
Compilation of small ribosomal subunit RNA sequences

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INTRODUCTION

Table 1 lists 275 small ribosomal subunit RNA (further abbreviated as srRNA) sequences (references 1–270) that have been published, or submitted to the EMBL or GenBank nucleotide sequence libraries, to our knowledge. The previous compilation (271) listed 106 srRNA sequences. There is a tendency towards publication of partial, rather than complete sequences. This is a consequence of the availability of new techniques for sequencing or DNA amplification, that allow to collect results faster, but do not allow to determine the complete sequence up to the termini. One such method uses reverse transcription of the RNA with primers complementary to universally conserved sequence areas (272), in which case the sequence adjacent to the 3'-terminus cannot be determined. In another approach (27), the rDNA is amplified by the polymerase chain reaction (273) rather than by cloning. Since the primers for the PCR bind to conserved sequences close to the termini but within the boundaries of the srRNA gene, neither of the terminal sequences is comprised in the analysis. Both these methods, however, can yield a continuous sequence spanning more than 90% of the molecule, provided a sufficient number of primers is used. Some authors (e.g. reference 274) use a limited set of primers, in which case a discontinuous set of partial sequences is obtained, which can nevertheless be aligned with complete sequences from other species and used for phylogenetic studies.

The set of 270 different srRNA sequences listed in Table 1 comprises complete sequences and continuous partial sequences, but no discontinuous partial sequences. In order to limit the space needed for the alignment, we have restricted it to 60 sequences. This comprises all the complete sequences that were published, or have become accessible in sequence libraries, since the last compilation (271), plus 8 previously listed sequences added as references in order to allow a comparison of the present alignment and secondary structure scheme with the previous one.

SEQUENCE ALIGNMENT

The 60 sequences are listed in 5 groups, consisting of eukaryotic (cytoplasmic) -, archaeobacterial -, eubacterial -, plastidial - and mitochondrial srRNAs. Each group comprises a sequence already aligned in the previous compilation, viz. *Homo sapiens* for the eukaryotic cytoplasmic srRNAs, *Halobacterium cutirubrum* for the archaeobacterial srRNAs, *Escherichia coli* for the eubacterial srRNAs, *Zea mays* for the plastid srRNAs. Because of the extreme variability in length and secondary structure of mitochondrial srRNA sequences, an animal -, a plant -, a fungal - and a flagellate sequence were added as references in this group. The species chosen are *H. sapiens*, *Glycine max*,

Saccharomyces cerevisiae and *Leishmania tarentolae*. The sequences are identified on each alignment page by a number corresponding with that in Table 1 and with the literature reference, and by the initials of the species name.

Alignment positions are numbered at the top and bottom of each page. In addition, *E. coli* srRNA nucleotide positions counting from its 5'-terminus are indicated above the eubacterial sequences. Regardless of the analytical method used, all sequences are listed using the ribonucleotide symbols U, C, A, and G. Posttranscriptional modifications are known for few sequences and not indicated in the alignment, but if data are available this is mentioned by a footnote in the last column of Table 1. The symbol X is used for unidentified -, and the symbols Y (pyrimidine nucleotide) and R (purine nucleotide) for incompletely identified nucleotides. These symbols point to uncertainty in the identification of a nucleotide in the case of analyses performed on cloned or amplified DNA, which examine the structure of a single gene. In the case of sequencing by reverse transcription of srRNA, however, they can point either to analytical uncertainty or to sequence heterogeneity, since the srRNA used as template may be a mixture of different sequences. Gaps introduced in order to optimize the alignment are filled with hyphens. On the contrary, dots are used for an interruption of the sequence due to partial sequencing. Hence, a sequence interrupted by 10 dots means that partial sequences are known to the left and to the right of the interruption, but that the length of the separating stretch is unknown. An interruption by 10 X's means that exactly 10 nucleotides are present, but their identity is unknown. A sequence starting or ending with dots means that sequencing has not reached the terminus. Lower case characters at termini are used to indicate length heterogeneity of the RNA molecules.

It should be noted that the alignment of the sequences for optimal similarity is straightforward in areas of relatively conserved primary and secondary structure, but is much more arbitrary in the structurally more variable areas. Alignment rests mostly on the periodic occurrence of conserved sequence motifs and on the observation of compensating substitutions in complementary areas of the secondary structure (see below). In the variable areas, conserved sequence motifs are rarer and at the same time the sequences differ in length. Whether compensating substitutions are seen or not then depends on how the gaps are placed, which makes their observation less meaningful.

Sequence segments presumedly involved in base pairing according to the secondary structure model described below are indicated by shading superimposed on the alignment. Shaded

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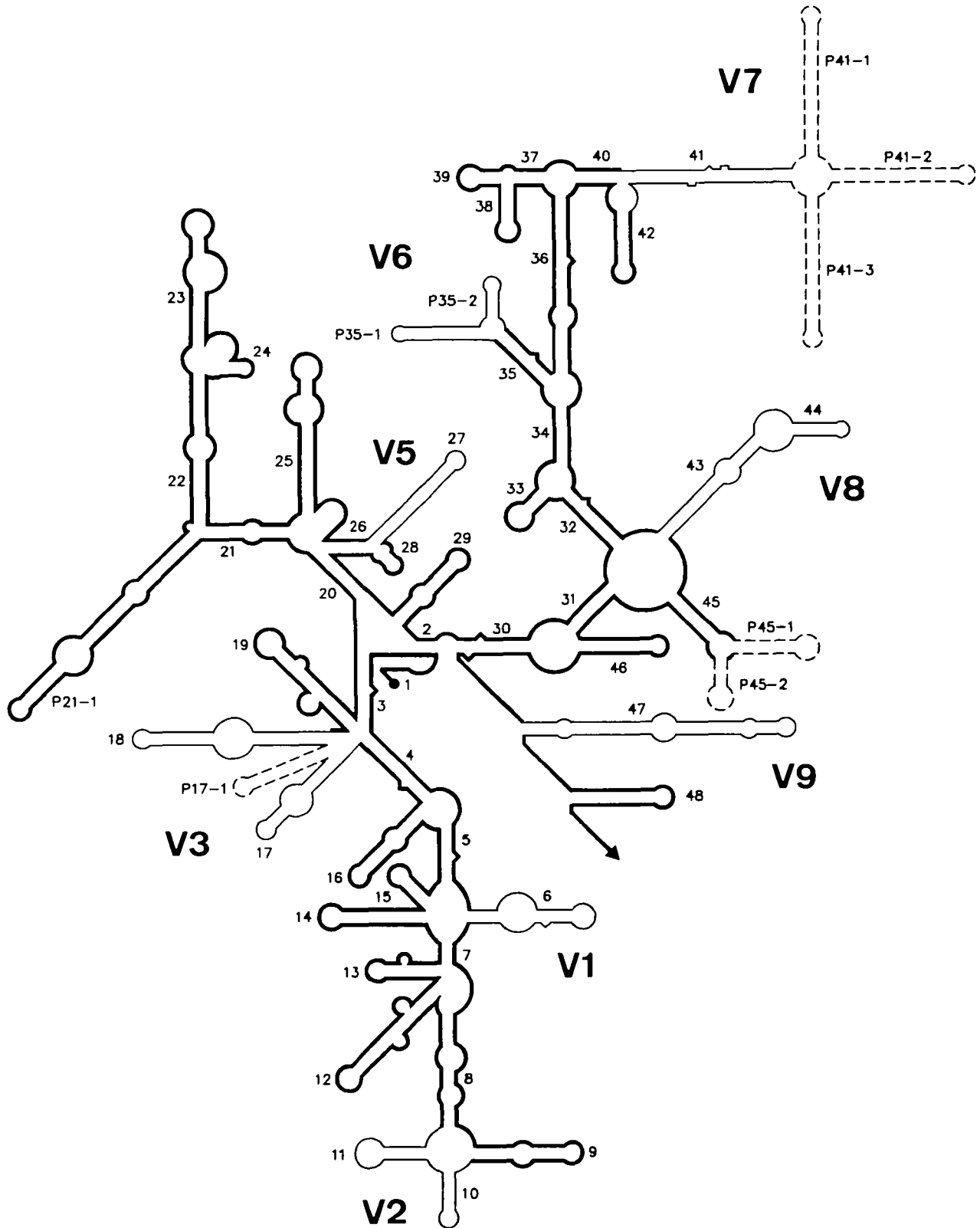


Fig. 1. Secondary structure model for prokaryotic srRNAs.

The 5'-terminus is symbolized by a filled circle and the 3'-terminus by an arrowhead. Helices are numbered in the order of occurrence from 5'- to 3'-terminus. Helices bearing a single number are common to the prokaryotic and eukaryotic (Fig. 2) models. A composite number preceded by P points to a prokaryote-specific helix. Relatively conserved areas are drawn in bold lines, areas of sequence- and length variability in thin lines. Eight variable areas, numbered V1 to V9, are distinguished, V4 being absent in prokaryotic srRNAs. Helices drawn in broken lines are present in a small number of known structures only. Archaeobacterial sequences follow the prokaryotic pattern except for helix 35, which is unbranched as in eukaryotes.

areas corresponding to complementary strands of helices 1 to 48 of the secondary structure model are numbered 1 and 1' to 48 and 48'. Helix numbers are listed twice, the uppermost row applying to the eukaryotic sequences, and the lowermost row to the bacterial -, plastidial -, and mitochondrial sequences. Internal loops and bulges in a helix are indicated by interruption of the shading. Bases suspected to belong to pairs other than the Watson-Crick pairs G·C, A·U, or the wobble pair G·U, because they are intercalated between Watson-Crick and/or wobble pairs, are put in parentheses.

SECONDARY STRUCTURE MODEL

The secondary structure models adopted for indication of the double stranded areas in the alignment are shown in Fig. 1 and 2. The prokaryotic model of Fig. 1 applies to archaeobacterial, eubacterial, plastidial, and mitochondrial srRNAs. The model of Fig. 2 applies to eukaryotic srRNAs. Helices common to both models, further called universal helices, are numbered 1 to 48, in the order of occurrence of the 5'-proximal strand when the sequence is scanned from 5' to 3'-end. Helix numbers change

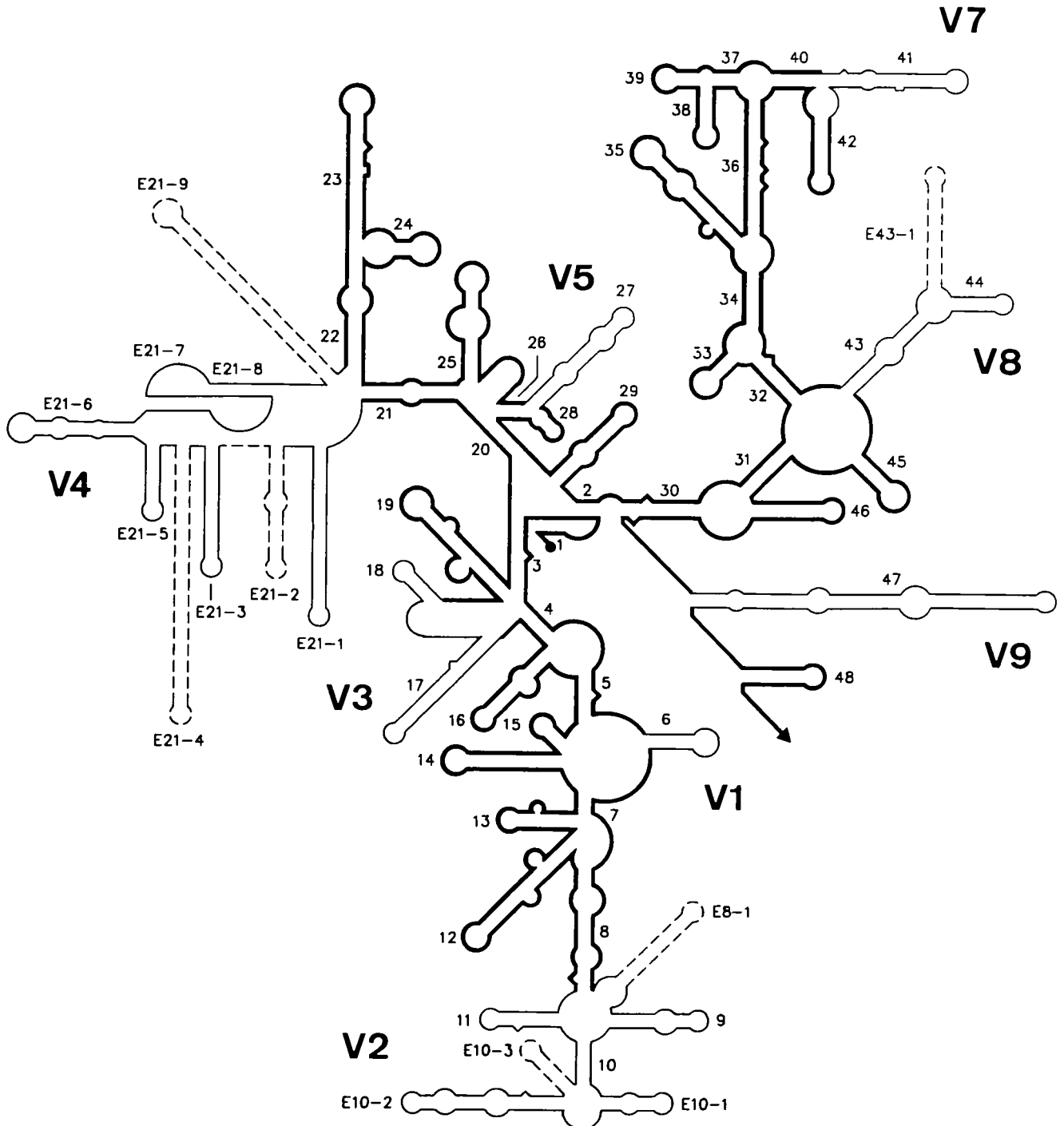


Fig. 2. Secondary structure model for eukaryotic srRNAs.

Symbols are as in Fig. 1. Helices bearing a composite number preceded by E are eukaryote-specific. Variable area V6 is missing in eukaryotic srRNAs.

at branching points and at pseudoknot loops, not at internal- and bulge loops. Helices specific to the prokaryotic model are numbered Pa-b, where a is the number of the preceding universal helix and b is a serial number. Helices specific to the eukaryotic model are similarly numbered Ea-b.

Structurally conserved areas are drawn in bold lines, whereas structurally variable areas, labeled V1 to V9, are drawn in thin lines. Helices that are present in a limited number of species are drawn in broken lines. Such is the case for e.g. helices P41-1 to P41-3, specific for plant mitochondrial srRNAs, or helix E10-3, hitherto found only in *Euglena gracilis* cytoplasmic srRNA. Conversely, helices can be absent in certain srRNAs. As an example, the diplomonad *Giardia lamblia* misses helices E21-1 to E21-4. Even the 'universal' helices do not occur in all srRNAs, the exceptions being found among the mitochondrial srRNAs. Those from animal mitochondria retain only 36 of the universal helices, with most of the missing ones belonging to variable areas. In flagellate mitochondrial srRNAs the structure retains only 25 universal helices, with the entire area consisting of helices 31 to 45 missing. The Fig. 1 model should therefore be regarded, not so much as a general prokaryotic model, but rather as a model for eubacterial and plastidial srRNA secondary structure, from which mitochondrial srRNA structures can be derived by addition (in the case of plant mitochondria) or subtraction of sets of helices. As for the archaeobacterial srRNAs, these differ from the eubacterial ones only by lacking the branching point leading to helices P35-1 and P35-2.

The models of Fig. 1 and 2 concur with those proposed by Gutell et al. (275) as far as the conserved areas are concerned, and for a fraction of the variable areas. However, we propose a structure for a long insertion in area V7 found in plant mitochondrial srRNAs, and for area V4 in eukaryotic srRNAs, both left undefined in (275). The latter structure is different from that adopted in the previous compilation (271) and comprises a pseudoknot. In addition, for areas V2 and V3 of the eukaryotic model, we propose a base pairing scheme slightly different from that of Gutell et al. (275). Although most of the structures that we propose in the variable areas are supported by observation of compensating substitutions, (unpublished) they should nevertheless be regarded as tentative in view of the difficulties connected with alignment in these areas explained above.

AVAILABILITY OF THE DATA

Of the 270 different srRNA sequences listed in Table 1, 197 were in our computer file at the time of writing, in aligned form and with delimitation of secondary structure elements. The remaining ones, which are not listed in the papers reporting them but have been submitted to GenBank, have only recently become available in the file server of this library. They will be aligned as soon as possible. The sequences will be available on floppy disks, readable on microcomputers operating under MS-DOS, in the following three formats:

1) In the form of an alignment with indication of secondary structure elements. Aligned sequences will be listed on 42 pages each containing 100 alignment positions of all the sequences. This format is most useful for those wishing to produce a hardcopy of the complete alignment, rather than the sample of 60 sequences listed here. From this file, the complete alignment can be printed using a wide carriage printer, condensed print and reduced line spacing. Note, however, that this takes about 252 pages of 15 inch wide printer paper.

2) The sequences, listed one by one, without indication of secondary structure elements, but interspersed with the gaps required for alignment, i.e. with homologous nucleotides in the same position in each sequence.

3) The sequences, listed one by one, written continuously without gaps or secondary structure-describing symbols. The number of formatted floppy disks of different types that should be sent in order to obtain each of these files is listed in Table 2.

In addition, all these files can be obtained on a TK50 tape, suitable for a MicroVax computer operating under VMS 5.0 or higher.

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Table 1. List of rRNA sequences.

Nr (a)	Species	Specification (b)	Taxonomic position (c)	Access. (e)	Length (d)	Method (L)	Re-mark
BUKARYOTES							
* 1	<i>Homo sapiens</i>		Chordata (Ph.)	X03205	1869		g
2	<i>Homo sapiens</i>	pB pA4	Chordata (Ph.)	M10098	1868		
3	<i>Homo sapiens</i>		Chordata (Ph.)	K03432	1870		
4	<i>Nus musculus</i>		Chordata (Ph.)	X00686	1869		
5	<i>Rattus norvegicus</i>	Male Sprague-Dawley, liver	Chordata (Ph.)	M11188	1869		
* 6	<i>Rattus norvegicus</i>	Male Sprague-Dawley, liver	Chordata (Ph.)	X01117	1874		
* 7	<i>Oryctolagus cuniculus</i>	Reticulocytes	Chordata (Ph.)	X06778	1863		h
8	<i>Xenopus laevis</i>		Chordata (Ph.)	X04025	1826		g
9	<i>Xenopus borealis</i>		Chordata (Ph.)	X01723	1825		g
10	<i>Artemia salina</i>		Arthropoda (Ph.)	X13457	1810		
* 11	<i>Eurytemora californica</i>		Arthropoda (Ph.)	X07801	1814		
* 12	<i>Tenebrio molitor</i>		Arthropoda (Ph.)	X07801	1921		
* 13	<i>Drosophila melanogaster</i>		Insecta (Cl.)	X03680	1795		
14	<i>Cnephia biditidis elegans</i>		Insecta (Cl.)	X03680	1795		
* 15	<i>Oryza sativa</i>		Monocotyledoneae (Cl.)	X00755	1812		
* 16	<i>Lycopersicon esculentum</i>		Monocotyledoneae (Cl.)	X01576	1800		
17	<i>Zea mays</i>		Monocotyledoneae (Cl.)	X02202	1809		
* 18	<i>Glycine max</i>	Cultivar Black Mexican, leaves	Dicotyledoneae (Cl.)	X02623	1807		
* 19	<i>Arabidopsis thaliana</i>	Variety Wayne lambda-SR1	Dicotyledoneae (Cl.)	X02623	1807		
* 20	<i>Zamia pumila</i>	Variety Co 10	Dicotyledoneae (Cl.)	X16077	1804		
* 21	<i>Chlamydomonas reinhardtii</i>	Leaves	Cyadopsida (Cl.)	X13688	1813		
* 22	<i>Volvox carteri</i>	f. nagariensis, HK 10 (UTEX 1885)	Chlorophyceae (Cl.)	X13688	1798	PCR	
* 23	<i>Chlorella vulgaris</i>	Type strain 211-11b	Chlorophyceae (Cl.)	X06425	1796		
* 24	<i>Nanochlorum eucaryotum</i>		Chlorophyceae (Cl.)	X13688	1798		
25	<i>Cochromonas danica</i>		Chlorophyceae (Cl.)	X06425	1796		
26	<i>Costaria costata</i>		Phaeophyceae (Cl.)	X13688	1798		
* 27	<i>Skeletonema costatum</i>	Sporophytes	Phaeophyceae (Cl.)	X04971	1795	PCR	
28	<i>Neurospora crassa</i>	Culture 18/C, British Columbia	Basidiomycetes (Cl.)	V01335	1798		
29	<i>Saccharomyces cerevisiae</i>	Strain A364A	Ascomycotina (Ph.)	X12708	1774		
* 30	<i>Pneumocystis carinii</i>	Isolate from rat lung	Ascomycotina (Ph.)	X02641	1809		h
31	<i>Achlya bisexualis</i>	Strain Ax3	Mastigocytina (Ph.)	X13160	1872		
32	<i>Dictyostelium discoideum</i>	Strain CL	Myxozoa (Ph.)	X03949	1882		
* 33	<i>Physarum polycephalum</i>		Ciliata (Ph.)	X03948	1771		
34	<i>Euplates adiculatus</i>		Ciliata (Ph.)	X03947	1771		
35	<i>Oxytricha nova</i>		Ciliata (Ph.)	M10932	1771		
36	<i>Stylomychia pustulata</i>		Ciliata (Ph.)	X03947	1771		
37	<i>Tetrahymena thermophila</i>	Strain A-17682a (intron+), ATCC 30377	Ciliata (Ph.)	X03947	1771		
38a	<i>Tetrahymena pigmentosa</i>	Strain UM 1286 (intron-)	Ciliata (Ph.)	X03947	1771		
38b	<i>Tetrahymena hyperangularis</i>	Strain EN 101, ATCC 30273	Ciliata (Ph.)	X03947	1771		
38c	<i>Tetrahymena nanneyi</i>	Strain X05, ATCC 30840	Ciliata (Ph.)	X03947	1771		
39	<i>Tetrahymena hegewischi</i>	Strain KP7 (intron-), ATCC 30832	Ciliata (Ph.)	X03947	1771		
40	<i>Tetrahymena australis</i>	Strain MG0 (intron-), ATCC 30831	Ciliata (Ph.)	X03947	1771		
41	<i>Tetrahymena capricornis</i>	Strain AU-P1-1 (intron-), ATCC 30291	Ciliata (Ph.)	X03947	1771		
42	<i>Tetrahymena patula</i>	Strain LPF (intron-), ATCC 50064	Ciliata (Ph.)	X03947	1771		
43a	<i>Tetrahymena borealis</i>	Strain UM 731 (intron-)	Ciliata (Ph.)	X03947	1771		
43b	<i>Tetrahymena canadensis</i>	Strain UM 1215, ATCC 30368	Ciliata (Ph.)	X03947	1771		
44	<i>Tetrahymena trophicalis</i>	Strain TC3 (intron-), ATCC 30352	Ciliata (Ph.)	X03947	1771		
45	<i>Tetrahymena pyriformis</i>	Strain GL-C (intron-, a-micronuclear)	Ciliata (Ph.)	X03947	1771		
46	<i>Tetrahymena malaccensis</i>	Strain MP75 (intron+), ATCC 50066	Ciliata (Ph.)	X03947	1771		
47	<i>Paramecium tetraurelia</i>		Ciliata (Ph.)	X03947	1771		
48	<i>Proocentrum micans</i>		Dinoflagellates (Assemblage)	X03772	1753		
49	<i>Plasmodium berghei</i>	Strain LB113614	Sporozoa (Ph.)	M14649	2059		
50	<i>Plasmodium berghei</i>	Strain MUY2	Sporozoa (Ph.)	M14599	2058		
* 51	<i>Plasmodium falciparum</i>		Sporozoa (Ph.)	X13706	2091		
* 52	<i>Plasmodium falciparum</i>		Sporozoa (Ph.)	X13926	2148		
* 53	<i>Plasmodium lophurae</i>		Sporozoa (Ph.)	M18332	2108		
54	<i>Plasmodium vivax</i>		Sporozoa (Ph.)	X13706	2108		
55	<i>Acanthamoeba castellanii</i>		Rhizopoda (Ph.)	M13435	2303		
* 56	<i>Naegleria gruberi</i>		Amoeblina (O.)	M18732	2019		
57	<i>Trypanosoma brucei</i>		Kinetoplastidea	M22676	2255		
58	<i>Crithidia fasciculata</i>		Kinetoplastidea	X03450	2206		
* 59	<i>Leishmania donovani</i>	Strain Sudan 1	Kinetoplastidea	X07773	2204		
60	<i>Euglena gracilis</i>		Euglenozoa (Assemblage)	M12677	2305		
61	<i>Vairimorpha necatrix</i>		Euglenozoa (Assemblage)	X00266	1244		
* 62	<i>Giardia lamblia</i>	Strain Portland 1	Polymastigotes (Assemblage)	M19500	1453		

Table 1. continued

Nr (a)	Species	Specification (b)	Taxonomic position (c)	Length (d)	Accession (e)	Method Reference (f)
ARCHAEBACTERIA						
* 63	<i>Halobacterium cutirubrum</i>	Strain RI	Halobacteria	1472	K02971	
64	<i>Halobacterium halobium</i>		Halobacteria	1473	M11583	
65	<i>Halobacterium volcanii</i>	ATCC 17082	Halobacteria	1472	K00421	
66	<i>Halococcus morrhuae</i>	Strain JF1	Methanomicrobium group	1475	X00662	
* 67	<i>Methanospirillum hungatei</i>	DSM 1224	Methanococcus group	1466	X16932	
68	<i>Methanotherrix soehngenii</i>	Strain Marburg	Methanobacter group	1471	X16932	
69	<i>Methanococcus vannielii</i>	DSM 1312	Methanobacter group	1476	X15364	
70	<i>Methanobacterium formalicium</i>	DSM 2476	Thermoplasma group	1486	X03235	
* 71	<i>Methanobacterium thermoautotrophicum</i>	DSM 2476	Thermoplasma group	1471	X05567	
* 72	<i>Thermococcus celer</i>	Strain PL-19 DSM 2709	Extrema thermophiles	1495		
* 73	<i>Thermoplasma acidophilum</i>	Strain P1	Extrema thermophiles	1497		
74	<i>Desulfurococcus mobilis</i>	Strain VC-16	Extrema thermophiles	1493		
* 75	<i>Pyrodicticum occultum</i>		Extrema thermophiles	1504		
76	<i>Sulfolobus solfataricus</i>		Extrema thermophiles	1492		
77	<i>Thermoproteus tenax</i>					
78	<i>Archaeoglobus fulgidus</i>					
EUBACTERIA						
79	<i>Agrobacterium tumefaciens</i>	DSM 30105	Proteobacteria (Cl.)	1489	M11223	
80	<i>Brucella abortus</i>	Strain 11/19	Proteobacteria (Cl.)	(1429)	X13695	RT
81	<i>Ehrlichia risticii</i>	ATCC VR986	Proteobacteria (Cl.)	(1489)	M21290	RT
82	<i>Hypnomicrobium vulgare</i>	Strain MC-750	Proteobacteria (Cl.)	(1373)		RT
83	<i>Rickettsia prowasekii</i>		Proteobacteria (Cl.)	1508	M21789	RT
84	<i>Rickettsia rickettsii</i>	ATCC VR891	Proteobacteria (Cl.)	(1443)	M21293	RT
85	<i>Rickettsia typhi</i>		Proteobacteria (Cl.)	(1444)	M20499	RT
86	<i>Rochalimaea quintana</i>	Strain Puller	Proteobacteria (Cl.)	1492	M11927	RT
87	<i>Alcaligenes faecalis</i>	ATCC 8750	Proteobacteria (Cl.)	(1473)	M22508	RT
88	<i>Alcaligenes xylosoxidans</i>	ATCC 15173, subsp. denitrificans	Proteobacteria (Cl.)	(1463)	M22509	RT
89	<i>Chromobacterium fluvivitale</i>	ATCC 33051	Proteobacteria (Cl.)	(1470)	M22511	RT
90	<i>Chromobacterium violaceum</i>	ATCC 12472	Proteobacteria (Cl.)	(1472)	M22510	RT
91	<i>Eikenella corrodens</i>	ATCC 23834	Proteobacteria (Cl.)	(1487)	M22512	RT
92a	<i>Eikenella corrodens</i>	ATCC 23834	Proteobacteria (Cl.)	(1486)	M22513	RT
92b	<i>Eikenella corrodens</i>	ATCC 23834	Proteobacteria (Cl.)	(1486)	M22514	RT
92c	<i>Eikenella corrodens</i>	ATCC 23834	Proteobacteria (Cl.)	(1486)	M22515	RT
93	<i>Kingella denitrificans</i>	ATCC 33394	Proteobacteria (Cl.)	(1472)	M22516	RT
94	<i>Kingella kingae</i>	ATCC 23330	Proteobacteria (Cl.)	(1473)	M22517	RT
* 95	<i>Nelapsaria gonorrhoeae</i>	ATCC 8375	Proteobacteria (Cl.)	1544	X07714	RT
* 96	<i>Pseudomonas aeruginosa</i>	ATCC 11996	Proteobacteria (Cl.)	1537	X06584	RT
* 97	<i>Pseudomonas cepacia</i>	ATCC 25416	Proteobacteria (Cl.)	(1471)	M22518	RT
98	<i>Pseudomonas testosteronei</i>	ATCC 11996	Proteobacteria (Cl.)	1536	M11224	RT
99	<i>Vitrosocilla stercoraria</i>	VT1	Proteobacteria (Cl.)	(1487)	M22519	RT
*100	<i>Acyrtosyphon pisum symbiont P</i>		gamma group (SCL.)	1547	M27039	RT
*101	<i>Acyrtosyphon pisum symbiont S</i>		gamma group (SCL.)	1542	M27040	RT
*102	<i>Chromatium vinosum</i>		gamma group (SCL.)	1526	M26629	RT
103	<i>Coxiella burnetii</i>	Strain Q177	Proteobacteria (Cl.)	(1484)	M21291	RT
104	<i>Escherichia coli</i>	Operon rrmB	Proteobacteria (Cl.)	(1494)	M26630	RT
*105	<i>Escherichia coli</i>		Proteobacteria (Cl.)	1542	V00348	RT
106	<i>Proteus vulgaris</i>	DSM 1361	Proteobacteria (Cl.)	1544	J01874	RT
107	<i>Ruminobacter amylophilus</i>	ATCC VR331	Proteobacteria (Cl.)	1539		RT
108	<i>Wolbachia persica</i>		Proteobacteria (Cl.)	(1475)	M21292	RT
109	<i>Desulfosarcina variabilis</i>		Proteobacteria (Cl.)	(1527)	M26632	RT
110	<i>Desulfotobacter postgatei</i>		Proteobacteria (Cl.)	(1519)	M26633	RT
111	<i>Desulfurobacterium desulfuricans</i>	ATCC 27774	Proteobacteria (Cl.)	1551		RT
112	<i>Desulfuromonas acetoxidans</i>		Proteobacteria (Cl.)	(1522)	M26634	RT
113	<i>Myxococcus xanthus</i>	Strain MD207	Proteobacteria (Cl.)	1537		RT
114	<i>Molinitella succinogenes</i>		uncertain affiliation	(1503)		
115	<i>Acholeplasma entomophilum</i>	Strain TAC, ATCC 43706	Firmicuta (Ph.)	(1476)	M23931	RT
116	<i>Acholeplasma florum</i>	Strain L1, ATCC 33453	Firmicuta (Ph.)	1508	M23932	RT
117	<i>Acholeplasma laidlawii</i>	Strain JA1	Firmicuta (Ph.)	(1473)	M23933	RT
118	<i>Acholeplasma modicum</i>	Strain PG49, ATCC 29102	Firmicuta (Ph.)	(1453)	M25050	RT
119	<i>Anaeroleplasma absetoclasticum</i>	Strain 6-1, ATCC 27879	Firmicuta (Ph.)	(1436)	M25049	RT
120	<i>Anaeroleplasma bectoclasticum</i>	Strain JR, ATCC 27112	Firmicuta (Ph.)			
121	<i>Anaeroleplasma intermedium</i>	Strain 51A	Firmicuta (Ph.)			
122	<i>Anaeroleplasma varium</i>	Strain A-2, ATCC 43167	Firmicuta (Ph.)			
123	<i>Asteroleplasma anaerobium</i>	Strain 161, ATCC 27880	Firmicuta (Ph.)	1550	M23934	RT
124	<i>Bacillus subtilis</i>	Operon rrmB	Firmicuta (Ph.)	1544	M23732	RT
125	<i>Clostridium innocuum</i>	Strain B-3, ATCC 14501	Firmicuta (Ph.)	1530	M23731	RT
126	<i>Clostridium ramosum</i>	Strain 113-I, ATCC 25582	Firmicuta (Ph.)	(1476)	M26494	RT
127	<i>Clostridium sticklandii</i>		Firmicuta (Ph.)	(1487)	M23728	RT
128	<i>Erysipelothrix rhusiopathiae</i>	Strain alpha-P15, ATCC 19414	Firmicuta (Ph.)	1549	M23729	RT
129	<i>Lactobacillus cateniformis</i>	Strain 1871, ATCC 25536	Firmicuta (Ph.)			
130	<i>Lactobacillus confusus</i>	DSM 20196	Firmicuta (Ph.)			

Table 1. continued.

