAGTGAGTAACTGCCCTGCACCTC--GGGAT	145
Mulcerans	TCT-----TCGGAGATACTCGAGTGGCAACGGGTGAGTAAACAGTGAGTAACTGCCCTGCACCTC--GGGAT	146
Mavium	TCT-----TCGGAGTACTCGAGTGGCAACGGGTGAGTAAACAGTGAGTAACTGCCCTGCACCTC--GGGAT	134
MaviumK-10	TCT-----TCGGAGTACTCGAGTGGCAACGGGTGAGTAAACAGTGAGTAACTGCCCTGCACCTC--GGGAT	146
MlepraeTN	TCTAAAAAACTTTTTTATGAGATACTCGAGTGGCAACGGGTGAGTAAACAGTGAGTAACTGCCCTGCACCTCAGGGAT	158
MJLS	CTT-----C--GGGGTACTCGAGTGGCAACGGGTGAGTAAACAGTGAGTAACTGCCCTGCACCTT--GGGAT	134
MKMS	CTT-----C--GGGGTACTCGAGTGGCAACGGGTGAGTAAACAGTGAGTAACTGCCCTGCACCTT--GGGAT	134
MMCS	CTT-----C--GGGGTACTCGAGTGGCAACGGGTGAGTAAACAGTGAGTAACTGCCCTGCACCTT--GGGAT	135
Msmegmatis	CTT-----TCGGGGTACTCGAGTGGCAACGGGTGAGTAAACAGTGAGTAACTGCCCTGCACCTT--GGGAT	147
Mvanbaalenii	CTT-----C--GGGGTACTCGAGTGGCAACGGGTGAGTAAACAGTGAGTAACTGCCCTGCACCTT--GGGAT	134
Nfarcinica	CTT-----C--GGGGTACTCGAGTGGCAACGGGTGAGTAAACAGTGAGTAACTGCCCTGCACCTT--GGGAT	144
RRH1	CTT-----C--GGGGTACTCGAGTGGCAACGGGTGAGTAAACAGTGAGTAACTGCCCTGCACCTT--GGGAT	143
Cdiphtheriae	CTA-----GCTTGTAGG--TACTCGAGTGGCAACGGGTGAGTAAACAGTGAGTAACTGCCCTGCACCTC--GGGAT	117
Cjeikeium	CCTT-----GCTTGCAGGGTACTCGAGTGGCAACGGGTGAGTAAACAGTGAGTAACTGCCCTGCACCTC--GGGAT	147
Cefficiens	CCT-----GCTTGCAG--GG--TGGATTAGTGGCAACGGGTGAGTAAACAGTGAGTAACTGCCCGCCTT--GGGAT	127
Cglutamicum	CAGA-----GCTTGTCTTGG--TGGATTAGTGGCAACGGGTGAGTAAACAGTGAGTAACTGCCCTGCACCTT--GGGAT	145
Nocardioides	CT-----TTCCGGGGTACTCGAGTGGCAACGGGTGAGTAAACAGTGAGTAACTGCCCTGCACCTT--GGGAT	136
Pacnes	CTGC-----TTTTGTGGGGTGTCTCGAGTGGCAACGGGTGAGTAAACAGTGAGTAACTGCCCTGCACCTT--GGGAT	140
TfuscaYX	CCTT-----CGGGGGTACTCGAGTGGCAACGGGTGAGTAAACAGTGAGTAACTGCCCTGCACCTT--GGGAT	115
Rxylanophilus	CCTT-----CGGGGGTACTCGAGTGGCAACGGGTGAGTAAACAGTGAGTAACTGCCCTGCACCTT--GGGAT	117
ruler	.....90.....100.....110.....120.....130.....140.....150.....160	





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Badollescentis	GAGGGCGACCGCCACATGGGACTGAGATACGGCCCAGACTCCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGG	380
Blongum	GAGGGCGACCGCCACATGGGACTGAGATACGGCCCAGACTCCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGG	378
Aaurescens	GAGGGTGACCGGCCACTGGGACTGAGACACGGCCCAGACTCCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGG	352
AFB24	GAGGGTGACCGGCCACTGGGACTGAGACACGGCCCAGACTCCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGG	366
TTWist	GAGGGTGATCGGCCACTGGGACTGAGACACGGCCCAGACTCCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGG	378
TTW08/27	GAGGGTGATCGGCCACTGGGACTGAGACACGGCCCAGACTCCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGG	378
Lxlyi	GAGGGTGACCGGCCACTGGGACTGAGACACGGCCCAGACTCCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGG	347
Savermitilis	GAGGGCGACCGCCACTGGGACTGAGACACGGCCCAGACTCCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGG	370
Scoelicolor	GAGGGCGACCGCCACTGGGACTGAGACACGGCCCAGACTCCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGG	373
FalniACN14a	GAGGGCGACCGCCACTGGGACTGAGACACGGCCCAGACTCCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGG	364
FCcI3	GAGGGCGACCGCCACTGGGACTGAGACACGGCCCAGACTCCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGG	364
FEAN1pec	GAGGGCGATCGGCCACTGGGACTGAGACACGGCCCAGACTCCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGG	362
Acellulolyticus	GAGGGCGACCGCCACTGGGACTGAGACACGGCCCAGACTCCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGG	361
MbovisAF2122/97	GAGGGTGTCGGGCCACTGGGACTGAGATACGGCCCAGACTCCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGG	377
MtuberculosisH37Rv	GAGGGTGTCGGGCCACTGGGACTGAGATACGGCCCAGACTCCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGG	377
MbovisPasteur	GAGGGTGTCGGGCCACTGGGACTGAGATACGGCCCAGACTCCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGG	377
MtuberculosisCDC1551	GAGGGTGTCGGGCCACTGGGACTGAGATACGGCCCAGACTCCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGG	376
Mulcerans	GAGGGTGTCGGGCCACTGGGACTGAGATACGGCCCAGACTCCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGG	375
Mavium	GAGGGTGTCGGGCCACTGGGACTGAGATACGGCCCAGACTCCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGG	363
