

Supplementary File S1: Sequence comparison of the 18S (pp. 2-3), 5.8S (p. 4) and 28S (pp. 5-8) rRNA variant types coming from all the genomic 45S rDNA units (Supplementary Table 3A). Nucleotides identical to the first row (45-M) are indicated as dots, while gaps are expressed as dashes.

18S

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                20          40          60          80          100          120
45S-M 18S TACCTGGTTGATCCTGCCAGTAATATATGCTTGTCTCAAAGATTAAGCCATGCAAGTCTAAGTGCACACGGCCGGTACAGTGAAACTGCGAATGGCTCATTAAATCAGTTATGGTTCCTTTGATCGCTCC 130
45S-U1 18S .....A..... 130
45S-U2 18S .....A..... 130
45S-U3 18S .....A..... 130
45S-S 18S .....C.....G..... 130

                140          160          180          200          220          240          260
45S-M 18S ACCCGGTTACTTGGATAACTGTGGCAATTCAGAGCTAATACATGCCAACGAGCGCCGACCTGGGCCGCCCTTCTCCCCTCG-G-GGCGGGG-GG-TGGGTACCCGGGGACGCGTGCATTTATCAGATC 255
45S-U1 18S T.....CTAT.T.....T.GG.....C..... 260
45S-U2 18S T.....CTAT.T.....T.GG.....C.T..... 260
45S-U3 18S T.....CTAT.T.....T.GG.....C.....C..... 260
45S-S 18S T.....C..... 231

                280          300          320          340          360          380
45S-M 18S CAAAACCCATGCGGGTGCGGGGCGGTGGAGAGGGGGGCGCTCGCGCCTACCCGCCGCCCTCCGCCCCCGCCTCGCTTTGGTGACTCTAGATAACCTCGGGCCGATCGCGCGCCCTC-GCGGCGGCGACG 384
45S-U1 18S .....A..... 389
45S-U2 18S .....T.....A..... 389
45S-U3 18S .....A.....A.....A..... 389
45S-S 18S .....C.....CTCCC-.....G.GG.....GG.....T.....C..... 348

                400          420          440          460          480          500          520
45S-M 18S GTTCATTGGAATGTCTGCCCTATCAACTTTCGATGGTAGGTCCGTGCGCTACCATGGTGACCACGGGTGACGGGAATCAGGTTTCGATTCCGGAGAGGGAGCCTGAGAAACGGCTACCACATCCAAGGA 514
45S-U1 18S ..... 519
45S-U2 18S ..... 519
45S-U3 18S .....CT.TA.G.....A..... 519
45S-S 18S A..... 478

                540          560          580          600          620          640
45S-M 18S AGGCAGCAGGCGCGCAAATACCCATTTCCGACACGGAGAGGTAGTGACGAAAAATAACAATGCAGGTCTCTTTTCGAGGCCCTGCAATTGGAATGAGTGCATCCCAAACCCATGGGCGAGGACCCATTGG 644
45S-U1 18S .....C.....T.....C.T.....T..... 649
45S-U2 18S .....C.....T.....C.T.....T..... 649
45S-U3 18S .....C.....T.....C.T.....T..... 649
45S-S 18S .....C.....G.....A.....T.....C.T.....T..... 608

                660          680          700          720          740          760          780
45S-M 18S AGGGCAAGTCTGGTGCCAGCAGCCCGGTAATTCAGCTCCAATAGCGTATGCTAACGTTGCTGCAGTTAAAAAGCTCGTAGTTGGATCTCGGGGACCAGGGCCGCGCGGTCCGCCGAGGGCAGCCACC 774
45S-U1 18S .....T..... 779
45S-U2 18S .....T..... 779
45S-U3 18S .....T..... 779
45S-S 18S .....AT..A.....AGT-..T..... 736

                800          820          840          860          880          900
45S-M 18S GCCGGTCCCGGACCCCAAGGCTCCCGCGCCCCCGGATGCCCTTGACTGGGTGTCT- CGGCTTGGGGCCCGAGCGTTTACTTTGAAAAAATTAGAGTGTTCAAGGCAGGGCCGGCACC GCGCCCCA 903
45S-U1 18S .....T.....T.....TT 906
45S-U2 18S .....T.....TT 906
45S-U3 18S .....T.....T.....TT 906
45S-S 18S T.....T.....AG.....GGTAC..C.....A.....C..AGC.G..G 860