NC (a)	Species	Specification (b)	Taxonomic position (c)	Length (d)	Access. (e)	Method (f)	Remark
131	<i>Lactobacillus haloterans</i>	DSM 20190	Firmicuta (Ph.)		M23037	RT	
132	<i>Lactobacillus kandleri</i>	DSM 20593	Firmicuta (Ph.)		M23038	RT	
133	<i>Lactobacillus minor</i>	DSM 20014	Firmicuta (Ph.)		M23039	RT	
134	<i>Lactobacillus viridescens</i>	ATCC 12706	Firmicuta (Ph.)		M23040	RT	
135	<i>Lactobacillus vitulinus</i>	Strain 185, ATCC 27783	Firmicuta (Ph.)	(1477)			
136	<i>Lactococcus gervasei</i>	NCDO 2156	Firmicuta (Ph.)	(1475)			
137	<i>Lactococcus lactis</i>	NCDO 2118, subsp. lactis	Firmicuta (Ph.)	(1472)			
138	<i>Lactococcus plantarum</i>	NCDO 1869	Firmicuta (Ph.)	(1473)			
139	<i>Lactococcus raffinolactis</i>	NCDO 617	Firmicuta (Ph.)	(1478)			
140	<i>Leuconostoc cremoris</i>	DSM 20346	Firmicuta (Ph.)		M23034	RT	
141	<i>Leuconostoc lactis</i>	DSM 20202	Firmicuta (Ph.)		M23031	RT	
142	<i>Leuconostoc mesenteroides</i>	DSM 20343	Firmicuta (Ph.)		M23035	RT	
143	<i>Leuconostoc oenos</i>	DSM 20252	Firmicuta (Ph.)		M23032	RT	
144	<i>Leuconostoc paramesenteroides</i>	DSM 20288	Firmicuta (Ph.)		M23033	RT	
145	<i>Mycoplasmata agalactiae</i>	Strain PG2, NCTC 10123	Firmicuta (Ph.)	(1463)			
146	<i>Mycoplasmata arginini</i>	Strain G230, ATCC 23838	Firmicuta (Ph.)	(1474)			
147	<i>Mycoplasmata arbutitidis</i>	Strain PG6, ATCC 19611	Firmicuta (Ph.)	(1480)			
148	<i>Mycoplasmata bovigenitalium</i>	Strain PG11, ATCC 19852	Firmicuta (Ph.)	(1464)			
149	<i>Mycoplasmata californicum</i>	Strain ST-6, ATCC 33461	Firmicuta (Ph.)	(1480)			
150	<i>Mycoplasmata capricolum</i>	Operon rmb	Firmicuta (Ph.)	1521	X00921	RT	
151	<i>Mycoplasmata ellychniae</i>	Strain ELGN-1, ATCC 43707	Firmicuta (Ph.)	(1475)	M24292	RT	
152	<i>Mycoplasmata fermentans</i>	Strain PG18, ATCC 19989	Firmicuta (Ph.)	(1461)	M24289	RT	
*153	<i>Mycoplasmata gallisepticum</i>		Firmicuta (Ph.)	1519	M22441	RT	
154	<i>Mycoplasmata hominis</i>		Firmicuta (Ph.)	(1468)	M24473	RT	
155	<i>Mycoplasmata hyominis</i>		Firmicuta (Ph.)	1537	Y00149	RT	
156	<i>Mycoplasmata iowae</i>	Strain PG21, ATCC 23114	Firmicuta (Ph.)	(1470)	M24658	RT	
157	<i>Mycoplasmata iowae</i>	ATCC 17981	Firmicuta (Ph.)	(1463)	M24293	RT	
158	<i>Mycoplasmata lipophilum</i>	Strain 695, ATCC 33552	Firmicuta (Ph.)	(1480)	M24581	RT	
159	<i>Mycoplasmata mobile</i>	Strain MeBy, ATCC 27104	Firmicuta (Ph.)	(1466)	M24480	RT	
160	<i>Mycoplasmata muris</i>	Strain 1634, ATCC 43663	Firmicuta (Ph.)	(1466)	M24480	RT	
161	<i>Mycoplasmata muris</i>	Strain RIII4, ATCC 33757	Firmicuta (Ph.)	(1466)	M23939	RT	
162	<i>Mycoplasmata neurolyticum</i>	Strain UMJ0847, subsp. mucooides	Firmicuta (Ph.)	(1474)	M23944	RT	
163	<i>Mycoplasmata orale</i>	Strain type A, ATCC 19988	Firmicuta (Ph.)	(1480)	M23944	RT	
164	<i>Mycoplasmata pirum</i>	Strain CH19299, ATCC 23714	Firmicuta (Ph.)	(1463)	M24659	RT	
165	<i>Mycoplasmata pirum</i>	Strain 70-159, ATCC 25960	Firmicuta (Ph.)	(1465)	M23940	RT	
166	<i>Mycoplasmata pneumoniae</i>	Strain PH, ATCC 15531	Firmicuta (Ph.)	(1465)	M23941	RT	
167	<i>Mycoplasmata putrefaciens</i>	Strain PG34, ATCC 19612	Firmicuta (Ph.)	(1476)	M23941	RT	
168	<i>Mycoplasmata salivarum</i>	Strain KS-1, ATCC 15718	Firmicuta (Ph.)	(1476)	M23938	RT	
169	<i>Mycoplasmata sualvi</i>	Strain PG20, ATCC 23064	Firmicuta (Ph.)	(1497)	M24661	RT	
170	<i>Mycoplasmata sp.</i>	Strain Mayfield B, ATCC 33004	Firmicuta (Ph.)	(1475)	M24479	RT	
171	<i>Mycoplasmata sp.</i>	Strain 831-C4, ATCC 49191	Firmicuta (Ph.)	1523	M10588	RT	
172	<i>Mycoplasmata sp.</i>	Strain PG 50, Operon rmb	Firmicuta (Ph.)	(1474)	M24478	RT	
*173	<i>Oenothera hookeri</i> MLO	Strain M1, ATCC 49191	Firmicuta (Ph.)	1535			
174	<i>Spiroplasma apis</i>	Strain B-31, ATCC 33834	Firmicuta (Ph.)	(1469)	M23937	RT	
175	<i>Spiroplasma citri</i>	Strain Maroc, ATCC 27556	Firmicuta (Ph.)	1523	M23942	RT	
176	<i>Spiroplasma group II</i>	Strain DM1, ATCC 43153	Firmicuta (Ph.)	(1468)	M24483	RT	
177	<i>Spiroplasma group IX (beetle)</i>	Strain CN-5, ATCC 33827	Firmicuta (Ph.)	(1464)	M24474	RT	
178	<i>Spiroplasma group VI</i>	Strain Y32, ATCC 33835	Firmicuta (Ph.)	(1473)	M24477	RT	
179	<i>Spiroplasma group VII (wasp)</i>	Strain MQ-1, ATCC 33825	Firmicuta (Ph.)	(1458)	M24481	RT	
180	<i>Spiroplasma group XII (beetle)</i>	Strain DM-1, ATCC 43210	Firmicuta (Ph.)	(1460)	M24482	RT	
181	<i>Spiroplasma group XIII (horsefly)</i>	Strain TG-1, ATCC 43525	Firmicuta (Ph.)	(1469)	M24475	RT	
182	<i>Spiroplasma group XIII (horsefly)</i>	Strain SMCA, ATCC 29335	Firmicuta (Ph.)	(1468)	M24662	RT	
183	<i>Spiroplasma taiwanense</i> group XXII	Strain CT-1, ATCC 43302	Firmicuta (Ph.)	(1467)	M24476	RT	
184	<i>Streptococcus pleocarpus</i>	Strain 608, ATCC 29734	Firmicuta (Ph.)	1577	M23730	RT	
185	<i>Ureaplasma urealyticum</i>	Strain 960, NCTC 10177	Firmicuta (Ph.)	(1484)	M23935	RT	
186	<i>Vagococcus fluvialis</i>	NCDO 2497	Firmicuta (Ph.)	(1476)			
187	<i>Corynebacterium polymorphus</i>	NCDO 2097	Firmicuta (Ph.)	(1458)			
*188	<i>Megacorynebacterium elsdemii</i>		Firmicuta (Ph.)	(1458)			
*189	<i>Mycobacterium bovis</i>	Strain BCC	Firmicuta (Ph.)	1567	M26493	RT	
190	<i>Mycobacterium Kansasii</i>	DSM 43224	Firmicuta (Ph.)	1536			
191	<i>Nocardioideus albus</i>	DSM 43109	Firmicuta (Ph.)	(1463)	X15916	PCR	
192	<i>Nocardioideus jensenii</i>	DSM 29641	Firmicuta (Ph.)	(1444)			
193	<i>Nocardioideus luteus</i>	NCIB 11455	Firmicuta (Ph.)	(1443)			
194	<i>Pleobacter simplex</i>	NCIB 8929	Firmicuta (Ph.)	(1441)			
195	<i>Propionibacterium acidipropionici</i>	DSM 20272	Firmicuta (Ph.)	(1444)			
196	<i>Propionibacterium acnes</i>	DSM 1897	Firmicuta (Ph.)	(1351)			
197	<i>Propionibacterium freudenreichii</i>	DSM 20271	Firmicuta (Ph.)	(1359)			
198	<i>Propionibacterium jensenii</i>	DSM 20535	Firmicuta (Ph.)	(1468)			
199	<i>Propionibacterium thoenii</i>	DSM 43307	Firmicuta (Ph.)	(1365)			
200	<i>Propionibacterium thoenii</i>	DSM 20276	Firmicuta (Ph.)	(1214)			
*201	<i>Streptomyces ambofaciens</i>	Operon rmb	Firmicuta (Ph.)	(1365)			
*202	<i>Streptomyces coelicolor</i>	Strain A3 (2) M145, Operon rmb	Firmicuta (Ph.)	1528	M27245	RT	
*203	<i>Streptomyces lividans</i>	Strain TK21 Operon rmb	Firmicuta (Ph.)	1531	Y00411	RT	

Table 1. continued.

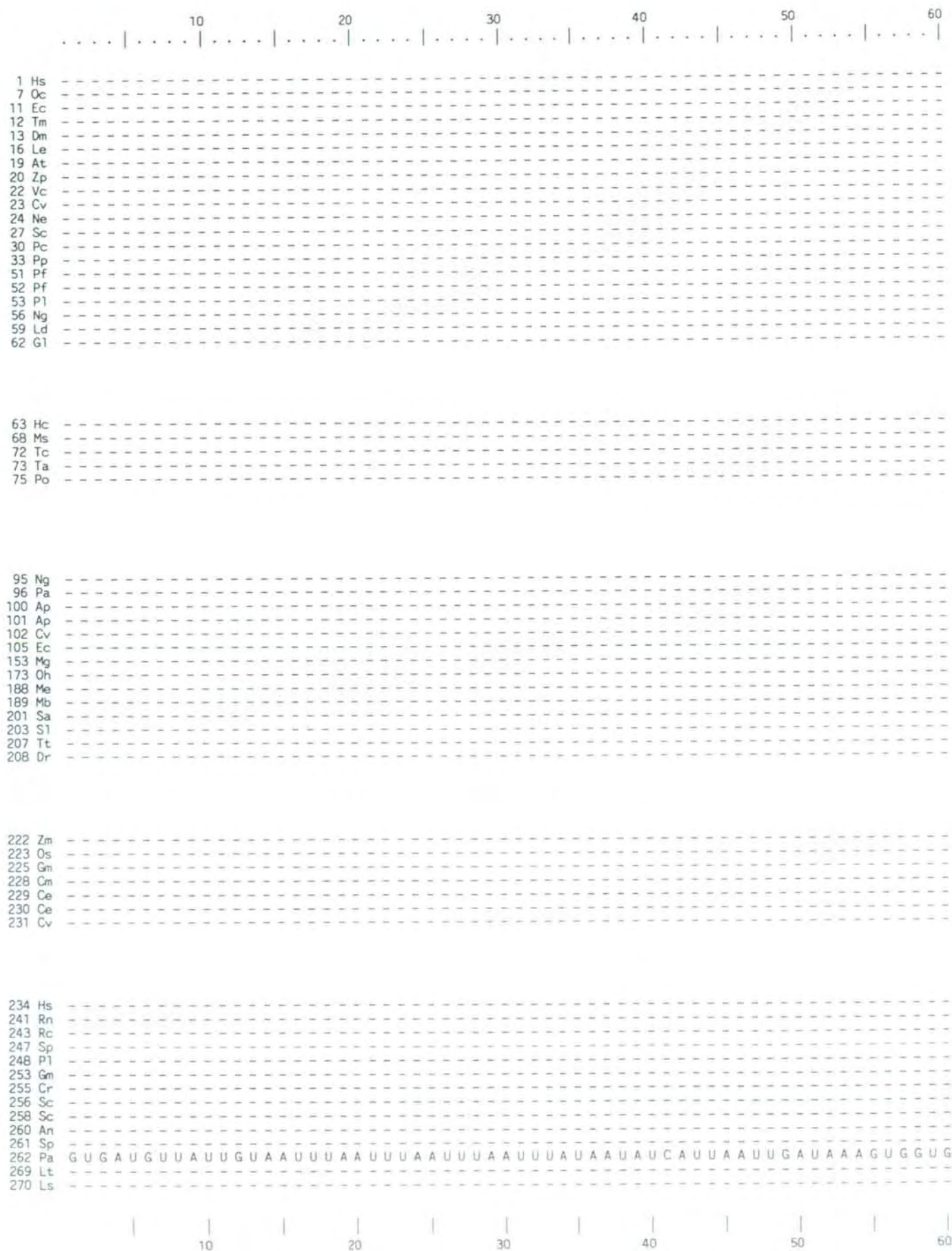
NC (a)	Species	Specification (b)	Taxonomic position (c)	Length (d)	Access. (e)	Method (f)	Re-mark
204	Terrabacter tumescens	NCIB 8914	Firmicutes (Ph.)	(1444)		RT	
205	Tsukamurella paucicatabolum	DSM 20162, NCTC 10741	Firmicutes (Ph.)	(1341)			
*206	Haliobacterium chlorum		Firmicutes (Ph.)	1522	M11212		
*207	Thermus thermophilus	Strain HB6	Firmicutes (Ph.)	1515	X07998		
*208	Deinococcus radiodurans	Strain UMO 298	Radioresistant micrococi & rel. (Ph.)	1515	M21413		
*209	Bacteroides fragilis	ATCC 25285	Radioresistant micrococi & rel. (Ph.)	1533	M11656		
210	Cytophaga heparina	IFO 12017 (ATCC 13125)	Bacteroides, Flavobact., Cytophaga (Ph.)	1528	M11657		
211	Chlamydia psittaci	Strain 6BC	Bacteroides, Flavobact., Cytophaga (Ph.)	1556	M13769		
212	Chloroflexus aurantiacus	J10PL (lyophilized cells)	Green non sulfur bacteria & rel. (Ph.)	1484			
213	Herposiphon aurantiacus	ATCC 23779 (frozen cell pellet)	Green non sulfur bacteria & rel. (Ph.)	1483			
214	Thermomicrobium roseum	ATCC 27502 (frozen cell pellet)	Green non sulfur bacteria & rel. (Ph.)	1525			
215	'Clathrochloris sulfurica'	Strain 1	Green sulfur dependent (Ph.)	(1335)			
216	Anacystis nidulans	Strain 6301 (Berkeley)	Cyanobacteria	1487	X01296	RT	
217	Thermotoga maritima	Strain MSB 8, DSM 3109	Thermophilic eubacteria	1563			
218	Arhodomonas oleiferhydrans			(1487)	M26631		
219	Desulfomonile tiedjei			(1505)	M26635		
220	Syntrophomonas wolfei			(1532)	M26492		
221	Syntrophoepora bryantii			(1532)	M26491		
PLASTIDS							
*222	Zea mays chl.		Angiospermae (Ph.)	1490	Z00028		
*223	Oryza sativa chl.		Angiospermae (Ph.)	1491	X15901		
224	Nicotiana tabacum chl.	Variety Bright Yellow 4	Angiospermae (Ph.)	1486	V00165		
*225	Glycine max chl.		Angiospermae (Ph.)	1470	X06428		
226	Marchantia polymorpha chl.		Bryophyta (Ph.)	1496	X04465		
*227	Chlamydomonas reinhardtii chl.		Chlorophyceae (Cl.)	1475	X03269		
*228	Chlamydomonas moewusii chl.		Chlorophyceae (Cl.)	1481			
*229	Chlamydomonas eugastros chl.		Chlorophyceae (Cl.)	1481			
*230	Chlorella ellipsoidea chl.	Strain IAM-C87	Chlorophyceae (Cl.)	1583	X12742		
*231	Chlorella vulgaris chl.	Strain 211-11b	Chlorophyceae (Cl.)	1494	X16579	PCR	
232	Ochromonas danica chr.	Strain 933-7	Oomycetes (Cl.)	(1355)		RT	
233	Euglena gracilis chl.	Strain Z	Euglenozoa (Assemblage)	1491			
MITOCHONDRIA							
*234	Homo sapiens mit.	Placenta	Chordata (Ph.)	954	V00710		
235	Pan troglodytes mit.	Cultured cells	Chordata (Ph.)	948			
236	Pan paniscus mit.	Frozen tissue	Chordata (Ph.)	949			
237	Gorilla gorilla mit.	Frozen tissue	Chordata (Ph.)	948			
238	Pongo pygmaeus mit.	Frozen tissue	Chordata (Ph.)	950			
239	Mus musculus mit.	L-cell, C2-1 line	Chordata (Ph.)	956			
240	Rattus norvegicus mit.	Liver	Chordata (Ph.)	953			
*241	Rattus norvegicus mit.	Variant A	Chordata (Ph.)	954	V00680		
242	Bos taurus mit.	Heart	Chordata (Ph.)	955	X14848		
*243	Rana catesbeiana mit.		Chordata (Ph.)	937	V00654		
244	Xanopus laevis mit.		Chordata (Ph.)	937	X12841		
245	Drosophila yakuba mit.	Stock 2371.6, Ivory coast	Chordata (Ph.)	819	X02890		
246	Drosophila virilis mit.	Stock 2375.8, Chile	Chordata (Ph.)	789	X03240		
*247	Strombolyticentrotus purpuratus mit.	Fresh eggs	Arthropoda (Ph.)	789			
*248	Paracentrotus lividus mit.		Arthropoda (Ph.)	865	X12631		
249	Zea mays mit.		Echinodermata (Ph.)	878	J04815		
250	Zea mays mit.		Echinodermata (Ph.)	878	X00794		
251	Zea diploperennis mit.		Echinoidae (Cl.)	1964	M10248		
252	Triticum aestivum mit.		Monocotyledoneae (Cl.)	1967			
*253	Glycine max mit.		Monocotyledoneae (Cl.)	1964			
254	Oenothera sp. mit.		Monocotyledoneae (Cl.)	1955	X01229		
*255	Chlamydomonas reinhardtii mit.	Cultivar Williams	Monocotyledoneae (Cl.)	1990	M16859		
*256	Saccharomyces cerevisiae mit.		Dicotyledoneae (Cl.)	1199			
257	Saccharomyces cerevisiae mit.	Strain MH41-7B	Volvocales (O.)		M22648		j
*258	Saccharomyces cerevisiae mit.	Strain D273-10B, wild-type	Heiascomycetes (Cl.)	1686	V00704		
259	Saccharomyces cerevisiae mit.	Strain 777-3A	Heiascomycetes (Cl.)	1651	X07799		
*260	Aspergillus nidulans mit.	Strain KU14-4A	Heiascomycetes (Cl.)	1649	X07800		
*261	Schistosoma haematobium mit.	Strain paba A1, bi A1	Plectocomycetes (Cl.)	1554			
*262	Podospira anserina mit.	Race A	Plectocomycetes (Cl.)	1422	X15738		
263	Tetrahymena pyriformis mit.	Strain ST	Plectocomycetes (Cl.)	14734	X14734		
264	Paramecium pyriformis mit.	Strain ST	Holotricha (O.)	1659	X05203		
265	Paramecium primaurelia mit.	Stock 513 (Edinburgh)	Holotricha (O.)	1668	M12714		
266	Paramecium tetraurelia mit.	Stock 51 (Edinburgh)	Holotricha (O.)	16917	K01750		
267	Trypanosoma brucei mit.	Strain 427	Holotricha (O.)	16907	K01751		
268	Critidia fasciculata mit.	Euglenozoa (Assemblage)	Kinetoplastida	611	V01350		
*269	Leishmania tarentolae mit.	Euglenozoa (Assemblage)	Kinetoplastida	612	X02548		
*270	Leptomonas sp. mit.	Euglenozoa (Assemblage)	Kinetoplastida	611			k

Table 2. Number of formatted disks to be sent in order to obtain a copy of the database.

Size	Disk type Capacity	Database format (see text)		
		Format 1	Format 2	Format 3
5.25"	DSDD (360 Kbytes)	15	4	2
5.25"	DSHD (1.2 Mbytes)	5	2	1
3.5"	DSDD (720 Kbytes)	8	2	1
3.5"	DSHD (1.44 Mbytes)	4	1	1

Footnotes to Table 1

- a) This number corresponds with the literature reference and is preceded by an asterisk if the sequence is printed in the alignment. The same number, and the initials of the species name, precede or follow the sequence on each alignment page. Identical numbers, followed by a different lower case character, are attributed to srRNAs from related species, or from different strains of the same species, that have the same sequence (e.g. *Tetrahymena canadensis* and *Tetrahymena borealis*). In such cases only one sequence is listed in our computer file.
- b) This column contains the following data, if specified by the authors:
- Strain name for laboratory animals, (cultivated) variety for plants, culture collection and strain number in the case of microorganisms.
 - Tissue from which the DNA used for cloning or amplification was extracted in the case of differentiated organisms.
 - Ribosomal RNA operon to which belongs the cloned srRNA gene in the case of bacteria.
- c) The taxonomic position is described according to the following references: 277 for the metazoa (No. 1 to 14), 278 for the higher plants (No. 15 to 20), 279 for the algae (No. 21 to 27), 280 for the fungi (No. 28 to 33). The taxonomic position of the protista (No. 34–62) is described according to Wetzel (281) for the species numbered 34–47 and 49–56, but according to Corliss (282) for *Prorocentrum micans* (No. 48) and for Euglenozoa, Microsporidia and Polymastigotes (57–62). The archaeobacteria are classified according to Woese (283). The classification of the eubacteria is according to Stackebrandt et al. (284) for the Proteobacteria, according to Wayne et al. (285) for the Firmicuta, and according to Woese (283) for the remaining taxa. We have no information yet on the taxonomic position of species 218–221. Taxon designations corresponding to an established taxonomic level are followed by the abbreviation Ph. (phylum), Sph. (subphylum), Cl. (class), O. (order).
- d) The srRNA termini are located experimentally (e.g. by S1 nuclease mapping) by some authors, but more often deduced by comparison with structures from related species. In case of length heterogeneity the length of the longest variant is listed. A question mark following the length denotes uncertainty on the location of the termini. A number enclosed in brackets means that the sequence has been determined partially and gives the length of the sequenced area. No length is mentioned for sequences not yet accessible in sequence libraries at the time of writing.
- e) Accession number in the EMBL and Genbank nucleotide sequence libraries. The accession number for a sequence is the same in both libraries but there can be a delay before a sequence submitted to one library arrives in the other one.
- f) PCR: the DNA was amplified by the polymerase chain reaction.
RT: the srRNA was sequenced by the dideoxynucleotide method using reverse transcriptase.
In the remaining cases DNA was amplified by cloning and sequencing was performed in most cases by the dideoxynucleotide method.
- g) Complete data on nucleoside modification can be found in the paper reporting this sequence.
- h) Partial data on modified nucleosides are mentioned in this paper or other papers cited therein.
- i) Complete data on nucleoside modification can be found in (276), but the sequence listed there misses 1 nucleotide and has been corrected in (105).
- j) *Chlamydomonas reinhardtii* mitochondrial srRNA consists of a set of 4 discontinuous fragments, which in the rDNA are interspersed with genes coding for tRNAs, large ribosomal subunit RNA fragments, and proteins. The interruptions between the fragments correspond with alignment positions 239 to 312, 911 to 930, and 2643 to 2811.
- k) In the mature RNA, the nucleotides in alignment positions 431 to 618 are deleted by processing.



	70	80	90	100	110	120	
-----					U A C C U G G U U	U - G A U C	Hs 1
-----					U A C C U G G U U	U - G A U C	Oc 7
-----					U A C C U G G U U	U - G A U C	Ec 11
-----					U C C C U G G U U	U - G A U C	Tm 12
-----					A U U C U G G U U	U - G A U C	Dm 13
-----					U A C C U G G U U	U - G A U C	Le 16
-----					U A C C U G G U U	U - G A U C	At 19
-----					U A C C U G G U U	U - G A U C	Zp 20
-----					U A C C U G G U U	U - G A U C	Vc 22
-----					A A C C U G G U U	U - G A U C	Cv 23
-----					U A C C U G G U U	U - G A U C	Ne 24
-----					U A C C U G G U U	U - G A U C	Sc 27
-----					U A C C U G G U U	U - G A U C	Pc 30
-----					U A C C U G G U U	U - G A U C	Pp 33
-----					A A C C U G G U U	U - G A U C	Pf 51
-----					A A C C U G G U U	U - G A U C	Pf 52
-----					A A C C U G G U U	U - G A U C	P1 53
-----					U A C C U G G U U	U - G A U C	Ng 56
-----					G A U C U G G U U	U - G A U U	Ld 59
-----					C A U C C G G U U	U - G A U C	G1 62

----- 1 ----- 2

-----					A U U C C G G U U	U - G A U C	Hc 63
-----					A U U C C G G U U	U - G A U C	Ms 68
-----					A U U C C G G U U	U - G A U C	Tc 72
-----					A C U C C G G U U	U - G A U C	Ta 73
-----					A C U C C G G U U	U - G A U C	Po 75

----- 10 -----

-----					U G A A C A U A A G A G U U	U - G A U C	Ng 95
-----					G A A C U G A A G A G U U	U - G A U C	Pa 96
-----					A A A U U G A A G A G U U	U - G A U C	Ap 100
-----					A A A U U G A A G A G U U	U - G A U C	Ap 101
-----					X A C U G A A G A G U U	U - G A U C	Cv 102
-----					A A A U U G A A G A G U U	U - G A U C	Ec 105
-----					U U - U U C U G A G A G U U	U - G A U C	Mg 153
-----					A U A C G - A A G A G U U	U - G A U C	Oh 173
-----					U A U C A U G G A G A G U U	U - G A U C	Me 188
-----					U U U G U U U G G A G A G U U	U - G A U C	Mb 189
-----					U - U C A C G G A G A G U U	U - G A U C	Sa 201
-----					A U U C A C G G A G A G U U	U - G A U C	S1 203
-----					U U G - U U G G A G A G U U	U - G A U C	Tt 207
-----					U U U A U G G A G A G U U	U - G A U C	Dr 208

----- 1 ----- 2

-----					C U C A U G G A G A G U U	U - C G A U C	Zm 222
-----					U C U C A U G G A G A G U U	U - C G A U C	Os 223
-----					U C U C A U G G A G A G U U	U - C G A U C	Gm 225
-----					A C C U A U G A U G A G U U	U - G A U C	Cm 228
-----					A C C U A U G A U G A G U U	U - G A U C	Ce 229
-----					U U U C A U G G A G A G U U	U C G A U C	Ce 230
-----					U G C U G C A G A G A G U U	Y - G A U C	Cv 231

-----					A A U A G G U U U	U - G G U C	Hs 234	
-----					A A - A G G U U U	U - G G U C	Rn 241	
-----					C A A A G G U U U	U - G G U C	Rc 243	
-----					G C C G A U U U	U - G G U C	Sp 247	
-----					A C C G A U U U	U - G G U C	P1 248	
-----			A U C A U A C U C		A A A U A - - A G A G U U U	U - G A U C	Gm 253	
-----					A A A U U - - A G A G U U U	U - G G U C	Cr 255	
-----					A G U A A A - - A A A U U U A U A A G A A U A U	U - G A U G	Sc 256	
-----					A G U A A A - - A A A U U U A U A A G A A U A U	U - G A U G	Sc 258	
-----					G G U A U A G A G U A A U A U C C C A U U U C C C U A U A C U A U G A A A A U U U	U - G A U G	An 260	
-----					U U A A A U A A G G C G U G G C G C A A G C U C G C C U U U A C U C A C U U U A A C C A A A G U U G A G U U U	U - G G U G	Pa 262	
-----						U A G - U - C A A - -		Lt 269
-----						U A G - U - C A A - -		Ls 270

70 80 90 100 110 120

	130	140	150	160	170	180
1 Hs	CUGGCCAAGUAGG--(C)AUAUGCU-UUGUCUC	CAAAG--AUUUAAGCCAUUGC	AUGUCUAAAGUAC---			
7 Oc	CUGGCCAAGUAGG--(C)AUAUGCU-UUGUCUC	CAAAG--AUUUAAGCCAUUGC	AUGUCUAAAGUAC---			
11 Ec	CUGGCCAAGUAGGU--CAUAUUGCU-UUGUCUC	CAAAG--AUUUAAGCCAUUGC	AUGUCUAAAGUAC---			
12 Tm	CUGGCCAAGUAGGU--CAUAUUGCU-UUGUCUC	CAAAG--AUUUAAGCCAUUGC	AUGUCUAAAGUAC---			
13 Dm	CUGGCCAAGUAGGU--UUAUUGCU-UUGUCUC	CAAAG--AUUUAAGCCAUUGC	AUGUCUAAAGUAC---			
16 Le	CUGGCCAAGUAGGU--CAUAUUGCU-UUGUCUC	CAAAG--AUUUAAGCCAUUGC	AUGUCUAAAGUAC---			
19 At	CUGGCCAAGUAGGU--CAUAUUGCU-UUGUCUC	CAAAG--AUUUAAGCCAUUGC	AUGUCUAAAGUAC---			
20 Zp	CUGGCCAAGUAGGU--CAUAUUGCU-UUGUCUC	CAAAG--AUUUAAGCCAUUGC	AUGUCUAAAGUAC---			
22 Vc	CUGGCCAAGUAGGU--CAUAUUGCU-UUGUCUC	CAAAG--AUUUAAGCCAUUGC	AUGUCUAAAGUAC---			
23 Cv	CUGGCCAAGUAGGU--CAUAUUGCU-UUGUCUC	CAAAG--AUUUAAGCCAUUGC	AUGUCUAAAGUAC---			
24 Ne	CUGGCCAAGUAGGU--CAUAUUGCU-UUGUCUC	CAAAG--AUUUAAGCCAUUGC	AUGUCUAAAGUAC---			
27 Sc	CUGGCCAAGUAGGU--CAUAUUGCU-UUGUCUC	CAAAG--AUUUAAGCCAUUGC	AUGUCUAAAGUAC---			
30 Pc	CUGGCCAAGUAGGU--CAUAUUGCU-UUGUCUC	CAAAG--AUUUAAGCCAUUGC	AUGUCUAAAGUAC---			
33 Pp	CUGGCCAAGUAGGU--CAUAUUGCU-UUGUCUC	CAAAG--AUUUAAGCCAUUGC	AUGUCUAAAGUAC---			
51 Pf	CUGGCCAAGUAGGU--CAUAUUGCU-UUGUCUC	CAAAG--AUUUAAGCCAUUGC	AUGUCUAAAGUAC---			
52 Pf	CUGGCCAAGUAGGU--CAUAUUGCU-UUGUCUC	CAAAG--AUUUAAGCCAUUGC	AUGUCUAAAGUAC---			
53 P1	CUGGCCAAGUAGGU--CAUAUUGCU-UUGUCUC	CAAAG--AUUUAAGCCAUUGC	AUGUCUAAAGUAC---			
56 Ng	CUGGCCAAGUAGG(C)U--CAUAUUGCU-UUGUCUC	CAAAG--AUUUAAGCCAUUGC	AUGUCUAAAGUAC---			
59 Ld	CUGGCCAAGUAGG--CAUAUUGCU-UUGUCUC	CAAAG--AUUUAAGCCAUUGC	AUGUCUAAAGUAC---			
62 G1	CUGGCCAAGUAGG--CAUAUUGCU-UUGUCUC	CAAAG--AUUUAAGCCAUUGC	AUGUCUAAAGUAC---			
2 — 1' — 3 — 4 — 5 — 6						
63 Hc	CUGGCCGGAGGGC--CAU--UGCUAUCGGGAGUCCG	---AUUUAAGCCAUUGC	UAGUGUGGCGGU--			
78 Ms	CUGGCCAGAGGGC--UAC--UGCUAUCGGGAGUCCG	---ACUUAAGCCAUUGC	GAGUGGAGGUA--			
72 Tc	CUGGCCGGAGGGC--CAC--UGCUAUCGGGAGUCCG	---ACUUAAGCCAUUGC	GAGUGGAGGUA--			
73 Ta	CUGGCCGGAGGGC--CAC--UGCUAUCGGGAGUCCG	---ACUUAAGCCAUUGC	GAGUGGAGGUA--			
75 Po	CUGGCCGGAGGGC--GAC--CGCUAUCGGGAGUCCG	---ACUUAAGCCAUUGC	GAGUGGAGGUA--			
20 30 40 50 60 70						
95 Ng	CUGGCCUCAGGAU--UGAAACGGCUUGGCCGGGCAUGGC	---UUAACACAUUGC	AAAGUCGGAGC(G)CAGC			
96 Pa	AUGGCCUCAGGAU--UGAAACGGCUUGGCCGGGCAUGGC	---UUAACACAUUGC	AAAGUCGGAGGCUUAUAU			
100 Ap	AUGGCCUCAGGAU--UGAAACGGCUUGGCCGGGCAUGGC	---UUAACACAUUGC	AAAGUCGGAGGCUUAUAU			
101 Ap	AUGGCCUCAGGAU--UGAAACGGCUUGGCCGGGCAUGGC	---UUAACACAUUGC	AAAGUCGGAGGCUUAUAU			
102 Cv	CUGGCCUCAGGAU--UGAAACGGCUUGGCCGGGCAUGGC	---UUAACACAUUGC	AAAGUCGGAGGCUUAUAU			
105 Ec	AUGGCCUCAGGAU--UGAAACGGCUUGGCCGGGCAUGGC	---UUAACACAUUGC	AAAGUCGGAGGCUUAUAU			
153 Mg	CUGGCCUCAGGAU--UGAAACGGCUUGGCCGGGCAUGGC	---UUAACACAUUGC	AAAGUCGGAGGCUUAUAU			
173 Oh	CUGGCCUCAGGAU--UGAAACGGCUUGGCCGGGCAUGGC	---UUAACACAUUGC	AAAGUCGGAGGCUUAUAU			
188 Me	CUGGCCUCAGGAU--UGAAACGGCUUGGCCGGGCAUGGC	---UUAACACAUUGC	AAAGUCGGAGGCUUAUAU			
189 Mb	CUGGCCUCAGGAU--UGAAACGGCUUGGCCGGGCAUGGC	---UUAACACAUUGC	AAAGUCGGAGGCUUAUAU			
201 Sa	CUGGCCUCAGGAU--UGAAACGGCUUGGCCGGGCAUGGC	---UUAACACAUUGC	AAAGUCGGAGGCUUAUAU			
203 S1	CUGGCCUCAGGAU--UGAAACGGCUUGGCCGGGCAUGGC	---UUAACACAUUGC	AAAGUCGGAGGCUUAUAU			
207 Tt	CUGGCCUCAGGAU--UGAAACGGCUUGGCCGGGCAUGGC	---UUAACACAUUGC	AAAGUCGGAGGCUUAUAU			
208 Or	CUGGCCUCAGGAU--UGAAACGGCUUGGCCGGGCAUGGC	---UUAACACAUUGC	AAAGUCGGAGGCUUAUAU			
2 — 1' — 3 — 4 — 5 — 6						
222 Zm	CUGGCCUCAGGAU--UGAAACGGCUUGGCCGGGCAUGGC	---UUAACACAUUGC	AAAGUCGGAGGCUUAUAU			
223 Os	CUGGCCUCAGGAU--UGAAACGGCUUGGCCGGGCAUGGC	---UUAACACAUUGC	AAAGUCGGAGGCUUAUAU			
225 Gm	CUGGCCUCAGGAU--UGAAACGGCUUGGCCGGGCAUGGC	---UUAACACAUUGC	AAAGUCGGAGGCUUAUAU			
228 Cm	CUGGCCUCAGGAU--UGAAACGGCUUGGCCGGGCAUGGC	---UUAACACAUUGC	AAAGUCGGAGGCUUAUAU			
229 Ce	CUGGCCUCAGGAU--UGAAACGGCUUGGCCGGGCAUGGC	---UUAACACAUUGC	AAAGUCGGAGGCUUAUAU			
230 Ce	CUGGCCUCAGGAU--UGAAACGGCUUGGCCGGGCAUGGC	---UUAACACAUUGC	AAAGUCGGAGGCUUAUAU			
231 Cv	CUGGCCUCAGGAU--UGAAACGGCUUGGCCGGGCAUGGC	---UUAACACAUUGC	AAAGUCGGAGGCUUAUAU			
234 Hs 241 Rn 243 Rc 247 Sp 248 P1 253 Gm 255 Cr 256 Sc 258 Sc 260 An 261 Sp 262 Pa 269 Lt 270 Ls						
234 Hs	CUGAGCCUUAUCUAUAU(A)--GCUUUAAGUAAGA	---UUAACACAUUGC	AAAGUCGGAGGCUUAUAU			
241 Rn	CUGAGCCUUAUCUAUAU(A)--(A)UUGGUAAGUAAGA	---UUAACACAUUGC	AAAGUCGGAGGCUUAUAU			
243 Rc	CUGAGCCUUAUCUAUAU(A)--ACUUAAGUAAGA	---UUAACACAUUGC	AAAGUCGGAGGCUUAUAU			
247 Sp	CUGAGCCUUAUCUAUAU(A)--ACUUAAGUAAGA	---UUAACACAUUGC	AAAGUCGGAGGCUUAUAU			
248 P1	CUGAGCCUUAUCUAUAU(A)--GCUUAAGUAAGA	---UUAACACAUUGC	AAAGUCGGAGGCUUAUAU			
253 Gm	CUGAGCCUUAUCUAUAU(A)--GCUUAAGUAAGA	---UUAACACAUUGC	AAAGUCGGAGGCUUAUAU			
255 Cr	CUGAGCCUUAUCUAUAU(A)--GCUUAAGUAAGA	---UUAACACAUUGC	AAAGUCGGAGGCUUAUAU			
256 Sc	CUGAGCCUUAUCUAUAU(A)--GCUUAAGUAAGA	---UUAACACAUUGC	AAAGUCGGAGGCUUAUAU			
258 Sc	CUGAGCCUUAUCUAUAU(A)--GCUUAAGUAAGA	---UUAACACAUUGC	AAAGUCGGAGGCUUAUAU			
260 An	CUGAGCCUUAUCUAUAU(A)--GCUUAAGUAAGA	---UUAACACAUUGC	AAAGUCGGAGGCUUAUAU			
261 Sp	CUGAGCCUUAUCUAUAU(A)--GCUUAAGUAAGA	---UUAACACAUUGC	AAAGUCGGAGGCUUAUAU			
262 Pa	CUGAGCCUUAUCUAUAU(A)--GCUUAAGUAAGA	---UUAACACAUUGC	AAAGUCGGAGGCUUAUAU			
269 Lt	CUGAGCCUUAUCUAUAU(A)--GCUUAAGUAAGA	---UUAACACAUUGC	AAAGUCGGAGGCUUAUAU			
270 Ls	CUGAGCCUUAUCUAUAU(A)--GCUUAAGUAAGA	---UUAACACAUUGC	AAAGUCGGAGGCUUAUAU			

	190	200	210	220	230	240	
						
							G C A C G G Hs 1
							G C A C G G Oc 7
							U A C A U G C Ec 11
							U A C A A Tm 12
							A C A C Dm 13
							C A A A Le 16
							C G A A At 19
							C U A U Zp 20
							A C U G Vc 22
							C U G Cv 23
							C U G Ne 24
							A A Sc 27
							C A A Pc 30
							A G A G C A A Pp 33
U A							U A U Pf 51
U							G U A A G Pf 52
U A							U A U P1 53
(C)A U A U G C G G U							U U C G Ng 56
							C A C U G Ld 59
							C C C - G1 62