MaviumK-10	GAGGGTGTCGGGCCACTGGGACTGAGATACGGCCCAGACTCCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGG	375
MlepraeTN	GAGGGTGACCGCCACTGGGACTGAGATACGGCCCAGACTCCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGG	388
MJLS	GAGGGTGACCGCCACTGGGACTGAGATACGGCCCAGACTCCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGG	365
MKMS	GAGGGTGACCGCCACTGGGACTGAGATACGGCCCAGACTCCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGG	365
MMCS	GAGGGTGACCGCCACTGGGACTGAGATACGGCCCAGACTCCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGG	366
Msmegmatis	GAGGGTGACCGCCACTGGGACTGAGATACGGCCCAGACTCCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGG	378
Mvanbaalenii	GAGGGTGACCGCCACTGGGACTGAGATACGGCCCAGACTCCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGG	365
Nfarcinica	GAGGGCGACCGCCACTGGGACTGAGACACGGCCCAGACTCCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGG	373
RRH1	GAGGGTGACCGCCACTGGGACTGAGACACGGCCCAGACTCCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGG	372
Cdiphtheriae	GAGGGTGACCGCCACTGGGACTGAGATACGGCCCAGACTCCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGG	344
Cjeikeium	GAGGGTGACCGCCACTGGGACTGAGACACGGCCCAGACTCCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGG	374
Cefficiens	GAGGGTGATCGGCCACTGGGACTGAGACACGGCCCAGACTCCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGG	355
Cglutamium	GAGGGTGATCGGCCACTGGGACTGAGACACGGCCCAGACTCCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGG	373
Nocardioides	GAGGGTGACCGCCACTGGGACTGAGACACGGCCCAGACTCCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGG	366
Pacnes	GAGGGTGACCGCCACTGGGACTGAGATACGGCCCAGACTCCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGG	369
TfuscaYX	GAGGGCGACCGCCACTGGGACTGAGACACGGCCCAGACTCCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGG	347
Rxylanophilus	GAGGGTGGTCAGCCACTGGGACTGAGACACGGCCCAGACTCCTACGGGAGGCAGCAGTGGGGAATATTGCACAATGGG	356
ruler	.....330.....340.....350.....360.....370.....380.....390.....400	



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Badollescentis	CGCAAGCCTGATGCAGCGACGCCCGCTGGGGATGACGGCCTTCGGGTTGTAAACCGCTTTGACTGGGAGCAAG--CCC	458
Blongum	CGCAAGCCTGATGCAGCGACGCCCGCTGAGGGATGGAGGCCCTTCGGGTTGTAAACCTCTTTATCGGGGAGCAAG--CG-	455
Aaurescens	CGCAAGCCTGATGCAGCGACGCCCGCTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTAGTAGGGGAAGAAG--CGA	430
AFB24	CGAAAGCCTGATGCAGCGACGCCCGCTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTAGTAGGGGAAGAAG--CGA	444
TTWist	CGCAAGCCTGATGCAGCAACGCCCGCTGGGGGAAAGAGGCCCTTCGGGTTGTAAACCTCTTTGGCAGGGGAAGAAG--CGA	456
TTW08/27	CGCAAGCCTGATGCAGCAACGCCCGCTGGGGGAAAGAGGCCCTTCGGGTTGTAAACCTCTTTGGCAGGGGAAGAAG--CGA	456
Lxlyi	CGAAAGCCTGATGCAGCAACGCCCGCTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTAGTAGGGGAAGAAG--CGA	425
Savermitilis	CGAAAGCCTGATGCAGCGACGCCCGCTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTAGTAGGGGAAGAAG--CGA	448
Scoelicolor	CGAAAGCCTGATGCAGCGACGCCCGCTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTAGTAGGGGAAGAAG--CGA	451
FalniACN14a	CGAAAGCCTGATGCAGCGACGCCCGCTGGGGGATGACGGCCTTCGGGTTGTAAACCTCTTTAGTAGGGGAAGAAG--CGC	442
FCcI3	CGAAAGCCTGATGCAGCGACGCCCGCTGGGGGATGACGGCCTTCGGGTTGTAAACCTCTTTAGTAGGGGAAGAAG--CGA	442
FEAN1pec	CGAAAGCCTGATGCAGCGACGCCCGCTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTAGTAGGGGAAGAAG--CGA	440
Acellulolyticus	CGAAAGCCTGATGCAGCGACGCCCGCTGGGGGAAAGAGGCCCTTCGGGTTGTAAACCTCTTTAGTAGGGGAAGAAG--CGA	439
MbovisAF2122/97	CGCAAGCCTGATGCAGCGACGCCCGCTGGGGGATGACGGCCTTCGGGTTGTAAACCTCTTTAGTAGGGGAAGAAG--GTC	455
MtuberculosisH37Rv	CGCAAGCCTGATGCAGCGACGCCCGCTGGGGGATGACGGCCTTCGGGTTGTAAACCTCTTTAGTAGGGGAAGAAG--GTC	455
MbovisPasteur	CGCAAGCCTGATGCAGCGACGCCCGCTGGGGGATGACGGCCTTCGGGTTGTAAACCTCTTTAGTAGGGGAAGAAG--GTC	455
MtuberculosisCDC1551	CGCAAGCCTGATGCAGCGACGCCCGCTGGGGGATGACGGCCTTCGGGTTGTAAACCTCTTTAGTAGGGGAAGAAG--GTC	454
Mulcerans	CGCAAGCCTGATGCAGCGACGCCCGCTGGGGGATGACGGCCTTCGGGTTGTAAACCTCTTTAGTAGGGGAAGAAG--GTC	453