                920          940          960          980          1,000          1,020          1,040
45S-M 18S TTGAATACCCAGCTAGGAATAATGGAATAGGACCCCGTTCTATTTTCTGTGGGTTTCCGGAACCCGGGCCATGATCGAGAGGGACGCCGGGGGCATTTCGATTGCGCCGCTAGAGGTGAAATTCCT 1033
45S-U1 18S A.....T..... 1036
45S-U2 18S A.....T..... 1036
45S-U3 18S A.....T..... 1036
45S-S 18S C.....G.....T.....T..... 988

                1,060          1,080          1,100          1,120          1,140          1,160
45S-M 18S GGACCGGCGCAAGACGGACCGGAGCGAAAGCGTTTCCAAAGAACGTTTTTCATTAATCAAGAACGAAAGTCGGAGGTTTCGAAGACGATCAGATACCGTCGTAGTTCGACCGTAAACGATGCCGACCCGCG 1163
45S-U1 18S .....T..... 1166
45S-U2 18S .....T..... 1166
45S-U3 18S .....T..... 1166
45S-S 18S .....GAA.....A.....T..... 1118
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5.8S

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                20           40           60           80           100           120
45S-M 5.8S - AACTCTTAGCGGTGGATCACTCGGCTCGTGCATGAAGAACGCAGCTAGCTGCGAGAACTAATGTGAATTGCAGGACACACATTGATCATCGACCTTTCGAACGCACATTGCGGCCCGGGTCCAT 129
45S-U1 5.8S C.....C.....C.....C.....C.....AC.....T.....T.C. 128
45S-U2 5.8S C.....C.....C.....C.....C.....AC.....T.....T.C. 128
45S-U3 5.8S C.....C.....C.....C.....C.....AC.....T.....T.C. 128
45S-S 5.8S C.....C.....C.....C.....C.....AC.....T.....T.C. 128

                140
45S-M 5.8S CCCGGGGCCACGCCTGTCTGAGGGTCGCC 158
45S-U1 5.8S .....C.....T 157
45S-U2 5.8S .....C.....T 157
45S-U3 5.8S T.....C.....T 157
45S-S 5.8S .....C.....T 157
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28S