6

							U U A G Hc 63
							G C A A Ms 68
							C U U - Tc 72
							G U A A Ta 73
							C G G A Po 75

80

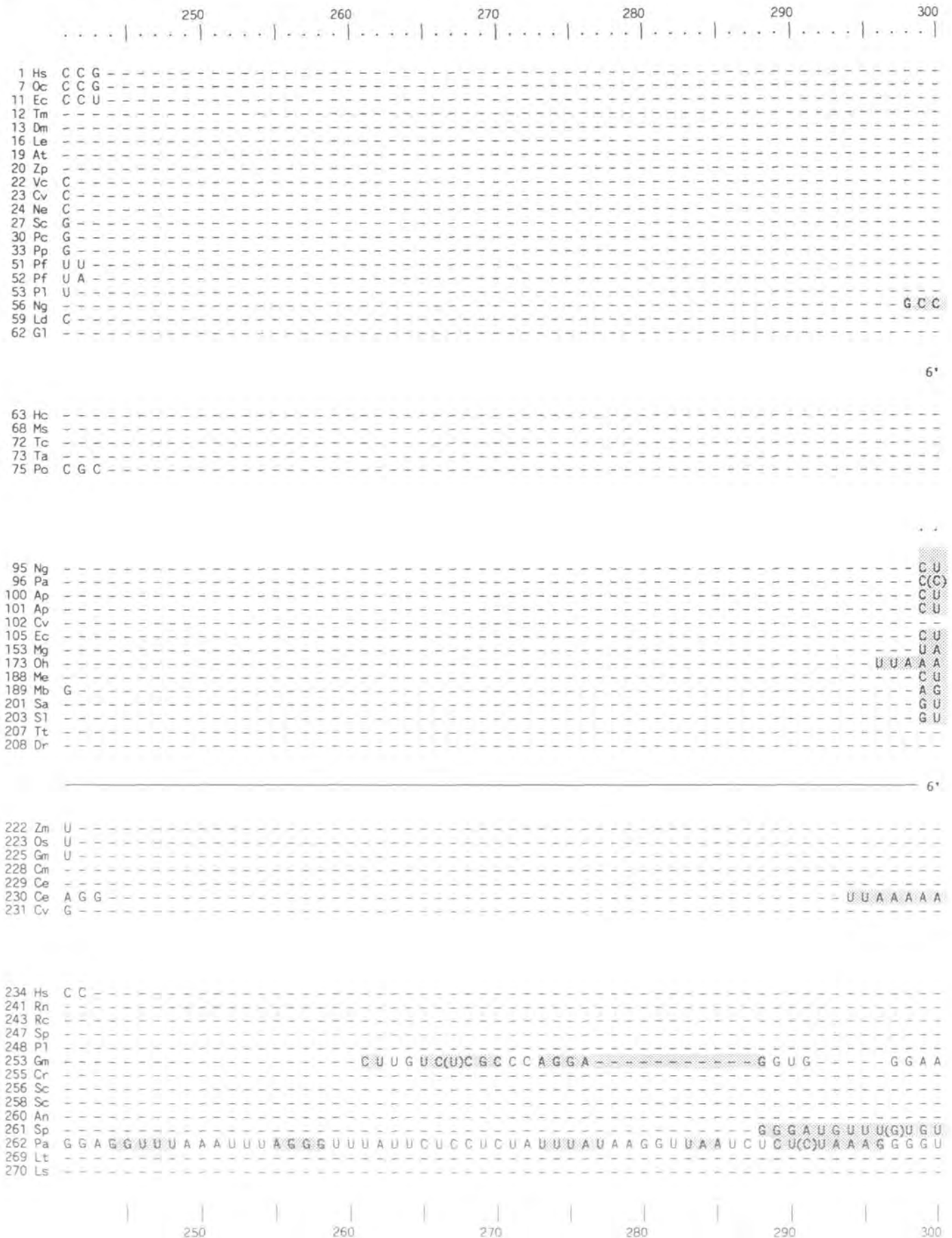
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G A A - G G G - (A) G							C U U G Pa 96
G A G A A G A G A G							C U U G Ap 100
AC - A A G A G A G							C U U G Ap 101
- - - G G G C - -							U U C G Cv 102
A G G A A G A - A G							C U U G Ec 105
- - - G A U G - U A							G C A A Mg 153
- - - G A A G - U U U A A							G C A A Oh 173
A G A U G A G A A G							C U U G Me 188
GU - - - (C) U C U							U U C G Mb 189
CC - - - - A C							U U C G Sa 201
CC - - - - A C							U U C G S1 203
C G G G G U - - -							U U U - Tt 207
							U U C G Dr 208

6

U - - - - -							
U - - - - -							G G Zm 222
U - - - - -							G G Os 223
ACAG - - - -							G G Gm 225
ACAG - - - -							G C A A Cm 228
UUGCUUUUUUUUA							G C A A Ce 229
AAUUUGG - - -							G C U U Ce 230
							C U U Cv 231

							A U C C Hs 234
							Rn 241
							C A G - - Rc 243
							C C A - - Sp 247
							C C A - - P1 248
UUCGGGGAGCUGGGCAGAAAGGAAAGAGGGCCUCCUAGCG(U)G A A G							G U U G Gm 253
XX - XXX -							C A A - - Cr 255
UUA - UU - - -							G A U A A Sc 256
UUA - UU - - -							G A U A A Sc 258
UUAGUU - - -							A U U A - An 260
- - A A C A (A) A A C A A U A C A U C C U							U U A G Sp 261
UUA A A U U U U A (C) A G U U G C A G U A A A G U U A U U C U U U C C U U U C U G U A A A C U G G U U							A U U A Pa 262
AA - - - - -							U U U U Lt 269
AAA - - - - -							U U G U Ls 270

190 200 210 220 230 240



310 320 330 340 350 360

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--- G U A C A G U G A A A C U G C G G A A U G G C U C A U U A A A U C A G (U) U A U G G U U C C U U U G G U C G C U C G Hs 1
--- G U A C A G U G A A A C U G C G G A A U G G C U C A U U A A A U C A G (U) U A U G G U U C C U U U G G U C G C U C G Oc 7
--- C U U A A G G C G A A A C C G C G A A A U G G C U C A U U A A A U C A G (U) U A U G G U U C C U U A G A U C G U A C C Ec 11
--- U U (A) A G G U G A A A C C G C G A A A G G C U C A U U A A A U C A G (U) U A U G G U U C C U U A G A U C G U A C C Tm 12
G(A) U U A A A (A) G U G A A A C C G C G A A A U G G C U C A U U A A A U C A G (U) U A U G G U U C C U U A G A U C G U A A A Dm 13
--- U U C A G A C U G U G A A A C U G C G G A A U G G C U C A U U A A A U C A G U U A U A G U U U G U U U G A U C G U A U C Le 16
--- U U C A (G) A C U G U G A A A C U G C G G A A U G G C U C A U U A A A U C A G U U A U A G U U U G U U U G A U G G U A A C At 19
--- U U U G (G) A C (G) U G U G A A A C U G C G G A A U G G C U C A U U A A A U C A G U U A U A G U U U C U U U G A U G G U A C U Zp 20
--- U U A U - A C U G U G A A A C U G C G G A A U G G C U C A U U A A A U C A G U U A U A G U U U A U U U G A U G G U A C C Vc 22
--- U U U A U A C U G U G A A A C U G C G G A A U G G C U C A U U A A A U C A G U U A U A G U U U A U U U G A U G G U A C U Cv 23
--- U U U A U A C U G U G A A A C U G C G G A A U G G C U C A U U A A A U C A G U U A U A G U U U A U U U G A U G G U A C C Ne 24
--- A U U A U U A U G U G A A A C U G C G G A A U G G C U C A U U A A A U C A G U U A U A G U U U A U U U G A U A A U C YC Sc 27
--- U U A U A C A G U G A A A C U G C G G A A U G G C U C A U U A A A U C A G U U A U A G U U U A U U U G A U A A U C Pc 30
--- - - - U C U (C) U (U) G A A A C U G C G G A A C G G C U C C G C A U U A C C A G U U U G U (A) A C C A U A G C A G C (A) A G C Pp 33
--- U A U A U G U A - - - G A A A C U G C G G A A C G G C U C A U U A A A A C A G U U A U A G U (C) U A C U U G A (C) A - U U - - Pf 51
--- - A U A U (A) U U - - - G A A A C U G C G G A A C G G C U C A U U A A A A C A G U U A U A U (C) U A C U U G A U G - (U) U - - Pf 52
U A U U A U A U A - - - G A A A C U G C G G A A C G G C U C A U U A A A A C A G U U A U A A U (C) U A C U U G A (C) A - U - - Pl 53
G U G U A U (A) A U G A U (A) G U C U G U G G A A G G C U C A U U A U A A C A G U U A (U) A C U C C U A G C C A C U G G A A A Ng 56
--- A U U U G C A - - - G A A U C U G C G G A U G G C U C A U U A C A U C A G A C G U A A U (C) U G (C) G (C) A A A A U C U Ld 59
--- - - - G G A C G C G C G G A C G G C U C A G G A C A A C G G U U G C (A) C C C C G C G G C (G) G U C C C G1 62

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6* 7 8

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--- A C C C G C A G C G G G A A A G G C U C A G U A A C A C G U G G C C A A G C U A C C C U G U G G - - - Hc 63
--- - U A C A U G G C G G A A C U G G C U C A G U A A C A C G U G G A G A A C C U A C C C U A G G G - - - Ms 68
--- G C G C (G) C A C C G G C G G A C G G C U C A G U A A C A C G U G G G U A A C C U A C C C U C G G - - - Tc 72
--- - G G C (A) C C G G C G G A A C A G C U C A G U A A C A C G U G G A U A A U U A C C C U C A G G - - - Ta 73
--- G G G G C G C G C G G A C G G C U C A G U A A C A C G U G G C C A A G C U A C C C U C G G - - - Po 75

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90 100 110 120 130 140

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U C U C G G - G U G (G) C G A G U G G C G G A A C G G G U G A G U A A C A U A U C G G - A A C G U A C C G G G U A G C - - - Ng 95
U - - - U G G A U U C A G C G G C G G A A C G G G U G A G U A A U G C C U A G G - G A U C U G C C U G G U A G U - - - Pa 96
C U C U U G U C G G C A A G C G G C G G A A C G G G U G A G U A A U A U G C U A G G - A A U C U G C C C A A A G A - - - Ap 100
C U C U G G - G U G A C G A G C G G C G G A C G G G U G A G U A A U G C U G G G - A A A C U G C C U G A U G G C - - - Ap 101
G C C U - - - G A G U A G A G U G G C G G A C G G G U G A G U A A C G C A U G G G - A A U C U G C C U G G C A G A - - - Cv 102
U C U U U G + C U G A C G A G U G G C G G A C G G G U G A G U A A U G U C U G G G - A A A C U G C C U G A U A G U - - - Ec 105
C A U U - - - - - A G A G G C G G A A C G G G U G A G U A A C A C G C U A U C C A A U C U G (C) C U A U A G U - - - Mg 153
C U U U - - - - - A U G G C G G A A C G G G U G A G U A A C G G U A A G C A A U C U G C C C U A A G A - - - Oh 173
U C U U A U U G A U U C G A G U G G C A A A C G G G U G A G U A A C G C G U A A G C A A C C U G C C C U U C A G A - - - Me 188
A(U) - - - - - A C U C G A U G G C G G A A C G G G U G A G U A A C A C G U G G G U A U C U G C C C U G C A C U - - - Mb 189
- - - - - G G G A U U A G U G G C G G A A C G G G U G A G U A A C A C G U G G G A A U C U G C C C U G C A C U - - - Sa 201
- - - - - G G G A U U A G U G G C G G A A C G G G U G A G U A A C A C G U G G G A A U C U G C C C U U C A C U - - - Sl 203
- - A C U C C G U G G U A G C G G C G G A C G G G U G A G U A A C A C G U G G U G A C C U A (C) C G G A A G A - - - Tt 207
- - - - - G A C C G A G U G C G G A C G G G U G A G U A A C A C G U A A C U G A C C U A (C) C C A G A A G U - - - Dr 208

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6* 7 8

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--- G U U U C C A G U G G C G G A A C G G G U G A G U A A C G C G U (A) A G - A A C C U G C C C U U G G G A - - - Zn 222
--- - G U U U C C A G U G G C G G A A C G G G U G A G U A A C G C G U (A) A G - A A C C U G C C C U U G G G A - - - Os 223
--- - G U U U C C A G U G G C G G A A C G G G U G A G U A A C G C G U (A) A G - A A C C U A C C C U U G G G A - - - Gm 225
--- C U G U U A G U U A G U G G C G G A C G G G U G C G U A A C G C G U A A G - A A U C A A C A U U C U G G - - - Cm 228
--- C U G U U A G U U A G U G G C G G A C G G G U G C G U A A C G C G U A A G - A A U C A A C A U U C U G G - - - Ce 229
A A A G U A A A U U C U A G U G G C G G A C G G G U G A G U A A C G C G U A A G - A A C C U A (C) C U U A G G C - - - Ce 230
C C A G A U U G C G A U G A G U G G C G G A C G G G U G A G U A A C A C G U A A G - A A C C U A (C) C U (U) U U G G A - - - Cv 231

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--- - - - - G U U - - C C A G U G A G U - C A C C C U - (C) U A A A U C - - - Hs 234
--- - - - - C A U A A A C C G G U G A - A A A U C C C U - U A A A G A U U U - - - Rn 241
--- - - - - C A A A C C C G U G A G - A A C G C (C) C U - U U A A U U C U - - - Rc 243
--- - - - - C U A G C A A C C A G U G A - - A A U A G A A U - C U U A U U C - - - Sp 247
--- - - - - A U G A C A A A C C A G U G A - - A G U A A A A A - - U U U U G G - - - Pt 248
C A G U U G A A A C A A A G U G G C G A A C G G G U G C G U A A U G C G U G G G - A A U C U G C C G A A C A G - - - Gm 253
--- - - - - A A G U U G C - - - U A G G U G A C C C A - A U (A) C G G G - C A U C G G G C - A A - - - Cr 255
G A U - - A A U A A A U A U G U G G U G A A A C G U G A G U A A U U U U A U A G G A A U A A U G A C U A U A G A Sc 256
G A U - - A A U A A A U A U G U G G U G U A A C G U G A G U A A U U U A U U A U G G A A U A A U G A A C U A U A G A Sc 258
A A C - - U A A (G) U A G U A G U G G U G U A C A G G U G A G U A A A A G A U A A U U G G C U A C C U U A A A G U A - - - An 260
U U U U U - - - G U G A C G U G G U G A A C A G G U G A G U A A A A G G A A G A A C G G A C C U U A A A U - - - Sp 261
U U U U U A A A U A A A G U G G U G U A C A G G U G A G U A A U A U G U U U U G U A C C U A A A A G - - - Pa 262
--- - - - - A U A U A G U U U - - - - A U U U - - - - G U U (U) A C - - - A A A U U A A A U - - - Lt 269
--- - - - - U U U A U A U A G U U U - - - - - A U U G A A A U - A C U A - - - - U U U A U U U U C (A) A - - - Ls 270

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310 320 330 340 350 360

	370	380	390	400	410	420
1 Hs	C U	---	---	C C U C U C C U A C U U G(G)-	A U A A C U(G)U G G	U A A U - U C U A(G)A
7 Oc	C U	---	---	C C U C U C C U A C U U G(G)-	A U A A C U(G)U G G	U A A U - U C U A(G)A
11 Ec	---	---	---	U U A C U A C U U G(G)-	A U A A C U(G)U G G	U A A U - U C U A(G)A
12 Tm	---	---	---	C A C A U U U A C U U G(G)-	A U A A C U(G)U G G	U A A U - U C U A(G)A
13 Dm	---	---	---	C A G U U A C U U G(G)-	A U A A C U(G)U G G	U A A U - U C U A(G)A
16 Le	---	---	---	U A C - U A C U C G(G)-	A U A A C C G U A G	U A A U - U C U A G A
19 At	---	---	---	U A C - U A C U C G(G)-	A U A A C C G U A G	U A A U - U C U A G A
20 Zp	C	---	---	U G C - U A C A C G(G)-	A U A A C C G U A G	U A A U - U C U A G A
22 Vc	---	---	---	U A C - U A C U C G(G)-	A U A A C C G U A G	U A A U - U C U A G A
23 Cv	---	---	---	U A C - U A C U C G(G)-	A U A A C C G U A G	U A A U - U C U A G A
24 Ne	---	---	---	U A C U A C U C G(G)-	A U A A C C G U A G	U A A U - U C U A G A
27 Sc	---	---	---	U A C U A C U C G(G)-	A U A A C C G U A G	U A A U - U C U A G A
30 Pc	---	---	---	U A C U A C U C G(G)-	A U A A C C G U G G	U A A U - U C U A G A
33 Pp	C G C G U U G U U G C C G C A A G G C G A C G G C G G	---	---	U U C A C A G G(G)-	A U A A C C(C)U G G	U A A U - U C U G(A)G
51 Pf	---	---	---	U U U A U U A A G(G)-	A U A A C U A C G G	A A A A - G C U G U A
52 Pf	---	---	---	U U U A U U A A G(G)-	A U A A C U A C G G	A A A A - G C U G U A
53 P1	---	---	---	U U U U U A A A G(G)-	A U A A C U A C G G	A A A A - G C U G U A
56 Ng	---	---	---	G U U U A C A A G(G)-	A U A(C)C(A)C(C)G U	A A A C - U G C(A)G(C)
59 Ld	U G C - - G G	---	---	U U U - - C C G C A A	---	---
62 G1	---	---	---	U G C U A G C C G G - A C A C C G C U G G	---	---
----- EB-1 ----- EB-1' ----- 9 ----- 9' -----						
63 Hc	---	---	---	A C G G G(A)U A C U C U C G G	G A A A - - C U G A G	
68 Ms	---	---	---	U U G G G U A U A A C C C G G	G A A A - - C U G G G	
72 Tc	---	---	---	A G G G G A U A A C C C G G	G A A A - - C U G G G	
73 Ta	---	---	---	C G G G G(C)A U A A C C U C G G	G A A A - - C U G A G	
75 Po	---	---	---	A C G G G G A U A A C C C G G	G A A A - - C U G G G	
----- 150 ----- 160 -----						
95 Ng	---	---	---	G(G)G G(G)A U A A C U G A U C	G A A A - - G A U C A	
96 Pa	---	---	---	A G(G)G G(G)A U A A C G(U)C C G	G A A A - - C G G C C	
100 Ap	---	---	---	G(G)G G(G)A U A A C U A C U A G	A A A A - - U G G U A	
101 Ap	---	---	---	G(G)G G(G)A U A A C U A(G)U G	G A A A - - C G(G)U A	
102 Cv	---	---	---	G(G)G G(G)A U A A C C C G G G	G A A A - - C U C G G	
105 Ec	---	---	---	G(G)G G(G)A U A A C U A C U G	G A A A - - C G G U A	
153 Mg	---	---	---	G(G)G G(G)A U A A C U A G U C	G A A A - - G A U U A	
173 Oh	---	---	---	C(G)A G G A U A(A)C A G U U G	G A A A - - C G A C U	
188 Me	---	---	---	U(G)G G(G)A C A A C A G C U G	G A A A - - C G G C U	
189 Mb	---	---	---	U C G G(G)A U A A G C C U G G	G A A A - - C U G G G	
201 Sa	---	---	---	C U G G(G)A C A A G C C U G	G A A A - - C G G G G	
203 S1	---	---	---	C U G G(G)A C A A G C C U G	G A A A - - C G G G G	
207 Tt	---	---	---	G G G G G A C A(A)C C C G G	G A A A - - C U C G G	
208 Dr	---	---	---	C A U G(A)A U A A C U G G C	G A A A - - G G U C A	
----- 9 ----- 9' -----						
222 Zm	---	---	---	G G G G(A)A C A A C A A C U G	G A A A - - C G G U U	
223 Os	---	---	---	G G G G(A)A C A A C A A C U G	G A A A - - C G G U U	
225 Gm	---	---	---	G G G G(A)A C A A C A G C U G	G A A A - - C G G C U	
228 Cm	---	---	---	U G(G)G G(G)A U A(A)U A A C G G	G A A A - - C U G U U	
229 Ce	---	---	---	U G(G)G G(G)A U A(A)U A A C G G	G A A A - - C U G U U	
230 Ce	---	---	---	G G G G(G)A C A A C A C U G	G A A A - - C G G U U	
231 Cv	---	---	---	G A G G(G)A U A A C C A U U G	G A A A - - C G A U G	
234 Hs	---	---	---	---	---	
241 Rn	---	---	---	---	---	
243 Rc	---	---	---	---	---	
247 Sp	---	---	---	---	---	
248 P1	---	---	---	---	---	
253 Gm	---	---	---	---	---	
255 Cr	---	---	---	---	---	
256 Sc	---	---	---	---	---	
258 Sc	---	---	---	---	---	
260 An	---	---	---	---	---	
261 Sp	---	---	---	---	---	
262 Pa	---	---	---	---	---	
269 Lt	---	---	---	---	---	
270 Ls	---	---	---	---	---	

	430	440	450	460	470	480	
G C U A A U(A) C A U G C - - - - C G A C G G G C - - G C U G A C C C C C U U - - C G - - - -							Hs 1
G C U A A U(A) C A U G C - - - - C G A C G - G C - - G C U G A C C U C C C U U U - - - -							Oc 7
G C U A A U(A) C A U G C A - - - - U C A G A G G C - - U C C - A C C C - - - - - -							Ec 11
G C U A A U(A) C A U G C A - - - - A A C A G A G G C - - U C C A A C C C G A A - - - -							Tm 12
G C U A A U(A) C A U G C A - - - - A U U A A A A C - - A U G A A C C U U U A U - - - -							Dm 13
G C U A A U(A) C A U G C A - - - - A C(A) A A C - - C C C G A C U U A U - - - -							Le 16
G C U A A U(A) C G U G C A - - - - C C A A A U - - C C C G A C U U U U - - - -							At 19
G C U A A U(A) C G U G C A - - - - C A C A A - - - C C C G A C U U - - - -							Zp 20
G C U A A U(A) C G U G C G - - - - C A C A A - - - U C C G A C U U - - - -							Vc 22
G C U A A U(A) C G U G C G - - - - U A C A - - - - U C C G A C U U - - - -							Cv 23
G C U A A U(A) C G U G C G - - - - C A C A - - - - U C C G A C U U - - - -							Ne 24
G C U A A U(A) U A U G C A - - - - U C A A A G - - - C G G A A C U U - - - -							Sc 27
G C U A A U(A) C A U G - - - - C A A A A A U - - C C C G A C U U - - - -							Pc 30
G C U A A U(A) C A A G - - - - - - - A A C G U A C(A) C C G C U U C G A C C C G U A A - - - -							Pp 33
G C U A A U(A) C U U G - - - - - - - C U U U A U U A - - U C C U U G A U - U U - U U - - - -							Pf 51
G C U A A U(A) C U U G - - - - - - - U G A A A A U A - - C C U U U G A U A U A C A U A U - - - -							Pf 52
G C U A A U(A) C U U G - A U C G A - - - - U U U U(C) U U G - - A A A C C C A - - - -							P1 53
G(A) U A - U(A) C U U G U U C - - - - C C U U C - - G G G G U G G U(A) A U A G U A(U) U U G(U) G C U G - - - -							A N 56
G C U A A U(A) C A U G A A C C - - A A C C G G G - - G U U C U C C(A) C U C A G A C G G U G G G C - - - -							Ld 59
G C C A A G A - C G U G C G C A A G G G C G C - - - - - - - - - - - - - - - - - -							G1 62

9' ----- 10 ----- E10-1 -----

G C U A A U(C) C C G A U A - - - A C G C U U U G C U C C U G G A - - - - - -							Hc 63
U A U A A U A C C C G A U A - - - G G U C U C G A U U G C U G G A A U - - - -							Ms 68
G C U A A U C C C C G A U A - - - G G C C U G A G G U A C U G G A A - - - -							Tc 72
G C U A A U(U) C C C G A U A - - - G U C A U U A C A A C U G G A A U - - - -							Ta 73
G C U A A U C C C C G A U A - - - G G C G A G G G G C C U G G A A C - - - -							Po 75

170 180 190

G C U A A U(A) C C(G) C A U A - - - C G U C U U G A - - - - - - - - - -							Ng 95
G C U A A U(A) C C(G) C A U A - - - C G U C C U G A - - - - - - - - - -							Pa 96
G C U A A U(A) C C(G) C A U A - - - A U G U U G A A A - - - - - - - - - -							Ap 100
G C U A A U(A) C C(G) C A U A - - - A C G U C G C A A - - - - - - - - - -							Ap 101
G C U A A U(A) C C(G) C A U A - - - C G C C C U A C G - - - - - - - - - -							Cv 102
G C U A A U(A) C C(G) C A U A - - - A C G U C G C A A - - - - - - - - - -							Ec 105
G C U A A U(A) C C(G) C A U A - - - A C A A G U U A C U(A) U C G C A U - - - -							Mg 153
G(C) U A A G A C U(G) G A U A - - - G G A G A C A A G A - - A G G C A U - - - -							Oh 173
G C U A A U(A) C C(G) A U A - - - C G U U C U U U U G U C C - - - - - -							Me 188
U C U A A U(A) C C G G A U A - - - G G A C C A C G G G A - - - - - -							Mb 189
U C U A A U(A) C C G G A U A - - - C U G A U C C G C U U - - - - - -							Sa 201
U C U A A U(A) C C G G A U A - - - C U G A C C C U C G C - - - - - -							S1 203
G(C) U A A U C C C C A U G - - - U G G A C(C) C G C C C U U G - - - -							Tt 207
G C U A A U(A) C G U G A U G - - - U G G U G A U U U G C C G U G - - - -							Dr 208

9' ----- 10 -----

G C U A A U(A) C C C C G U A - - - - G G C U G A G G - - - - - - - - - -							Zm 222
G C U A A U(A) C C C C G U A - - - - G G C U G A G G - - - - - - - - - -							Os 223
G C U A A U(A) C C C C G U A - - - - G G C U G A G G - - - - - - - - - -							Gm 225
G(G) U A A U(A) C C(G) C A U A - - - A A A C U G A G G - - - - - - - - - -							Cm 228
G(G) U A A U(A) C C(G) C A U A - - - A A A C U G A G G - - - - - - - - - -							Ce 229
G C U A A U(A) C C C C A U A - - - - A G C U G A G G - - - - - - - - - -							Ce 230
G C U A A U(A) C U C G U A - - - - U U G C U G A G A - - - - - - - - - -							Cv 231

- -							Hs 234
- -							Rn 241
- -							Rc 243
- -							Sp 247
- -							P1 248
A - - - - - G A A A - - - - - G C U A A A A - - - - - - - - - - - - - - - -							Gm 253
- -							Cr 255
A A U A U A - - - - - - - - - - - U U A U U A U A U A A A A U A A - - - -							Sc 256
A A U A U A - - - - - - - - - - - U U A U U A U A U A A A A U A A - - - -							Sc 258
U A U A A A A A G A A A - - - - - - - - - - - A C A C A C U C U U - - - -							An 260
A U A A -							Sp 261
U A U A G U A A U A A A - - - - - - - - - - - G A A U A G U A - - - - - -							Pa 262
A G - - - - - - - - - - - G A A U A G U A - - - - - - - - - - - - - - - -							Lt 269
U A - - - - - - - - - - - G U A A A U A - - - - - - - - - - - - - - - -							Ls 270

430 440 450 460 470 480

	490	500	510	520	530	540
1 Hs	---	---	---	---	---	---
7 Dc	---	---	---	---	---	---
11 Ec	---	---	---	---	---	---
12 Tm	---	---	---	---	---	---
13 Dm	---	---	---	---	---	---
16 Le	---	---	---	---	---	---
19 At	---	---	---	---	---	---
20 Zp	---	---	---	---	---	---
22 Vc	---	---	---	---	---	---
23 Cv	---	---	---	---	---	---
24 Ne	---	---	---	---	---	---
27 Sc	---	---	---	---	---	---
30 Pc	---	---	---	---	---	---
33 Pp	---	---	---	---	---	---
51 Pf	---	---	---	---	---	---
52 Pf	---	---	---	---	---	---
53 P1	---	---	---	---	---	---
56 Ng	A G C	(C)U A G(C)U A U U G U(A)A C C U A G U U	U U U C G	G G U	---	---
59 Ld	A C C A	U C G U C	---	---	---	---
62 G1	---	---	---	---	---	---
----- E10-1' -----						
63 Hc	---	---	---	---	---	---
68 Ms	---	---	---	---	---	---
72 Tc	---	---	---	---	---	---
73 Ta	---	---	---	---	---	---
75 Po	---	---	---	---	---	---
----- E10-2 -----						
95 Ng	---	---	---	---	---	---
96 Pa	---	---	---	---	---	---
100 Ap	---	---	---	---	---	---
101 Ap	---	---	---	---	---	---
102 Cv	---	---	---	---	---	---
105 Ec	---	---	---	---	---	---
153 Mg	---	---	---	---	---	---
173 Oh	---	---	---	---	---	---
188 Me	---	---	---	---	---	---
189 Mb	---	---	---	---	---	---
201 Sa	---	---	---	---	---	---
203 S1	---	---	---	---	---	---
207 Tt	---	---	---	---	---	---
208 Dr	---	---	---	---	---	---
222 Zm	---	---	---	---	---	---
223 Os	---	---	---	---	---	---
225 Gm	---	---	---	---	---	---
228 Cm	---	---	---	---	---	---
229 Ce	---	---	---	---	---	---
230 Ce	---	---	---	---	---	---
231 Cv	---	---	---	---	---	---
234 Hs	---	---	---	---	---	---
241 Rn	---	---	---	---	---	---
243 Rc	---	---	---	---	---	---
247 Sp	---	---	---	---	---	---
248 P1	---	---	---	---	---	---
253 Gm	---	---	---	---	---	---
255 Cr	---	---	---	---	---	---
256 Sc	---	---	---	---	---	---
258 Sc	---	---	---	---	---	---
260 An	---	---	---	---	---	---
261 Sp	---	---	---	---	---	---
262 Pa	---	---	---	---	---	---
269 Lt	---	---	---	---	---	---
270 Ls	---	---	---	---	---	---

490 500 510 520 530 540

	550	560	570	580	590	600	
C	C	C	C	C	C	C	Hs 1
C	C	C	C	C	C	C	Oc 7
C	C	C	C	C	C	C	Ec 11
C	C	C	C	C	C	C	Tm 12
C	C	C	C	C	C	C	Dm 13
C	C	C	C	C	C	C	Li 16
C	C	C	C	C	C	C	At 19
C	C	C	C	C	C	C	Zp 20
C	C	C	C	C	C	C	Vc 22
C	C	C	C	C	C	C	Cv 23
C	C	C	C	C	C	C	Ne 24
C	C	C	C	C	C	C	Sc 27
C	C	C	C	C	C	C	Pc 30
C	C	C	C	C	C	C	Pp 33
C	C	C	C	C	C	C	Pf 51
C	C	C	C	C	C	C	Pf 52
C	C	C	C	C	C	C	P1 53
C	C	C	C	C	C	C	Mg 56
C	C	C	C	C	C	C	Ld 59
C	C	C	C	C	C	C	G1 62

E10-2

E10-2'

							Hc 63
							Ms 68
							Tc 72
							Ta 73
							Po 75

							Ng 95
							Pa 96
							Ap 100
							Ap 101
							Cv 102
							Ec 105
							Mg 153
							Oh 173
							Me 188
							Mb 189
							Sa 201
							S1 203
							Tt 207
							Dr 208

							Zn 222
							Os 223
							Gm 225
							Cm 228
							Ce 229
							Ce 230
							Cv 231

							Hs 234
							Rn 241
							Rc 243
							Sp 247
							P1 248
							Gm 253
							Cr 255
							Sc 256
							Sc 258
							An 260
							Sp 261
							Pa 262
							Lt 269
							Ls 270

550

560

570

580

590

600

	610	620	630	640	650	660
1 Hs	U A G A U A A		C C U C G	G G C C G	A U C G C A C	-- G C C
7 Oc	U A G A U A A		C C U U G	G G C C G	A U C G C A C	-- (C) C C
11 Ec	U G U A U A A		C U U U G	G G C C G	A U C G C A C	-- G G G
12 Tm	U G A A U A A		C U U U A	C G C U G	A U C G C A C	-- G G U
13 Dm	U -- C U A A A		U A A C A	U G C A G	A U C G C A U	-- G G U
16 Le	A U G A U A A		C U (C) G	A C G --	G A U C G C A	U -- G G C
19 At	A U G A U A A		C U (C) G	A C G --	G A U C G C A	U -- G G C
20 Zp	A U G A U A C		C U U G A	U G --	A A U U G C A	U -- G G C
22 Vc	A U G A U A A		C U U C A	C G --	A A U C G U A	U -- G G C
23 Cv	A U G A U A A		C U U C A	C G --	A A U C G C A	U -- G G C
24 Ne	A U G A U A A		C U U C A	C G --	A A U C G C A	U -- G G C
27 Sc	A U A A U A A	G	C U U U C	G --	A A U U G C A	U -- G C A
30 Pc	A U G A U A A		C U U C G	A --	G A U C G C A	U -- G G C
33 Pp	A C G G U U A	U C C G	C U U C G	A A G	A U C G G U G	-- A G U
51 Pf	A U A A C A A		G A A G	U A A	C A C G U A A	U -- A A A
52 Pf	A U A A C A A		G A A G	A A A	C A C A U A A	U -- A A A
53 P1	A U A A C A A		G A A G	C A A	C A C A U A A	U -- A A A G
56 Mg	U U (U) U C A U		A A G G	C C U	U (U) C --	-- A G G
59 Ld	A A U U C A U		U C C G	U G C	G A A (A) G C	-- C G G
62 G1			C C G C	G G G C	G A G C (A)	-- G C G

E10-2

10'

11

63 Hc		A G G G C	A A G C	C G G	-- A A C	G C					U C C G		
68 Ms		G C A U C	G A G A	-- U U U	A A A	-- G C					U C C G		
72 Tc		G G U C C	U C A G	G C C G	-- A A A	G G G G					U C U		
73 Ta		G G U U G	U A U G	A C G	-- A A A	-- G C					U C U		
75 Po		G G U C C	A U G A	C C G	-- A A A	-- G G	G C G C G C G G (A) G				C C U	-- C (C) C C G C	

200

210

95 Ng						G A G G G	-- A A A	G C A G G G G			A C C	U U C G G G G		
96 Pa						G G A G	-- A A A	G U C G G G G			A U C	U U U C G G A		
100 Ap						A A C C	-- A A A	-- G U G G G G G			G A C C	U U U U G G G		
101 Ap						G A C C	-- A A A	-- G U G G G G G			G A C C	U U C G G G		
102 Cv						G G G G	-- A A A	-- G G G G G C				U U C G G		
105 Ec						G A C C	-- A A A	-- G A G G G G G			G A C C	U U C G G G		
153 Mg						G A (G) A	U A A A C	U U U -- A A A	G A A G C			A A C	U U C G G	
173 Oh						C U U C	U U G U U U U	-- A A A	A (G) A C C U A			G C A A		
188 Me						G C A U	G G C A G A G G	G A A G	G G A G G C U C			U U C G		
189 Mb							U G C A U G U C	-- U U G (U) G G U G				G A A A G		C
201 Sa							G G G C A U C	-- C --	A G G C G G U U			C G A A		A
203 S1							A G G C A U C	-- U --	G C G A G G U U			C G A A		A
207 Tt							G G U G (U) G U C C	-- A A A	-- G G G C			U U U		
208 Dr							G C A A A U C A C U	-- A A A	-- G A			U U U A		

10'

11

222 Zm						A G C A	-- A A A	G G A				G A A A		
223 Os						A G C A	-- A A A	G G A				G A A A		
225 Gm						A G C A	-- A A A	G G A				G G A A		
228 Cm						A G U U	-- A A A	C A A U				G A A A		
229 Ce						A G U U	-- A A A	C A A U				G A A A		
230 Ce						A G U A	-- A A A	G G A A U				A C U		
231 Cv						A G U G	-- A A A	G G A A U				G A A A		

234 Hs												A C C A		
241 Rn												G C C U A		
243 Rc												U A C C C		
247 Sp												C C U A A		
248 P1												U C U C C		
253 Gm														
255 Cr														
256 Sc												U U U A U A U A U A A	-- A A A	G G A U A U -- A U A U -- A U A -- -- A U
258 Sc												U U U A U A U A U A A	-- A A A	G G A U A U -- A U A U -- A U A -- -- A U
260 An														
261 Sp														
262 Pa														
269 Lt														
270 Ls														

610

620

630

640

650

660

670	680	690	700	710	720	
G C G G C G - A - C G A C	- - - C C A U U C G A A C G (U) C U G	- - - C C C U A U C	- - - A A C U U U	- - - Hs 1		
G (C) G G C G - A - G G C A	- - - C C A U U C G A A G G (U) C U G	- - - C C C U A U C	- - - A A C U U U	- - - Oc 7		
C C G G C G - A - G G C A	- - - U C U U U C A A A U G (U) C U G	- - - C C C U A U C	- - - A A C U U U	- - - Ec 11		
C C G G C G - A - G G C A	- - - U C U U U C A A A U G (U) C U G	- - - C C C U A U C	- - - A A C U U U	- - - Tm 12		
C C G G C G - A C - G C A	- - - U C A U U C A A A U U U C U G	- - - C C C U A U C	- - - A A C U U U	- - - Dm 13		
C C G G C G - A C - G C A	- - - U C A U U C A A A U U U C U G	- - - C C C U A U C	- - - A A C U U U	- - - Le 16		
C C G G C G - A C - G C U	- - - U C A U U C A A A U U U C U G	- - - C C C U A U C	- - - A A C U U U	- - - At 19		
C C G G C G - A U - G U U	- - - U C A U U C A A A U U U C U G	- - - C C C U A U C	- - - A A C U U U	- - - Zp 20		
C C G G C G - A U - G U U	- - - U C A U U C A A A U U U C U G	- - - C C C U A U C	- - - A A C U U U	- - - Vc 22		
C C G G C G - A U - G U U	- - - U C A U U C A A A U U U C U G	- - - C C C U A U C	- - - A A C U U U	- - - Cv 23		
C C G G C A - A U - G G A	- - - U C A U U C A A A U U U C U G	- - - C C C U A U C	- - - A A C U U U	- - - Ne 24		
C C G G C G - A U - G A U	- - - U C A U U C A A A U U U C U G	- - - C C C U A U C	- - - A G C U U G	- - - Sc 27		
C C G G C G - A U - G A U	- - - U C A U U C A A A U U U C U G	- - - C C C U A U C	- - - A A C U U U	- - - Pc 30		
U U U C U G - G G - U (G) G C U C	U C G C U G U (G) U G C U U C U G	- - - A C C U A U C	- - - A A C U A G	- - - Pp 33		
U U U A - G U G U - G U (A) -	- - - U C A A U C G (A) G U U C U G	- - - A C C U A U C	- - - A G C U U U	- - - Pf 51		
- - - U G U G U A (U) U A -	- - - U C A A U C G (A) G U A U C U G	- - - A C C U A U C	- - - A G C U U U	- - - Pf 52		
U U U A - G U G U - G U (A) -	- - - U C A A U C G (A) G U U C U G	- - - A C C U A U C	- - - A G C U U U	- - - P1 53		
U C U A - G (U) G - G C C A G -	- - - G C A G A G G A G U (U) C U U	- - - A C C U A U C	- - - A G C U - -	- - - Ng 56		
- C C G - G C (G) U C - - -	- - - U U (U) U G (A) C G (A) A C A C U G	- - - C C C U A U C	- - - A G C U G G	- - - Ld 59		
C G C - (A) - G C - G A C (G) G	- C C C G C C G (G) G C U U C G	- - - G G G C (A) U C	- - - A C C - -	- - - G1 62		