Mavium	CGCAAGCCTGATGCAGCGACGCCCGCTGGGGGATGACGGCCTTCGGGTTGTAAACCTCTTTAGTAGGGGAAGAAG--GTC	441
MaviumK-10	CGCAAGCCTGATGCAGCGACGCCCGCTGGGGGATGACGGCCTTCGGGTTGTAAACCTCTTTAGTAGGGGAAGAAG--GTC	453
MlepraeTN	CGCAAGCCTGATGCAGCGACGCCCGCTGGGGGATGACGGCCTTCGGGTTGTAAACCTCTTTAGTAGGGGAAGAAG--GTC	466
MJLS	CGCAAGCCTGATGCAGCGACGCCCGCTGGGGGATGACGGCCTTCGGGTTGTAAACCTCTTTAGTAGGGGAAGAAG--GTC	443
MKMS	CGCAAGCCTGATGCAGCGACGCCCGCTGGGGGATGACGGCCTTCGGGTTGTAAACCTCTTTAGTAGGGGAAGAAG--GTC	443
MMCS	CGCAAGCCTGATGCAGCGACGCCCGCTGGGGGATGACGGCCTTCGGGTTGTAAACCTCTTTAGTAGGGGAAGAAG--GTC	444
Msmegmatis	CGCAAGCCTGATGCAGCGACGCCCGCTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTAGTAGGGGAAGAAG--GTC	456
Mvanbaalenii	CGCAAGCCTGATGCAGCGACGCCCGCTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTAGTAGGGGAAGAAG--GTC	443
Nfarcinica	CGAAAGCCTGATGCAGCGACGCCCGCTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTAGTAGGGGAAGAAG--GTC	451
RRH1	CGAAAGCCTGATGCAGCGACGCCCGCTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTAGTAGGGGAAGAAG--GTC	450
Cdiphtheriae	CGCAAGCCTGATGCAGCGACGCCCGCTGGGGGATGACGGCCTTCGGGTTGTAAACCTCTTTAGTAGGGGAAGAAG--GTC	422
Cjeikeium	CGCAAGCCTGATGCAGCGACGCCCGCTGGGGGATGACGGCCTTCGGGTTGTAAACCTCTTTAGTAGGGGAAGAAG--GTC	452
Cefficiens	CGCAAGCCTGATGCAGCGACGCCCGCTGGGGGATGACGGCCTTCGGGTTGTAAACCTCTTTAGTAGGGGAAGAAG--GTC	433
Cglutamium	CGCAAGCCTGATGCAGCGACGCCCGCTGGGGGATGACGGCCTTCGGGTTGTAAACCTCTTTAGTAGGGGAAGAAG--GTC	451
Nocardioides	CGGAAGCCTGATGCAGCAACGCCCGCTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTAGTAGGGGAAGAAG--GTC	444
Pacnes	CGGAAGCCTGATGCAGCAACGCCCGCTGAGGGATGACGGCCTTCGGGTTGTAAACCTCTTTAGTAGGGGAAGAAG--GTC	447
TfuscaYX	CGCAAGCCTGATGCAGCGACGCCCGCTGGGGGATGAGAGGCCCTTCGGGTTGTAAACCTCTTTAGTAGGGGAAGAAG--GTC	427
Rxylanophilus	CGAAAGCCTGATGCAGCAACGCCCGCTGGGGGATGAGAGGCCCTTCGGGTTGTAAACCTCTTTAGTAGGGGAAGAAG--GTC	436
ruler	.....410.....420.....430.....440.....450.....460.....470.....480	



Badolescentis **TTTC**-----GGGGT**GAGTGTACCTTT**CGAAT**AAGCA**CCGGC**TAACTA**CGT**GCCAGCAGCCGCGGTAATACGTA** 525  
Blongum -----AGAGT**GAGTTTACCCGTT**GAA**T**AAGCA**CCGGC**TAACTA**CGT**GCCAGCAGCCGCGGTAATACGTA 519  
Aaurens **AAG**-----TGACGGT**ACCTGC**AGAAGAAGCG**CCGGC**TAACTA**CGT**GCCAGCAGCCGCGGTAATACGTA 493  
AFB24 **AAG**-----TGACGGT**ACCTGC**AGAAGAAGCG**CCGGC**TAACTA**CGT**GCCAGCAGCCGCGGTAATACGTA 507  
TTWist **AAG**-----TGACGGT**ACCTGC**AGAAAAAGCG**CCGGC**TAACTA**CGT**GCCAGCAGCCGCGGTAATACGTA 519  
TTW08/27 **AAG**-----TGACGGT**ACCTGC**AGAAAAAGCG**CCGGC**TAACTA**CGT**GCCAGCAGCCGCGGTAATACGTA 519  
Lxlyi **AAG**-----TGACGGT**ACCTGC**AGAAAAAGCG**CCGGC**TAACTA**CGT**GCCAGCAGCCGCGGTAATACGTA 488  
Savermitilis **AAG**-----TGACGGT**ACCTGC**AGAAGAAGCG**CCGGC**TAACTA**CGT**GCCAGCAGCCGCGGTAATACGTA 511  
Scoelicolor **AAG**-----TGACGGT**ACCTGC**AGAAGAAGCG**CCGGC**TAACTA**CGT**GCCAGCAGCCGCGGTAATACGTA 514  
FalniACN14a **AAG**-----TGACGGT**ACCTGC**AGAAGAAGCG**CCGGC**TAACTA**CGT**GCCAGCAGCCGCGGTAATACGTA 505  
FCcI3 **GAG**-----TGACGGT**ACCTGC**AGAAGAAGCG**CCGGC**TAACTA**CGT**GCCAGCAGCCGCGGTAATACGTA 505  
FEAN1pec **GAG**-----TGACGGT**ACCTGC**AGAAGAAGCG**CCGGC**TAACTA**CGT**GCCAGCAGCCGCGGTAATACGTA 503  
Acellulolyticus **AAG**-----TGACGGT**ACCTGC**AGAAGAAGCG**CCGGC**TAACTA**CGT**GCCAGCAGCCGCGGTAATACGTA 502  
MbovisAF2122/97 **CGGGTTCTCTC**---GGATT**GACGGTAGGT**GGAGAAGAAGCA**CCGGCCAACTA**CGT**GCCAGCAGCCGCGGTAATACGTA** 530  
MtberculosisH37Rv **CGGGTTCTCTC**---GGATT**GACGGTAGGT**GGAGAAGAAGCA**CCGGCCAACTA**CGT**GCCAGCAGCCGCGGTAATACGTA** 530  
MbovisPasteur **CGGGTTCTCTC**---GGATT**GACGGTAGGT**GGAGAAGAAGCA**CCGGCCAACTA**CGT**GCCAGCAGCCGCGGTAATACGTA** 530  
MtberculosisCDC1551 **CGGGTTCTCTC**---GGATT**GACGGTAGGT**GGAGAAGAAGCA**CCGGCCAACTA**CGT**GCCAGCAGCCGCGGTAATACGTA** 529  
Mulcerans **CGGGTTTTCTC**---GGATT**GACGGTAGGT**GGAGAAGAAGCA**CCGGCCAACTA**CGT**GCCAGCAGCCGCGGTAATACGTA** 528  
Mavium **CGGGTTTTCTC**---GGATT**GACGGTAGGT**GGAGAAGAAGCA**CCGGCCAACTA**CGT**GCCAGCAGCCGCGGTAATACGTA** 516  
MaviumK-10 **CGGGTTTTCTC**---GGATT**GACGGTAGGT**GGAGAAGAAGCA**CCGGCCAACTA**CGT**GCCAGCAGCCGCGGTAATACGTA** 528  