	1,180	1,200	1,220	1,240	1,260	1,280	1,300	
45S-M 28S	GGAAACTCTGGTGGAGGCCCGCCGCGTCTGACGTGCAAAATCGGTCGTC	CGACCTGGGCATAGGGGCGAAAGACTAATCGAACCATCTAGTAGCTGGTTCCCTCCGAAGTTTCCCTCAGGATAGCTGGC						1288
45S-U1 28S	.....	TA.....	.....	T.....	.....	A.....	.....	1245
45S-U2 28S	.....	TA.....	.....	T.....	.....	A.....	.....	1245
45S-U3 28S	.....	TA.....	.....	T.....	.....	A.....	.....	1245
45S-S 28S	.....	A.....	.....	T.....	.....	.....	.....	1278
	1,320	1,340	1,360	1,380	1,400	1,420		
45S-M 28S	GCTCGCCGATCAAGCAGTTTTATCCGGTAAAGCCAATGACTAGAGGCCCTTGGGGCCGAAACGGCCTCAACCTATTCTCAAACCTTTAAATGGGTAAGAGGCCCGGCTCGCTGGCGCTGGAGCCGGGCGTGG							1418
45S-U1 28S	.....	AT.....	.....	G.....	.....	A.....	A.....T.....	1370
45S-U2 28S	.....	AT.....	.....	G.....	.....	A.....	A.....T.....	1370
45S-U3 28S	.....	AT.....	.....	G.....	.....	A.....	A.....T.....	1370
45S-S 28S	.....	G.....	.....	A.....	.....	A.....	T.....	1403
	1,440	1,460	1,480	1,500	1,520	1,540	1,560	
45S-M 28S	AATGCGACCGCCTAGTGGGCCATTTTGGTAAGCAGAAGTGGTCTGCGGGATGAACCGAACGCCGGGTTAAGGCGCCCGATGCCGACGCTCATCAGACCCCATAAAAGGTGTTGGTTGATATAGACAG							1548
45S-U1 28S	.....	GA.....C.....	G.....	.....	C.....	T.....	.....	1500
45S-U2 28S	.....	GA.....C.....	G.....	.....	C.....	T.....	.....	1500
45S-U3 28S	.....	GA.....C.....	G.....	.....	C.....	T.....	.....	1500
45S-S 28S	.....	GA.....C.....	T.....	.....	C.....	.....	G.....	1533
	1,580	1,600	1,620	1,640	1,660	1,680		
45S-M 28S	CAGGACGGTGGCCATGGAAGTCGGCACCCGCCAAGGAGTGTGTAACAACCTCACCTGCCGAATCAACTAGCCCTGAAAATGGATGGCCTGGAGCGTCGGGCCCATACCCGGCCGTCGACGGCACAAAGGA							1678
45S-U1 28S	.....	.....	T.....	.....	.....	.....	G.....AG	1630
45S-U2 28S	.....	.....	T.....	.....	.....	.....	G.....AG	1630
45S-U3 28S	.....	.....	T.....	.....	.....	G.....	G.....AG	1630
45S-S 28S	.....	A.....T.....	T.....	.....	.....	.....	G.....AG	1663
	1,700	1,720	1,740	1,760	1,780	1,800	1,820	
45S-M 28S	CA-CGCGAGCGGTGCGC-GCGCTGCAAGCCTCGACGAGTAGGAGGGCCGCGCGGTGGCGCCGAAGCCAGGGCGCGGGCCGGTGGAGCCCGCGGGCGCAGATCTTGGTGGTAGTAGCAAATATT							1806
45S-U1 28S	.....	CC.C.CTC.C.GG.G.G-AAAGG.T.....	.....	G.....	T.....	T.....	A.....	1759
45S-U2 28S	.....	CC.C.CTC.C.GG.G.G-AAAGG.T.....	.....	G.....	T.....	T.....	A.....	1759
45S-U3 28S	.....	CT.C.CTC.C.GG.G.G-AAAGG.T.....	.....	G.....	T.....	T.....	A.....	1759
45S-S 28S	.....	CC.C.CCT.C.GG.G.GGAAAGG.T.....	.....	G.....	T.....	T.....	T.....	1793
	1,840	1,860	1,880	1,900	1,920	1,940		
45S-M 28S	CAAACGAGAGCTTTGAAGGCCGAAGTGGAGAAGGGTTCATGTGAACAGCAGTTGAACATGGGTGAGCCGGTCTAAGGGACGGGCCTACGCCGTTTCGGAGGGGAGGGCGATGGCCTCTGTGCCCCCG							1936
45S-U1 28S	.....	.....	A.....	.....	T.....	GA.....T.....	A.....	1889
45S-U2 28S	.....	.....	A.....	.....	T.....	GA.....T.....	A.....	1889
45S-U3 28S	.....	.....	A.....	.....	T.....	GA.....T.....	A.....	1889
45S-S 28S	.....	.....	C.....	T.....	T.....	GA.....	A.....A.....C.....	1923
	1,960	1,980	2,000	2,020	2,040	2,060	2,080	
45S-M 28S	CTCGACCGAAAGGGAGTCGGGTCCAGATCCCCGAGCCCGGAGCGGGCAGCGGGCCGCGAGGCGCCAGTGCAGTGCAGCAAACGAACCCGGAGATGCCGGCGGGTCCCCGGGAAAGAGTTCTCTT							2066
45S-U1 28S	.....	GC.....T.....	T.....	A.....	T.....	.....	A.....T.....T.....	2018
45S-U2 28S	.....	GC.....T.....	T.....	A.....	T.....	.....	A.....T.....T.....	2018
45S-U3 28S	.....	GC.....T.....	T.....	A.....	T.....	.....	A.....T.....T.....	2018
45S-S 28S	.....	GC.....T.....	T.....	A.....	T.....	.....	A.....	2052
	2,100	2,120	2,140	2,160	2,180	2,200		
45S-M 28S	TTCTTTGTGAAGGGCAGGGCGCCCTGGAACGGGTTTCGCCCGAGAGAGGGGCCCGGCCCTGAAAGCGCCGCGTCTGGCGGCGTCCGGTGAAGTGCAGTCTCGTGGCCCTTAAAAATCCGGGGGAGAAGGT							2196
45S-U1 28S	.....	.....	T.....	AG.....	.....	T.....	A.....GC.....	2148
45S-U2 28S	.....	.....	T.....	AG.....	.....	T.....	A.....GC.....	2148
45S-U3 28S	.....	.....	T.....	AG.....	.....	T.....	A.....GC.....	2148
45S-S 28S	.....	.....	T.....	.....	G.....	C.....	.....	2182
	2,220	2,240	2,260	2,280	2,300	2,320	2,340	
45S-M 28S	GTAATCTCGCGCCGGCCGTACCCATATCCGCAGCAGGTCTCCAAGGTGAACAGCCTCTGGCGTGTGGAACAAGGCAGAGTAAGGGAAGTCGGCAAGTCAGATCCGTAACCTCCGGGATAAGGATTGCG							2326
45S-U1 28S	.....	.....	.....	.....	.....	.....	.....	2277
45S-U2 28S	.....	.....	.....	.....	.....	.....	.....	2277
45S-U3 28S	.....	G.....	.....	.....	G.....	.....	.....	2277
45S-S 28S	.....	G.....	.....	.....	.....	.....	.....	2311