11'	B'	12	
- - - G C G - - - C C A - - -	- - - C A G G A U G C G G C U G C G	- - - G U C G A U U - - -	- - - A G G U - - - Hc 63
- - - G C G - - - C C U - - -	- - - A A G G A U G G G U C U G C G	- - - G C C U (A) U C - - -	- - - A G G U - - - Ms 68
- - - G C C - - - G C C C - - -	- - - G A G G A U G G G C C G C G	- - - G C C G A U U - - -	- - - A G G U - - - Tc 72
- - - G C - - - G C C U - - -	- - - G A G G A U A G U C U G C G	- - - G C C U (A) U C - - -	- - - A G G U - - - Ta 73
G C G C - - - G C C C - - -	- - - G A G G A U G G G C U G C G	- - - G C C C (A) U C - - -	- - - A G G U - - - Po 75

220	230	240	
- - - C C U U G C - G C U A - - -	- - - U C C G A G C G G C C G A J A U	- - - C U G A U U - - -	- - - A G C U - - - Ng 95
- - - C C U C A C - G C U A - - -	- - - U C A G A U G A A C C C A G A C	- - - C G G A U U - - -	- - - A G C U - - - Pa 96
- - - C C U C A U - G C U A - - -	- - - U U G G A U G A A C C C A G A C	- - - G A G A U U - - -	- - - A G C U - - - Ap 100
- - - C C U C A C - G C C A - - -	- - - U C A G A U G U G C C C A G G U	- - - A G G A U U - - -	- - - A G C U - - - Ap 101
- - - G C U C U C - G U U G - - -	- - - C C A G A U G A G C C C A G G U	- - - C G G A U U - - -	- - - A G C U - - - Cv 102
- - - C C U C U U - G C C A - - -	- - - U C G G A U G U G C C C A G A U	- - - G G G A U U - - -	- - - A G C U - - - Ec 105
- - - G C U U C - G C U A - - -	- - - U A A A G (A) U G A G G G U G C G	- - - G C A U A U C - - -	- - - A G C U - - - Mg 153
- - - U A G G U (A) U - G C U U - - -	- - - A G G G A G G A G C U U G C G	- - - U C A A U U - - -	- - - A G U U - - - Oh 173
G A G C U U U C - G C U U - - -	- - - U A G G A G G G G C U U G C G	- - - U C C U A U U - - -	- - - A G C U - - - Me 188
G C U (U) U A G - C G G U G - - -	- - - U G G G A U G A G C C C G C G	- - - G C C U (A) U C - - -	- - - A G C U - - - Mb 189
G C U C C G G C - G G U G - - -	- - - C A G G A U G A G C C C G C G	- - - G C C U (A) U C - - -	- - - A G C U - - - Sa 201
G C U C C G G C - G G U G - - -	- - - A A G G A U G A G C C C G C G	- - - G C C U (A) U C - - -	- - - A G C U - - - S1 203
- - - G C C C - G C U U - - -	- - - C C G G (A) U G G C C G C G U	- - - C C C (A) U C - - -	- - - A G C U - - - Tt 207
- - - - - U C - G C U U - - -	- - - C U G G (A) U G G G U U G C G U	- - - U C C (A) U C - - -	- - - A G C U - - - Dr 208

11'	B'	12	
- - - - - U C C - G C C C - - -	- - - A A G G A G G G C U (C) G C G U	- - - C U G A U U - - -	- - - A G C U - - - Zm 222
- - - - - U C C - G C C C - - -	- - - A A G G A G G G G C U (C) G C G U	- - - C U G A U U - - -	- - - A G C U - - - Os 223
- - - - - U C C - G C C C - - -	- - - G A G G A G G G G C U (C) G C G U	- - - C U G A U U - - -	- - - A G C U - - - Gm 225
- - - - - G U U G - G C C A - - -	- - - G G A A A C G A G C U U G C G U	- - - C U G A U U - - -	- - - A G C U - - - Cm 228
- - - - - G U U G - G C C A - - -	- - - G G A A A C G A G C U U G C G U	- - - C U G A U U - - -	- - - A G C U - - - Ce 229
- - - - - A U U C U - G U C U - - -	- - - A A A G (A) U G G C U U G C G U	- - - C U G A U U - - -	- - - A G C U - - - Ce 230
- - - - - A U C - G C C A - - -	- - - A (U) A G (A) U G G C U U G C G G	- - - C U G A U U - - -	- - - A G C U - - - Cv 231

- - - - - C G A U C A (A) A G G A A C - A	A G C A U - - -	- - - Hs 234	
- - - - - A A A C U U A A G G A G A - -	G G G C A U - - -	- - - Rn 241	
- - - - - A G A U - A - A A G G (A) G C -	U G G U A U - - -	- - - Rc 243	
- - - - - A A C C U G G A A A G A A - -	G A (A) A A G - - -	- - - Sp 247	
- - - - - C A C C U A A A A A - - -	G A G A C A G G - - -	- - - P1 248	
- - - - - G C U G - - - U U U G A U G A G	C C U G C G U - - -	- - - Gm 253	
- - - - - - - - - A A C C U G (C) G U - - -	A G G A U U A G C - - -	- - - Cr 255	
A U A U A U U U - A U C U - - -	A U A G U C A A G C C A U A A - -	U G G (U) U U - - -	- - - Sc 256
A U A U A U U U - A U C U - - -	A U A G U C A A G C C A U A A - -	U G G (U) U U - - -	- - - Sc 258
- - - - - U C C - G C U U - U A A G A U G U	A - U U A U U A U C - A C G G U G -	- - -	- - - An 260
- - - - - A C - U U U - G A U U - - -	U A A G A C - U G G C U U U U - A	C G A U U - - -	- - - Sp 261
- - - - - U G U U C - G C U U - U U A G A U G A	A A A A A U C U C G G G G A A - - -	- - -	- - - Pa 262
- - - - - - - - - G A U U A U U - G U (U) A U	- - -	- - -	- - - Lt 269
- - - - - U (A) G A U A C U U U G U U G A U	- - -	- - -	- - - Ls 270

670	680	690	700	710	720
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Table with columns labeled 730, 740, 750, 760, 770, 780 and rows of nucleotide sequences for elements 1-62.

Table with columns labeled 12, 12', 13 and rows of nucleotide sequences for elements 63-75.

Table with columns labeled 250, 260, 270, 280, 290, 300 and rows of nucleotide sequences for elements 95-208.

Table with columns labeled 12, 12', 13 and rows of nucleotide sequences for elements 222-231.

Table with columns labeled 730, 740, 750, 760, 770, 780 and rows of nucleotide sequences for elements 234-270.

	790	800	810	820	830	840		
U C G - A U U C C C G G A G A G G (G) A G C - C U G A G A G A A A C C G G C U (A) C C A C (A) U C C C A A - - - - G G - A (A) G G C A G G Hs 1								
U C G - A U U C C C G G A G A G G (G) A G C - C U G A G A G A A A C C G G C U (A) C C A C (A) U C C C A A - - - - G G - A (A) G G C A G G Oc 7								
U C G - A U U C C C G G A G A G G (C) A G C - C U G A G A G A A A C C G G C U (A) C C A C (A) U C C C A A - - - - G G - A (A) G G C A G G Ec 11								
U C G - A U U C C C G G A G A G G (G) A G C - C U G A G A G A A A C C G G C U (A) C C A C (A) U C C C A A - - - - G G - A (A) G G C A G G Tm 12								
U C G - A U U C C C G G A G A G G (G) A G C - C U G A G A G A A A C C G G C U (A) C C A C (A) U C C C A A - - - - G G - A (A) G G C A G G Dm 13								
U C G - A U U C C C G G A G A G G (G) A G C - C U G A G A G A A A C C G G C U (A) C C A C (A) U C C C A A - - - - G G - A (A) G G C A G G Le 16								
U C G - A U U C C C G G A G A G G (G) A G C - C U G A G A G A A A C C G G C U (A) C C A C (A) U C C C A A - - - - G G - A (A) G G C A G G At 19								
U C G - A U U C C C G G A G A G G (G) A G C - C U G A G A G A A A C C G G C U (A) C C A C (A) U C C C A A - - - - G G - A (A) G G C A G G Zp 20								
U C G - A U U C C C G G A G A G G (G) A G C - C U G A G A G A A A C C G G C U (A) C C A C (A) U C C C A A - - - - G G - A (A) G G C A G G Vc 22								
U C G - A U U C C C G G A G A G G (G) A G C - C U G A G A G A A A C C G G C U (A) C C A C (A) U C C C A A - - - - G G - A (A) G G C A G G Cv 23								
U C G - A U U C C C G G A G A G G (G) A G C - C U G A G A G A A A C C G G C U (A) C C A C (A) U C C C A A - - - - G G - A (A) G G C A G G Ne 24								
A A G - A U U C C C G G A G A G G (G) A G C - C U G A G A G A A A C C G G C U (A) C C A C (A) U C C C A A - - - - G G - A (A) G G C A G G Sc 27								
U C U - A U U C C C G G A G A G G (G) A G C - C U G A G A G A A A C C G G C U (A) C C A C (A) U C C C A A - - - - G G - A (A) G G C A G G Pc 30								
U C G - A U U C C C G G A G A G G (G) G G C - C U G A G A G A A A C C G G C U (A) C C A C (A) U C C C A A - - - - G G - A (A) G G C A G G Pp 33								
U C G - A U U C C C G G A G A G G (G) A G C - C U G A G A G A A A C C G G C U (A) C C A C (A) U C C C A A - - - - G G - A (A) G G C A G G Pf 51								
U C G - A U U C C C G G A G A G G (G) A G C - C U G A G A G A A A C C G G C U (A) C C A C (A) U C C C A A - - - - G G - A (A) G G C A G G Pf 52								
U C G - A U U C C C G G A G A G G (G) A G C - C U G A G A G A A A C C G G C U (A) C C A C (A) U C C C A A - - - - G G - A (A) G G C A G G P1 53								
U C G - A U U C C C G G A G A G G (G) A G C - C U G A G A G A A A C C G G C U (A) C C A C (A) U C C C A A - - - - G G - A (C) G G C A G G Ng 56								
U C G - A U U C C C G G A G A G G (G) A G C - C U G A G A G A A A C C G G C U (A) C C A C U U C U A C - - - - G G - A G G G C A G G Ld 59								
U C G - A C U C C C G G A G A G C G G C - C U G C G A G A C G G C C C G C A C (A) U C C A A - - - - G G - A (C) G G C A G G GT 62								

	13'	7'	14	14'	15	15'	16	
A A G - A G C C C C G G A G A C G G A A U - C U G A G A C A A G A U U C C G G G C C C U A C - - - - G - G G C G C A G Hc 63								
A A G - A G C C C C G G A G A U G G A A U - C U G A G A C A C G A A U U C C A G G C C C U A C - - - - G G - G G U G G C A G Ms 68								
G G G - A G C C C C G G A G A U G G A C A - C U G A G A C A C G G G C C A G G C C C U A C - - - - G G - G G C G C A G Tc 72								
G G G - A G C C C C G G A G A U G G A C U - C U G A G A C A C A G U C C A G G C C C U A C - - - - G G - G G C G C A G Ta 73								
G G G - A G X C C C C A G A U G G G C (A) - C U G A G A C A A G (G) G C C C A G G C C C U A C - - - - G G - G G C G C A C Po 75								

	310	320	330	340	350		
A U G - A U C C G C C A C A C U G G G A - C U G A G A C A C C G G C C C A G A C U C C U A C - - - - G G - G A G G C A G Ng 95							
A U G - A U C C A G C C A C A C U G G G A A - C U G A G A C A C C G G U C C A G A C U C C U A C - - - - G G - G A G G C A G Pa 96							
A U A - A C C A G C C C A C A C U G G G A A - C U G A G A C A C C G G U C C A G A C U C C U A C - - - - G G - G A G G C A G Ap 100							
A U G - A C C A G C C C A C A C U G G G A A - C U G A G A C A C C G G U C C A G A C U C C U A C - - - - G G - G A G G C A G Ap 101							
A U G - A C C A G C C C A C A C U G G G A A - C U G A G A C A C C G G U C C A G A C U C C U A C - - - - G G - G A G G C A G Cv 102							
A U G - A C C A G C C C A C A C U G G G A A - C U G A G A C A C C G G U C C A G A C U C C U A C - - - - G G - G A G G C A G Ec 105							
U A G - A A U A A C C A C A A U G G G A A - C U G A G A C A C C G G U C C A G A C U C C U A C - - - - G G - G A G G C A G Mg 153							
U U G - A A C G G C C A C A U U G G G A A - C U G A G A C A C C G G C C C A A A C U C C U A C - - - - G G - G A G G C A G Oh 173							
A U G - A A C G G C C A C A U U G G G A A - C U G A G A C A C C G G C C C A G A C U C C U A C - - - - G G - G A G G C A G Me 188							
G U G - U C C G G C C A C A C U G G G A A - C U G A G A C A C C G G C C C A G A C U C C U A C - - - - G G - G A G G C A G Mb 189							
G C G - A C C G G C C A C A C U G G G A A - C U G A G A C A C C G G C C C A G A C U C C U A C - - - - G G - G A G G C A G Sa 201							
G C G - A C C G G C C A C A C U G G G A A - C U G A G A C A C C G G C C C A G A C U C C U A C - - - - G G - G A G G C A G S1 203							
A U G - G C C G G C C A C A C U G G G C A - C U G A G A C A C C G G G C C C A C U C C U A C - - - - G G - G A G G C A G Tt 207							
G U G - G C C G G C C A C A C U G G G C A - C U G A G A C A C C G G G U C C A C U C C U A C - - - - G G - G A G G C A G Dr 208							

	13'	7'	14	14'	15	15'	16	
A U G - A U C A G C C A C A C U G G G A - C U G A G A C A C C G G C C C A G A C U C C U A C - - - - G G - G A G G C A G Zm 222								
A U G - A U C A G C C C A C A C U G G G A - C U G A G A C A C C G G C C C A G A C U C C U A C - - - - G G - G A G G C A G Os 223								
A U G - A U C A G C C C A C A C U G G G A - C U G A G A C A C C G G C C C A G A C U C C U A C - - - - G G - G A G G C A G Gm 225								
A U G - A U C A G C C C A C A C U G G G A - C U G A G A C A C C G G U C C A G A C U C C U A C - - - - G G - G A G G C A G Cm 228								
A U G - A U C A G C C C A C A C U G G G A - C U G A G A C A C C G G U C C A G A C U C C U A C - - - - G G - G A G G C A G Ce 229								
A U G - A U C A G C C C A C A C U G G G A - C U G A G A C A C C G G C C C A G A C U C C U A C - - - - G G - A A G G C A G Ce 230								
A U G - A U C A G C C C A C A C U G G G A - C U G A G A C A C C G G C C C A G A C U C C U A C - - - - G G - G A G G C A G Cv 231								

	790	800	810	820	830	840	
U A G C C U - A G C C A C A - - - - - C C C C C A C - - - - G G - G A A A C A G Hs 234							
U U G C C U - A G C C A C A - - - - - C C C C C A C A - - - - G G - G A A A C A G Rn 241							
- A G U C U - C A C C A C A - - - - - C C C C U C A A - - - - G G - G A A A U C A G Rc 243							
- A G A U G - A G C C C A C G A C A C - - - - - U A A G C A A G A G A G U G C U C C A A C U G Sp 247							
C A - A U - G C C C C A C A C - - - - - U A A G C A A U - - - - A C G G C C A C A C U C G P1 248							
A U G - A U C A G C C C A C A C U G G G A - C U G A G A C A C G G C C C G A C U C C C A C - - - - G G - G G G G C A G Gm 253							
U A C - U A G G C C A C C G G U G G A C - C U G A A A A G - G G G C C A G G U C C U U A - - - - U G - A A C C C A G Cr 255							
U A G - A A C G A U C A C C G U U G A C U - C U - G A A A U A U A G U C A A U A U C U A U - - - - A A - G A U A C A G Sc 256							
U A G - A A C G A U C A C C G U U G A C U - C U - G A A A U A U A G U C A A U A U C U A U - - - - A A - G A U A C A G Sc 258							
U C G - A U C G A C C A C A U U G G U - C U - G A A A A A A C C C A A U G C G U U U - - - - U A - G U A - C A G An 260							
(G) U G C U C G A C C A C A U U G G C U - (C) U G A G A C A - A (C) A G C C A A G A U G A A C A U U U A G U C A U C C A G Sp 261							
U U G - A U C G A C C A C A U U G G G - A U - G A A A A A A U C C C A A G G G A A A C - - - - G A A G U A - C A G Pa 262							
G U G - - - U G G - A A A - - - - - G U G - - - - - U U - - - - - A A - - - - - A A - - - - - Lt 269							
G U G - - - U G G A A A U - A G U - - - - - G U U A A - - - - - A U G - - - - - A U G - - - - - Ls 270							

	850	860	870	880	890	900
1 Hs	C A G G C G C G C A A A U U A C C C C C C U C C C G A C C					
7 Oc	C A G G C G C G C C A A A A U U A C C C C C C U C C C G A C C					
11 Ec	C A G G C G C G C C A A A A U U A C C C C C C U C C C G A C C					
12 Tm	C A G G C G C G C C A A A A U U A C C C C C C U C C C G A C C					
13 Dm	C A G G C G C G C C A A A A U U A C C C C C C U C C C G A C C					
16 Le	C A G G C G C G C C A A A A U U A C C C C C C U C C C G A C C					
19 At	C A G G C G C G C C A A A A U U A C C C C C C U C C C G A C C					
20 Zp	C A G G C G C G C C A A A A U U A C C C C C C U C C C G A C C					
22 Vc	C A G G C G C G C C A A A A U U A C C C C C C U C C C G A C C					
23 Cv	C A G G C G C G C C A A A A U U A C C C C C C U C C C G A C C					
24 Ne	C A G G C G C G C C A A A A U U A C C C C C C U C C C G A C C					
27 Sc	C A G G C G C G C C A A A A U U A C C C C C C U C C C G A C C					
30 Pc	C A G G C G C G C C A A A A U U A C C C C C C U C C C G A C C					
33 Pp	C A G G C G C G C C A A A A U U A C C C C C C U C C C G A C C					
51 Pf	C A G G C G C G C C A A A A U U A C C C C C C U C C C G A C C					
52 Pf	C A G G C G C G C C A A A A U U A C C C C C C U C C C G A C C					
53 Pt	C A G G C G C G C C A A A A U U A C C C C C C U C C C G A C C					
56 Mg	C A G G C G C G C C A A A A U U A C C C C C C U C C C G A C C					
59 Ld	C A G G C G C G C C A A A A U U A C C C C C C U C C C G A C C					
62 G1	C A G G C G C G C C A A A A U U A C C C C C C U C C C G A C C					



63 Hc	C A G G C G C G C A A A C C U U U A C A C U G U A C G A A					
68 Ms	C A G G C G C G C G A A A C C U U U A C A C U G U A C G A A					
72 Tc	C A G G C G C G C G A A A C C U U U A C A C U G U A C G A A					
73 Ta	C A G G C G C G C G A A A C C U U U A C A C U G U A C G A A					
75 Po	C A G G C G C G C G A A A C C U U U A C A C U G U A C G A A					



95 Ng	C A G U G G G G A A U U U U G G A C A A U G G G C G C A					
96 Pa	C A G U G G G G A A U U U U G G A C A A U G G G C G C A					
100 Ap	C A G U G G G G A A U U U U G G A C A A U G G G C G C A					
101 Av	C A G U G G G G A A U U U U G G A C A A U G G G C G C A					
102 Cv	C A G U G G G G A A U U U U G G A C A A U G G G C G C A					
105 Ec	C A G U G G G G A A U U U U G G A C A A U G G G C G C A					
153 Mg	C A G U A G G G A A U U U U U C A C A A U G G G A C G A A					
173 Oh	C A G U A G G G A A U U U U U C G G C A A U G G G A G A A					
188 Me	C A G U G G G G A A U U U U C G G C A A U G G G A C G A A					
189 Mb	C A G U G G G G A A U U U U C G G C A A U G G G A C G A A					
201 Sa	C A G U G G G G A A U U U U G C A C A A U G G G G C G A A					
203 S1	C A G U G G G G A A U U U U G C A C A A U G G G G C G A A					
207 Tt	C A G U U A G G A A U U C U U C C G C A A U G G G C G C A					
208 Dr	C A G U U A G G A A U U C U U C C A C A A U G G G C G C A					



222 Zm	C A G U G G G G A A U U U U C C G C A A U G G G C G A A					
223 Ds	C A G U G G G G A A U U U U C C G C A A U G G G C G A A					
225 Gm	C A G U G G G G A A U U U U C C G C A A U G G G C G A A					
228 Dm	C A G U G A G G A A U U U U C C G C A A U G G G C G A A					
229 Ce	C A G U G A G G A A U U U U C C G C A A U G G G C G A A					
230 Ce	C A G U G A G G A A U U U U C C G C A A U G G G C G A A					
231 Cv	C A G U G A G G A A U U U U C C G C A A U G G G C G A A					

234 Hs	C A G U G A U U A A A C C U U A G C A A U A A A C - G A A					
241 Rn	C A G U G A U U A A A U U U A G C A A U A A A C - G A A					
243 Rc	C A G U G A U U A A A U U U A G C A A U A A A C - G A A					
247 Sp	C A G U G A U U A A A U U U A G C A A U A A A C - G A A					
248 P1	C A G U G A U U A A A U U U A G C A A U A A A C - G A A					
253 Gm	C A G U G G G G A A U U U U G G A C A A U G G G C - G A A					
255 Cr	C A G U G U G G A A U U U U G G A C A A U G G G C - G A A					
256 Sc	(C) A G U G A G G A A U U U U G G A C A A U G G G C - G A A					
258 Sc	(C) A G U G A G G A A U U U U G G A C A A U G G G C - G A A					
260 An	C A G U G A G G A A U U U U G G A C A A U G G G C - G A A					
261 Sp	C A G U G A G G A A U U U U G G A C A A U G G G C - G A A					
262 Pa	C A G U G A G G A A U U U U G G A C A A U G G G C - G A A					
269 Lt	- - - U U A - - - - - U U A - - - - - U A - - - - -					
270 Ls	- - - U U A - - - - - G - A U A - - - - - U A U - - - - -					



	910		920		930		940		950		960		
A A C A A U A C A G G A C U C												G A G - G C C	Hs 1
A A C A A U A C A G G A C U C												G A G - G C C	Oc 7
A A C A A U A C A G G A C U C												G A G - G C C	Ec 11
A A C A A U A C A G G A C U C												G A G - G C C	Tm 12
A A C A A U A C A G G A C U C						A U A U C C						G A G - G C C	Dm 13
A A C A A U A C A G G A C U C												G A G - G C C	Le 16
A A C A A U A C A G G A C U C												G A G - G C C	At 19
A A C A A U A C A G G A C U C												G A G - G C C	Zp 20
A A C A A U A C A G G A C U C												G C G - U C U	Vc 22
A A C A A U A C A G G A C U C												A G G - U C U	Cv 23
A A C A A U A C A G G A C U C												G G - U C U	Ne 24
A A C A A U A C A G G A C U C												A G G - U C U	Sc 27
A A C A A U A C A G G A C U C												G G G - U C U	Pc 30
A A C A A U A C A G G A C U C												G G - U G G	Pp 33
A A C A A U A C A G G A C U C												U U G - G U U	Pf 51
A A C A A U A C A G G A C U C												A U G - A U U	Pf 52
A A C A A U A C A G G A C U C												U U G - A U U	P1 53
A G U G (A) U C C C (A) G A C C												G - G U -	Ng 56
A G A G U U - G (U) C A G U C - C												G G A - - -	Ld 59
													G1 62

17

17'

												G C C	Hc 63
												A A U	Ms 68
												G C C	Tc 72
												G U C	Ta 73
												G C G	Po 75

410

420

G U C U G A A G A A G G C C C												G G U U	Ng 95
G U G U G A A G A A G G C C C												G A U U	Pa 96
G U A U G A A G A A G G C C C												G G U U	Ap 100
G U G U G A A G A A G G C C C												G G U U	Ap 101
G G G U G A A G A A G G C C C												G G U U	Cv 102
G U A U G A A G A A G G C C C												G G U U	Ec 105
G A A C G A U G A A G G U C U												A G A U U	Mg 153
G A A C G A U G A A G G U A U												G U A C	Oh 173
G A A C G A U G A A G G C C C												G G U U	Me 188
G G G G A U G A C G G C C C												G G U U	Mb 189
G A G G G A U G A C G G C C C												G G U U	Sa 201
G A G G G A U G A C G G C C C												G G U U	S1 203
G G A G G A U G A A G G C C C												G G G U U	Tt 207
G A G G G A U G A A G G U U												G A U C	Dr 208

17

17'

G G A G G U G G A A G G C C C												G G U C	Zm 222
G G A G G U G G A A G G C C C												G G U C	Os 223
G A A G G U A G A A G G C C C												G G U C	Gm 225
G A G G G A A G A A G G G C C												G C U C	Cm 228
G A G G G A A G A A G G G C C												G C U C	Ce 229
G A G G G A U G A C (A) G C C												G G U (C)	Ce 230
G A A G G A U G A (A) G G C C												G G U U	Cv 231

													Hs 234
													Rn 241
													Rc 243
													Sp 247
													P1 248
G A G U G A A G A A G G G C												G C U	Gm 253
- - - A C A A A - - - - -												- U U	Cr 255
G G A U G A U A U A U A A A - A												- U U U	Sc 256
G G A U G A U A U A U A A A - A												- U U U	Sc 258
G A A U G A A A G U G U A U - U A												U A A U A	An 260
G A G U G A A A C U - - - - -												- A G	Sp 261
G A A U G G C U C C A U A A												- U A	Pa 262
- - - - - A A U A												- U A U	Lt 269
- - - - - A U A												- U U A	Ls 270

910

920

930

940

950

960

	970	980	990	1000	1010	1020
1 Hs	CUGUAUUUG					
7 Oc	CUGUAUUUG					
11 Ec	CCGUAUUUG					
12 Tm	CCGUAUUUG					
13 Dm	CUGUAUUUG					
16 Le	GGUAUUUG					
19 At	GGUAUUUG					
20 Zp	GGUAUUUG					
22 Vc	GGUAUUUG					
23 Cv	GGUAUUUG					
24 Ne	GGUAUUUG					
27 Sc	GGUAUUUG					
30 Pc	GGUAUUUG					
33 Pp	GCAUUUCA					
51 Pf	UUGUAUUUG					
52 Pf	UUGUAUUUG					
53 P1	UUGUAUUUG					
56 Ng	G(G)GCAAG(G)UA					
59 Ld	UUG(U)CAUUU					
62 G1	UUG(U)CAUUU					

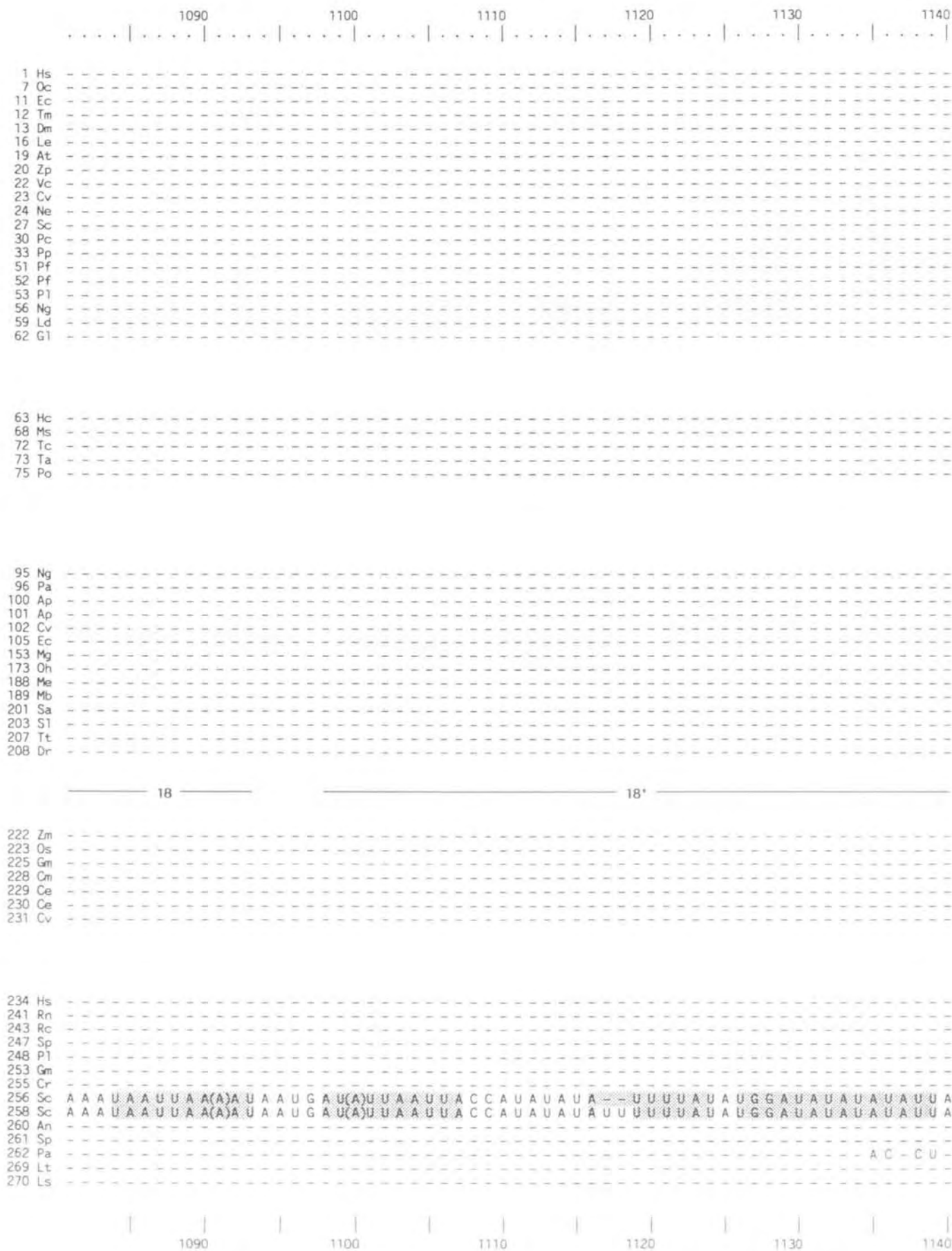
	17'	18
63 Hc	UUCAC	UUUUGU(A)
68 Ms	CUGGC	UGUCGAG
72 Tc	ACGGC	UUUUCGG
73 Ta	AAGGC	UUUUCUG
75 Po	GC(U)GU	UC(C)C(G)C

	430	440
95 Ng	GUAAGGAC	UUUUGU
96 Pa	GUAAGCAC	UUUAAG
100 Ap	GUAAGUAC	UUUC(A)G
101 Ap	GUAAGCAC	UUUC(A)G
102 Cv	GUAAGCCC	UUUC(G)G
105 Ec	GUAAGUAC	UUUC(A)G
153 Mg	GUAAGUUC	UUUUAU
173 Oh	(G)UAAAGUUC	UUUUAU
188 Me	GUAAGUUC	UGUUAU
189 Mb	GUAAGUUC	UUUC(A)C
201 Sa	GUAAGUUC	UUUC(A)G
203 S1	GUAAGUUC	UUUC(A)G
207 Tt	GUAAGUUC	UGUA(A)C
208 Dr	GUAAGUUC	UGUA(A)U

	17'	P17-1	P17-1'	18
222 Zn	GUCAAAUUC			UUUUC-U
223 Os	GUCAAAUUC			UUUUC-U
225 Gm	AUGAAAUUC			UUUUC-C
228 Cm	GUAAAAUUC			UUUUC-U
229 Ce	GUAAAAUUC			UUUUC-U
230 Ca	GUAAAAUUC			UUUUC-U
231 Cv	(G)UAAAUUC			UUUUC-U

234 Hs						
241 Rn						
243 Rc						
247 Sp						
248 P1						
253 Gm	UGUAAGCUC					UUUC(G)U
255 Cr	UGU					
256 Sc	UAUUUAUUAAGUUC	CGGGCCCGGGCC	CACGGAGCCGA	AACCCGA	AAGGAGAA	AUAUUAAA
258 Sc	UAUUUAUUAU					AUAUUAAA
260 An	CAUUAAGUAU					AUAUUAAA
261 Sp	UAUAAGCUC					CUUAUAUA
262 Pa	AU-CGAUUU					AUCGAUAAA
269 Lt	U					
270 Ls	U					

970 980 990 1000 1010 1020



	1150	1160	1170	1180	1190	1200	
---	---	---	---	---	---	---	Hs 1
---	---	---	---	---	---	---	Oc 7
---	---	---	---	---	---	---	Ec 11
---	---	---	---	---	---	---	Tm 12
---	---	---	---	---	---	---	Dm 13
---	---	---	---	---	---	---	Le 16
---	---	---	---	---	---	---	At 19
---	---	---	---	---	---	---	Zp 20
---	---	---	---	---	---	---	Vc 22
---	---	---	---	---	---	---	Cv 23
---	---	---	---	---	---	---	Ne 24
---	---	---	---	---	---	---	Sc 27
---	---	---	---	---	---	---	Pc 30
---	---	---	---	---	---	---	Pp 33
---	---	---	---	---	---	---	Pf 51
---	---	---	---	---	---	---	Pf 52
---	---	---	---	---	---	---	P1 53
---	---	---	---	---	---	---	Ng 56
---	---	---	---	---	---	---	Ld 59
---	---	---	---	---	---	---	G1 62

18'

19

---	---	---	---	---	---	---	Hc 63
---	---	---	---	---	---	---	Ms 68
---	---	---	---	---	---	---	Tc 72
---	---	---	---	---	---	---	Ta 73
---	---	---	---	---	---	---	Po 75

470

480

490

500

510

---	---	---	---	---	---	---	Ng 95
---	---	---	---	---	---	---	Pa 96
---	---	---	---	---	---	---	Ap 100
---	---	---	---	---	---	---	Ap 101
---	---	---	---	---	---	---	Cv 102
---	---	---	---	---	---	---	Ec 105
---	---	---	---	---	---	---	Mg 153
---	---	---	---	---	---	---	Oh 173
---	---	---	---	---	---	---	Me 188
---	---	---	---	---	---	---	Mb 189
---	---	---	---	---	---	---	Sa 201
---	---	---	---	---	---	---	S1 203
---	---	---	---	---	---	---	Tt 207
---	---	---	---	---	---	---	Dr 208

18'

19

---	---	---	---	---	---	---	Zn 222
---	---	---	---	---	---	---	Os 223
---	---	---	---	---	---	---	Gm 225
---	---	---	---	---	---	---	Cm 228
---	---	---	---	---	---	---	Ce 229
---	---	---	---	---	---	---	Ce 230
---	---	---	---	---	---	---	Cv 231

---	---	---	---	---	---	---	Hs 234
---	---	---	---	---	---	---	Rn 241
---	---	---	---	---	---	---	Rc 243
---	---	---	---	---	---	---	Sp 247
---	---	---	---	---	---	---	P1 248
---	---	---	---	---	---	---	Gm 253
---	---	---	---	---	---	---	Cr 255
---	---	---	---	---	---	---	Sc 256
---	---	---	---	---	---	---	Sc 258
---	---	---	---	---	---	---	An 260
---	---	---	---	---	---	---	Cr 261
---	---	---	---	---	---	---	Pa 262
---	---	---	---	---	---	---	Lt 269
---	---	---	---	---	---	---	Ls 270