MlepraeTN **TGGGTTTTCTC**---GGATT**GACGGTAGGT**GGAGAAGAAGCA**CCGGCCAACTA**CGT**GCCAGCAGCCGCGGTAATACGTA** 541  
MJLS **AAG**-----TGACGGT**ACCTACA**AGAAGAAGGA**CCGGCCAACTA**CGT**GCCAGCAGCCGCGGTAATACGTA** 506  
MKMS **AAG**-----TGACGGT**ACCTACA**AGAAGAAGGA**CCGGCCAACTA**CGT**GCCAGCAGCCGCGGTAATACGTA** 506  
MMCS **AAG**-----TGACGGT**ACCTACA**AGAAGAAGGA**CCGGCCAACTA**CGT**GCCAGCAGCCGCGGTAATACGTA** 507  
Msmegmatis **AAG**-----TGACGGT**ATGTG**CAGAAGAAGGA**CCGGCCAACTA**CGT**GCCAGCAGCCGCGGTAATACGTA** 519  
Mvanbaalenii **AAG**-----TGACGGT**ACCTG**AGAAGAAGGA**CCGGCCAACTA**CGT**GCCAGCAGCCGCGGTAATACGTA** 506  
Nfarcinica **AAG**-----TGACGGT**ACCTG**AGAAGAAGCA**CCGGCCAACTA**CGT**GCCAGCAGCCGCGGTAATACGTA** 514  
RRH1 **AAG**-----TGACGGT**ACCTG**CAGAAGAAGCA**CCGGC**TAACTA**CGT**GCCAGCAGCCGCGGTAATACGTA 513  
Cdiphtheriae **TTGTG**-----ACGGT**TACCTAGATA**AAGAAGCA**CCGGC**TAACTA**CGT**GCCAGCAGCCGCGGTAATACGTA 485  
Cjeikeium **CTGTG**GGG-----TGACGGT**ACCTG**GATAAGAAGCA**CCGGC**TAACTA**CGT**GCCAGCAGCCGCGGTAATACGTA 520  
Cefficiens **TT--GT**-----GACGGT**ACCTG**AGAAGAAGCA**CCGGC**TAACTA**CGT**GCCAGCAGCCGCGGTAATACGTA 496  
Cglutamicum **TATGTT**-----GACGGT**ACCTG**AGAAGAAGCA**CCGGC**TAACTA**CGT**GCCAGCAGCCGCGGTAATACGTA 516  
Nocardioides **CGGTGATGGT**-----GGT**GACGGTAGGT**ACAAGAAGCA**CCGGCCAACTA**CGT**GCCAGCAGCCGCGGTAATACGTA** 516  
Pacnes **GAGTGACGGT**-----AATG--GGTA-----AAGAAGA**CCGGC**TAACTA**CGT**GCCAGCAGCCGCGGTAATACGTA 510  
TfuscaYX **TGGTTTTCTGG**---GGGTT**GACGGTAGGT**GTTGA**T**AAGAAGCA**CCGGC**TAACTA**CGT**GCCAGCAGCCGCGGTAATACGTA 502  
Rxylianophilus **AGGGTTAATAGCCCC**TAGCCT**GACGGTACCCGAC**GAGGAAG**CCCCGGC**TAACTA**CGT**GCCAGCAGCCGCGGTAATACGTA 516  
ruler .....490.....500.....510.....520.....530.....540.....550.....560



Badolescentis **GGGTGCAAGCGTTATCCGGAA**TATTGGGCGT**AAAGGGCT**CGTAGGCGGTT**CGT**CGCGT**CCGGTGT**GAAAGT**CCAT**CGCT 605  
Blongum **GGGTGCAAGCGTTATCCGGAA**TATTGGGCGT**AAAGGGCT**CGTAGGCGGTT**CGT**CGCGT**CCGGTGT**GAAAGT**CCAT**CGCT 599  
Aaurens **GGGCGCAAGCGTTATCCGGAA**TATTGGGCGT**AAAGAGCT**CGTAGGCGGTT**TGT**CGCGT**CTGCTGT**GAAAGA**CCGGGGCT** 573  
AFB24 **GGGCGCAAGCGTTATCCGGAA**TATTGGGCGT**AAAGAGCT**CGTAGGCGGTT**TGT**CGCGT**CTGCGCT**GAAAAT**CCGGGGCT** 587  
TTWist **GGGCGCGAGCGTTGTCCGGAA**TATTGGGCGT**AAAGAGCT**CGTAGGCGGTT**TGT**CACGT**CTGCCGT**GAAAA**CCGAGGCT** 599  
TTW08/27 **GGGCGCGAGCGTTGTCCGGAA**TATTGGGCGT**AAAGAGCT**CGTAGGCGGTT**TGT**CACGT**CTGCCGT**GAAAA**CCGAGGCT** 599  
Lxlyi **GGGTGCGAGCGTTGTCCGGAA**TATTGGGCGT**AAAGAGCT**CGTAGGCGGTT**TGT**CGCGT**CTGCTGT**GAAAA**CCCGAGGCT** 568  
Savermitilis **GGGCGCAAGCGTTGTCCGGAA**TATTGGGCGT**AAAGAGCT**CGTAGGCGGTT**TGT**CACGT**CGGTTGT**GAAAAG**CCCGGGGCT** 591  
Scoelicolor **GGGCGCAAGCGTTGTCCGGAA**TATTGGGCGT**AAAGAGCT**CGTAGGCGGTT**TGT**CACGT**CGGTTGT**GAAAAG**CCCGGGGCT** 594  
FalniACN14a **GGGTGCAAGCGTTGTCCGGAA**TATTGGGCGT**AAAGAGCT**CGTAGGCGGCT**TGT**CGCGT**CGGCTGT**GAAAA**CCCGGGGCT** 585  
FCcI3 **GGATGCAAGCGTTGTCCGGAA**TATTGGGCGT**AAAGAGCT**CGTAGGCGGCT**TGT**CGCGT**CGGCTGT**GAAAA**CCCGGGGCT** 585  
FEAN1pec **GGGTGCAAGCGTTGTCCGGAA**TATTGGGCGT**AAAGAGCT**CGTAGGCGGCT**TGT**CGCGT**CGGCTGT**GAAAA**CCCGGGGCT** 583  
Acellulolyticus **GGGTGCAAGCGTTGTCCGGAA**TATTGGGCGT**AAAGAGCT**CGTAGGCGGTT**TGT**CGCGT**CGGATGT**GAAAA**CCCAGGCT** 582  
MbovisAF2122/97 **GGGTGCGAGCGTTGTCCGGAA**TACTGGGCGT**AAAGAGCT**CGTAGGTTGGTT**TGT**CGCGTT**GTTCGT**GAAAT**CTCACGGCT** 610  
MtberculosisH37Rv **GGGTGCGAGCGTTGTCCGGAA**TACTGGGCGT**AAAGAGCT**CGTAGGTTGGTT**TGT**CGCGTT**GTTCGT**GAAAT**CTCACGGCT** 610  
MbovisPasteur **GGGTGCGAGCGTTGTCCGGAA**TACTGGGCGT**AAAGAGCT**CGTAGGTTGGTT**TGT**CGCGTT**GTTCGT**GAAAT**CTCACGGCT** 610  
MtberculosisCDC1551 **GGGTGCGAGCGTTGTCCGGAA**TACTGGGCGT**AAAGAGCT**CGTAGGTTGGTT**TGT**CGCGTT**GTTCGT**GAAAT**CTCACGGCT** 609  
Mulcerans **GGGTGCGAGCGTTGTCCGGAA**TACTGGGCGT**AAAGAGCT**CGTAGGTTGGTT**TGT**CGCGTT**GTTCGT**GAAAT**CTCACGGCT** 608  
Mavium **GGGTGCGAGCGTTGTCCGGAA**TACTGGGCGT**AAAGAGCT**CGTAGGTTGGTT**TGT**CGCGTT**GTTCGT**GAAAT**CTCACGGCT** 596  