28S

455-M 28S TCTAAGGGCTGAGCCGGTCTGGGCTGAGGTGCGAAGCGGGCCTGGGCCCGAGCCGCGACTGGGGGAGCGGCCGCCCGAGGTGCCCTGACCCCGTTCCCGAGCCGCGGGGGTGCAGCGCGGTGGCGCGC 2456
455-U1 28SG.....A.....G.....A.T.T...G.....TT.....CCCTG.AT.....T-TT-.....TA-..A-.....T... 2396
455-U2 28SG.....A.....G.....A.T.T...G.....TT.....CCCTG.AT.....T-TT-.....TA-..A-.....T... 2396
455-U3 28SG.....A.....G.....A.T.T...G.....TT.....CCCTG.AT.....T-TT-.....TA-..A-.....T... 2396
455-S 28SG.....A.....G.....C.....G.....C.C.....CC-T..T.....T..T-.....C.GA-.....T... 2428

455-M 28S GGTCCCTCTCTCCCCCGCCGCGTCCGCCCTGGGCTTTTTGCGGTCTCGACTCCCCCGACTCTTCCCTCCGCCCTTTCCCGTCCGCGGGGTGCGGCGGGGGTCTCGGAGGAGGGGGGTGGAAG 2586
455-U1 28SAG...T-.....C.....ATG.G...G.G...A-..GA-..AA.C-.....T..CT-.....A..C...GG-...G..C..AT.TC..T- 2501
455-U2 28SAG...T-.....C.....ATG.G...G.G...A-..GA-..AA.C-.....T..CT-.....A..C...GG-...G..C..AT.TC..T- 2501
455-U3 28SAG...T-.....C.....ACG.G...G.G...A-..GA-..AA.C-.....T..CT-.....A..C...GA-...A-C..AT.TC..T- 2500
455-S 28SA-.....C.....T..G-.....G-.....G-.....C-G-.....C-CT-.....T-.....A-.....C-.....AT.TC..T- 2503

455-M 28S AGGCCGTGGGGAGGAAAGGGTGGTTCGTGGCGTGGGGGGCAACGGGAGGGTCTCGCTGCCGCGCATGCCCTCCGCTGGCCGGGGCCCGCGGGGGCGGGATGCGCAGCGGTTGGCGGCGGCACCC 2716
455-U1 28S C...T-C.T.T-.CTC-.....G..T...T...T...T...GTCT.T...G-..AA-..A...TGTGTGTA...G.....T.....T.....TG 2613
455-U2 28S C...T-C.T.T-.CTC-.....G..T...T...T...T...GTCT.T...G-..AA-..A...TGTGTGTA...G.....T.....T.....TG 2613
455-U3 28S C...T-C.T.T-.CTC-.....G..T...T...T...T...GTCT.T...G-..AA-..A...TGTGTGTA...G.....T.....T.....TG 2611
455-S 28S C...T-C.T.T-.CTC-.....G..T...G..TA...GTC...G-..C-..GA-..T.....T.....G.ATGC..TGC.GT-..T.....T..... 2612