1150

1160

1170

1180

1190

1200

	1210	1220	1230	1240	1250	1260
1 Hs	G U G C C A G C A G C C C G C C G G U A A U U C C A G G C U - C C C A A U A G C G U A U (A) U U A A A G U U G C U G (C) A G U U A -					
7 Oc	G U G C C A G C A G C C C G C C G C C G U A A U U C C A G G C U - C C C A A U A G C G U A U (A) U U A A A G U U G C U G (C) A G U U A -					
11 Ec	G U G C C A G C A G C C C G C C G C C G U A A U U C C A G G C U - C C C A A U A G C G U A U (A) U U A A A G U U G C U G (C) A G U U A -					
12 Tm	G U G C C A G C A G C C C G C C G C C G U A A U U C C A G G C U - C C C A A U A G C G U A U (A) U U A A A G U U G C U G (C) A G U U A -					
13 Dm	G U G C C A G C A G C C C G C C G C C G U A A U U C C A G G C U - C C C A A U A G C G U A U (A) U U A A A G U U G C U G (C) A G U U A -					
16 Le	G U G C C A G C A G C C C G C C G C C G U A A U U C C A G G C U - C C C A A U A G C G U A U (A) U U A A A G U U G C U G (C) A G U U A -					
19 At	G U G C C A G C A G C C C G C C G C C G U A A U U C C A G G C U - C C C A A U A G C G U A U (A) U U A A A G U U G C U G (C) A G U U A -					
20 Zp	G U G C C A G C A G C C C G C C G C C G U A A U U C C A G G C U - C C C A A U A G C G U A U (A) U U A A A G U U G C U G (C) A G U U A -					
22 Vc	G U G C C A G C A G C C C G C C G C C G U A A U U C C A G G C U - C C C A A U A G C G U A U (A) U U A A A G U U G C U G (C) A G U U A -					
23 Cv	G U G C C A G C A G C C C G C C G C C G U A A U U C C A G G C U - C C C A A U A G C G U A U (A) U U A A A G U U G C U G (C) A G U U A -					
24 Ne	G U G C C A G C A G C C C G C C G C C G U A A U U C C A G G C U - C C C A A U A G C G U A U (A) U U A A A G U U G C U G (C) A G U U A -					
27 Sc	G U G C C A G C A G C C C G C C G C C G U A A U U C C A G G C U - C C C A A U A G C G U A U (A) U U A A A G U U G C U G (C) A G U U A -					
30 Pc	G U G C C A G C A G C C C G C C G C C G U A A U U C C A G G C U - C C C A A U A G C G U A U (A) U U A A A G U U G C U G (C) A G U U A -					
33 Pp	G U G C C A G C A G C C C G C C G C C G U A A U U C C A G G C U - C C C A A U A G C G U A U (A) U U A A A G U U G C U G (C) A G U U A -					
51 Pf	G U G C C A G C A G C C C G C C G C C G U A A U U C C A G G C U - C C C A A U A G C G U A U (A) U U A A A G U U G C U G (C) A G U U A -					
52 Pf	G U G C C A G C A G C C C G C C G C C G U A A U U C C A G G C U - C C C A A U A G C G U A U (A) U U A A A G U U G C U G (C) A G U U A -					
53 P1	G U G C C A G C A G C C C G C C G C C G U A A U U C C A G G C U - C C C A A U A G C G U A U (A) U U A A A G U U G C U G (C) A G U U A -					
56 Ng	G U G C C A G C A G C C C G C C G C C G U A A U U C C A G G C U - C C C A A U A G C G U A U (A) U U A A A G U U G C U G (C) A G U U A -					
59 Ld	G U G C C A G C A G C C C G C C G C C G U A A U U C C A G G C U - C C C A A U A G C G U A U (A) U U A A A G U U G C U G (C) A G U U A -					
62 G1	G U G C C A G C A G C C C G C C G C C G U A A U U C C A G G C U - C C C A A U A G C G U A U (A) U U A A A G U U G C U G (C) A G U U A -					

19

19'

3'

20

63 Hc	G U G C C A G C C G C C G C C G U A A U A C C G U - G C A G U C C G A G U G A U G G C C G A U C U U A U U G G G C C U A -				
68 Ms	G U G C C A G C C G C C G C C G G U A A C A C C G - G C G G C C C G A G U G G U G G C C G U U U A U A U U G G G C C U A -				
72 Tc	G U G (G) C A G C C G C C G C C G (G) U A A U A C C G - G C G G C C C G A G U G G U G G C C G U U U A U A U U G G G C C U A -				
73 Ta	G U G C C A G C C G C C G C C G G U A A C A C C A - G C A G C U C G A G U G G U G G C C G A U U U A U U G A G G C C U A -				
75 Po	G U G U C A G C C G C C G C C G G U A A U A C C A - G C A C G C G A G U G G U G G C C G A U U U A U C U G G G C C U A -				

520

530

540

550

560

570

95 Ng	G U G C C A G C A G C C C G C C G C C G U A A U A C G U - A G G G U G C G A A G C G U U A A U C G G A A U U A C U G G G C G U A -				
96 Pa	G U G C C A G C A G C C C G C C G C C G U A A U A C G G - A G G G U G C C A A G C C G U U A A U C A G G A A U U A C U G G G C G U A -				
100 Ap	G U G C C A G C A G C C C G C C G C C G U A A U A C G G - A G G G U G C C A A G C C G U U A A U C A G G A A U U A C U G G G C G U A -				
101 Ap	G U G C C A G C A G C C C G C C G C C G U A A U A C G G - A G G G U G C C A A G C C G U U A A U C A G G A A U U A C U G G G C G U A -				
102 Cv	G U G C C A G C A G C C C G C C G C C G U A A U A C G G - A G G X G U G C A A A G C C G U U A A U C G G G A A U U A C U G G G C G U A -				
105 Ec	G U G C C A G C A G C C C G C C G C C G U A A U A C G G - A G G G U G C C A A A G C C G U U A A U C G G G A A U U A C U G G G C G U A -				
153 Mg	G U G C C A G C A G U C C G C C G C C G U A A U A C A U - A G G G U G C C A A A G C C G U U A A U C G G G A A U U A C U G G G C G U A -				
173 Oh	G U G C C A G C A G C C C G C C G C C G U A A U A C A U - A G G G U G C C A A A G C C G U U A A U C C G G A A U U A C U G G G C G U A -				
188 Me	G U G C C A G C A G C C C G C C G C C G U A A U A C G U - A G G G U G C C X G A A G C C G U U G U C C G G A A U U A C U G G G C G U A -				
189 Mb	G U G C C A G C A G C C C G C C G C C G U A A U A C G U - A G G G U G C C X G A A G C C G U U G U C C G G A A U U A C U G G G C G U A -				
201 Sa	G U G C C A G C A G C C C G C C G C C G U A A U A C G U - A G G G G C G C A A G C C G U U G U C C G G A A U U A C U G G G C G U A -				
203 S1	G U G C C A G C A G C C C G C C G C C G U A A U A C G U - A G G G G C G C A A G C C G U U G U C C G G A A U U A C U G G G C G U A -				
207 Tt	G U G C C A G C A G C C C G C C G C C G U A A U A C G G - A G G G G C G C A A G C C G U U G U C C G G A A U U A C U G G G C G U A -				
208 Dr	G U G C C A G C A G C C C G C C G C C G U A A U A C S G - A S G G U G C A A A G C G U U A C C C G G A A U U A C U G G G C G U A -				

19

19'

3'

20

222 Zm	G U G C C A G C A G C C C G C C G C C G U A A A G A C A G - A G S A U G C A A A G C G U U A U C C G G A A U U G A U U G G C G U A -				
223 Os	G U G C C A G C A G C C C G C C G C C G U A A A G A C A G - A G S A U G C A A A G C C G U U A U C C C G G A A U U G A U U G G C G U A -				
225 Gm	G U G C C A G C A G C C C G C C G C C G U A A A G A C A G - A G S A U G C A A A G C C G U U A U C C C G G A A U U G A U U G G C G U A -				
228 Cm	G U G C C A G C A G C C C G C C G C C G U A A A U A C A U - A G S A U G C A A A G C C G U U A U C C C G G A A U U G A U U G G C G U A -				
229 Ce	G U G C C A G C A G C C C G C C G C C G U A A U A C A U - A G S A U G C A A A G C C G U U A U C C C G G A A U U G A U U G G C G U A -				
230 Ce	G U G C C A G C A G C C C G C C G C C G U A A A G A C A G - A G S A U G C A A A G C C G U U A U C C C G G A A U U G A U U G G C G U A -				
231 Cv	G U G C C A G C A G C C C G C C G C C G U A A A G A C A G - A G S A U G C A A A G C C G U U A U C C C G G A A U U G A U U G G C G U A -				

234 Hs	G U G C C A G C C A C C C G C C G C C G U C A U A C C G A - U U A A C C C A A A G U (C) A U A A G A A G - - - - - C (O) G G C G U A -				
241 Rn	G U G C C A G C C C C C C G C C G C C G G C U A C A C C G A - U U A A C C C C A A A G U (C) U S A A U A G A U U - - - - - U (C) G G C G U U -				
243 Rc	G U G C C A G C C C C C C G C C G C C G G C U A C A C C G A - U U G G G A G C C A A A G U (C) U S A A U A G A U U - - - - - C (A) U (C) G G C G U U -				
247 Sp	G U G C C A G C C C C C C G C C G C C G G U U A U A C G - U A (A) U U C C U A C A G U U A A A U A G - - - - - U A C G G U G A A -				
248 P1	G U G C C A G C C A G C C G C C G C C G U U A U A C C G - U A C C U U C C U A A G C U U A A A U A G - - - - - A A C C G U A U -				
253 Gm	G U G C C A G C C A G C C C G C C G C C G U A A A G A C C G - U G C G G U G C U A A G U C C U A A U C G G A A U U G A U U G G C G U A -				
255 Cr	G U G C C A G C A G C C C G C C G C C G U A A A A C C G A - G C G G G U G C C A A G C G U U A A U A G C U A U U G A C U A G G C A G G U -				
256 Sc	G U G C C A G C A G U C C G C C G C C G U A A A C A C A A - A G A S G S C G A G C G U U A A U C A U A A U - - - - - G G U U U A -				
258 Sc	G U G C C A G C A G U C C G C C G C C G U A A C A C A A - A G A S G S C G A G C G U U A A U C A U A A U - - - - - G G U U U A -				
260 An	G U G C C A G C A G C C C G C C G C C G U A A U A C C G U - A S A A G A C U A A G C G U U A A A C A U U A U A U (U) A G G C U U A -				
261 Sp	G U G C C A G C A G C C C G C C G C C G U A A U A C C G G - A A U A G A A C U A A G C G U U A A A C A U U A A U A A G G C U U A -				
262 Pa	G U G C C A G C C A G C C G C C G C C G U A A U A C C G U - A A S A G A C U A A G C G U U A U (U) C A U U C A U U A A A A S G U U A -				
269 Lt	A U G C C A G C C C G U U G C G G U A A U U C U - A U G C U U U U A A A U A U U A U A - - - - - C A U U U A U - - - - -				
270 Ls	A U G C C A G C C C G U U G C G G U A A U U C U - A U G C U U U U A A A U A U U A U A - - - - - C A U U U A U - - - - -				