MaviumK-10 **GGGTGCGAGCGTTGTCCGGAA**TACTGGGCGT**AAAGAGCT**CGTAGGTTGGTT**TGT**CGCGTT**GTTCGT**GAAAT**CTCACGGCT** 608  
MlepraeTN **GGGTGCGAGCGTTGTCCGGAA**TACTGGGCGT**AAAGAGCT**CGTAGGTTGGTT**TGT**CGCGTT**GTTCGT**GAAA**CTCACGGCT** 621  
MJLS **GGGTCCGAGCGTTGTCCGGAA**TACTGGGCGT**AAAGAGCT**CGTAGGTTGGTT**TGT**CGCGTT**GTTCGT**GAAAA**CCGGGGGCT** 586  
MKMS **GGGTCCGAGCGTTGTCCGGAA**TACTGGGCGT**AAAGAGCT**CGTAGGTTGGTT**TGT**CGCGTT**GTTCGT**GAAAA**CCGGGGGCT** 586  
MMCS **GGGTCCGAGCGTTGTCCGGAA**TACTGGGCGT**AAAGAGCT**CGTAGGTTGGTT**TGT**CGCGTT**GTTCGT**GAAAA**CCGGGGGCT** 587  
Msmegmatis **GGGTCCGAGCGTTGTCCGGAA**TACTGGGCGT**AAAGAGCT**CGTAGGTTGGTT**TGT**CGCGTT**GTTCGT**GAAAA**CTCACAGCT** 599  
Mvanbaalenii **GGGTCCGAGCGTTGTCCGGAA**TACTGGGCGT**AAAGAGCT**CGTAGGTTGGTT**TGT**CGCGTT**GTTCGT**GAAAA**CTCACAGCT** 586  
Nfarcinica **GGGTGCGAGCGTTGTCCGGAA**TACTGGGCGT**AAAGAGCT**CGTAGGCGGTT**TGT**CGCGT**CTCCGT**GAAAA**CTGGGGCT** 594  
RRH1 **GGGTGCAAGCGTTGTCCGGAA**TACTGGGCGT**AAAGAGCT**CGTAGGCGGTT**TGT**CGCGT**CTTTGT**GAAAA**CTCACAGCT** 593  
Cdiphtheriae **GGGTGCGAGCGTTGTCCGGAA**TACTGGGCGT**AAAGAGCT**CGTAGGTTGGTT**TGT**CGCGT**CTCTGT**GAAAT**CTCCGGGCT** 565  
Cjeikeium **GGGTGCGAGCGTTGTCCGGAA**TACTGGGCGT**AAAGAGCT**CGTAGGTTGGTT**TGT**CGCGT**CTCTGT**GAAAT**CTCCGGGCT** 600  
Cefficiens **GGGTGCGAGCGTTGTCCGGAA**TACTGGGCGT**AAAGAGCT**CGTAGGTTGGTT**TGT**CGCGT**CTCTGT**GAAAT**CTCCGGGCT** 576  
Cglutamicum **GGGTGCGAGCGTTGTCCGGAA**TACTGGGCGT**AAAGAGCT**CGTAGGTTGGTT**TGT**CGCGT**CTCTGT**GAAAT**CTCCGGGCT** 596  
Nocardioides **GGGTGCGAGCGTTGTCCGGAA**TATTGGGCGT**AAAGGGCT**CGTAGGCGGTT**TGT**CGCGT**CGGGAGT**GAAAA**CACTGGGCT** 596  
Pacnes **GGGTGCGAGCGTTGTCCGGAA**TATTGGGCGT**AAAGGGCT**CGTAGGTTGGTT**TGT**CGCGT**CGGAAGT**GTAAT**CTTTGGGCT** 590  
TfuscaYX **GGGTCCGAGCGTTGTCCGGAA**TATTGGGCGT**AAAGAGCT**CGTAGGCGGCT**TGT**CGCGT**CTGCTGT**GAAAA**CTCCGGGCT** 582  
Rxylianophilus **GGGGTCCGAGCGTTGTCCGGAA**TACTGGGCGT**AAAGAGCT**CGTAGGCGGCT**TGT**CGCGT**CTGCTGT**GAAAA**CCCGGGGCT** 596  
ruler .....570.....580.....590.....600.....610.....620.....630.....640









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 Badolescentis CAAGCGGCGGAGCATGCGGATTAATTGATGCAACGCGAAGAACTTACCTGGGCTTGACATGT-TCCCGACAGCCCCAG 1002  
 Blongum CAAGCGGCGGAGCATGCGGATTAATTGATGCAACGCGAAGAACTTACCTGGGCTTGACATGT-TCCCGACGGTCGTAG 996  
 Aaurescens CAAGCGGCGGAGCATGCGGATTAATTGATGCAACGCGAAGAACTTACCAAGGCTTGACATGA-ACCGGAAAGACCTGG 970  
 AFB24 CAAGCGGCGGAGCATGCGGATTAATTGATGCAACGCGAAGAACTTACCAAGGCTTGACATGG-CCCGGACCGGGCTGG 984  
 TTWist CAAGCGGCGGAGCATGCGGATTAATTCAATGCAACGCGAAGAACTTACCAAGGCTTGATATAT-ACCGGAAAGGCGTAG 996  
 TTW08/27 CAAGCGGCGGAGCATGCGGATTAATTCAATGCAACGCGAAGAACTTACCAAGGCTTGATATAT-ACCGGAAAGGCGTAG 996  
 Lxlyi CAAGCGGCGGAGCATGCGGATTAATTGATGCAACGCGAAGAACTTACCAAGGCTTGACATAT-ACGAGAAACGGGCTAG 965  
 Savermitilis CAAGCAGCGGAGCATGTGGCTTAATTGACGCAACGCGAAGAACTTACCAAGGCTTGACATAC-ACCGGAAAGCATTAG 988  
 Scoelicolor CAAGCGGCGGAGCATGTGGCTTAATTGACGCAACGCGAAGAACTTACCAAGGCTTGACATAC-ACCGGAAAGCATCAG 991  
 FalniACN14a CAAGCGGCGGAGCATGTGGCTTAATTGATGCAACGCGAAGAACTTACCAAGGCTTGACATGC-AGGGAAATCTCGTAG 982  
 FCcI3 CAAGCGGCGGAGCATGTGGCTTAATTGATGCAACGCGAAGAACTTACCAAGGCTTGACATGC-AGGGAAATCTCGTAG 982  
 FEAN1pec CAAGCGGCGGAGCATGTGGCTTAATTGATGCAACGCGAAGAACTTACCAAGGCTTGACATGC-AGAGAAATCCGTAG 980  
 Acellulolyticus CAAGCGGCGGAGCATGTGGCTTAATTGATGCAACGCGAAGAACTTACCTGGGCTTGACATGC-AGGGAAATCCGCGAG 979  
 MbovisAF2122/97 CAAGCGGCGGAGCATGTGGATTAATTGATGCAACGCGAAGAACTTACCTGGGTTTGACATGC-ACAGGACGCGCTAG 1007  
 MtuberculosisH37Rv CAAGCGGCGGAGCATGTGGATTAATTGATGCAACGCGAAGAACTTACCTGGGTTTGACATGC-ACAGGACGCGCTAG 1007  
 MbovisPasteur CAAGCGGCGGAGCATGTGGATTAATTGATGCAACGCGAAGAACTTACCTGGGTTTGACATGC-ACAGGACGCGCTAG 1007  
 MtuberculosisCDC1551 CAAGCGGCGGAGCATGTGGATTAATTGATGCAACGCGAAGAACTTACCTGGGTTTGACATGC-ACAGGACGCGCTAG 1006  
 Mulcerans CAAGCGGCGGAGCATGTGGATTAATTGATGCAACGCGAAGAACTTACCTGGGTTTGACATGC-ACAGGACGCGCTAG 1005  