455-M 28S TGGGCGCGCGCCGCGCCCTTCCCGCGGATCTCCGAGCTACGGCCCCGCGCGGGGGCCGCGTCCGCGCGTGCGCCCCCTCCGGGGAGTGGCGCGC- GGCCT- CG- GC- TCCCCCGGTGCGGGCGCC 2842
455-U1 28S ...A..A..A.G..G..T..T...C.TCTG.....T...A..TCTGCT.TA...GCTT.T...G...AG.G..TAG.TC.CGGGG..A.TG...T...C.GCGC..T... 2742
455-U2 28S ...A..A..A.G..G..T..T...C.TCTG.....T...A..TCTGCT.TA...GCTT.T...G...AG.G..TAG.TC.CGGGG..A.TG...T...C.GCGC..T... 2742
455-U3 28S ...A..A..A.G..G..T..T...C.TCTG.....T...A..TCTGCT.TA...ACTT.T...G...AG.G..TAG.TC.CGGGG..A.TG...T...C.GCGC..T... 2740
455-S 28S ...A..T.....G.....T.....C.....T...A..TC-CGT.TG...CTT.T..T...G...GAG...A..G-..CGGG-.....T...C.GCGC..... 2733

455-M 28S TCGGCCGCGGC- TAGCAGCAGCTTAGAAGTGTGCGGACCAGGGGAATCCGACTGTTTAAATTAACAAGCATCGCGAAGCCCTCGGCGGGTGTGACGCGATGTGATTTCTGCCAGTGTCTGA 2971
455-U1 28STAAGA.T..... 2872
455-U2 28STAAGA.T..... 2872
455-U3 28STAAGA.T.....A..... 2870
455-S 28SC-..T.....TG.....GT.....GT..... 2862

455-M 28S ATGTCAAAGTGAAGAAATCAACGAAGCGCGGGTAAACGGCGGGAGTAACCTATGACTCTCTTAAGGTAGCCAAATGCCTCGTCACTAATTAGTGACGCGCATGAATGGATGAACGAGATCCCACCTGTC 3101
455-U1 28S 3002
455-U2 28S 3002
455-U3 28S 3000
455-S 28ST..... 2992

455-M 28S CCTACCTGCTATCTAGCGAAACCACAGCCAAGGGAACGGGCTTGGCAGAATCAGCGGGGAAAGAACCCCTGTTGAGCTTGACTCTAGTCTGGCCCTGTGAAGAGACATGAGGGGTGTAAGAATAAGTGGG 3231
455-U1 28SA..... 3132
455-U2 28SA..... 3132
455-U3 28SA..... 3130
455-S 28SA..... 3122

455-M 28S AGGCCCGGGCTTCCCGGGCGCGCCGCGGTGAAATACCACTACTCTTATCGTTTCTCACTTACCCGGTGAGGCGGGAAAGCCGGCGTCCCCGCGGGGGCCGCCCTGCTTCTGGCGTCAAGCGC 3361
455-U1 28SA.....T.....A.....G.TT...T.G.T.TT..TCA.T..TCT...C.....T..... 3262
455-U2 28SA.....T.....A.....G.TT...T.G.T.TT..TCA.T..TCT...C.....T..... 3262
455-U3 28SA.....T.....A.....G.TT...T.G.T.TT..TCA.T..TCT...C.....T..... 3260
455-S 28STG...CCT.G..C..A..G.G..CC.CGGTGA..A...CAC...-..C.TA..GT..C.T.AC.T.CC...TTGG..A...A.G.GAG.CC.C..C.GGCT..T- 3249

455-M 28S CCGGGGGCGTGCGGGGGGTGGGGGCAACCCCTTCCCTCCCGCGCGCCGACCGGGGCGCGACCCGCCCGGGGACAGCGTCAGGTGGGAGTTTACTGGGGCGGTACACCTGTCAAACGGTAACGC 3491
455-U1 28SA..A..A.....T..... 3356
455-U2 28SA..A..A.....T..... 3356
455-U3 28SA..A..A.....T..... 3354
455-S 28ST.....C-C.AT-.....G-.....G-GT-.....CC-..G-.....T.....T.G..... 3344