1210

1220

1230

1240

1250

1260

1270 1280 1290 1300 1310 1320

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- A A A G C - U C - G U A G U - U G G A U C U - - - - - - - - Hs 1
- A A A G C - U C - G U A G U - U G G A U C U - - - - - - - - Dc 7
- A A A G C - U C - G U A G U - U G G A U C U - - - - - - - - Ec 11
- A A A G C - U C - G U A G U - U G G A U C U - - - - - - - - Tm 12
- A A A G C - U C - G U A G U - U G G A C C U U - - - - - - - - Dm 13
- A A A G C - U C - G U A G U - U G G A C C U U - - - - - - - - Le 16
- A A A G C - U C - G U A G U - U G G A C C C U - - - - - - - - At 19
- A A A G C - U C - G U A G U - U G G A U C U U - - - - - - - - Zp 20
- A A A G C - U C - G U A G U - U G G A U U U U - - - - - - - - Vc 22
- A A A G C - U C - G U A G U - U G G A U U U U - - - - - - - - Cv 23
- A A A G C - U C - G U A G U - U G G A U U U U - - - - - - - - Ne 24
- A A A G C - U C - G U A G U - U G G A U U U U - - - - - - - - Sc 27
- A A A G C - U C - G U A G U - U G G A U U U U - - - - - - - - Pc 30
- A A A G C - U C - G U A G U - (C) G G C U C C - - - - - - - - Pp 33
- A A A G C - U C - G U A G U - U G G A U U U U - - - - - - - - Pf 51
- A A A G C - U C - G U A G U - U G G A U U U U - - - - - - - - Pf 52
- A A A G C - U C - G U A G U - U G G A U U U U - - - - - - - - P1 53
- A A A G C - U C - G U (A) G U - A U A C C U A A - - - - - - - - Ng 56
- A A A G C - U C - G U A G U - U G G A C C C C - - - - - - - - Ld 59
- A A A G C - C C - G U A G U - U G G A C C C C - - - - - - - - G1 62
  
```

20 21

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- - - A A G C G U C C G U A G C - U G - - - - G C U G A A C A A G U C C G U U G G G A A A U C U G U C C G - C U U A A C Hc 63
- - - A A G C G G U C U G U A G C - C G - - - - G C C G G A U A A G U C C U U G A G A A A U C U G G C A G - C U U A A C Mc 68
- - - A A G C G U C C G U A G C - C G - - - - G G C C C G U A A A G U C C C U G G C G A A A U C C C A C G G - C U C A A C Tc 72
- - - A A G C G U C C G U A G C - C G - - - - G U C U U A U A A A U C U C A G A U A A A U C U C C G - C U U A A C Ta 73
- - - A A G C G C C G U A G C - C G - - - - G C C C G G U A A G U C C C C C U A A A G C C C G G - C U C A A C Po 75
  
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580 590 600 610 620

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- - - A A G C G G G C G C A A G A - C G - - - - G U U A C U U A A G C A G G A U G U G A A A U C C C C G G G G - C U C A A C Ng 95
- - - A A G C G C G C C G U A A G G - U G - - - - G U U C A G (C) A A G C U U G A U G U G A A A U C C C C G G G G - C U C A A C Pa 96
- - - A A G A G C C C G C A A G G - U G - - - - G U U U U U U A A G U C A G G U G U G A A A U C C C C U A G G G - C U C A A C Ap 100
- - - A A G C G C A C C G C A G G - C G - - - - G U U U G U U A A G U C A G A U G U G A A A U C C C C G C G G - C U C A A C Av 101
- - - A A G C G C C A C G U A G G - C G - - - - G C (A) C G G U C A G U C U G C U G U G A A A G C C C C G G G - C U C A A C Cv 102
- - - A A G C G C A C G C A G G - C G - - - - G U U U G U U A A G U C A G A U G U G A A A U C C C C G G G - C U C A A C Ec 105
- - - A A A C A A G C C A G G - C G - - - - G A U U A G A A A G U C U G G U G U U A A A A G C A A U U G - C U U A A C Oh 153
- - - A A G G G C C G C A G G - C G - - - - G U U A A U A A G U U U A U G G U U U A A A G U G C A A G G - C U C A A C Mg 173
- - - A A G G G C C G C A G G - C G - - - - G C G U C G U A A G U C G U U G A A A A G U G C A A G G - C U U A A C Me 188
- - - A A G A G C C U C G U A G G - U G - - - - G U U U G U C G C G U U G U U C G U G A A A U C C C A C G G G - C U U A A C Sb 189
- - - A A G A G C U C G U A G G - C G - - - - G C U U G U C A C G U C G G U U G U G A A A G C C C G G G G - C U U A A C Ma 201
- - - A A G A G C U C G U A G G - C G - - - - G C U U G U C A C G U C G G U U G U G A A A G C C C G G G G - C U U A A C S1 203
- - - A A G G G C C G U A G G - C G - - - - G C C U G G G C C G U C C A U G U G A A A G A G C A C A G G - C U C A A C Tt 207
- - - A A G G G C G U A G G - C G - - - - G A U A U U U A A G U C U G G U U U A A A G A C C G A G G - C U C A A C Dr 208
  
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21 P21-1

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- - - A A G C G U C U G U A G G - U G - - - - G C U U U U C A A G U C C G C C G U C A A A U C C C A G G G G - C U C A A C Zm 222
- - - A A G C G U C U G U A G G - U G - - - - G C U U U U C A A G U C C G C C G U C A A A U C C C A G G G G - C U C A A C Os 223
- - - A A G C G U C U G U A G G - U G - - - - G C U U U U A A A G U C C G C C G U C A A A U C C C A G G G G - C U C A A C Gm 225
- - - A A G C G U C U G U A G G - U G - - - - G U U G A A A A A G U C G A C U G U C A A A U C C C A A G G G - C U C A A C Cm 228
- - - A A G C G U C U G U A G G - U G - - - - G U U G A A A A A G U C A C U G U C A A A U C C C A A G G G - C U C A A C Ce 229
- - - A A G C G U C U G U A G G - U G - - - - G U U U A U U A A G U C U A C U G U U A A A G A U C A G G G - C U U A A C Ce 230
- - - A A G C G U C U G U A G G - U G - - - - G C U U A A (A) A A G U C U C U G U C A A A G A U C A G G G - C U U A A C Cv 231
  
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1270 1280 1290 1300 1310 1320

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- - - A A G A G U G U U U A G - A U C - - - - - - - - - - Hs 234
- - - A A A C G U G C C A A A C U - A U A A A U - - - - - - - - - - Rn 241
- - - A A A C G U G A U U A A A G U A A - - - - - - - - - - Rc 243
- - - A A A G G G U - G U U A G A - - - - - - - - - - Sp 247
- - - A A A G G G C C G U U A G A - - - - - - - - - - P1 248
- - - A A A G G G C A C G U A G G - C G - - - - G U G A A U (C) G G U U G A (A) G U G A A A G U C G C C A - A A A A C U Gm 253
- - - C A G C G C G U - C U G A G C G - - - - U U - A A U - G G - - - - - - - - - - Cr 255
- - - A A G G A U C C G U A G A A U G - - - - - - - - - - - - - - - - Sc 256
- - - A A G G A U C C G U A G A A U G - - - - - - - - - - - - - - - - Sc 258
- - - A A G G G U (A) C U A G A - C - - - - G G U A A A U U A A A C U C - - - - - - - - - - U A A A U An 260
- - - A A A A G U A G U A G A - U G - - - - G A A A A A (A) A - - - - - - - - - - - - - - - - Sp 261
- - - A A G G G U (A) C U U (A) G A - C G - - - - G U A G A A U U G C C U - - - - - - - - - - - - - - - - Pa 262
- - - - - - - - - - - - U U U (A) U U A A - - - - - - - - - - - - - - - - - U U U A A U U U A Lt 269
- - - - - - - - - - - - U A U A U - U A - - - - - - - - - - - - - - - - U A - A U U U (U) A Ls 270
  
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	1330	1340	1350	1360	1370	1380
1 Hs	U G G G(A)G C	U G C G U A	G G C G G G			
7 Oc	U G U G G A G G G	U G C G U A	G G C G G G			
11 Ec	U G U G G A G G G	U G C G U A	G G C G G G			
12 Tm	G U G U C C C G C	G C G C	C G C G G U U A			
13 Dm	G U G C U U C A U A C G G G U A	G U A C A A C(U)U A				
16 Le	U G G G A U G	G G C G G C	G G C G G C			
19 At	U G G G A U G	G G C G G C	G G C G G C			
20 Zp	U G G G A C G	G C C C G G	G C C C G G			
22 Vc	C G G G U G G	G G U G G(U)	G			
23 Cv	C G G G U G G	G(A)C C U G	C			
24 Ne	C G G G U G G	G C C C U G	C			
27 Sc	C U G G C(A)G	U G G U A A	C			
30 Pc	A G G G	A U G G U U G C C				
33 Pp	A G A C C U U C A G(A)G C C U U G A U U C G G G A					
51 Pf	C A A A G A A U C	G A U A U U U A U(U)G U A A C				
52 Pf	U A A A G A(A)U C C G A U G U U C A U U U A A A C					
53 P1	C A A A G A A U C	U A U U U U A A G G A U G U G				
56 Ng	G A G U G G U	G U G U A G U A U A U				
59 Ld	U G G G C U G U G					
62 G1						

E21-1

63 Hc	G G G C A G G	C G U C C A G C G G A A	A C U G U U C	A G C		
68 Ms	U G U C A G G	C U U U C A G G A G A U	A C U G U C U	G G C		
72 Tc	C G U G G G G	C U U G C U G G G G A U	A C U G C G G	G C C		
73 Ta	G G A A G A A	C U U C U G A A G A	G A C U G U A A	G A C		
75 Po	C C G G G G A	G U G G G G G	G G A U	A C U G C C G	G G C	

630 640 650

95 Ng	C C G G G A A C U G	C G U U	C U G A	A C U G G G U	G A C	
96 Pa	C U G G G A A C U G	C A U C	C A A A A G C U(A)C U G	A G C C		
100 Ap	C U A G G A A C U G	C A U U	U G A A	A C U G G A A	A A C	
101 Ap	G U G G G A A C G G	C A U U	U G A G	A C U G G C A	A G C	
102 Cv	C U G G G A A C U G	C A G U	G G A U	A C U G C C G	(C)C C	
105 Ec	C U G G G A A C U G	C A U C	U G A U	A C U G G C A	A G C	
153 Mg	G A U U G U A U	G	C A U U	G G A A	A C U U C U A	G U C
173 Oh	A U U G U G A U	G	C U A U	A A A A	A C U G U U U	A G C
188 Me	C C C G U C A G G G	G A C C	G A A	A C U G C G A	U G C	
189 Mb	U G U G A G C G U G	C G G G	C G A U	A C G G G C A	G A C	
201 Sa	C C C G G G U C U G	C A G U	C G A U	A C G G G C A	G G C	
203 S1	C C C G G G U C U G	C A G U	C G A U	A C G G G C A	G G C	
207 Tt	C G U G G G G A G	C G U G	G G A U	A C G C U C A	G G C	
208 Dr	C U C G G G A G U G	G A C U	G G A U	A C U G G A U	G U C	

P21-1'

222 Zm	C C U G G A C A G G	C G G U	G G A A	A C U A C C A	A G C	
223 Os	C C U G G A C A G G	C G G U	G G A A	A C U A C C A	A G C	
225 Gm	C C U G G A C A G G	C G G U	G G A A	A C U A C C A	A G C	
228 Cm	C U U G G U C C G G	C A G U	C G A U	A C U U U U	A A C	
229 Ce	C U U G G U C C G G	C A G U	C G A U	A C U U U U	A A C	
230 Ce	C C U G A G U C G G	C A G U	A G A A	A C U A U G	A G C	
231 Cv	C C U G G G C G G	C A G G	A G A A	A C U C U A	G G C	

234 Hs						
241 Rn						
243 Rc						
247 Sp						
248 P1						
253 Gm	G G U G G A A U G	C U(C)U	C G A A	A C C(A)A U U	C A C	
255 Cr						
256 Sc				U A U A U U		
258 Sc				U A U A U U		
260 An				G A G U	A C U A U U	U A C U
261 Sp				U(C)	U U U U	C
262 Pa				G G G A	A C A A U U U	U A C
269 Lt	G U			C A A	U A A A	
270 Ls	G U			C A A U A A A A		

1330 1340 1350 1360 1370 1380

	1390	1400	1410	1420	1430	1440	
CG	---	GU	CCGCC	---	CGA	---	Hs 1
CG	---	GU	CCGCC	---	CGA	---	Oc 7
CG	---	GU	CCGCC	---	UAC	---	Ec 11
CA	---	UC	GUUCG(C)G	GUGUUAACUGG	---	CCGCCGGA	Tm 12
CA	---	---	AUUGUGGU	---	UAGU	---	Om 13
CG	---	GU	CCGCC	---	CUA	---	Le 16
CG	---	GU	(C)CGC	---	CUUUGGU	---	At 19
CG	---	GU	CCG	---	CUUUU	---	Zp 20
CG	---	GU	CCGCC	---	UCU	---	Vc 22
CG	---	GU	CCGCCG	---	UUU	---	Cv 23
CG	---	GU	CCGCCG	---	UUU	---	Ne 24
CG	---	GC	CA(C)AC	---	ACU	---	Sc 27
UG	---	GU	(C)UCCG	---	AGUUG	---	Pc 30
CACUGG	---	GU	CAGCUGCUCUU	---	CUC	---	Pp 33
UAUUCUAGGGGAAC	---	---	---	UAUUUAGCUUUUGG	---	AAGAGCGCGCAA	PF 51
UGGUUUUGGGAACAACCAAAUAUAUAUAUAUUUUU-G	---	---	---	CUUUUGUU	---	CAAAUAAGGUU	PF 52
CUUUUAUUGGAAUUAUGCUAAUUUGUCAC	---	---	---	---	UUCG	---	P1 53
UAG	---	UUU	UACC	---	AGAGGAC	---	Ng 56
U	---	GU	UCCUGG	---	UCGUCCGU	---	Ld 59
							G1 62

E21-1

E21-1'

---	---	---	---	---	---	---	Hc 63
---	---	---	---	---	---	---	Ms 68
---	---	---	---	---	---	---	Tc 72
---	---	---	---	---	---	---	Ta 73
---	---	---	---	---	---	---	Po 75

---	---	---	---	---	---	---	Ng 95
---	---	---	---	---	---	---	Pa 96
---	---	---	---	---	---	---	Ap 100
---	---	---	---	---	---	---	Ap 101
---	---	---	---	---	---	---	Cv 102
---	---	---	---	---	---	---	Ec 105
---	---	---	---	---	---	---	Mg 153
---	---	---	---	---	---	---	Oh 173
---	---	---	---	---	---	---	Me 188
---	---	---	---	---	---	---	Mb 189
---	---	---	---	---	---	---	Sa 201
---	---	---	---	---	---	---	S1 203
---	---	---	---	---	---	---	Tt 207
---	---	---	---	---	---	---	Dr 208

---	---	---	---	---	---	---	Zn 222
---	---	---	---	---	---	---	Os 223
---	---	---	---	---	---	---	Gm 225
---	---	---	---	---	---	---	Cm 228
---	---	---	---	---	---	---	Ce 229
---	---	---	---	---	---	---	Ce 230
---	---	---	---	---	---	---	Cv 231

---	---	---	---	---	---	---	Hs 234
---	---	---	---	---	---	---	Rn 241
---	---	---	---	---	---	---	Rc 243
---	---	---	---	---	---	---	Sp 247
---	---	---	---	---	---	---	P1 248
---	---	---	---	---	---	---	Gm 253
---	---	---	---	---	---	---	Cr 255
---	---	---	---	---	---	---	Sc 256
---	---	---	---	---	---	---	Sc 258
---	---	---	---	---	---	---	An 260
---	---	---	---	---	---	---	Sp 261
---	---	---	---	---	---	---	Pa 262
---	---	---	---	---	---	---	Lt 269
---	---	---	---	---	---	---	Ls 270

1390

1400

1410

1420

1430

1440

	1450	1460	1470	1480	1490	1500
1 Hs	- G G C G A - G C C -	- - - - A C C G C C C -	- G U C C C C -	- - - - - G C (C) C C U	U G C C U C -	- - - - -
7 Oc	- G G C G A - G C C -	- - - - A C C G C C C -	- G U C C C C -	- - - - - G C C C C U	U G C C C U C -	- - - - -
11 Ec	- G G U G G - + U U -	- - - - A C U G C C U -	- G G C C U -	- - - - - G A A - C -	- A G C C C A -	- - - - -
12 Tm	C G U C (C) U - G C C G G U G G	G C U U A G C -	- U C G U -	- - - - - G (A) G G C G -	G C C C A A -	- - - - -
13 Dm	A U A C C U U A U G U A (U) G	U A A G C G U A U U A C C G	- - - - -	- G U G G A G U U C U	U A U A U G U G A U U A	- - - - -
16 Le	G G U - G U - G C -	- - - - A C C G G U C -	G (U) C U C -	- - - - - G U C C C U U C -	- - - - -	- - - - -
19 At	- G U - - - - G (C) -	- - - - A U U G G U C -	G G C U U -	- - - - - G U C C C U U C -	- - - - -	- - - - -
20 Zp	- - - U G G - G U G - U G -	C A C C G G C C -	G U U U C -	- - - - - G U C C C U U U U -	- - - - -	- - - - -
22 Vc	G G U - G U - G C -	- - - - A C U G C (U) C -	U S C U C -	- - - - - C A C C U U C C -	- - - - -	- - - - -
23 Cv	G G U - G U - G C -	- - - - A C U G G C A -	G G (G) C U -	- - - - - C A C C U U G -	- - - - -	- - - - -
24 Ne	G G U - G U - G C -	- - - - A C U G G C C -	G G G C C -	- - - - - C A C C U U G -	- - - - -	- - - - -
27 Sc	- - - G U G (C) - G U G -	- - - - A G U U G Y G U C A U U C -	- - - - -	- - - - - U (G) G C C A -	U C C U -	- - - - -
30 Pc	- - - U G - - - - U G (C) A -	- - - - C U G G -	- - - - - C G C -	- - - - - A A C -	- U G A U C C U U C C C -	- - - - -
33 Pp	C U A C U G A U G A U A G G G A	C G U C C G G U C A A U C G U G C (C) C	U G G G C U G U C -	- - - - - G C U G U C -	C C C C C C -	- - - - -
51 Pf	C C U C U A - - - - U - U A -	- U U A U - G U U C U U U A A A U A A C A A A -	- G A U U C U U U -	- - - - -	- - - - -	- - - - -
52 Pf	U U - C U A A U A A A U U U A U G U U U U A U C -	- - - - - A G A U A U G A C A -	- G A (A) U C U U U -	- - - - -	- - - - -	- - - - -
53 P1	C A U A C A U U C U A G U A A A A U G U A C U C U U U A A A U A A A A -	- C A U U C U U U -	- - - - -	- - - - -	- - - - -	- - - - -
56 Ng	G G U - U G G C G A G A G U U A U C -	- A C U C U U -	- - - - -	- - - - - G U U U G C C U A C U U -	- - - - -	- - - - -
59 Ld	- - - C - C A U G U C -	- - - - G G A -	- - - - - U U U G G U -	- - - - -	- - - - - G A C C A -	- - - - -
62 G1	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -

E21-1'

E21-2

63 Hc	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
68 Ms	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
72 Tc	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
73 Ta	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
75 Po	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -

95 Ng	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
96 Pa	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
100 Ap	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
101 Ap	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
102 Cv	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
105 Ec	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
153 Mg	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
173 Oh	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
188 Me	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
189 Mb	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
201 Sa	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
203 S1	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
207 Tt	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
208 Dr	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -

222 Zm	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
223 Os	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
225 Gm	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
228 Cm	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
229 Ce	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
230 Ce	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
231 Cv	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -

234 Hs	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
241 Rn	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
243 Rc	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
247 Sp	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
248 P1	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
253 Gm	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
255 Cr	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
256 Sc	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
258 Sc	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
260 An	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
261 Sp	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
262 Pa	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
269 Lt	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
270 Ls	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -

1450

1460

1470

1480

1490

1500

	1510	1520	1530	1540	1550	1560	
-----							Hs 1
-----							Oc 7
-----							Ec 11
-----							Tm 12
AAUACUUGUAUUUUUUUCAUAUGGUUCCUCUUAUUUAAAACAACCGUGCAU(U)AGUGGUCU							Dm 13
-----							Le 16
-----							At 19
-----							Zp 20
-----							Vc 22
-----							Cv 23
-----							Ne 24
-----							Sc 27
-----							Pc 30
-----							Pp 33
-----							Pf 51
-----							Pf 52
-----							P1 53
-----							Nd 56
-----							Ld 59
-----							G1 62

E21-2

E21-2'

E21-3

-----							Hc 63
-----							Ms 68
-----							Tc 72
-----							Ta 73
-----							Po 75
-----							Ng 95
-----							Pa 96
-----							Ap 100
-----							Ap 101
-----							Cv 102
-----							Ec 105
-----							Mg 153
-----							Oh 173
-----							Me 188
-----							Mb 189
-----							Sa 201
-----							S1 203
-----							Tt 207
-----							Dr 208
-----							Zm 222
-----							Os 223
-----							Gm 225
-----							Cm 228
-----							Ce 229
-----							Ce 230
-----							Cv 231
-----							Hs 234
-----							Rn 241
-----							Rc 243
-----							Sp 247
-----							P1 248
-----							Gm 253
-----							Cr 255
-----							Sc 256
-----							Sc 258
-----							An 260
-----							Sp 261
-----							Pa 262
-----							Lt 269
-----							Ls 270

1510

1520

1530

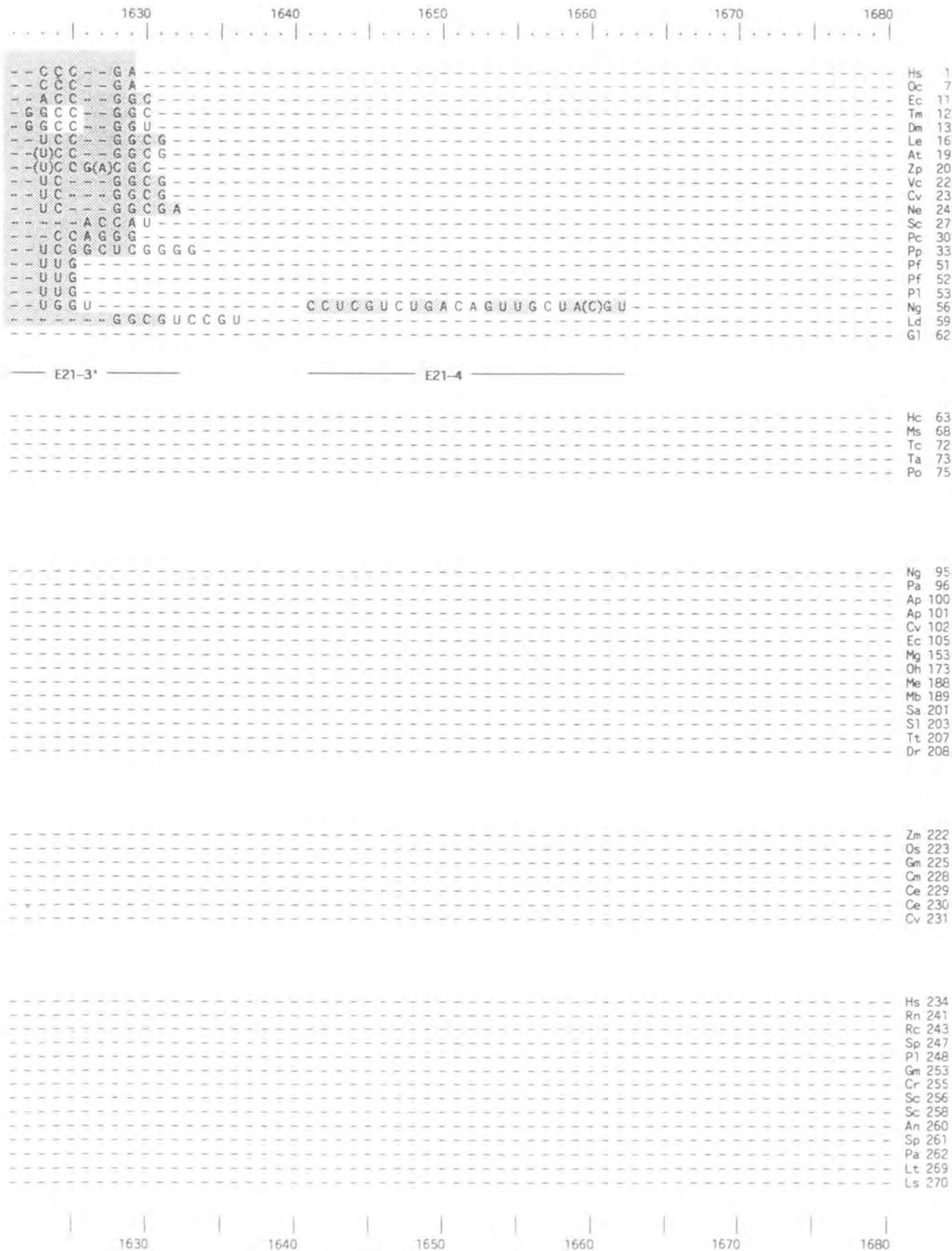
1540

1550

1560

	1570	1580	1590	1600	1610	1620
1 Hs	---	UUA	GCU	---	GAA	---
7 Oc	---	UUA	GCU	---	GAA	---
11 Ec	---	UUC	ACC	---	GG	---
12 Tm	---	UUC	GUU	---	GAA	---
13 Dm	---	UUA	AAAC	---	GAA	---
16 Le	---	UUA	AUU	---	GGCC	---
19 At	---	UUA	AUU	---	GGCC	---
20 Zp	---	UUA	ACU	---	G(U)CU	---
22 Vc	---	UUC	ACU	---	G(U)CU	---
23 Cv	---	UUC	ACU	---	G(U)CU	---
24 Ne	---	UUC	GCU	---	G(U)CU	---
27 Sc	---	UUA	AGU	---	UGUC	---
30 Pc	---	UUC	GCU	---	GGG	---
33 Pp	---	UUC	GC	---	GAUC	---
51 Pf	---	UUU	U	---	GC	---
52 Pf	---	UUU	AUU	---	GC	---
53 P1	---	UUU	A	---	AUG	---
56 Ng	---	---	---	---	GC	---
59 Ld	A C A A G A A A C A C C G G G A G U G G U U C C U U U C C U G A U U U A C G C A U G U C A U					
62 GT						
----- E21-3 -----						
63 Hc	---					
68 Ms	---					
72 Tc	---					
73 Ta	---					
75 Po	---					
----- E21-3' -----						
95 Ng	---					
96 Pa	---					
100 Ap	---					
101 Ap	---					
102 Cv	---					
105 Ec	---					
153 Mg	---					
173 Oh	---					
188 Me	---					
189 Mb	---					
201 Sa	---					
203 S1	---					
207 Tt	---					
208 Dr	---					
222 Zm	---					
223 Os	---					
225 Gm	---					
228 Cm	---					
229 Ce	---					
230 Ce	---					
231 Cv	---					
234 Hs	---					
241 Rn	---					
243 Rc	---					
247 Sp	---					
248 P1	---					
253 Gm	---					
255 Cr	---					
256 Sc	---					
258 Sc	---					
260 An	---					
261 Sp	---					
262 Pa	---					
269 Lt	---					
270 Ls	---					

1570 1580 1590 1600 1610 1620



	1690	1700	1710	1720	1730	1740
1 Hs	---	---	---	---	---	---
7 Oc	---	---	---	---	---	---
11 Ec	---	---	---	---	---	---
12 Tm	---	---	---	---	---	---
13 Dm	---	---	---	---	---	---
16 Le	---	---	---	---	---	---
19 At	---	---	---	---	---	---
20 Zp	---	---	---	---	---	---
22 Vc	---	---	---	---	---	---
23 Cv	---	---	---	---	---	---
24 Ne	---	---	---	---	---	---
27 Sc	---	---	---	---	---	---
30 Pc	---	---	---	---	---	---
33 Pp	---	---	---	---	---	---
51 Pf	---	---	---	---	---	---
52 Pf	---	---	---	---	---	---
53 Pl	---	---	---	---	---	---
56 Ng	---	A C U U	---	---	---	---
59 Ld	---	---	---	---	---	---
62 Gl	---	---	---	---	---	---

----- E21-4* -----

63 Hc	---	---	---	---	---	---
68 Ms	---	---	---	---	---	---
72 Tc	---	---	---	---	---	---
73 Ta	---	---	---	---	---	---
75 Po	---	---	---	---	---	---

95 Ng	---	---	---	---	---	---
96 Pa	---	---	---	---	---	---
100 Ap	---	---	---	---	---	---
101 Ap	---	---	---	---	---	---
102 Cv	---	---	---	---	---	---
105 Ec	---	---	---	---	---	---
153 Mg	---	---	---	---	---	---
173 Oh	---	---	---	---	---	---
188 Me	---	---	---	---	---	---
189 Mb	---	---	---	---	---	---
201 Sa	---	---	---	---	---	---
203 Sl	---	---	---	---	---	---
207 Tt	---	---	---	---	---	---
208 Dr	---	---	---	---	---	---

222 Zm	---	---	---	---	---	---
223 Os	---	---	---	---	---	---
225 Gm	---	---	---	---	---	---
228 Cm	---	---	---	---	---	---
229 Ce	---	---	---	---	---	---
230 Ce	---	---	---	---	---	---
231 Cv	---	---	---	---	---	---

234 Hs	---	---	---	---	---	---
241 Rn	---	---	---	---	---	---
243 Rc	---	---	---	---	---	---
247 Sp	---	---	---	---	---	---
248 Pl	---	---	---	---	---	---
253 Gm	---	---	---	---	---	---
255 Cr	---	---	---	---	---	---
256 Sc	---	---	---	---	---	---
258 Sc	---	---	---	---	---	---
260 An	---	---	---	---	---	---
261 Sp	---	---	---	---	---	---
262 Pa	---	---	---	---	---	---
269 Lt	---	---	---	---	---	---
270 Ls	---	---	---	---	---	---





	1810	1820	1830	1840	1850	1860
1 Hs	U G G A U A C C - G C A G C U A G G A A U A A U G G A A U A G - G -					A C - C(G)C G G
7 Oc	U A G A U A C C - G C A G C U A G G A A U A A U G G A A U A G - G -					A C - C(G)C G G
11 Ec	U G(A)A U A A U G - G G U G C A U G G A A U A A U G G A A U A G - G -					A C - U U C G U
12 Tm	G A A U A C U G - G U G C A U G G A A U A A U G G A A U A G - G -					A C - C U C G G
13 Dm	U A U U C U - G U G C A U G G G A U A A U S A A A U A A - G -					A C - C U C U G
16 Le	G U(A)U A C A U - U(A)G C A U G G G A U A A C(A)U(U)A U A G - G -					A U - U U C G G
19 At	U G(G)A U A C A U - U(A)G C A U G G G A U A A C A U(C)A U A G - G -					A U - U U C G A
20 Zp	A A U A C A U - U A G C A U G G A A U A A C G G U A U A G - G -					A U - U C U G G
22 Vc	U G A A U A C A U - U(A)G C A U G G A A U A A C A C G A U A G - G -					A C - U C U G G
23 Cv	U G A A U A C A U - U(A)G C A U G G A A U A A C A(C)G A U A G - G -					A C - U C U G G
24 Ne	U G A A U A C A U - U(A)G C A U G G A A U A A C A(C)G A U A G - G -					A C - U C U G G
27 Sc	G(A)A U A U A U - U(A)G Y A U G G A A U A A U A A G A U A G - G -					A C - U U U G A
30 Pc	A A U A C(A)U - U(A)G C A U G G A A U A A U A A A U A G - G -					A C A U G U G A
33 Pp	A A - G G(C)A - C A G C A U G G - G A(C)G A A A(C)G C C - G -					C A C - C G G G
51 Pf	G U U U G A A U A C U - A U A G C A U G G A A U A A C A A A U U G -					A A C - A A G
52 Pf	G(U)U U G A A U A C U - A C A G C A U G G A A U A A C A A A U U G -					A A U - A A G
53 P1	G U U U G A A U A C U - A C A G C A U G G A A U A A C A A A U U G -					A A C - A A G
56 Ng	U U U A(G)C A U G G G(A) - C U G C A G A G U A G C U G U A U U(U)A G C G -					A A G G - U U G
59 Ld	U G A A U A G - A A A G C A U G G G A U A A C A A A G G A G C A -					G C - C U(C)U A
62 G1	A C C C G C C - G C - G U G - G G A C - - - C G C G C A G - - -					- - - C G G
----- E21-6' ----- E21-7 ----- E21-8 -----						
63 Hc						
68 Ms						
72 Tc						
73 Ta						
75 Po						
95 Ng						
96 Pa						
100 Ap						
101 Ap						
102 Cv						
105 Ec						
153 Mg						
173 Oh						
188 Me						
189 Mb						
201 Sa						
203 S1						
207 Tt						
208 Dr						
222 Zm						
223 Os						
225 Gm						
228 Cm						
229 Ce						
230 Ce						
231 Cv						
234 Hs						
241 Rn						
243 Rc						
247 Sp						
248 P1						
253 Gm						
255 Cr						
256 Sc						
258 Sc						
260 An						
261 Sp						
262 Pa						
269 Lt						
270 Ls						

	1870	1880	1890	1900	1910	1920	
-- UUCUAUUUUU -- GUUGG				UUUUCGG	A -- ACU -- G(A) -- GGCC		Hs 1
-- UUCUAUUUUU -- GUUGG				UUUUCGG	A -- ACU -- G(A) -- GGCC		Oc 7
-- UUCUAUUUUU -- GUUGG				UUUUCGG	A -- AUA -- CGA -- GGUA		Ec 11
-- UUCUAUUUUU -- GUUGG				UUUUCGG	A -- AUU -- UGA -- GGUA		Tm 12
-- (U)UCUUCUUU -- CAUUGG				UUUUCGG	A -- (U)CA -- AGA -- GGUA		Dm 13
-- UCCUAU(U)A(C) -- GUUGG				UUUUCGG	A -- AUC -- GGA -- AGUA		Le 16
-- UCCUAU(U)G U -- GUUGG				UUUUCGG	A -- AUC -- GGA -- AGUA		At 19
-- UCCUAUUGC -- GUUGG				UUUUCGG	A -- ACC -- GGA -- AGUA		Zp 20
-- CCUAUC -- GUUGG				UUUUCGG	A -- AUC -- GGA -- AGUA		Vc 22
U -- CCUAUC(C)U -- GUUGG				UUUUCGG	A -- ACC -- GGA -- AGUA		Cv 23
-- CCUAUC(C)U -- GUUGG				UUUUCGG	A -- ACC -- GGA -- AGUA		Ne 24
-- (G)UCUAUUUU -- GUUGG				UUUUCGG	A -- (G)UC -- AA -- AGUA		Sc 27
-- UUCUAUUUUU -- GUUGG				UUUUCGG	A -- ACC -- AU -- UUA		Pc 30
-- (U)CGC(C)UUU -- U(U)UUU				UUUUCGG	A -- GAC -- UCGGUA		Pp 33
-- CUAUAUUUUU -- UGUUCU				UUUUCGG	A -- UUAUUUUUUUUUUUG		Pf 51
-- CUAUA(U)A UU UU(U)UUAUUUUUUUUUG				UUUUCGG	A -- UUAUUUUUUUUUUUG		Pf 52
-- CUAUAUUUUU -- GUUCU				UUUUCGG	A -- UUAUUUUUUUUUUUG		P1 53
-- (C)A C C U(C)G G U G U G C U G G A G				UUUUCGG	A -- (A)C A G C G C -- U U G U A		Ng 56
-- GGCUACCGUUU -- CGGCUU				UUUUCGG	A -- UUU -- A(A)A -- GGU		Ld 59
-- GCGCGGC G C G C G				UUUUCGG	A -- GC -- C C C -- G		G1 62

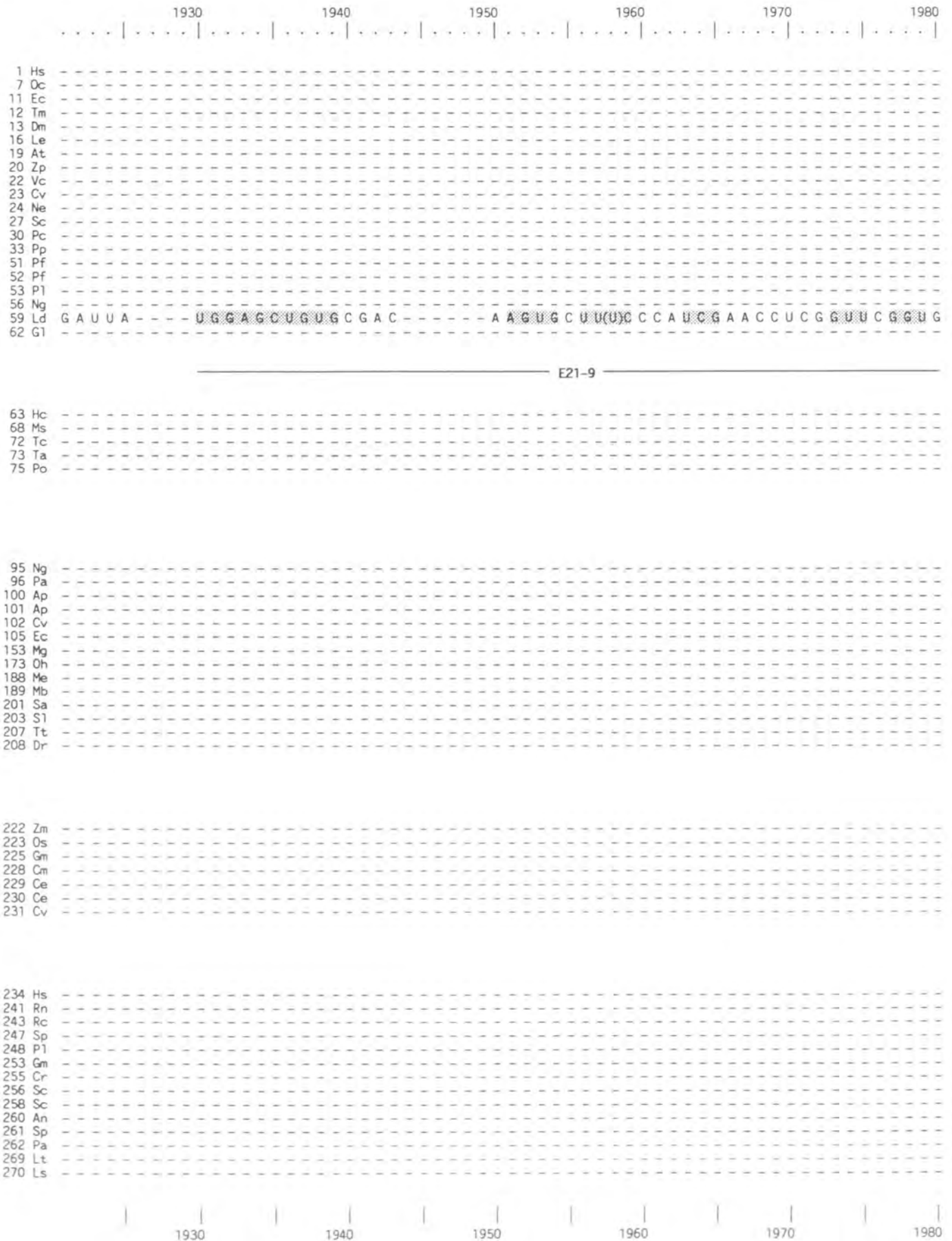
	E21-8	E21-7'	E21-8'	
--				Hc 63
--				Ms 68
--				Tc 72
--				Ta 73
--				Po 75

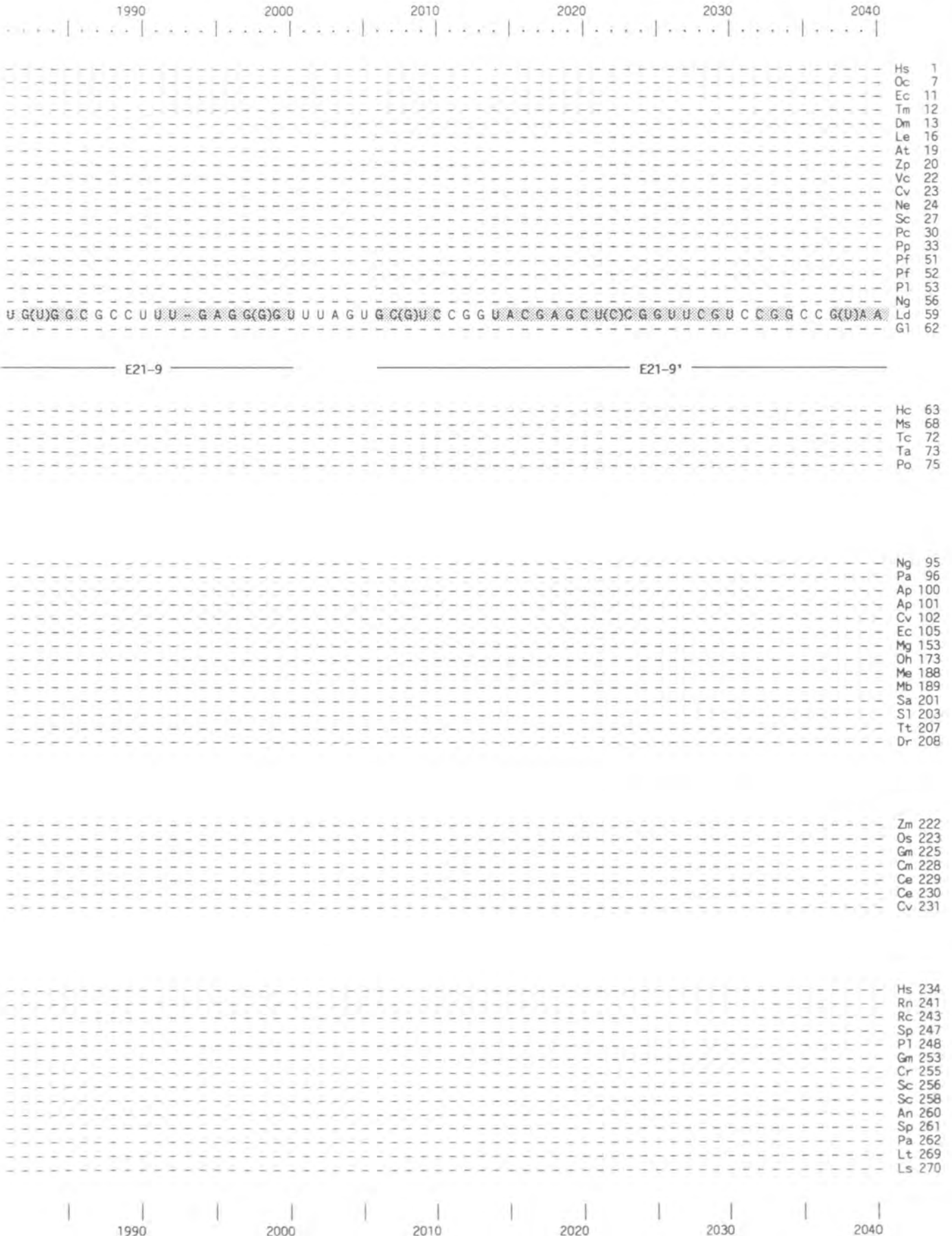
--				Ng 95
--				Pa 96
--				Ap 100
--				Ap 101
--				Cv 102
--				Ec 105
--				Mg 153
--				Oh 173
--				Me 188
--				Mb 189
--				Sa 201
--				S1 203
--				Tt 207
--				Dr 208

--				Zm 222
--				Os 223
--				Gm 225
--				Cm 228
--				Ce 229
--				Ce 230
--				Cv 231

--				Hs 234
--				Rn 241
--				Rc 243
--				Sp 247
--				P1 248
--				Gm 253
--				Cr 255
--				Sc 256
--				Sc 258
--				An 260
--				Sp 261
--				Pa 262
--				Lt 269
--				Ls 270







	2050	2060	2070	2080	2090	2100
1 Hs	---	---	AUGAUAUAAGAGGGGACGGC	---	---	CGGGGGG
7 Oc	---	---	AUGAUAUAAGAGGGGACGGC	---	---	CGGGGGG
11 Ec	---	---	AUGAUAUAAGAGGGGACGGA	---	---	CGGGGGG
12 Tm	---	---	AUGAUAUAU(A)GGA(A)CGGA	---	---	UGGGGGG
13 Dm	---	---	AUGAUAUAU(A)GGA(A)G(U)U	---	---	UGGGGGG
16 Le	---	---	AUGAUAUAU(A)GGA(A)G(U)U	---	---	CGGGGGG
19 At	---	---	AUGAUAUAU(A)GGA(A)G(U)U	---	---	CGGGGGG
20 Zp	---	---	AUGAUAUAU(A)GGA(A)G(U)U	---	---	CGGGGGG
22 Vc	---	---	AUGAUAUAU(A)GGA(A)G(U)U	---	---	CGGGGGG
23 Cv	---	---	AUGAUAUAU(A)GGA(A)G(U)U	---	---	CGGGGGG
24 Ne	---	---	AUGAUAUAU(A)GGA(A)G(U)U	---	---	CGGGGGG
27 Sc	---	---	AUGAUAUAU(A)GGA(A)G(U)U	---	---	UGGGGGG