 Mavium CAAGCGGCGGAGCATGTGGATTAATTGATGCAACGCGAAGAACTTACCTGGGTTTGACATGC-ACAGGACGCGCTAG 993  
 MaviumK-10 CAAGCGGCGGAGCATGTGGATTAATTGATGCAACGCGAAGAACTTACCTGGGTTTGACATGC-ACAGGACGCGCTAG 1005  
 MlepraeTN CAAGCGGCGGAGCATGTGGATTAATTGATGCAACGCGAAGAACTTACCTGGGTTTGACATGC-ACAGGACGCGCTAG 1018  
 MJLS CAAGCGGCGGAGCATGTGGATTAATTGATGCAACGCGAAGAACTTACCTGGGTTTGACATGC-ACAGGACGCGCTAG 983  
 MKMS CAAGCGGCGGAGCATGTGGATTAATTGATGCAACGCGAAGAACTTACCTGGGTTTGACATGC-ACAGGACGCGCTAG 983  
 MMCS CAAGCGGCGGAGCATGTGGATTAATTGATGCAACGCGAAGAACTTACCTGGGTTTGACATGC-ACAGGACGCGCTAG 984  
 Msmegmatis CAAGCGGCGGAGCATGTGGATTAATTGATGCAACGCGAAGAACTTACCTGGGTTTGACATGC-ACAGGACGCGCTAG 996  
 Mvanbaalenii CAAGCGGCGGAGCATGTGGATTAATTGATGCAACGCGAAGAACTTACCTGGGTTTGACATGC-ACAGGACGCGCTAG 983  
 Nfarcinica CAAGCGGCGGAGCATGTGGATTAATTGATGCAACGCGAAGAACTTACCTGGGTTTGACATGC-ACCGGAAACCTGCGAG 991  
 RRH1 CAAGCGGCGGAGCATGTGGATTAATTGATGCAACGCGAAGAACTTACCTGGGTTTGACATGC-ACCGGAAAGCCGTAG 989  
 Cdiphtheriae CAAGCGGCGGAGCATGTGGATTAATTGATGCAACGCGAAGAACTTACCTGGGCTTGACATAT-ACAGGACCGGCTAG 962  
 Cjeikeium CAAGCGGCGGAGCATGTGGATTAATTGATGCAACGCGAAGAACTTACCTGGGCTTGACATAC-ACCGGATCGCTGCGAG 999  
 Cefficiens CAAGCGGCGGAGCATGTGGATTAATTGATGCAACGCGAAGAACTTACCTGGGCTTGACATAC-ACTAGAICGCTGCGAG 973  
 Cglutamium CAAGCGGCGGAGCATGTGGATTAATTGATGCAACGCGAAGAACTTACCTGGGCTTGACATGC-ACCGGATCGGCTAG 993  
 Nocardioides CAAGCGGCGGAGCATGCGGATTAATTGATGCAACGCGAAGAACTTACCTGGGTTTGACATAC-GCCGAAAGCGCCAG 993  
 Pacnes CAAGCGGCGGAGCATGCGGATTAATTGATGCAACGCGTAGAACCTTACCTGGGTTTGACATGC-ATCGGGATGCTCAG 987  
 TfuscaYX CAAGCGGCGGAGCATGTGCTTAATTGATGCAACGCGAAGAACTTACCAAGGCTTGACATCA-CCGGTAATCTCAG 978  
 Rxylianophilus CAAGCAGCGGAGCATGTCTTTAATTGATGCAACGCGAAGAACTTACCTGGGCTTGACATGCTGGTGGTAGGCGCCGG 993  
 ruler .....970.....980.....990.....1000.....1010.....1020.....1030.....1040



\* \*\*\*\*\* \* \*\*\*\*\* \*\* \*\*\*\* \*  
 Badolescentis AGATGGG--GCCTCCCTTCGGGGCGGGTTCACAGGTGGTGCATGGTTCGTGCTCAGCTCGTGTGCTGAGATGTTGGGTTAA 1080  
 Blongum AGATACG--GCTTCCCTTCGGGGCGGGTTCACAGGTGGTGCATGGTTCGTGCTCAGCTCGTGTGCTGAGATGTTGGGTTAA 1074  
 Aaurescens AAACAGG-TGCCCCGCTT-GCGGTCGGTTACAGGTGGTGCATGGTTCGTGCTCAGCTCGTGTGCTGAGATGTTGGGTTAA 1048  
 AFB24 AAACAGT-CCCTCCCTTTGGGGCCGGTTCACAGGTGGTGCATGGTTCGTGCTCAGCTCGTGTGCTGAGATGTTGGGTTAA 1063  
 TTWist AGATA--GCCCCCCCGC-AAGGTCGGTATACAGGTGGTGCACGGTTCGTGCTCAGCTCGTGTGCTGAGATGTTGGGTTAA 1072  
 TTW08/27 AGATA--CGCCCCCGC-AAGGTCGGTATACAGGTGGTGCACGGTTCGTGCTCAGCTCGTGTGCTGAGATGTTGGGTTAA 1072  
 Lxlyi AAATAGT-CAACTCTTTG-GACACTCGTAAACAGGTGGTGCATGGTTCGTGCTCAGCTCGTGTGCTGAGATGTTGGGTTAA 1043  
 Savermitilis AGATAG--TGCCCCCTT-GTGGTCGGTGTACAGGTGGTGCATGGCTGTCGTGAGATGTTGGGTTAA 1065  
 Scoelicolor AGATGG--TGCCCCCTT-GTGGTCGGTGTACAGGTGGTGCATGGCTGTCGTGAGATGTTGGGTTAA 1068  
 FalniACN14a AGATACG---GGGTCGTAAGGGTCC-TGCACAGGTGGTGCATGGCTGTCGTGAGATGTTGGGTTAA 1058  
 FCcI3 AGATACG---GGGTCGTAAGGGTCC-TGCACAGGTGGTGCATGGCTGTCGTGAGATGTTGGGTTAA 1058  
 FEAN1pec AGATATG---GGGTCCTTAGGGGCTC-TGCACAGGTGGTGCATGGCTGTCGTGAGATGTTGGGTTAA 1056  
 Acellulolyticus AGATGCC---GGGTCGCAAGGGCCC-TGCACAGGTGGTGCATGGCTGTCGTGAGATGTTGGGTTAA 1055  
 MbovisAF2122/97 AGATAGG---CGTTCCTTGTGGCCTGTGTGCAGGTGGTGCATGGCTGTCGTGAGATGTTGGGTTAA 1084  
 MtuberculosisH37Rv AGATAGG---CGTTCCTTGTGGCCTGTGTGCAGGTGGTGCATGGCTGTCGTGAGATGTTGGGTTAA 1084  
 MbovisPasteur AGATAGG---CGTTCCTTGTGGCCTGTGTGCAGGTGGTGCATGGCTGTCGTGAGATGTTGGGTTAA 1084  
 MtuberculosisCDC1551 AGATAGG---CGTTCCTTGTGGCCTGTGTGCAGGTGGTGCATGGCTGTCGTGAGATGTTGGGTTAA 1083  
 Mulcerans AGATAGG---CGTTCCTTGTGGCCTGTGTGCAGGTGGTGCATGGCTGTCGTGAGATGTTGGGTTAA 1082  
 Mavium AGATAGG---CGTTCCTTGTGGCCTGTGTGCAGGTGGTGCATGGCTGTCGTGAGATGTTGGGTTAA 1070  
 MaviumK-10 AGATAGG---CGTTCCTTGTGGCCTGTGTGCAGGTGGTGCATGGCTGTCGTGAGATGTTGGGTTAA 1082  
 MlepraeTN AGATAGG---CACTCCCTTGTGGCCTGTGTGCAGGTGGTGCATGGCTGTCGTGAGATGTTGGGTTAA 1095  
 MJLS AGATATC---AGTTCCTTGTGGCCTGTGTGCAGGTGGTGCATGGCTGTCGTGAGATGTTGGGTTAA 1060  
 MKMS AGATAIC---AGTTCCTTGTGGCCTGTGTGCAGGTGGTGCATGGCTGTCGTGAGATGTTGGGTTAA 1060  
 MMCS AGATAIC---AGTTCCTTGTGGCCTGTGTGCAGGTGGTGCATGGCTGTCGTGAGATGTTGGGTTAA 1061  