30 Pc	---	---	AUGAUAUAU(A)GGA(A)G(U)U	---	---	UGGGGGG
33 Pp	---	---	GUAAA-AGCGAAAGGGG(U)U	---	---	CGAGGGG
51 Pf	---	---	ACGAAUUAU(A)GGA(U)G(U)U	---	---	UGGGGGG
52 Pf	---	---	ACGAAUUAU(A)GGA(U)G(U)U	---	---	UGGGGGG
53 P1	---	---	ACGAAUUAU(A)GGA(U)G(U)U	---	---	UGGGGGG
56 Ng	---	---	AUGGAGCUCAGGG	---	---	UGAGGGC
59 Ld	CGCCUUUUGAAACUCACGGCCUCUA	---	---	---	---	CGGGGGG
62 G1	---	---	AGGAUUAAGGAGGGUAGUU	---	---	CGGGGGG

E21-9*

22

63 Hc	---	---	UUGGGAACC	---	GGGAAGA	---	---	---	---	CGUGAGG
68 Ms	---	---	UUGGAGGCC	---	GGGAAGA	---	---	---	---	GGUGAGG
72 Tc	---	---	UUGGGAACC	---	(G)GGGAAGA	---	---	---	---	GGCCGGG
73 Ta	---	---	UUGGGAACC	---	GGGUGA	---	---	---	---	GGUUGA
75 Po	---	---	UAGGGGC	---	GGGAAGA	---	---	---	---	GGCCGA

660

670

95 Ng	---	---	UCGAGUUAU	---	GUC	---	AGA	---	---	GGGAGGG
96 Pa	---	---	UAGAGUUAU	---	GGU	---	AGA	---	---	GGUGGG
100 Ap	---	---	UAGAGUUAU	---	CGU	---	AGA	---	---	GGUGGGG
101 Ap	---	---	UAGAGUUAU	---	UGU	---	AGA	---	---	GGUGGGG
102 Cv	---	---	UAGAGUUAU	---	GAA	---	AGA	---	---	GGGGGGG
105 Ec	---	---	UUGGAGUUAU	---	CGU	---	AGA	---	---	GGGGGGG
153 Mg	---	---	UAGAGUUAU	---	GU	---	AGA	---	---	GAGUCC
173 Oh	---	---	UAGAGUUAU	---	GAU	---	AGA	---	---	GGCAAG
188 Me	---	---	UAGAGUUAU	---	CGG	---	AGA	---	---	GGAAAG
189 Mb	---	---	UAGAGUUAU	---	UGC	---	AGG	---	---	GGAGAGC
201 Sa	---	---	UAGAGUUAU	---	GGU	---	AGG	---	---	GGAGAU
203 S1	---	---	UAGAGUUAU	---	GGU	---	AGG	---	---	GGAGAU
207 Tt	---	---	UAGAGUUAU	---	GGG	---	AGA	---	---	GGGUGG
208 Dr	---	---	UUGAACCU	---	UGG	---	AGA	---	---	GGUAA

22

222 Zm	---	---	UUGGAGUUAU	---	GGU	---	AGG	---	---	GGCAGGA
223 Os	---	---	UUGGAGUUAU	---	GGU	---	AGG	---	---	GGCAGGA
225 Gm	---	---	UUGGAGUUAU	---	GGU	---	AGG	---	---	GGCAGGA
228 Cm	---	---	UUGGAGUUAU	---	GGU	---	AGA	---	---	GGUAGA
229 Ce	---	---	UUGGAGUUAU	---	GGU	---	AGA	---	---	GGUAGA
230 Ce	---	---	UUGGAGUUAU	---	GGU	---	AGG	---	---	GGCAGGA
231 Cv	---	---	UAGAGUUAU	---	GGU	---	AGG	---	---	GGCAGGA

234 Hs	---	---	---	---	ACCCCUCCCA	---	---	---	---	AUAAAG
241 Rn	---	---	---	---	CUCAUA	---	---	---	---	AUAGAA
243 Rc	---	---	---	---	UAACA	---	---	---	---	UU(A)GG
247 Sp	---	---	---	---	AAAGU(U)C	---	---	---	---	AUUGG
248 P1	---	---	---	---	AAAUUA	---	---	---	---	GAUUUGA
253 Gm	---	---	---	---	UAGAGUUAU	---	---	---	---	GGAGAGG
255 Cr	---	---	---	---	UGAACACUUUA	---	---	---	---	A(C)GUUG
256 Sc	---	---	---	---	UAGAGUUAU	---	---	---	---	UUAUU
258 Sc	---	---	---	---	UAGAGUUAU	---	---	---	---	U(A)UAAUU
260 An	---	---	---	---	UAGAGUUAU	---	---	---	---	AGAAGG
261 Sp	---	---	---	---	UAGAGUUAU	---	---	---	---	AUGUU
262 Pa	---	---	---	---	UAGAGUUAU	---	---	---	---	AGAAGA
269 Lt	---	---	---	---	AAAUUA	---	---	---	---	UU(U)UA
270 Ls	---	---	---	---	GUUUUAU(A)A	---	---	---	---	UUUA

2050

2060

2070

2080

2090

2100

2110	2120	2130	2140	2150	2160	
C A U U C G U(A) U U G C G C C G G - C U - A G A G G U G A A A U U C U U U - G G A C C G G C G C A A(G) A C G G A C C A G - A						Hs 1
C A U U C G U(A) U U G C G C C G G - C U - A G A G G U G A A A U U C U U U - G G A C C G G C G C A A(G) A C G G A C C A G - A						Oc 7
C A U U C G U(A) U U G C G A C C G - C U - A G A G G U G A A A U U C U U U - G G A C C G U C G C A A(G) A C G G A C C A G - A						Ec 11
C A U U C G U(A) U U G C G A C C G - U U - A G A G G U G A A A U U C U U U - G G A U C C G U C G C A A(G) A C G G A C C A G - A						Tm 12
C A U U A G U A U U A C G A C C G - C - G A G A G G U G A A A U U C U U U - G G A C C G U C G U A A G A C C U A A C U A A - A						Dm 13
C A U U C G U(A) U U C A U A G - U C - A G A G G U G A A A U U C U U U - G G A U U U A U G A A A(G) A C G G A C C A A C - U						Le 16
C A U U C G U(A) U U C A U A G - U C - A G A G G U G A A A U U C U U U - G G A U U U A U G A A A(G) A C G G A C C A A C - U						At 19
C A U U C G U(A) U U C A U(U) G - U C - A G A G G U G A A A U U C U U U - G G A U U U U A U G A A A(G) A C G G A C C A C - U						Zp 20
C A U U C G U(A) U U C C A U(U) G - U C - A G A G G U G A A A U U C U U U - G G A U U U U A C G G A A(G) A C G G A C C A C - U						Vp 22
C A U U C G U(A) U U C A U(U) G - U C - A G A G G U G A A A U U C U U U - G G A U U U U A U G A A A(G) A C G G A C C U A C - U						Cv 23
C A U U C G U(A) U U C A U(U) G - U C - A G A G G U G A A A U U C U U U - G G A U U U U A U G A A A(G) A C G G A C C U A C - U						Ne 24
U A U U C G U A U U U C A U U G - C C - A G A G G U G A A A U U C U U U - G G A U U U C U G A A A G A C C G A A C C U A C - U						Sc 27
C A U U A G U(A) U U C A U U G - U C - A G A G G U G A A A U U C U U U - A G A U U U A U U G A A A(G) A C C U A A C C U A C - U						Pc 30
U G A C C G A(A) U U C A U G G - U C - C G A G U G G U G A A A U U C U U U - U G A C C C U A U G C A A(G) U C G G A C C A A A - G						Pp 33
C A U U C G U(A) U U C A G A(U) G - U C - A G A G G U G A A A U U C U U U - A G A U U U C U G G A A(G) A C G G A C C A A A - U						Pf 51
C A U U C G U(A) U U C A G A(U) G - U C - A G A G G U G A A A U U C U U U - A G A U U U C U G G A A(G) A C C G G A C C U A C - U						Pf 52
C A U U C G U(A) U U C A G A(U) G - U C - A G A G G U G A A A U U C U U U - A G A U U U C U G G A A(G) A C C G G A C C U A C - U						P1 53
C C C G G U A C C A U G A G G - C U - A G A G G U G A A A U U C U U U G A - A G A C C C U C A U G U G A C C A A C C U A A - G						Ng 56
A G A C C G U A C U G G(G) G C G - U C - A G A G G U G A A A U U C U U U G A - A G A C C C G C(A) C C A G A C C G A A C C U A C - A						Ld 59
C A C C G G U A C C G C C C G G - G G - A C(G) G U G A A A C(A) G - G A U G A U C C C G C C G A G A C C G A C C G G C - C						G1 62

22	23	23'	24
G - - - G G U(A) C G U C U G G G - - - G U A G G A G U G A A A U C C U G U A - A U C C U G G A C G(G) A C C G C C G G U - G			Hc 63
A - - - G G U(A) C U C A G G G - - - G U A G G G G U G A A A U C C U U G U A - A U C C U U G A A G(G) A C C G C C A G U - G			Ms 68
G - - - G G U(A) C C C U G G G - - - G U A G G G G U G A A A U C C U A U A - A U C C C A G G G G(G) A C C G C C A G U - G			Tc 72
A - - - U G U(A) C U U C A G G - - - G U A G G G G U A A A A U C C U G U A - A U C C U G A A A G(G) A C C G A C C G G U - G			Ta 73
G - - - G G U(A) C U C C G G G - - - G U A G G G G C G A A A U C C G A U A - A U C C C G G G A G(G) A C C A C C A G U - G			Po 75

680	690	700	710	720	
U - - - G G A A U U C C A C G U - - - G U A G C A G U G A A A U G C - G U A G A G A U G U G G A G G A A U A C C G A U - G					Ng 95
U - - - U G A A U U C C U G G U - - - G U A G C C G G U G A A A U G C - G U A G A G A U A U G G A G G A A U A C C C A G U - G					Pa 96
U - - - A G A A U U C U A G G U - - - G U A G C C G G U G A A A U G C - G U A G A G A U A U C U G G A G G A A U A C C C G U - G					Ap 100
U - - - G G A A U U C C A G G U - - - G U A G C C G G U G A A A U G C - G U A G A G A U C U G G A G G A A U A C C C G U - G					Ap 101
U - - - A G A A U U C C A G G U - - - G U A G C C G G U G A A A U G C - G U A G A G A U C U G G A G G A A U A C C C A G U - G					Cv 102
U - - - A G A A U U C C A G G U - - - G U A G C C G G U G A A A U G C - G U A G A G A U C U G G A G G A A U A C C C G U - G					Ec 105
U - - - G G A A U U C C A U G U - - - G G A G C C G G U G A A A U G C - G U A G A G A U A U G G A G G A A C C C A G A - G					Mg 153
C - - - G G A A U U C C A U G U - - - G U A G U G G U G A A A U G C - G U A A A A U A U G G A G G A A C A C C C A G U - A					Oh 173
C - - - G G A A U U C C U A G U - - - G U A G C C G G U G A A A U G C - G U A G A U A U U A G G A G G A A C A C C C A G U - G					Me 188
U - - - G G A A U U C C U G G U - - - G U A G C C G G U G A A A U G C - G C A G A U A U C A G G A G G A A C A C C C G G U - G					Ms 189
C - - - G G A A U U C C U G G U - - - G U A G C C G G U G A A A U G C - G C A G A U A U C A G G A G G A A C A C C C G G U - G					Sa 201
C - - - G G A A U U C C U G G U - - - G U A G C C G G U G A A A U G C - G C A G A U A U C A G G A G G A A C A C C C G G U - G					S1 203
U - - - G G A A U U C C G G(G) A - - - G U A G C C G G U G A A A U G C - G C A G A U(A) C G G G A G G A A C C G C G A U - G					Tt 207
U - - - G G A A U U C U G G U - - - G U A G C C G G U G A A A U G C - G U A G A U A C C A G G A G G A A C C C A A U - G					Dr 208

22	23	23'	
G - - - G G A A U U C C G G U - - - G G A G C G G U G A A A U G C - A U U G A G A U C G G A A A G A A C A C C A A C - G			Zm 222
G - - - G G A A U U C C G G U - - - G G A G C G G U G A A A U G C - A U U G A G A U C G G A A A G A A C A C C A A C - G			Os 223
G - - - G G A A U U C C G G U - - - G G A G C G G U G A A A U G C - A U U G A G A U C G G A A A G A A C A C C A A C - G			Gm 225
G - - - G G A A U C C U A G C - - - G U A A C A G U G A A A U G U - G U A G A U U U A G G G A G A A C A C C A G C - G			Om 228
G - - - G G A A U C C U A G C - - - G U A A C A G U G A A A U G U - G U A G A U U U A G G G A G A A C A C C A G C - G			Ce 229
G - - - G G A A U U C C(G) G G U - - - G U A G C G G U G A A A U G C - G U A G A G A U C(G) G G A G G A A C A C C A A U - G			Ce 230
G - - - G G A A U U C C G G U - - - G G A G C G G U G A A A U G C - G U A G A G A U C G G G A G G A A C A C C A A A - G			Cv 231

2110	2120	2130	2140	2150	2160	
C U - - - A A A C U C A(C) C - - - U G A G U U G U G A A A A A C U C C - A G(U) U - - - G A C A C A A A A U A G A C - U						Hs 234
U U - - - A A A U U C C A A C - - - U U A U A U G U G A A A A U U C A U - U G U U - - - A G G A C C U A A A G C C C A A U - A						Rn 241
U - - - U A A A U A A A A C - - - U U A G U A G U U U U A U G C U - U G U U - - - A U U A A - G A A U U C C A C A - A						Rc 243
U U G U A G C - U U U G G G - - - (C) U A G C G G U U A A U U U U A(A) - U C - - - C C A C - - - A C G A - - - - - -						Sp 247
C U G U A G C - - - U C(C) C A G - - - C U A G U G G U A A A A A C U A A - U C U G - - - (A) G A A - G A A - - - - - -						P1 248
U - - - G G A A U U C U G U G U - - - G U A G G G G U G A A A U C C G C A - G A U U C U A C G G A U G G A A C G C C A A A - A						Gm 253
G - - - G U A A U U U C U G G A - - - G G A U C G G U G A A A U G C G A A - A U U U C C G G A U G G A A A G C C G A A - G						Cr 255
A A - - - A G A A U U A U A U A - - - G U A A A G A U G A A A U A A U A A - U A A U A A U U A U A G A C U A A U A U A U						Sc 256
A A - - - A G A A U U A U A U A - - - G U A A A G A U G A A A U A A U A A - U A A U A A U A U A A G A C U A A U A U A U						Sc 258
A - - - A G A A G C U C U G G A - - - G U A G U G A U A A A U A C G U A - U A A U A C C A U G A G A G A C U G A A C - G						An 260
G U - - - A G U A A C U C A A A - - - U A A G G G A U C A A A U C C G A C - A A U C U - - - U G A U G A C U G A C U G - C						Sp 261
U - - - C U U A C U C A G A G U - - - U G U A G A G U U A A U U C A U - - - A A U A C U - - - A G G G A C U G U A A A G -						Pa 262
U U U G - - - U U U U U A A A C - - - - - A C C - - - G U C C G G U - - - - - A U A U - G C A A A - - - U A A A A A - U G						Lt 269
U(U) U G - - - U U U U U A U A C - - - - - A C C - - - A U C A G G U - - - - - A U A U - G C A A A U A U A A A - - - U G						Ls 270

	2170	2180	2190	2200	2210	2220
1 Hs	G C		G A A A		G C A U U U	U G C C C - A A G A A U
7 Oc	G C C		G A A A		G C A U U U	U G C C C - A A G A A U
11 Ec	G C C		G A A A		G C A U U U	U G C C C - A A G A A U
12 Tm	G C C		G A A A		G C A U U U	U G C C C - A A A A A C
13 Dm	G C C		G A A A		G C A U U U	U G C C C - A A A G(A)U
16 Le	G C C		G A A A		G C A U U U	U G C C C - A A G G A U
19 At	G C C		G A A A		G C A U U U	U G C C C - A A G G A U
20 Zp	G C C		G A A A		G C A U U U	U G C C C - A A G G A U
22 Vc	G C C		G A A A		G C A U U U	U G C C C - A A G G A U
23 Cv	G C C		G A A A		G C A U U U	U G C C C - A A G G A U
24 Ne	G C C		G A A A		G C A U U U	U G C C C - A A G G A U
27 Sc	G C C		G A A A		G C A U U U	U A C C C - A A G G A U
30 Pc	G C C		G A A A		G C A U U U	U G C C C - A A G G A U
33 Pp	G C C		G U A A		G C A U U U	G U C A U C - A A G G G C
51 Pf	G C C		G A A A		G C A U U U	U G U C C - U A A A A U
52 Pf	G C C		G A A A		G C A U U U	U G U C C - U A A A U C
53 P1	G C C		G A A A		G C A U U U	U G U C C - U A A A A U
56 Ng	G C C		G A A A		G C U G U U	C U U G - G G C C A C
59 Ld	G C C		G A A G		G C U G U U	C U U C - A A G G A U
62 G1	G C		G C A G		G C G C C	U G C C - A A G A C C
24				24'	22'	
63 Hc	G C		G A A A		G C G	C C U C A G G A G
68 Ms	G C C		G A A G		G C G	U C U C A C C A G
72 Tc	G C C		G A A G		G C G	C C C G G C U G G
73 Ta	G C C		G A A A		G C G	U U C A A C U A G
75 Po	G C		G A A G		G C G	C U C G G C U G G
		730				740
95 Ng	G C		G A A G		G C A	G C C U C C U G G
96 Pa	G C C		G A A G		G C G	A C C A C C U G G
100 Ap	G C C		G A A A		G C G	G C C U C C U A A
101 Ap	G C C		G A A G		G C G	G C C C C C U G G
102 Cv	G C C		G A A G		G C G	G C C C C C U G G
105 Ec	G C C		G A A G		G C G	G C C C C C U G G
153 Mg	G C C		G A A G		G C G	A G S A C U U G G
173 Oh	G C C		G A A G		G C G	G C U U G C U G G
188 Me	G C C		G A A A		G C G	G C U U U C U G G
189 Mb	G C C		G A A G		G C G	G G U C U C U G G
201 Sa	G C C		G A A G		G C G	G A U C U C U G G
203 S1	G C C		G A A G		G C G	G A U C U C U G G
207 Tt	G C C		G A A G		G C A	G C C A C C U G G
208 Dr	G C		G A A G		G C A	A G U U A C U G G
24				24'	22'	
222 Zm	G C		G A A A		G C A	C U C U G C U G G
223 Os	G C C		G A A A		G C A	C U C U G C U G G
225 Gm	G C C		G A A A		G C A	C U C U G C U G G
228 Cm	G C C		G A A G		G C G	C U C U A C U G G
229 Ce	G C C		G A A G		G C G	C U C U A C U G G
230 Ce	G C C		G A A A		G C A	C U C U G C U G G
231 Cv	G C		G A A A		G C A	C U C U G C U G G
234 Hs	A C		G A A A		G U	
241 Rn	A C		G A A A		G U	
243 Rc	A C		G A A A		G U U	A C C(C)U A
247 Sp	U A		C C C U		U A C	C C C A A A U - U A
248 P1	A C		A U A A		G U C	- A A A A - U A
253 Gm	G C		G A A G		G C A	G C U C U C U G G
255 Cr	G C C		G A A A		G C A	C C A A C(A)U C A
256 Sc	G U		G A A A		A U A	- U U A A U U A A
258 Sc	G U		G A A A		A U A	- U U A A U U A(A)
260 An	G C		G A A G		G C A	- U C C U U C U A U
261 Sp	U U		A A G U		A A A	A A C U A C U U A C A A
262 Pa	G C		G A A G		G C A	- A U C U U U U A U
269 Lt	A C	A U U A A U U A U U A A(U)U A U A U	A U A U U A U A A(U)U A U U C A C A			- U A A G U C A A C(A)A A U
270 Ls	A C	A U U A A U U A U U A A(U)U A U A U	A U A U U A U A A(U)U A U U C A U A U C U U			- U A(U)A C A C A U A A

2230										2240										2250										2260										2270										2280									
G	U	U	U	C	A	U	U	A	U	C	A	A	--	G	A	--	--	A	C	G	A	--	A	A	G	U	C	G	A	G	U	U	C	G	A	A	--	G	A	C	G	A	U	C	A	G	A	U	A	C	C	Hs	1						
G	U	U	U	U	C	A	U	U	A	U	C	A	A	--	G	A	--	--	A	C	G	A	--	A	A	G	U	C	G	A	G	U	U	C	G	A	A	--	G	A	C	G	A	U	C	A	G	A	U	A	C	C	Ec	7					
G	U	U	U	C	A	U	U	A	U	C	A	A	--	G	A	--	--	A	C	G	A	--	A	A	G	U	C	G	A	G	U	U	C	G	A	A	--	G	A	C	G	A	U	C	A	G	A	U	A	C	C	Oc	11						
G	(C)	U	U	U	C	A	U	U	A	U	C	A	A	--	G	A	--	--	A	C	G	A	--	A	A	G	U	C	G	A	G	U	U	C	G	A	A	--	G	A	C	G	A	U	C	A	G	A	U	A	C	C	Tm	12					
G	U	U	U	U	C	A	U	U	A	U	C	A	A	--	G	A	--	--	A	C	G	A	--	A	A	G	U	C	G	A	G	U	U	C	G	A	A	--	G	A	C	G	A	U	C	A	G	A	U	A	C	C	Dm	13					
G	U	U	U	U	C	A	U	U	A	U	C	A	A	--	G	A	--	--	A	C	G	A	--	A	A	G	U	C	G	A	G	U	U	C	G	A	A	--	G	A	C	G	A	U	C	A	G	A	U	A	C	C	Le	16					
G	U	U	U	C	A	U	U	A	U	C	A	A	--	G	A	--	--	A	C	G	A	--	A	A	G	U	C	G	A	G	U	U	C	G	A	A	--	G	A	C	G	A	U	C	A	G	A	U	A	C	C	Zt	19						
G	U	U	U	C	A	U	U	A	U	C	A	A	--	G	A	--	--	A	C	G	A	--	A	A	G	U	C	G	A	G	U	U	C	G	A	A	--	G	A	C	G	A	U	C	A	G	A	U	A	C	C	Ap	20						
A	C	U	U	U	C	A	U	U	A	U	C	A	A	--	G	A	--	--	A	C	G	A	--	A	A	G	U	C	G	A	G	U	U	C	G	A	A	--	G	A	C	G	A	U	C	A	G	A	U	A	C	C	Vc	22					
G	U	U	U	C	A	U	U	A	U	C	A	A	--	G	A	--	--	A	C	G	A	--	A	A	G	U	C	G	A	G	U	U	C	G	A	A	--	G	A	C	G	A	U	C	A	G	A	U	A	C	C	Cv	23						
G	U	U	U	C	A	U	U	A	U	C	A	A	--	G	A	--	--	A	C	G	A	--	A	A	G	U	C	G	A	G	U	U	C	G	A	A	--	G	A	C	G	A	U	C	A	G	A	U	A	C	C	Ne	24						
G	U	U	U	C	A	U	U	A	U	C	A	A	--	G	A	--	--	A	C	G	A	--	A	A	G	U	C	G	A	G	U	U	C	G	A	A	--	G	A	C	G	A	U	C	A	G	A	U	A	C	C	Sc	27						
G	U	U	U	C	A	U	U	A	U	C	A	A	--	G	A	--	--	A	C	G	A	--	A	A	G	U	C	G	A	G	U	U	C	G	A	A	--	G	A	C	G	A	U	C	A	G	A	U	A	C	C	Pc	30						
A	U	U	C	C	G	U	U	A	U	C	(A)	A	--	G	A	--	--	G	C	G	A	--	A	A	G	U	C	G	A	G	U	U	C	G	A	A	--	G	A	C	G	A	U	C	A	G	A	U	A	C	C	Pp	33						
A	U	U	C	C	A	U	U	A	U	C	(A)	A	--	G	A	--	--	A	C	G	A	--	A	A	G	U	C	G	A	G	U	U	C	G	A	A	--	G	A	C	G	A	U	C	A	G	A	U	A	C	C	Pf	51						
A	U	U	C	C	A	U	U	A	U	C	(A)	A	--	G	A	--	--	A	C	G	A	--	A	A	G	U	C	G	A	G	U	U	C	G	A	A	--	G	A	C	G	A	U	C	A	G	A	U	A	C	C	Pf	52						
A	C	U	U	C	C	A	U	U	A	U	C	(A)	A	--	G	A	--	--	A	C	G	A	--	A	A	G	U	C	G	A	G	U	U	C	G	A	A	--	G	A	C	G	A	U	C	A	G	A	U	A	C	C	P1	53					
C	A	C	A	A	G	C	U	C	G	A	U	(C)	A	--	G	A	--	--	A	G	G	A	C	A	A	A	A	G	U	C	G	A	G	U	U	C	G	A	A	--	G	A	C	G	A	U	C	A	G	A	U	A	C	C	Ld	56			
A	C	C	U	C	C	U	C	C	U	C	A	A	--	G	A	--	--	A	C	C	A	A	--	A	A	G	U	C	G	A	G	U	U	C	G	A	A	--	G	A	C	G	A	U	C	A	G	A	U	A	C	C	Ng	59					
G	C	C	U	C	U	(G)	U	C	A	A	U	C	A	--	G	G	--	--	G	C	G	A	--	A	A	G	C	G	C	G	A	G	U	U	C	G	A	A	--	G	G	(C)	G	A	U	C	A	G	A	C	C	G1	62						

22'																				21'																				25																				
A	A	C	G	G	A	U	C	C	G	A	--	C	A	G	--	U	G	A	G	G	G	--	A	C	G	A	--	A	A	G	C	U	A	G	G	G	U	C	U	C	--	G	A	A	C	C	G	G	A	U	U	A	G	A	U	A	C	C	Hc	63
A	A	C	G	G	A	U	C	C	G	A	--	C	A	G	--	U	G	A	G	G	G	--	A	C	G	A	--	A	A	G	C	U	A	G	G	G	U	C	U	C	--	G	A	A	C	C	G	G	A	U	U	A	G	A	U	A	C	C	Ec	68
A	A	C	(G)	G	U	C	C	G	A	--	C	G	G	--	U	G	A	G	G	G	--	A	C	G	A	--	A	A	G	C	C	U	A	G	G	G	A	G	C	--	G	A	A	C	C	G	G	A	U	U	A	G	A	U	A	C	C	Tc	72	
A	A	C	G	G	A	U	C	C	G	A	--	C	G	G	--	U	G	A	G	G	G	--	A	C	G	A	--	A	A	G	C	C	U	A	G	G	G	A	G	C	--	G	A	A	C	C	G	G	A	U	U	A	G	A	U	A	C	C	Ta	73
A	A	C	G	G	A	U	C	C	G	A	--	C	G	G	--	U	G	A	G	G	G	--	A	C	G	A	--	A	A	G	C	C	U	A	G	G	G	A	G	C	--	G	A	A	C	C	G	G	A	U	U	A	G	A	U	A	C	C	Po	75

750										760										770										780										790																				
G	A	U	A	A	C	A	C	U	G	A	--	C	G	A	--	U	C	A	U	G	U	--	C	C	G	A	--	A	A	G	C	G	U	G	G	G	U	A	G	C	--	A	A	A	C	A	G	G	A	U	U	A	G	A	U	A	C	C	Ng	95
A	C	G	A	A	A	A	C	U	G	A	--	C	A	C	--	U	G	A	G	G	C	--	G	C	G	A	--	A	A	G	C	G	U	G	G	G	A	G	C	--	A	A	A	C	A	G	G	A	U	U	A	G	A	U	A	C	C	Pa	96	
A	C	A	A	A	A	A	A	C	U	G	A	--	C	C	G	--	U	G	A	G	G	C	--	G	C	G	A	--	A	A	G	C	G	U	G	G	G	A	G	C	--	A	A	A	C	A	G	G	A	U	U	A	G	A	U	A	C	C	Ap	100
U	U	C	A	A	A	C	A	C	U	G	A	--	C	C	G	--	U	C	A	G	G	U	--	G	C	X	A	--	A	A	G	C	G	U	G	G	G	A	G	C	--	A	A	A	C	A	G	G	A	U	U	A	G	A	U	A	C	C	Ap	101
U	U	C	A	A	A	C	A	C	U	G	A	--	C	C	G	--	U	C	A	G	G	U	--	G	C	X	A	--	A	A	G	C	G	U	G	G	G	A	G	C	--	A	A	A	C	A	G	G	A	U	U	A	G	A	U	A	C	C	Cv	102
A	C	C	A	A	A	C	A	C	U	G	A	--	C	C	G	--	U	C	A	G	G	U	--	G	C	X	A	--	A	A	G	C	G	U	G	G	G	A	G	C	--	A	A	A	C	A	G	G	A	U	U	A	G	A	U	A	C	C	Ec	105
G	C	C	A	A	A	C	A	C	U	G	A	--	C	C	G	--	U	C	A	G	G	U	--	G	C	X	A	--	A	A	G	C	G	U	G	G	G	A	G	C	--	A	A	A	C	A	G	G	A	U	U	A	G	A	U	A	C	C	Mc	153
G	U	C	U	U	A	C	U	G	A	--	C	G	C	--	U	G	A	G	G	C	--	A	C	G	A	--	A	A	G	C	G	U	G	G	G	A	G	C	--	A	A	A	C	A	G	G	A	U	U	A	G	A	U	A	C	C	Oh	173		
A	C	G	A	C	A	A	C	U	G	A	--	C	G	C	--	U	G	A	G	G	C	--	G	C	G	A	--	A	A	G	C	G	U	G	G	G	A	G	C	--	A	A	A	C	A	G	G	A	U	U	A	G	A	U	A	C	C	Me	188	
G	C	A	G	A	A	C	U	G	A	--	C	G	C	--	U	G	A	G	G	A	--	G	C	G	A	--	A	A	G	C	G	U	G	G	G	A	G	C	--	G	A	A	C	A	G	G	A	U	U	A	G	A	U	A	C	C	Mb	189		
G	C	C	G	A	A	C	U	G	A	--	C	G	C	--	U	G	A	G	G	A	--	G	C	G	A	--	A	A	G	C	G	U	G	G	G	A	G	C	--	G	A	A	C	A	G	G	A	U	U	A	G	A	U	A	C	C	Sa	201		
U	C	C	A	C	A	C	U	G	A	--	C	G	C	--	U	G	A	G	G	A	--	G	C	G	A	--	A	A	G	C	G	U	G	G	G	A	G	C	--	G	A	A	C	A	G	G	A	U	U	A	G	A	U	A	C	C	S1	203		
G	C	C	A	C	C	U	G	A	--	C	G	C	--	U	G	A	G	G	C	--	G	C	G	A	--	A	A	G	C	G	U	G	G	G	A	G	C	--	G	A	A	C	C	G	G	A	U	U	A	G	A	U	A	C	C	Tt	207			
A	C	A	G	A	A	C	U	G	A	--	C	G	C	--	U	G	A	G	G	C	--	G	C	G	A	--	A	A	G	C	G	U	G	G	G	A	G	C	--	G	A	A	C	C	G	G	A	U	U	A	G	A	U	A	C	C	Dr	208		

22'																			
-----	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

	2290	2300	2310	2320	2330	2340
1 Hs	G U C G U A G U U C C	-- G A C C A U A A A C G	A U G C C C G A C C U	G G C G A U G C G G C G	G G C G U U A U	---
7 Oc	G U C G U A G U U C C	-- G A C C C A U A A A C	G A U G C C C A A C U	G G C G A U G C G G C G	G G C G U U A U	---
11 Ec	G C C C U A G U U C U	-- A A C C C A U A A A C	G A U G C C C A A C U	G G C C U A G C G G C G	G G C G U U A U	---
12 Tm	G C C C U A G U U C U	-- A A C C C A U A A A C	G A U G C C C A A C U	G G C C U A G C G G C G	G G C G U U A U	---
13 Dm	G C C C U A G U U C U	-- A A C C C A U A A A C	G A U G C C C A A C U	G G C C U A G C G G C G	G G C G U U A U	---
16 Le	G U C C U A G U U C U	-- A A C C C A U A A A C	G A U G C C C A A C U	G G C C U A G C G G C G	G G C G U U A U	---
19 At	G U C C U A G U U C U	-- A A C C C A U A A A C	G A U G C C C A A C U	G G C C U A G C G G C G	G G C G U U A U	---
20 Zp	G U C C U A G U U C U	-- A A C C C A U A A A C	G A U G C C C A A C U	G G C C U A G C G G C G	G G C G U U A U	---
22 Vc	G U C C U A G U U C U	-- A A C C C A U A A A C	G A U G C C C A A C U	G G C C U A G C G G C G	G G C G U U A U	---
23 Cv	G U C C U A G U U C U	-- A A C C C A U A A A C	G A U G C C C A A C U	G G C C U A G C G G C G	G G C G U U A U	---
24 Ne	G U C C U A G U U C U	-- A A C C C A U A A A C	G A U G C C C A A C U	G G C C U A G C G G C G	G G C G U U A U	---
27 Sc	A U C G U A G U C U U	-- A A C C C A U A A A C	U A U G C C C G A C U	C A G G G A U U G G C G	G G C G U U A U	---
30 Pc	G U C G U A G U U C U	-- A A C C C A U A A A C	U A U G C C C G A C U	C A G G G A U U G G C G	G G C G U U A U	---
33 Pp	G U C G U A G U U C U	-- A A C C C A U A A A C	U A U G C C C G A C U	C A G G G A U U G G C G	G G C G U U A U	---
51 Pf	G U C G U A A U C U U	-- A A C C C A U A A A C	U A U G C C C G A C U	C A G G G A U U G G C G	G G C G U U A U	---
52 Pf	G U C G U A A U C U U	-- A A C C C A U A A A C	U A U G C C C G A C U	C A G G G A U U G G C G	G G C G U U A U	---
53 Pl	G U C G U A A U C U U	-- A A C C C A U A A A C	U A U G C C C G A C U	C A G G G A U U G G C G	G G C G U U A U	---
56 Ng	G U C G U A G U C C A	-- A A C C U A U A A A C	G A U G C C C A A C C	G A U U G G G A A C C	U U G G G A A C C	U U
59 Ld	A U U G U A G U C C A	-- A A C C U A U A A A C	G A U G C C C A A C C	G A U U G G G A A C C	U U G G G A A C C	U U
62 Gl	(A) C C G U A U U C C	-- G G C C G U A A A C G	G U G C C G C C C G C	G G C G G C C G C G C	---	---

	25*	26	27		
63 Hc	C G G G U A G U C C U	-- A G C U G U A A A C G	A U G U C C G C U A G G	G U G G C G C A G G C U	---
68 Ms	C G G G U A G U C C U	-- A G C C U G U A A A C	G A U U C C U C G C U A	G G U G U G G G C (C) A C G G U	---
72 Tc	C G G G U A G U C C U	-- A G C C U G U A A A C	G A U U C C G G G C U A	G G U G U G C G G C G A G C U	---
73 Ta	C G G G U A G U C C U	-- A G C C U G U A A A C	G A U U C C C A C C U G	G G U G U G C U U C U C G C U	---
75 Po	C G G G U A G U C C C	-- G G C U G U A A A C G	A U G C C G C G C U A	G G U G U G C G G C G C U	---

	800	810	820	830	840
95 Ng	C U G G U A G U C C A	-- C G C C G U A A A C G	A U G U C C A A U U A	G C U G U U G G C A A	---
96 Pa	C U G G U A G U C C A	-- C G C C C G U A A A C	G A U G U C G A C U U	A G C C G U U G G G A U C	---
100 Ap	C U G G U A G U C C A	-- C G C C C G U A A A C	G A U G U C G A C U U	A G C C G U U G G G A U C	---
101 Ap	C U G G U A G U C C A	-- C G C C C G U A A A C	G A U G U C G A C U U	A G C C G U U G G G A U C	---
102 Cv	C U G G U A G U C C A	-- C G C C C G U A A A C	G A U G U C G A C U U	A G C C G U U G G G A U C	---
105 Ec	C U G G U A G U C C A	-- C G C C C G U A A A C	G A U G U C G A C U U	A G C C G U U G G G A U C	---
153 Mg	C U A G U A G U C C A	-- C A C C C G U A A A C	G A U G U G G A U G U A	A A G G U G U G G A G	---
173 Oh	C U G G U A G U C C A	-- C G C C C G U A A A C	G A U G U G A G U A C U	A A A C G U U G G G	---
188 Me	C C G G U A G U C C A	-- G G C C C G U A A A C	G A U G G G A U A C U	A G G U G U A G G A U G	U U C
189 Mb	C U G G U A G U C C A	-- C G C C C G U A A A C	G A U G U G G G A C U	A G G U G U G G G G C A A	C
201 Sa	C U G G U A G U C C A	-- C G C C C G U A A A C	G A U G U G G G C A C U	A G G U G U G G G G C A A	C
203 Sl	C U G G U A G U C C A	-- C G C C C G U A A A C	G A U G U G G G C A C U	A G G U G U G G G G C A A	C
207 Tt	C G G G U A G U C C A	-- C G C C C U A A A C G	A U G C C G C G C U A	G G U C U C U G G G	---
208 Dr	C G G G U A G U C C A	-- C A C C C U A A A C G	A U G U A C G U U G	G C U A A G C G C A G	---

	25*	26	27		
222 Zm	C C A G U A G U C C U	-- A G C C G U A A A C G	A U G G A U A C U A G G	U G C U G U G C G	---
223 Os	C C A G U A G U C C U	-- A G C C C G U A A A C	G A U G G A U A C U A G G	U G C U G U G C G	---
225 Gm	C C A G U A G U C C U	-- A G C C C G U A A A C	G A U G G A U A C U A G G	U G C (C) U G U G C G	---
228 Cm	C U A G U A G U C C U	-- A G C C U G U A A A C	G A U U G G A A C U A A G	U G C U G C	---
229 Ce	C U A G U A G U C C U	-- A G C C U G U A A A C	G A U G G A A A C U A A G	U G C U G C	---
230 Ce	C C A G U A G U C C U	-- A G C C C G U A A A C	G A U G G A U A C U A A G	U G C U G (U) G C G	---
231 Cv	C C U G U A G U C C U	-- G G C C C G U A A A C	G A U G G A U A C U A A G	A U G U G G U	---

234 Hs	C C A C U A U G C U U	-- A G C C C U A A A C C	U C A (A) C A G U U A	---	---
241 Rn	C C A C U A U G C U U	-- A G C C C U A A A A C	C U U A A U A A U U A	---	---
243 Rc	C C A C U A U G C C U	-- A G C C C G U A A A C	C A U U A A	---	---
247 Sp	C U G U A U A C U U	-- A G A C C G U G U A A C A	C C C U A A	---	---
248 Pl	C U A C U A U A C U U	-- A G A C - G U A A A C A	C C C U A A	---	---
253 Gm	C U G G U A G U C C A	-- U G C C C G U A A A C	G A U G A G U G U U C	G C C C U U G G U C U	---
255 Cr	C G C G U A G U C C A	-- A A C C G U C A A C A	C A U A U A G U U U U	C	---
256 Sc	C G U G U A G U U C U	-- U A G C A G U A A A C	A U G A A U A C	- A A U U A U A A U A U	---
258 Sc	C G U G U A G U U C U	-- A G C A G U A A A C	A U G A A U A C	- A A U U A U U A A U A U	---
260 An	C U A G U A G U C C A	-- A G C C A G U A A A C	A U G A U A U G U	- C A U A G A C U A G A A A A A	A G U C
261 Sp	U C U G U A G U C U A	-- A G C C A G U A A A C	A U G A U A U G C	- C A U A C C A A U C	---
262 Pa	C A A G U A G U C U (U)	-- A G C A G U C A A U	A U G A U G C	- C A U A G G U U A G A U	- A U A G U U (A) A A U A C (A) A
269 Lt	U U - A U A A A U (U) U	-- U -	---	---	---
270 Ls	U U - G U A U A U U U	-- U -	---	---	---

	2290	2300	2310	2320	2330	2340
--	------	------	------	------	------	------

2350	2360	2370	2380	2390	2400	
						U C C C - Hs 1
						U C C C - Oc 7
						C C U C A A A Ec 11
						C C U C C G A Tm 12
						C U U U U A Dm 13
						G C U U U U A Le 16
						G C U U A U A At 19
						G C U C U A A Zp 20
						C U U U U G A Vc 22
						U C U U C G A Cv 23
						U U U U U G - Ne 24
						U U U U U U Sc 27
						U U U U U C U Pc 30
						C A U C U C G Pf 33
						U U U C G Pf 51
						U U A G Pf 52
						G C A A P1 53
						A U C C C Ng 56
						C G C C C G C U Ld 59
						C G C G C G U C Gt 62
27						
						A C G - Hc 63
						G C G - Ms 68
						U C G - Tc 72
						G U U G - Ta 73
						U G G - Po 75
. . . .						
						C U U G A Ng 95