 Msmegmatis AGATATC---GGTTCCTTGTGGCCTGTGTGCAGGTGGTGCATGGCTGTCGTGAGATGTTGGGTTAA 1073  
 Mvanbaalenii AGATAGG---TATTCCTTGTGGCCTGTGTGCAGGTGGTGCATGGCTGTCGTGAGATGTTGGGTTAA 1060  
 Nfarcinica AGATGTA---GCCCCCCCTTGGTTCGGTGTACAGGTGGTGCATGGCTGTCGTGAGATGTTGGGTTAA 1068  
 RRH1 AGATACG---GCCCCCCCTTGGTTCGGTGTACAGGTGGTGCATGGCTGTCGTGAGATGTTGGGTTAA 1066  
 Cdiphtheriae TGATACG---TTTCCCTTGTGGTCTGTATACAGGTGGTGCATGGTTCGTGAGATGTTGGGTTAA 1039  
 Cjeikeium AGATGTA---GTTCCCTTGTGGCTGGTGTACAGGTGGTGCATGGCTGTCGTGAGATGTTGGGTTAA 1076  
 Cefficiens AGATGTA---GTTCCCTTGTGGCTGGTGTACAGGTGGTGCATGGTTCGTGAGATGTTGGGTTAA 1050  
 Cglutamium AGATACG---TTTCCCTTGTGGTTCGGTGTACAGGTGGTGCATGGTTCGTGAGATGTTGGGTTAA 1070  
 Nocardioides AGATGG---TTCCCCCCTTGGTTCGGTGTACAGGTGGTGCATGGCTGTCGTGAGATGTTGGGTTAA 1068  
 Pacnes AGATGGGTTGCTCTTTGGGGTTCGGTTCACAGGTGGTGCATGGCTGTCGTGAGATGTTGGGTTAA 1067  
 TfuscaYX AGATGGG---GGTTCCTTCGGGGTTCGGTTCACAGGTGGTGCATGGCTGTCGTGAGATGTTGGGTTAA 1055  
 Rxylianophilus AAACGGTGGCCGACCTTCGGGAGCCAGCAGGTGGTGCATGGCTGTCGTGAGATGTTGGGTTAA 1073  
 ruler .....1050.....1060.....1070.....1080.....1090.....1100.....1110.....1120









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Badollescentis	CCGTCAAGTCATGAAAGTGGGTAGCACCCGAAGCCGGTGC-GCCCAACCTTTTGGGG--GGAGCCGTC---TAAGGTG	1463
Blongum	CCGTCAAGTCATGAAAGTGGGCAGCACCCGAAGCCGGTGC-GCCTAACCCCTTGTGGGATGGAGCCGTC---TAAGGTG	1459
Aaurescens	CCGTCAAGTCACGAAAGTGGTAAACCCGAAGCCGGTGC-GCCTAACCC--TTGTGGG--GGAGCCGTC---GAAGGTG	1431
AFB24	CCGTCAAGTCACGAAAGTGGTAAACCCGAAGCCGGTGC-GCCTAACCCCTTGTGGGAGGGAGCCTGTC---GAAGGTG	1448
TTWist	CCGTCAAGTCATGAAAGTGGTAAACCCGAAGCCGGTGC-ACTTAACTT-TTTT--GGAGAGAGCCGTC---GAAGGTG	1454
TTW08/27	CCGTCAAGTCATGAAAGTGGTAAACCCGAAGCCGGTGC-ACTTAACTT-TTTT-TGGAGAGAGCCGTC---GAAGGTG	1455
Lxlyi	CCGTCAAGTCATGAAAGTGGTAAACCCGAAGCCGGTGC-GCCCAACCC--TTGT--GGAGGGAGCCGTC---GAAGGTG	1426
Savermitilis	CCGTCAAGTCACGAAAGTGGTAAACCCGAAGCCGGTGC-GCCCAACCCCTTGTGGGAGGGAGCCTGTC---GAAGGTG	1457
Scoelicolor	CCGTCAAGTCACGAAAGTGGTAAACCCGAAGCCGGTGC-GCCCAACCCCTTGTGGGAGGGAGCCTGTC---GAAGGTG	1460
FalniACN14a	CCGTCAAGTCACGAAAGTGGTAAACCCGAAGCCGGTGC-GCCTAACCCCTTGTGGG--GGAGCCGTC---GAAGGTG	1441
FCcI3	CCGTCAAGTCACGAAAGTGGTAAACCCGAAGCCGGTGC-GCCTAACCCCTTGTGGG--GGAGCCGTC---GAAGGTG	1441
FEAN1pec	CCGTCAAGTCACGAAAGTGGTAAACCCGAAGCCGGTGC-GCCCAACCCCTTGTGGG--GGAGCCGTC---GAAGGTG	1439
Acellulolyticus	CCGTCAAGTCACGAAAGTGGTAAACCCGAAGCCGGTGC-GCCCAACCCGCAAGGGAGGGAGCCGTC---GAAGGTG	1439
MbovisAF2122/97	CCGTCAAGTCATGAAAGTGGTAAACCCGAAGCCAGTGC-GCCTAACCCCT---GGGAGGGAGCCTGTC---GAAGGTG	1466
MtuberculosisH37Rv	CCGTCAAGTCATGAAAGTGGTAAACCCGAAGCCAGTGC-GCCTAACCCCT---GGGAGGGAGCCTGTC---GAAGGTG	1466
MbovisPasteur	CCGTCAAGTCATGAAAGTGGTAAACCCGAAGCCAGTGC-GCCTAACCCCT---GGGAGGGAGCCTGTC---GAAGGTG	1466
MtuberculosisCDC1551	CCGTCAAGTCATGAAAGTGGTAAACCCGAAGCCAGTGC-GCCTAACCCCT---GGGAGGGAGCCTGTC---GAAGGTG	1465
Mulcerans	CCGTCAAGTCATGAAAGTGGTAAACCCGAAGCCAGTGC-GCCTAACCCCTTTTGGGAGGGAGCCTGTC---GAAGGTG	1468
Mavium	CCGTCAAGTCATGAAAGTGGTAAACCCGAAGCCAGTGC-GCCTAACCCCTTTT--GGGAGGGAGCCTGTC---GAAGGTG	1455
MaviumK-10	CCGTCAAGTCATGAAAGTGGTAAACCCGAAGCCAGTGC-GCCTAACCCCTTTT--GGGAGGGAGCCTGTC---GAAGGTG	1467
MlepraeTN	CCGTCAAGTCATGAAAGTGGTAAACCCGAAGCCAGTGC-GCCTAACCCCT---GGGAGGGAGCCTGTC---CAAGGTG	1478
MJLS	CCGTCAAGTCATGAAAGTGGTAAACCCGAAGCCGGTGC-GCCTAACCCCTTGTGGGAGGGAGCCGTC---GAAGGTG	1446
MKMS	CCGTCAAGTCATGAAAGTGGTAAACCCGAAGCCGGTGC-GCCTAACCCCTTGTGGGAGGGAGCCGTC---GAAGGTG	1446
MMCS	CCGTCAAGTCATGAAAGTGGTAAACCCGAAGCCGGTGC-GCCTAACCCCTTGTGGGAGGGAGCCGTC---GAAGGTG	1447
Msmegmatis	CCGTCAAGTCATGAAAGTGGTAAACCCGAAGCCGGTGC-GCCTAACCC--TTGTGG--AGGGAGCCGTC---GAAGGTG	1457
Mvanbaalenii	CCGTCAAGTCATGAAAGTGGTAAACCCGAAGCCGGTGC-GCCTAACCCCTTGTGGGAGGGAGCCGTC---GAAGGTG	1446
Nfarcinica	CCGTCAAGTCATGAAAGTGGTAAACCCGAAGCCGGTGC-GCCTAACCCCTTGTGGGAGGGAGCCGTC---GAAGGTG	1453
RRH1	CCGTCAAGTCATGAAAGTGGTAAACCCGAAGCCGGTGC-GCCTAACCCCTTGTGGGAGGGAGCCGTC---GAAGGTG	1451
Cdiphtheriae	CCGTCAAGTCATGAAAGTGGTAAACCCGAAGCCAGTGC-GCCTAACCCCTTGTGGGAGGGAGCCGTC---GAAGGTG	1392
Cjeikeium	CCGTCAAGTCATGAAAGTGGTAAACCCGAAGCCAGTGC-GCCAAACTTGT---TAGGG--AGCTGTC---GAAGGTG	1457
Cefficiens	CCGTCAAGTCATGAAAGTGGTAAACCCGAAGCCAGTGC-GCCAAAC---GGGAGGGAGCCTGTC---GAAGGTG	1408
Cglutamicum	CCGTCAAGTCATGAAAGTGGTAAACCCGAAGCCAGTGC-GCCCAACCTTTT--AGGGGGGAGCCTGTC---GAAGGTG	1453
Nocardioides	CCGTCAAGTCACGAAAGTGGTAAACCCGAAGCCGGTGC-GCCTAACCCCTTGTGGGAGGGAGCCGTC---GAAGGTG	1451
Pacnes	CCGTCAAGTCATGAAAGTGGTAAACCCGAAGCCGGTGC-GCCTAACCCCTTGTGGGAGGGAGCCGTC---GAAGGTG	1449
TfuscaYX	CCGTCAAGTCACGAAAGTGGTAAACCCGAAGCCAGTGC-GCCTAACCCCTTGTGGGAGGGAGCCGTC---GAAGGTG	1441
Rxylanophilus	CCGTCAAGTCACGAAAGTGGTAAACCCGAAGCCAGTGC-GCCTAACCCCTTGTGGGAGGGAGGGGGGCTTGC---GAAGGTG	1462
ruler	.....1450.....1460.....1470.....1480.....1490.....1500.....1510.....1520	



Badollescentis	AGACTCGTGAATGGGACTAAGTCGTAAACAAGGTAGCCGTACCGGAAGGTGCGGGCTGGATCACCTCCCTTCT-----	1534
Blongum	AGGCTCGTGAATGGGACTAAGTCGTAAACAAGGTAGCCGTACCGGAAGGTGCGGGCTGGATCACCTCCCTTCT-----	1530
Aaurescens	GGACCGGCGAATGGGACTAAGTCGTAAACAAGGTAGCCGTACCGGAAGGTG-----	1481
AFB24	GGACTGGCGAATGGGACTAAGTCGTAAACAAGGTAGCCGTACCGGAAGGTGCGGGCTGGATCACCTCCCTTCT-----	1517
TTWist	GGATTGGTGAATGGGACTAAGTCGTAAACAAGGTAGCCGTACCGGAAGGTGCGGGCTGGATCACCTCCCTTCT-----	1525
TTW08/27	GGATTGGTGAATGGGACTAAGTCGTAAACAAGGTAGCCGTACCGGAAGGTGCGGGCTGGATCACCTCCCTTCT-----	1526
Lxlyi	GGGTCGGTGAATAGGACTAAG-----	1447
Savermitilis	GGACTGGCGAATGGGACGAAGTCGTAAACAAGGTAGCCGTACCGGAAGGTGCGGGCTGGATCACCTCCCTTCTAA-----	1530
Scoelicolor	GGACTGGCGAATGGGACGAAGTCGTAAACAAGGTAGCCGTACCGGAAGGTGCGGGCTGGATCACCTCCCTTCT-----	1531
FalniACN14a	GGACCGGCGAATGGGACGAAGTCGTAAACAAGGTAGCCGTACCGGAAGGTGCGGGCTGGATCACCTCCCTTCT-----	1510
FCcI3	GGACCGGCGAATGGGACGAAGTCGTAAACAAGGTAGCCGTACCGGAAGGTGCGGGCTGGATCACCTCCCTTCT-----	1512
FEAN1pec	GGACCGGCGAATGGGACGAAGTCGTAAACAAGGTAGCCGTACCGGAAGGTGCGGGCTGGATCACCTCCCTTCT-----	1508
Acellulolyticus	GGACCGGCGAATGGGACGAAGTCGTAAACAAGGTAGCCGTACCGGAAGGTGCGGGCTGGATCACCTCCCTTCT-----	1509
MbovisAF2122/97	GGATCGGCGAATGGGACGAAGTCGTAAACAAGGTAGCCGTACCGGAAGGTGCGGGCTGGATCACCTCCCTTCT-----	1537
MtuberculosisH37Rv	GGATCGGCGAATGGGACGAAGTCGTAAACAAGGTAGCCGTACCGGAAGGTGCGGGCTGGATCACCTCCCTTCT-----	1537
MbovisPasteur	GGATCGGCGAATGGGACGAAGTCGTAAACAAGGTAGCCGTACCGGAAGGTGCGGGCTGGATCACCTCCCTTCT-----	1537
MtuberculosisCDC1551	GGATCGGCGAATGGGACGAAGTCGTAAACAAGGTAGCCGTACCGGAAGGTGCGGGCTGGATCACCTCCCTTCT-----	1536
Mulcerans	GGATCGGCGAATGGGACGAAGTCGTAAACAAGGTAGCCGTACCGGAAGGTGCGGGCTGGATCACCTCCCTTCT-----	1539
Mavium	GGATCGGCGAATGGGACGAAGTCGTAAACAAGGTAGCCGTACCGGAAGGTGCGGGCTGGATCAC-----	1517
MaviumK-10	GGATCGGCGAATGGGACGAAGTCGTAAACAAGGTAGCCGTACCGGAAGGTGCGGGCTGGATCACCTCCCTTCTAAGGAG-----	1544
MlepraeTN	GGATCGGCGAATGGGACGAAGTCGTAAACAAGGTAGCCGTACCGGAAGGTGCGGGCTGGATCACCTCCCTTCT-----	1549
MJLS	GGATCGGCGAATGGGACGAAGTCGTAAACAAGGTAGCCGTACCGGAAGGTGCGGGCTGGATCACCTCCCTTCT-----	1515
MKMS	GGATCGGCGAATGGGACGAAGTCGTAAACAAGGTAGCCGTACCGGAAGGTGCGGGCTGGATCACCTCCCTTCT-----	1515
MMCS	GGATCGGCGAATGGGACGAAGTCGTAAACAAGGTAGCCGTACCGGAAGGTGCGGGCTGGATCACCTCCCTTCT-----	1515
Msmegmatis	GGATCGGCGAATGGGACGAAGTCGTAAACAAGGTAGCCGTACCGGAAGGTGCGGGCTGGATCACCTCCCTTCT-----	1528
Mvanbaalenii	GGATCGGCGAATGGGACGAAGTCGTAAACAAGGTAGCCGTACCGGAAGGTGCGGGCTGGATCACCTCCCTTCT-----	1515
Nfarcinica	GGATCGGCGAATGGGACGAAGTCGTAAACAAGGTAGCCGTACCGGAAGGTGCGGGCTGGATCACCTCCCTTCTAAG-----	1527
RRH1	GGATCGGCGAATGGGACGAAGTCGTAAACAAGGTAGCCGTACCGGAAGGTGCGGGCTGGATCACCTCCCTTCT-----	1519
Cdiphtheriae	-----	1392
Cjeikeium	GGATTGGCGAATGGGACGAAGTCGTAAACAAGGTAGCCGTACCGGAAGGTGCGGGCTGGATCACCTCCCTTCT-----	1527
Cefficiens	-----	1408
Cglutamicum	GGATCGGCGAATGGGACGAAGTCGTAAACAAGGTAGCCGTACCGGAAGGTGCGGGCTGGATCACCTCCCTTCT-----	1524
Nocardioides	GGGCTGGCGAATGGGACGAAGTCGTAAACAAGGTAGCCGTACCGGAAGGTGCGGGCTGGATCACCTCCCTTCT-----	1520
Pacnes	GGACTGGTGAATAGGACTAAGTCGTAAACAAGGTAGCCGTACCGGAAGGTGCGGGCTGGATCACCTCCCTTCTAAGGA-----	1525
TfuscaYX	GGGCTGGCGAATGGGACGAAGTCGTAAACA-----	1471
Rxylanophilus	GGGCGGCGAATGGGACGAAGTCGTAAACAAGGTAGCCGTACCTGAAGGTGC-----	1513
ruler	.....1530.....1540.....1550.....1560.....1570.....1580.....1590.....	