						C U U G A Pa 96
						C A A G A Ap 100
						C U U G A Ap 101
						A U U U A Cv 102
						C U U G A Ec 105
						C G A A U Mg 153
						U A A A - Oh 173
						A U C G A Me 188
						C U U C C Mb 189
						A U U C C Sa 201
						G A U A U S1 203
						U C U - Tt 207
						G A U G - Dr 208
. . . .						
						A - U C G A Zm 222
						A C U C G A Os 223
						A - U C G A Gm 225
						C G A A U - Cm 228
						C G A A U - Ce 229
						A C U C A A Ce 230
						A G G U U A A Cv 231
. . . .						
						Hs 234
						Rn 241
						Rc 243
						Sp 247
						P1 248
						A C G U Gm 253
						Cr 255
						A U A U U - Sc 256
						A U A U U - Sc 258
						G U U U A - An 260
						U U U U U - Sp 261
						A C A A G G C G Pa 262
						Lt 269
						Ls 270

2350 2360 2370 2380 2390 2400

	2410	2420	2430	2440	2450	2460
1 Hs	-	-	-	-	-	-
7 Oc	-	-	-	-	-	-
11 Ec	U	-	-	-	-	-
12 Tm	U	-	-	-	-	-
13 Dm	-	-	-	-	-	-
16 Le	G	-	-	-	-	-
19 At	G	-	-	-	-	-
20 Zp	G	-	-	-	-	-
22 Vc	U	-	-	-	-	-
23 Cv	U	-	-	-	-	-
24 Ne	-	-	-	-	-	-
27 Sc	-	-	-	-	-	-
30 Pc	U	-	-	-	-	-
33 Pp	-	-	-	-	-	-
51 Pf	-	-	-	-	-	-
52 Pf	-	-	-	-	-	-
53 P1	-	-	-	-	-	-
56 Mg	-	-	-	-	-	-
59 Ld	G U A U C U U U U C U A U U	-	-	-	-	-
62 G1	-	-	-	-	-	-
			C G G C C U	- U U A C C G G C	- C A C C C(A) C G G G A	
					G G A A U G U U G A U U(U)- U A	A G G U G A -
						A U U A G A A U A U
----- 27' -----						
63 Hc	-	-	-	-	-	-
68 Ms	-	-	-	-	-	-
72 Tc	-	-	-	-	-	-
73 Ta	-	-	-	-	-	-
75 Po	-	-	-	-	-	-
95 Ng	-	-	-	-	-	-
96 Pa	-	-	-	-	-	-
100 Ap	-	-	-	-	-	-
101 Ap	-	-	-	-	-	-
102 Cv	A	-	-	-	-	-
105 Ec	-	-	-	-	-	-
153 Mg	A	-	-	-	-	-
173 Oh	-	-	-	-	-	-
188 Me	C	-	-	-	-	-
189 Mb	U U	-	-	-	-	-
201 Sa	A C	-	-	-	-	-
203 S1	A C A	-	-	-	-	-
207 Tt	-	-	-	-	-	-
208 Dr	-	-	-	-	-	-
222 Zn	C C	-	-	-	-	-
223 Os	C C	-	-	-	-	-
225 Gm	C C	-	-	-	-	-
228 Cm	-	-	-	-	-	-
229 Ce	-	-	-	-	-	-
230 Ce	A A	-	-	-	-	-
231 Cv	A U C	-	-	-	-	-
234 Hs	-	-	-	-	-	-
241 Rn	-	-	-	-	-	-
243 Rc	-	-	-	-	-	-
247 Sp	-	-	-	-	-	-
248 P1	-	-	-	-	-	-
253 Gm	-	-	-	-	-	-
255 Cr	-	-	-	-	-	-
256 Sc	-	-	-	-	-	-
258 Sc	-	-	-	-	-	-
260 An	-	-	-	-	-	-
261 Sp	-	-	-	-	-	-
262 Pa	U A A G C	-	-	-	-	U
269 Lt	-	-	-	-	-	-
270 Ls	-	-	-	-	-	-

2470	2480	2490	2500	2510	2520	
---AUGACCCGCGCGGC-AAGCUUC-CGG-GAAAGCCAA--AAGUUC---UU-UUGGGUU						Hs 1
---AUGACCCGCGCGGC-AAGCUUC-CGG-GAAAGCCAA--AAGUUC---UU-UUGGGUU						Oc 7
---GACUCGCGCGCGGC-AAGCUUC-CGG-GAAAGCCAA--AAGUUC---UU-UUGGGUU						Ec 11
---GACUCGCGCGCGGC-AAGCUUC-CGG-GAAAGCCAA--AAGUUC---UU-UUGGGUU						Tm 12
---UGGCU(C)UCGCGCGGC-(C)GCUUC-CGG-GAAAGCCAA--AAGUUC---UU-UUGGGUU						Dm 13
---GACUCGCGCGCGGC-AAGCUUC-CGG-GAAAGCCAA--AAGUUC---UU-UUGGGUU						Le 16
---GACUCGCGCGCGGC-AAGCUUC-CGG-GAAAGCCAA--AAGUUC---UU-UUGGGUU						At 19
---GACUCGCGCGCGGC-AAGCUUC-CGG-GAAAGCCAA--AAGUUC---UU-UUGGGUU						Zp 20
---GACUCGCGCGCGGC-AAGCUUC-CGG-GAAAGCCAA--AAGUUC---UU-UUGGGUU						Vc 22
---GACUCGCGCGCGGC-AAGCUUC-CGG-GAAAGCCAA--AAGUUC---UU-UUGGGUU						Cv 23
---AUGACCCGCGCGGC-AAGCUUC-CGG-GAAAGCCAA--AAGUUC---UU-UUGGGUU						Ne 24
---UGGCU(C)UCGCGCGGC-(A)CUGUUC-CGG-GAAAGCCAA--AAGUUC---UU-UUGGGUU						Sc 27
---GACUCGCGCGCGGC-AAGCUUC-CGG-GAAAGCCAA--AAGUUC---UU-UUGGGUU						Pc 30
---GACUCGCGCGCGGC-AAGCUUC-CGG-GAAAGCCAA--AAGUUC---UU-UUGGGUU						Pp 33
CUUUUAGAUAUGCUUC(C)UUCAGU-AAC(C)UUA-UGA-GAAAUUCA--AAGUUC---UU-UUGGGUU						Pf 51
UAUUAGAUAUGCUUC(C)UUCAGU-AAC(C)UUA-UGA-GAAAUUCA--AAGUUC---UU-UUGGGUU						Sf 52
CUUUUAGAUAUGCUUC(C)UUCAGU-AAC(C)UUA-UGA-GAAAUUCA--AAGUUC---UU-UUGGGUU						Pf 53
---AGCCAUUCUUCAGU-AAC(C)UUA-UGA-GAAAUUCA--AAGUUC---UU-UUGGGUU						Ng 56
AUAUCCUUCAGCA(C)GCUUC(C)UUCAGU-AAC(C)UUA-UGA-GAAAUUCA--AAGUUC---UU-UUGGGUU						Ld 59
---GACUCGCGCGCGGC-AAGCUUC-CGG-GAAAGCCAA--AAGUUC---UU-UUGGGUU						Gf 62

27' 28 28' 26' 20'

---AGCCUGCGGUGGUGCCGUA--GG-GAAGCCCGAGAAAGCGGGAC---C GC						Hc 63
---ACCGU(U)GUGGUGGUGCCGUA--GG-GAAGCCCGGUGAAAGCGGGAC---C GC						Ms 68
---AGCUUCGCGCGGUGCCGUA--GG-GAAGCCCGUUAAGCGGGAC---C GC						Tc 72
---AGGGGGGGGCAAGUGCCGUA--GG-GAAGCCCGUUAAGCGGGAC---C GC						Ta 73
---AGCCCGCCCAAGUGCCGUA--GG-GAAGCCCGUUAAGCGGGAC---C GC						Po 75

850 860 870 880

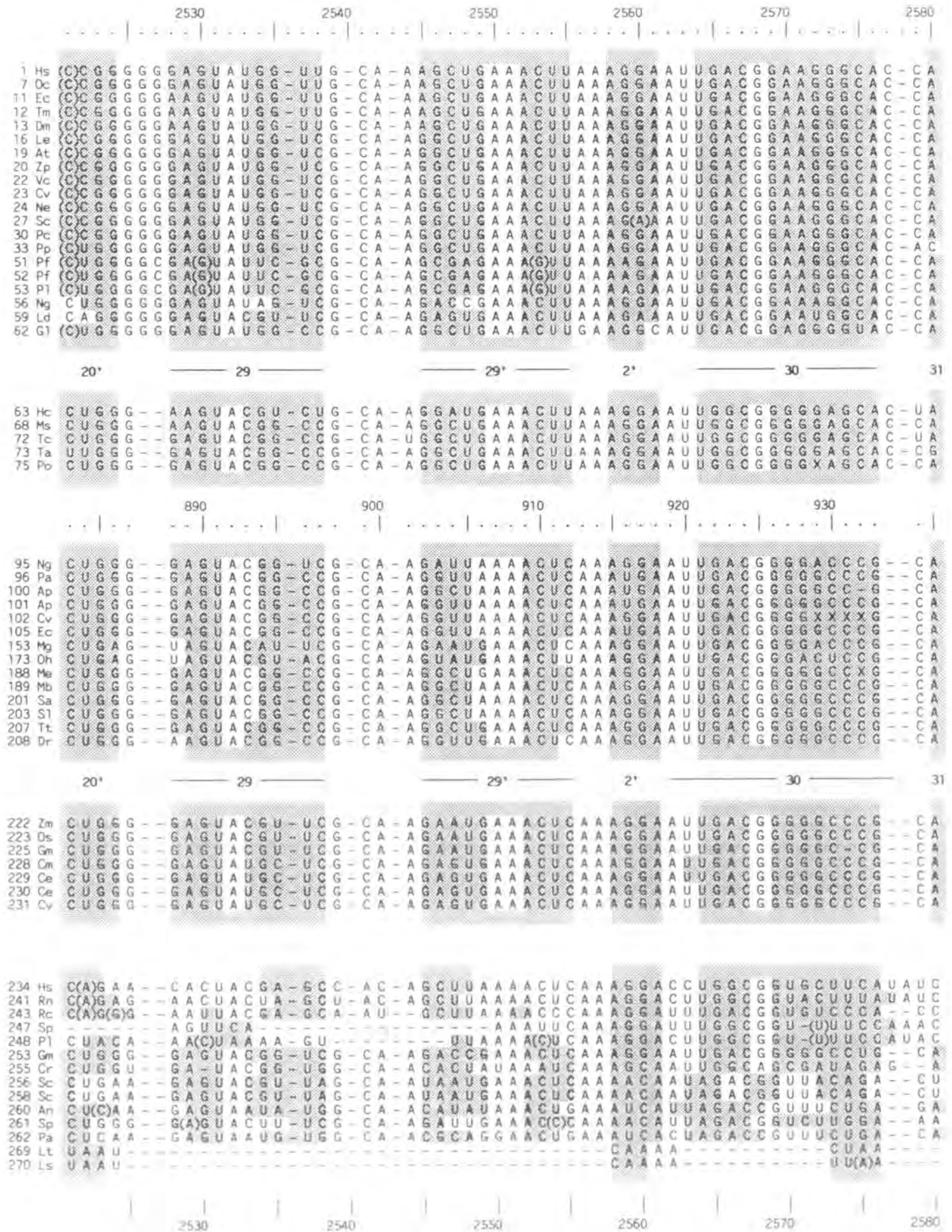
---UUGCUGGUAAGCGUA--GC-UAAACGGCGUGAAAGUUGAC---CGC						Ng 95
---GAUCUUAAGUGGCGGUA--GC-UAAACGGCGUUAAGUUGAC---CGC						Pa 96
---GGAGUGAAGUUCGUA--GC-UAAACGGCGUUAAGUUGAC---CGC						Ap 100
---GGGGUGAAGUGGCGUA--GC-UAAACGGCGUUAAGUUGAC---CGC						Av 101
---GGCGUGGCGUUCGUA--GC-UAAACGGCGUUAAGUUGAC---CGC						Cv 102
---CUUCGUGGCGUUA--GC-UAAACGGCGUUAAGUUGAC---CGC						Ec 105
---ACCAAGUGUUA--GU-UAAACGCAAUUAAGUAUCC---CGC						Mg 153
---CCUUCUGGCGGUA--GU-UAAACGCAAUUAAGUAUCC---CGC						Oh 173
---GGGAUUCGUGCCGUA--GC-UAAACGGCAAUUAAGUAUCC---CGC						Me 188
---GUUGUCCGUGCCGUA--GC-UAAACGGCAAUUAAGUAUCC---CGC						Sa 201
---GUUGUCCGUGCCGUA--GC-UAAACGGCAAUUAAGUAUCC---CGC						St 203
---CCUGGCGGCGGUA--GC-UAAACGGCAAUUAAGUAUCC---CGC						Tt 207
---CUGUGCUUGGCGGUA--GC-UAAACGGCAAUUAAGUAUCC---CGC						Dr 208

27' 28 28' 26' 20'

---CGUGCAGUGCUUGUA--GC-UAAACGGCGUUAAGUAUCC---CGC						Zm 222
---CGUGCAGUGCUUGUA--GC-UAAACGGCGUUAAGUAUCC---CGC						Os 223
---CGUGC(A)UGCUUGUA--GC-UAAACGGCGUUAAGUAUCC---CGC						Gm 225
---GCAUGUCUGUA--GC-UAAACGGCGUUAAGUAUCC---CGC						Cm 228
---GCAUGUCUGUA--GC-UAAACGGCGUUAAGUAUCC---CGC						Ce 229
---CGU(C)CAGUAUCUGUA--GC-UAAACGGCGUUAAGUAUCC---CGC						Ce 230
---ACUCAUAUCUGUA--GC-UAAACGGCGUUAAGUAUCC---CGC						Cv 231

---A--AUC--AAC--AAACUG(C)U---CGC						Hs 234
---A--ACC--UAC--AAAUUAUU---UGC						Rn 241
---A--UUUA--CAC--AA--AAUG---CGC						Rc 243
---GGAUCAGGGGCCA--GC-UAAACGGCGUUAAGUAUCC---CGC						Sp 247
---GAUAUAUAUAUAUAUA--AU-GAAAUUGA--AAAGUAUUC---CAC						Pf 248
---GAUAUAUAUAUAUAUA--AU-GAAAUUGA--AAAGUAUUC---CAC						Gm 253
---GAUAUAUAUAUAUAUA--AU-GAAAUUGA--AAAGUAUUC---CAC						Cr 255
---GAUAUAUAUAUAUAUA--AU-GAAAUUGA--AAAGUAUUC---CAC						Sc 256
---GAUAUAUAUAUAUAUA--AU-GAAAUUGA--AAAGUAUUC---CAC						Sc 258
GA--CUAUAUAUAUAUAUAUA--AU-GAAAUUGA--AAAGUAUUC---CAC						An 260
---GAUAUAUAUAUAUAUA--AU-GAAAUUGA--AAAGUAUUC---CAC						Sp 261
(C)GUAUAUAUAUAUAUAUA--AU-GAAAUUGA--AAAGUAUUC---CAC						Pa 262
---GAUAUAUAUAUAUAUA--AU-GAAAUUGA--AAAGUAUUC---CAC						Lt 269
---GAUAUAUAUAUAUAUA--AU-GAAAUUGA--AAAGUAUUC---CAC						Ls 270

2470 2480 2490 2500 2510 2520



	2590	2600	2610	2620	2630	2640			
C C A	- G G A G U	G G A G C(C)U	G C G G C U	U A A U U U G	A C U C A A C A C	C G G G A A A C C U	C A C C G G(C)C	C G G A	Hs 1
C C A	- G G A G U	G G A G C(C)U	G C G G C U	U A A U U U G	A C U C A A C A C	C G G G A A A C C U	C A C C G G(C)C	C G G A	Ec 7
C C A	- G G A G U	G G A G C(C)U	G C G G C U	U A A U U U G	A C U C A A C A C	C G G G A A A C C U	C A C C G G(C)C	C G G A	Tm 11
C C A	- G G A G U	G G A G C(C)U	G C G G C U	U A A U U U G	A C U C A A C A C	C G G G A A A C C U	C A C C G G(C)C	C G G A	Dm 12
C(C)A	- G G A G U	G G A G C(C)U	G C G G C U	U A A U U U G	A C U C A A C A C	C G G G A A A C C U	C A C C G G(C)C	- G A A	Le 13
C(C)A	- G G A G U	G G A G C(C)U	G C G G C U	U A A U U U G	A C U C A A C A C	C G G G A A A C C U	C A C C G G(C)C	- G A A	At 16
C(C)A	- G G A G U	G G A G C(C)U	G C G G C U	U A A U U U G	A C U C A A C A C	C G G G A A A C C U	C A C C G G(C)C	- G A A	Zp 19
C(C)A	- G G A G U	G G A G C(C)U	G C G G C U	U A A U U U G	A C U C A A C A C	C G G G A A A C C U	C A C C G G(C)C	- G A A	Vc 20
C(C)A	- G G A G U	G G A G C(C)U	G C G G C U	U A A U U U G	A C U C A A C A C	C G G G A A A C C U	C A C C G G(C)C	- G A A	Cv 22
C(C)A	- G G A G U	G G A G C(C)U	G C G G C U	U A A U U U G	A C U C A A C A C	C G G G A A A C C U	C A C C G G(C)C	- G A A	Ne 23
C(C)A	- G G A G U	G G A G C(C)U	G C G G C U	U A A U U U G	A C U C A A C A C	C G G G A A A C C U	C A C C G G(C)C	- G A A	Sc 24
C(C)A	- G G A G U	G G A G C(C)U	G C G G C U	U A A U U U G	A C U C A A C A C	C G G G A A A C C U	C A C C G G(C)C	- G A A	Pc 27
A A A	- G G A G U	G G A G C(C)U	G C G G C U	U A A U U U G	A C U C A A C A C	C G G G A A A C C U	C A C C G G(C)C	- G A A	Pp 30
C(C)A	- G G A G U	G G A G C(C)U	G C G G C U	U A A U U U G	A C U C A A C A C	C G G G A A A C C U	C A C C G G(C)C	- G A A	Pf 33
C(C)A	- G G A G U	G G A G C(C)U	G C G G C U	U A A U U U G	A C U C A A C A C	C G G G A A A C C U	C A C C G G(C)C	- G A A	Pf 51
C(C)A	- G G A G U	G G A G C(C)U	G C G G C U	U A A U U U G	A C U C A A C A C	C G G G A A A C C U	C A C C G G(C)C	- G A A	Pf 52
C(C)A	- G G A G U	G G A G C(C)U	G C G G C U	U A A U U U G	A C U C A A C A C	C G G G A A A C C U	C A C C G G(C)C	- G A A	Pf 53
C(C)A	- G G A G U	G G A G C(C)U	G C G G C U	U A A U U U G	A C U C A A C A C	C G G G A A A C C U	C A C C G G(C)C	- G A A	Pf 55
C(C)A	- G G A G U	G G A G C(C)U	G C G G C U	U A A U U U G	A C U C A A C A C	C G G G A A A C C U	C A C C G G(C)C	- G A A	Pf 56
C(C)A	- G G A G U	G G A G C(C)U	G C G G C U	U A A U U U G	A C U C A A C A C	C G G G A A A C C U	C A C C G G(C)C	- G A A	Pf 59
C(C)A	- G G A G U	G G A G C(C)U	G C G G C U	U A A U U U G	A C U C A A C A C	C G G G A A A C C U	C A C C G G(C)C	- G A A	Pf 62

31	32	33	33'	34					
C(C)A	- C C G G A	G G A G C C U	G C G G U U	U A A U U G G	A C U C A A C G C	C C G G A A C A U C U	C A C C G C C C	- G A	Hc 63
C(A)A	- C C G G U	G G A G C C U	G C G G U U	U A A U U G G	A C U C A A C G C	C C G G A A C A U C U	C A C C G C C C	- G A	Ms 68
C(A)A	- G G G G U	G G A G C C U	G C G G U U	U A A U U G G	A C U C A A C G C	C C G G A A C A U C U	C A C C G G G G	- G A	Tc 72
C(A)A	- C C G G A	G G A G C C U	G C G G U U	U A A U U G G	A C U C A A C G C	C C G G A A C A U C U	C A C C G G G G	- G A	Ta 73
C(A)A	- G G G G U	G G A G C C U	G C G G U U	U A A U U G G	A C U C A A C G C	C C G G A A C A U C U	C A C C G G G G	- G A	Po 75

	940	950	960	970	980	990			
C(C)A	- G C G G U	G G A G C A U	G U G G U U	U A A U U C G	A A G C A A C G C	C G A A G A A C C U	C C U G G U U	U U G A	Ng 95
C(A)A	- G C G G U	G G A G C A U	G U G G U U	U A A U U C G	A A G C A A C G C	C G A A G A A C C U	C C U G G U U	U U G A	Pa 96
C(A)A	- G C G G U	G G A G C A U	G U G G U U	U A A U U C G	A A G C A A C G C	C G A A G A A C C U	C C U G G U U	U U G A	Ap 100
C(A)A	- G C G G U	G G A G C A U	G U G G U U	U A A U U C G	A A G C A A C G C	C G A A G A A C C U	C C U G G U U	U U G A	Ap 101
C(A)A	- G C G G U	G G A G C A U	G U G G U U	U A A U U C G	A A G C A A C G C	C G A A G A A C C U	C C U G G U U	U U G A	Cv 102
C(A)A	- G C G G U	G G A G C A U	G U G G U U	U A A U U C G	A A G C A A C G C	C G A A G A A C C U	C C U G G U U	U U G A	Ec 105
C(A)A	- G C G G U	G G A G C A U	G U G G U U	U A A U U C G	A A G C A A C G C	C G A A G A A C C U	C C U G G U U	U U G A	Mg 153
C(A)A	- G C G G U	G G A G C A U	G U G G U U	U A A U U C G	A A G C A A C G C	C G A A G A A C C U	C C U G G U U	U U G A	Oh 173
C(A)A	- G C G G U	G G A G C A U	G U G G U U	U A A U U C G	A A G C A A C G C	C G A A G A A C C U	C C U G G U U	U U G A	Me 188
C(A)A	- G C G G U	G G A G C A U	G U G G U U	U A A U U C G	A A G C A A C G C	C G A A G A A C C U	C C U G G U U	U U G A	Mb 189
C(A)A	- G C G G U	G G A G C A U	G U G G U U	U A A U U C G	A A G C A A C G C	C G A A G A A C C U	C C U G G U U	U U G A	Sa 201
C(A)A	- G C G G U	G G A G C A U	G U G G U U	U A A U U C G	A A G C A A C G C	C G A A G A A C C U	C C U G G U U	U U G A	St 203
C(A)A	- G C G G U	G G A G C A U	G U G G U U	U A A U U C G	A A G C A A C G C	C G A A G A A C C U	C C U G G U U	U U G A	Tt 207
C(A)A	- G C G G U	G G A G C A U	G U G G U U	U A A U U C G	A A G C A A C G C	C G A A G A A C C U	C C U G G U U	U U G A	Dr 208

31	32	33	33'	34					
C(A)A	- G C G G U	G G A G C A U	G U G G U U	U A A U U C G	A A G C A A C G C	C G A A G A A C C U	C C A G G G C	U U G A	Zn 222
C(A)A	- G C G G U	G G A G C A U	G U G G U U	U A A U U C G	A A G C A A C G C	C G A A G A A C C U	C C A G G G C	U U G A	Os 223
C(A)A	- G C G G U	G G A G C A U	G U G G U U	U A A U U C G	A A G C A A C G C	C G A A G A A C C U	C C A G G G C	U U G A	Gm 225
C(A)A	- U C A G U	G G A G C A U	G U G G U U	U A A U U C G	A A G C A A C G C	C G A A G A A C C U	C C A G G G U	U U G A	Cm 228
C(A)A	- U C A G U	G G A G C A U	G U G G U U	U A A U U C G	A A G C A A C G C	C G A A G A A C C U	C C A G G G U	U U G A	Ce 229
C(A)A	- G C G G U	G G A G C A U	G U G G U U	U A A U U C G	A A G C A A C G C	C G A A G A A C C U	C C A G G G C	U U G A	Ce 230
C(A)A	- G C G G U	G G A G C A U	G U G G U U	U A A U U C G	A A G C A A C G C	C G A A G A A C C U	C C A G G G C	U U G A	Cv 231

C C U	- C U A G A	G G A G C C U	G U U C U G U	A A - U C G	A U A A A C C C C	C G A U C A A C C U	C A C C U C C	U U G C	Hs 234
C A U	- C U A G A	G G A G C C U	G U U C U A U	A A - (U)C	G A U A A A C C C	C G (U)U C U A C C C	G A C C (C)C U U C	U C G C	Rn 241
C(C)A	- C U A G A	G G A G C C U	G U U C U A U	A A - U C	G A U A A A C C C	C G A U C C C G A	C C A U U U C	U C G C	Rc 243
- C U C	- C U C C U	G G A G C C U	G U U C C A U	U G A A - U C	G A U A A A C C C	C G A U C C C G A	C C A A U U U	U U G U	Sp 247
- C U C	- C U C C U	G G A G C C U	G U U C C A U	U G A A - U C	G A U A A A C C C	C G A U C C C G A	C C A A U U U	U U G U	P1 248
C(A)A	- G C G G U	G G A G C A U	G U G G U U	U A A U U C G	A A G C A A C G C	C G A A G A A C C U	C C A G C C C	U U G A	Gm 253
U(G)C	- G C G G U	G G A G C A U	G U G G U U	U A A U U C G	A A G C A A C G C	C G A A G A A C C U	C C A G C C C	U U G A	Cr 255
U(A)A	- G C A G U	G G A G C A U	G U G G U U	U A A U U C G	A A G C A A C G C	C G A A G A A C C U	C C A G C C C	U U G A	Sc 256
U(A)A	- G C A G U	G G A G C A U	G U G G U U	U A A U U C G	A A G C A A C G C	C G A A G A A C C U	C C A G C C C	U U G A	Sc 258
C(C)A	- G U A G U	G A G C A U	G U G G U U	U A A U U C G	A A G C A A C G C	C G A A G A A C C U	C C A G C C C	U U G A	An 260
U(C)C	- G C A G U	G A G C A U	G U G G U U	U A A U U C G	A A G C A A C G C	C G A A G A A C C U	C C A G C C C	U U G A	Sp 261
C(C)A	- G C A G U	G A G C A U	G U G G U U	U A A U U C G	A A G C A A C G C	C G A A G A A C C U	C C A G C C C	U U G A	Pa 262
									Lt 269
									La 270

	2590	2600	2610	2620	2630	2640
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	2650	2660	2670	2680	2690	2700
1 Hs	CA	GGACA	AAUGAAC	AGGAUUG	AGGCU	CUUUC
7 Oc	CA	GGACA	AAUGAAC	AGGAUUG	AGGCU	CUUUC
11 Ec	CA	GGACA	AAUGAAC	AGGAUUG	AGGCU	CUUUC
12 Tm	CA	GGACA	AAUGAAC	AGGAUUG	AGGCU	CUUUC
13 Dm	CA	GGACA	AAUGAAC	AGGAUUG	AGGCU	CUUUC
16 Le	CA	GGACA	AAUGAAC	AGGAUUG	AGGCU	CUUUC
19 At	CA	GGACA	AAUGAAC	AGGAUUG	AGGCU	CUUUC
20 Zp	CA	GGACA	AAUGAAC	AGGAUUG	AGGCU	CUUUC
22 Vc	CA	GGACA	AAUGAAC	AGGAUUG	AGGCU	CUUUC
23 Cv	CA	GGACA	AAUGAAC	AGGAUUG	AGGCU	CUUUC
24 Ne	CA	GGACA	AAUGAAC	AGGAUUG	AGGCU	CUUUC
27 Sc	CA	GGACA	AAUGAAC	AGGAUUG	AGGCU	CUUUC
30 Pc	CA	GGACA	AAUGAAC	AGGAUUG	AGGCU	CUUUC
33 Pp	UA	GGACA	AAUGAAC	AGGAUUG	AGGCU	CUUUC
51 Pf	CA	GGACA	AAUGAAC	AGGAUUG	AGGCU	CUUUC
52 Pf	CA	GGACA	AAUGAAC	AGGAUUG	AGGCU	CUUUC
53 P1	CA	GGACA	AAUGAAC	AGGAUUG	AGGCU	CUUUC
56 Ng	CA	GGACA	AAUGAAC	AGGAUUG	AGGCU	CUUUC
59 Ld	CA	GGACA	AAUGAAC	AGGAUUG	AGGCU	CUUUC
62 G1	CG	GGACA	AAUGAAC	AGGAUUG	AGGCU	CUUUC

35

35'

63 Hc	CAG	UAGUA	AUGACGG	U(C)AGG	UUGAU	GAC	CU(U)AC	CG
68 Ms	CAG	UAGUA	AUGACGG	U(C)AGG	UUGAU	GAC	CU(U)AC	CG
72 Tc	CGG	CAGGA	UAGAGGG	U(C)AGG	UUGAU	GAC	CU(U)AC	CG
73 Ta	CCU	UAGGA	UAGAGGG	U(C)AGG	UUGAU	GAC	CU(U)AC	CG
75 Po	CAG	UAGUA	AUGACGG	U(C)AGG	UUGAU	GAC	CU(U)AC	CG

1000

1010

1020

95 Ng	CA	UGG	UGCGG	AAUCUC	CCGGA	GAGGG	AGGA	GUG	CCU
96 Pa	CA	UGG	UGCGG	AAUCUC	CCGGA	GAGGG	AGGA	GUG	CCU
100 Ap	CA	UUC	CACAG	AAUCUC	CCGGA	GAGGG	AGGA	GUG	CCU
101 Ap	CA	UUC	CACAG	AAUCUC	CCGGA	GAGGG	AGGA	GUG	CCU
102 Cv	CA	UUC	CACAG	AAUCUC	CCGGA	GAGGG	AGGA	GUG	CCU
105 Ec	CA	UUC	CACAG	AAUCUC	CCGGA	GAGGG	AGGA	GUG	CCU
153 Mg	CA	UUC	CACAG	AAUCUC	CCGGA	GAGGG	AGGA	GUG	CCU
173 Oh	CA	UUC	CACAG	AAUCUC	CCGGA	GAGGG	AGGA	GUG	CCU
188 Me	CA	UUC	CACAG	AAUCUC	CCGGA	GAGGG	AGGA	GUG	CCU
189 Mb	CA	UUC	CACAG	AAUCUC	CCGGA	GAGGG	AGGA	GUG	CCU
201 Sa	CA	UUC	CACAG	AAUCUC	CCGGA	GAGGG	AGGA	GUG	CCU
203 S1	CA	UUC	CACAG	AAUCUC	CCGGA	GAGGG	AGGA	GUG	CCU
207 Tt	CA	UUC	CACAG	AAUCUC	CCGGA	GAGGG	AGGA	GUG	CCU
208 Dr	CA	UUC	CACAG	AAUCUC	CCGGA	GAGGG	AGGA	GUG	CCU

35

P35-1

P35-1'

P35-2

222 Zm	CA	UGG	UGCGG	AAUCUC	CCGGA	GAGGG	AGGA	GUG	CCU
223 Os	CA	UGG	UGCGG	AAUCUC	CCGGA	GAGGG	AGGA	GUG	CCU
225 Gm	CA	UGG	UGCGG	AAUCUC	CCGGA	GAGGG	AGGA	GUG	CCU
228 Cm	CA	UGG	UGCGG	AAUCUC	CCGGA	GAGGG	AGGA	GUG	CCU
229 Ce	CA	UGG	UGCGG	AAUCUC	CCGGA	GAGGG	AGGA	GUG	CCU
230 Ce	CA	UGG	UGCGG	AAUCUC	CCGGA	GAGGG	AGGA	GUG	CCU
231 Cv	CA	UGG	UGCGG	AAUCUC	CCGGA	GAGGG	AGGA	GUG	CCU

234 Hs	U								
241 Rn	UA		AUU						
243 Rc	UU		AUC						
247 Sp	AA		AUU						
248 P1	AA		AUU						
253 Gm	CA	UA	UAC	ACAAA	C(A)G	UCC	UUA	A(C)GG	
255 Cr	UA								
256 Sc	UA								
258 Sc	UA								
260 An	UA								
261 Sp	AA	CAA	UAU	AG					
262 Pa	UA								
269 Lt									
270 Ls									

2650

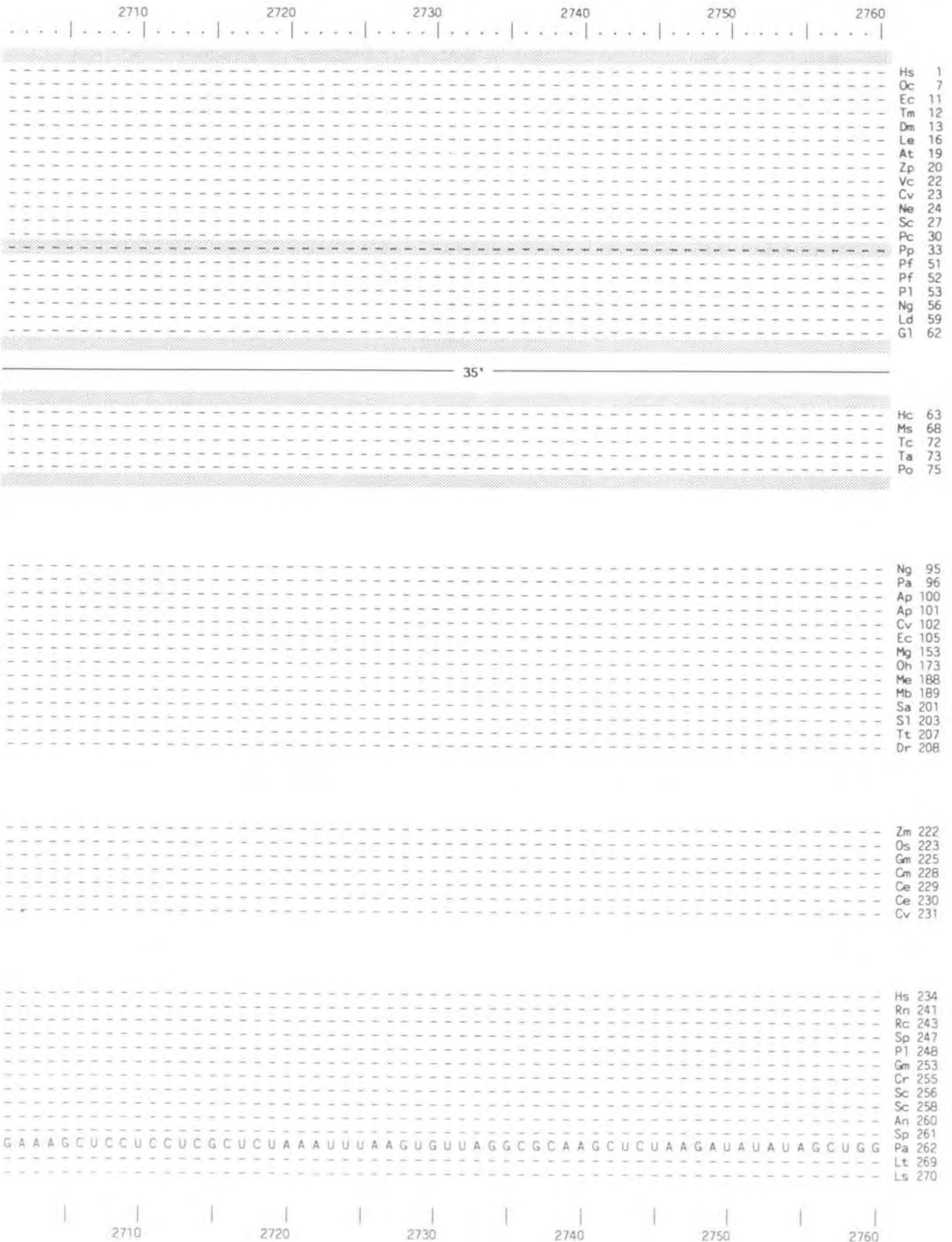
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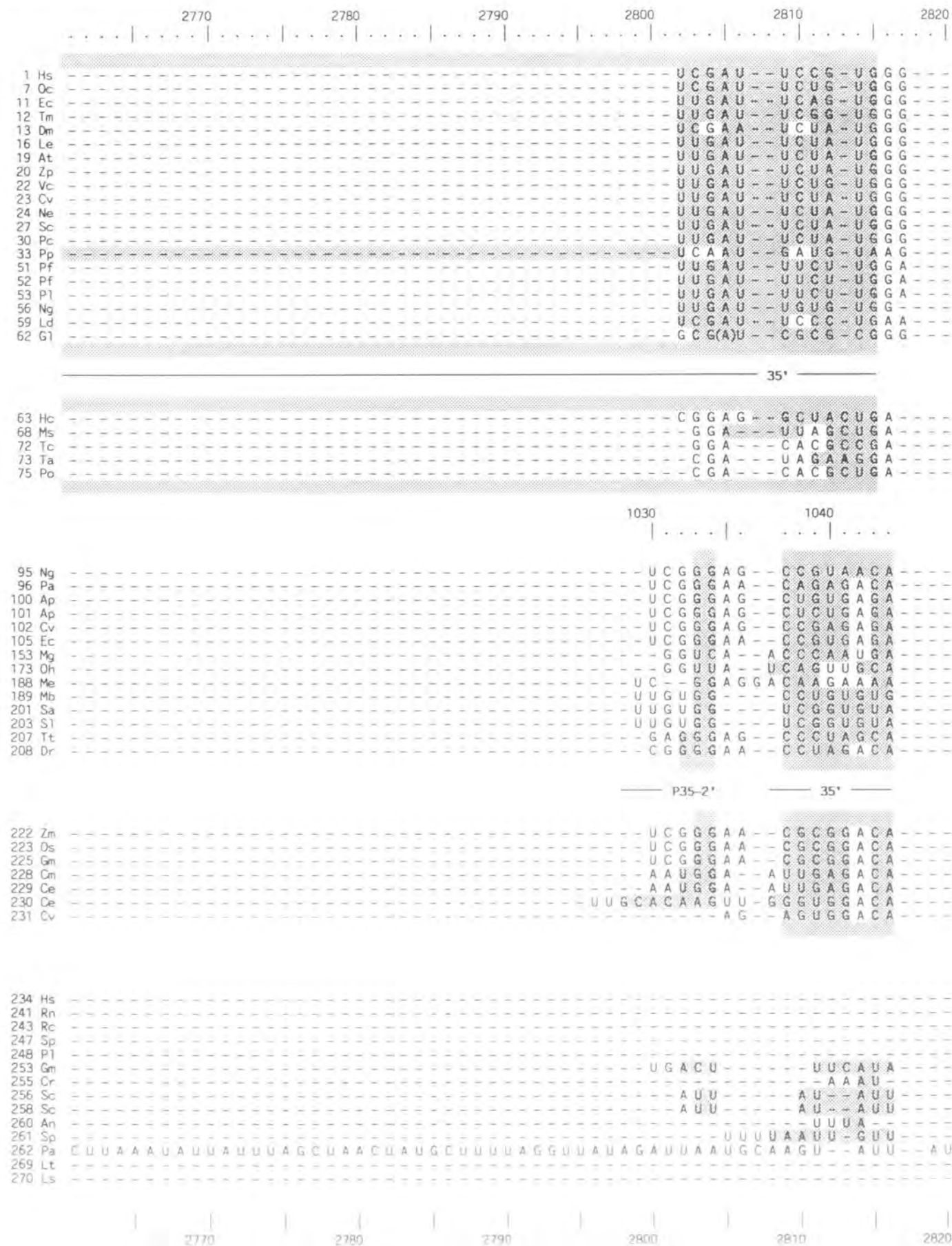
2670

2680

2690

2700





	2830	2840	2850	2860	2870	2880	
-- U G G(U)G G U G C A U G G C C G U U --(C)U U A G U U G G - U G - G A G - C G A U U U G U C U G G U U A A U U C C G A							He 1
-- U G G(U)G G U G C A U G G C C G U U --(C)U U A G U U G G - U G - G A G - C G A U U U G U C U G G U U A A U U C C G A							Os 7
-- U G G(U)G G U G C A U G G C C G U U --(C)U U A G U U G G - U G - G A G - C G A U U U G U C U G G U U A A U U C C G A							Ec 11
-- U G G(U)G G U G C A U G G C C G U U --(C)U U A G U U G G - U G - G A G - C G A U U U G U C U G G U U A A U U C C G A							Tm 12
-- U G G(U)G G U G C A U G G C C G U U --(C)U U A G U U G G - U G - G A G - C G A U U U G U C U G G U U A A U U C C G A							Dm 13
-- U G G(U)G G U G C A U G G C C G U U --(C)U U A G U U G G - U G - G A G - C G A U U U G U C U G G U U A A U U C C G U							Le 16
-- U G G(U)G G U G C A U G G C C G U U --(C)U U A G U U G G - U G - G A G - C G A U U U G U C U G G U U A A U U C C G U							At 19
-- U G G(U)G G U G C A U G G C C G U U --(C)U U A G U U G G - U G - G A G - C G A U U U G U C U G G U U A A U U C C G U							Zp 20
-- U G G(U)G G U G C A U G G C C G U U --(C)U U A G U U G G - U G - G G U - U G C C U U G U C A G G U U G A U U C C G G							Vc 22
-- U G G(U)G G U G C A U G G C C G U U --(C)U U A G U U G G - U G - G G U - U G C C U U G U C A G G U U G A U U C C G G							Cv 23
-- U G G(U)G G U G C A U G G C C G U U --(C)U U A G U U G G - U G - G G U - U G C C U U G U C A G G U U G A U U C C G G							Ne 24
-- U G G(U)G G U G C A U G G C C G U U --(C)U U A G U U G G - U G - G A G - U G A U U U G U C A G G U U A A U U C C G U							Sc 27
-- U G G(U)G G U G C A U G G C C G U U --(C)U U A G U U G G - U G - A A G - U G A U U U G U C U G G U U A A U U C C G A							Pc 30
-- U G G(U)G G U G C A U G G C C G U U --(C)U U A G U U G G - U G - G A U - U G A U U U G U C U G G U U A A U U C C G A							Pp 33
-- U G G(U)G G U G C A U G G C C G U U --(U)U U A G U U C G - U G A A U A - U G A U U U G U C U G G U U A A U U C C G A							Pf 51
-- U G G(U)G G U G C A U G G C C G U U --(U)U U A G U U C G - U G A A U A - U G A U U U G U C U G G U U A A U U C C G A							Pf 52
-- U G G(U)G G U G C A U G G C C G U U --(U)U U A G U U C G - U G A A U A - U G A U U U G U C U G G U U A A U U C C G A							Pt 53
-- U G G(U)G G U G C A U G G C C G U U --(U)U U A G U U C G - U G - G A G - U G A U U U G U C U G G U U A A U U C C G A							Ng 56
-- U G G(U)G G U G C A U G G C C G U U --(U)U U A G U U C G - U G - G A G - U G A U U U G U C U G G U U A A U U C C G U							Ld 59
-- C G G(U)G G U G C A U G G C C G U U --C C C A G C C G - U G - G C G - C G A G C C G U C U G C U C A U U G C G A							Gt 62

36 37 38 38* 39 39*

- G A G G A G G U G C A U G G C C G C C - G U C A G C U C G - U(A)- C C G - U G A G G(C)G U C C U G U U A A G U C A G G							He 63
- G A G G A G G U G C A U G G C C G C C - G U C A G C U C G - U(A)- C C G - U G A G G(C)A U C C U G U U A A G U C A G G							Ms 68
- G A G G A G G U G C A U G G C C G C C - G U C A G C U C G - U(A)- C C G - U G A G G(C)G U C C A C U U A A G U G U G G							Tc 72
- G A G G A G G U G C A U G G C C G U C - G U C A G C U C G - U(A)- C C G - U G A G G(C)G U C C A C U U A A G U G U G A							Ta 73
- G A G G A G G U G C A U G G C C G U C - G C C A G C U C G - U G - C C G - U G A G G U G U C C G G U U A A G U C C G G							Po 75

1050 1060 1070 1080 1090

- C A G G(U)G C U G C A(U)G G C U G(U)C - G U C A G C U C G - U G - U C G - U G A G A U G U U G G G U U A A G U C C C G							Ng 95
- C A G G(U)G C U G C A(U)G G C U G(U)C - G U C A G C U C G - U G - U C G - U G A G A U G U U G G G U U A A G U C C C G							Pa 96
- C A G G(U)G C U G C A U G G C C U G(U)C - G U C A G C U C G - U G - U C G - U G A A A U G U U G G G U U A A G U C C C G							Ap 100
- C A G G(U)G C U G C A U G G C C U G(U)C - G U C A G C U C G - U G - U C G - U G A A A U G U U G G G U U A A G U C C C G							Av 101
- C A G G(U)G C U G C A U G G C C U G(U)C - G U C A G C U C G - U G - U C G - U G A A A U G U U G G G U U A A G U C C C G							Cv 102
- C A G G(U)G C U G C A U G G C C U G(U)C - G U C A G C U C G - U G - U C G - U G A A A U G U U G G G U U A A G U C C C G							Ec 105
- C A G G(U)G C U G C A U G G C C U G(U)C - G U C A G C U C G - U G - U C G - U G A A A U G U U G G G U U A A G U C C C G							Mg 153
- C A G G(U)G C U G C A U G G C C U G(U)C - G U C A G C U C G - U G - U C G - U G A G A U G U U G G G U U A A G U C C C G							Oh 173
- C A G G(U)G C U G C A(U)G G C U G(U)C - G U C A G C U C G - U G - U C G - U G A G A U G U U G G G U U A A G U C C C G							Me 188
- C A G G(U)G C U G C A U G G C C U G(U)C - G U C A G C U C G - U G - U C G - U G A G A U G U U G G G U U A A G U C C C G							Ma 189
- C A G G(U)G C U G C A U G G C C U G(U)C - G U C A G C U C G - U G - U C G - U G A G A U G U U G G G U U A A G U C C C G							Sb 201
- C A G G(U)G C U G C A U G G C C U G(U)C - G U C A G C U C G - U G - U C G - U G A G A U G U U G G G U U A A G U C C C G							SI 203
- C A G G(U)G C U G C A U G G C C U G(U)C - G U C A G C U C G - U G - C C G - U G A G G U G U U G G G U U A A G U C C C G							Tl 207
- C A G G(U)G C U G C A U G G C C U G(U)C - G U C A G C U C G - U G - U C G - U G A G A U G U U G G G U U A A G U C C C G							Dr 208

36 37 38 38* 39 39*

- C A G G(U)G G U G C A U G G C U G(U)C - (G)U C A G C U C G - U G - C C G - U A A G G U G U U G G G U U A A G U C U C G							Zn 222
- C A G G(U)G G U G C A U G G C U G(U)C - (G)U C A G C U C G - U G - C C G - U A A G G U G U U G G G U U A A G U C U C G							Os 223
- C A G G(U)G G U G C A U G G C U G(U)C - G U C A G C U C G - U G - C C G - U A A G G U G U U G G G U U A A G U C C C G							Gm 225
- C A G G(U)G G U G C A U G G C C U G(U)C - G U C A G C U C G - U G - C G U - U G A C G U G U A U G G U U A A G U C C U G							Cm 228
- C A G G(U)G G U G C A U G G C C U G(U)C - G U C A G C U C G - U G - C G U - U G A C G U G U A U G G U U A A G U C C U G							Ce 229
- C A G G(U)G G U G C A U G G C C U G(U)C - G U C A G C U C G - U G - U C G - U G A G A U G U U G G G U U A A G U C C C G							Ce 230
- C A G G(U)G G U G C A U G G C C U G(U)C - G U C A G C U C G - U G - U C U - U G A G A U G U U G G G U U A A G U C C C G							Cv 231

- C A G C C U A U A U A C C G C C A U C - U U C A G C A A A - C C - C U G A U G A A G - G C U A C A - - A A G U - - - -							He 234
- C A G C C U A U A U A C C G C C A U C - U U C A G C A A A - C C - C U A A - A A A G - G C - A C U A - A A G U - - - -							Rn 241
- C A G C C U G U A U A C C C U C G U C - G A A A G C U U A - C C - (A)U G - U G A A C - G C U U G - - - C A G U - - - -							Rc 243
- C A G C C U G U A U A C C C A U C G U C - G U A A G C U C U A - C U - U C U - U G A G A A A G U U - - - - - - - - - -							Sp 247
- C A G C C U G U A U A C C C A U C G U C - G U A A G C U C U A - C U - U C U - U A A G A A A G U U - - - - - - - - - -							Pt 248
- C A G G(U)G C U G C A U G G C C U G(U)C - G U C A G C U C G - U G - U C G - U G A G A U G U U(U)G G U C A A G U C C(U)A							Gr 253
- A G C(U)C U U G C A U U G C U G A A A A G U U C G A G C - G G - G A C - C U C G - C C C - - U U A G U G C C G G U -							Cn 255
A C A G G(C)G U U A C A U U G U U G U C - U U U A G U U C G - (U)G - C U G - C A A A G U U U A(G)A U U A A U(G)U G C							Sc 256
A C A G G(C)G U U A C A U U G U U G U C - U U U A G U U C G - (U)G - C U G - C A A A G U U U A(G)A U - - A A U G U U C							Sc 258
- C A A G C G C U G C A C A G G C U G U U - U U U A G U U A A - U G - U C G - U G A G A U - - C U G G U U A A G U C C U U							An 260
- G G G(U)A U G C A U G G C U G U C - U U U A G U U A A - U C - U C G - U A - A G A U - G(A)G G U U A A U U C C(A)							Sp 261
A C A A G(U)G U G C A C A G G C U G U C - U U C A G U U G A - U G - U U G - U G A A A C - U G U G G U - - - - - - - - - -							Pa 262
- -							Lt 269
- -							Lu 270

2830 2840 2850 2860 2870 2880

		2890		2900		2910		2920		2930		2940							
1 Hs	U	-	A	A	C	G	A	A	C	G	A	G	-	-	-	-	-	-	-
7 Oc	U	-	A	A	C	G	A	A	C	G	A	G	-	-	-	-	-	-	-
11 Ec	U	-	A	A	C	G	A	A	C	G	A	G	-	-	-	-	-	-	-
12 Tm	U	-	A	A	C	G	A	A	C	G	A	G	-	-	-	-	-	-	-
13 Dm	U	-	A	A	C	G	A	A	C	G	A	G	-	-	-	-	-	-	-
16 Le	U	-	A	A	C	G	A	A	C	G	A	G	-	-	-	-	-	-	-
19 At	U	-	A	A	C	G	A	A	C	G	A	G	-	-	-	-	-	-	-
20 Zp	U	-	A	A	C	G	A	A	C	G	A	G	-	-	-	-	-	-	-
22 Vc	U	-	A	A	C	G	A	A	C	G	A	G	-	-	-	-	-	-	-
23 Cv	U	-	A	A	C	G	A	A	C	G	A	G	-	-	-	-	-	-	-
24 Ne	U	-	A	A	C	G	A	A	C	G	A	G	-	-	-	-	-	-	-
27 Sc	U	-	A	A	C	G	A	A	C	G	A	G	-	-	-	-	-	-	-
30 Pp	U	-	A	A	C	G	A	A	C	G	A	G	-	-	-	-	-	-	-
33 Pp	U	-	A	A	C	G	A	A	C	G	A	G	-	-	-	-	-	-	-
51 Pf	U	-	A	A	C	G	A	A	C	G	A	G	-	-	-	-	-	-	-
52 Pf	U	-	A	A	C	G	A	A	C	G	A	G	-	-	-	-	-	-	-
53 P1	U	-	A	A	C	G	A	A	C	G	A	G	-	-	-	-	-	-	-
56 Ng	U	-	A	A	C	G	A	A	C	G	A	G	-	-	-	-	-	-	-
59 Ld	C	-	A	A	C	G	A	A	C	G	A	G	-	-	-	-	-	-	-
62 G1	C	-	A	A	C	G	A	A	C	G	A	G	-	-	-	-	-	-	-

37'

40

41

63 Hc	C	-	A	A	C	G	A	G	C	A	-	-	-	-	-	-	-	-	-
68 Ms	C	-	A	A	C	G	A	G	C	A	-	-	-	-	-	-	-	-	-
72 Tc	U	-	A	A	C	G	A	G	C	A	-	-	-	-	-	-	-	-	-
73 Ta	U	-	A	A	C	G	A	G	C	A	-	-	-	-	-	-	-	-	-
75 Po	C	-	A	A	C	G	A	G	C	A	-	-	-	-	-	-	-	-	-

1100

1110

1120

1130

95 Ng	C	-	A	A	C	G	A	G	C	A	-	-	-	-	-	-	-	-	-
96 Pa	U	-	A	A	C	G	A	G	C	A	-	-	-	-	-	-	-	-	-
100 Ap	C	-	A	A	C	G	A	G	C	A	-	-	-	-	-	-	-	-	-
101 Ap	C	-	A	A	C	G	A	G	C	A	-	-	-	-	-	-	-	-	-
102 Cv	U	-	A	A	C	G	A	G	C	A	-	-	-	-	-	-	-	-	-
105 Ec	C	-	A	A	C	G	A	G	C	A	-	-	-	-	-	-	-	-	-
153 Mg	C	-	A	A	C	G	A	G	C	A	-	-	-	-	-	-	-	-	-
173 Oh	C	-	A	A	C	G	A	G	C	A	-	-	-	-	-	-	-	-	-
188 Me	C	-	A	A	C	G	A	G	C	A	-	-	-	-	-	-	-	-	-
189 Mb	C	-	A	A	C	G	A	G	C	A	-	-	-	-	-	-	-	-	-
201 Sa	C	-	A	A	C	G	A	G	C	A	-	-	-	-	-	-	-	-	-
203 S1	C	-	A	A	C	G	A	G	C	A	-	-	-	-	-	-	-	-	-
207 Tt	C	-	A	A	C	G	A	G	C	A	-	-	-	-	-	-	-	-	-
208 Dr	C	-	A	A	C	G	A	G	C	A	-	-	-	-	-	-	-	-	-

37'

40

41

222 Zm	C	-	A	A	C	G	A	G	C	A	-	-	-	-	-	-	-	-	-
223 Os	C	-	A	A	C	G	A	G	C	A	-	-	-	-	-	-	-	-	-
225 Gm	C	-	A	A	C	G	A	G	C	A	-	-	-	-	-	-	-	-	-
228 Cm	C	-	A	A	C	G	A	G	C	A	-	-	-	-	-	-	-	-	-
229 Ce	C	-	A	A	C	G	A	G	C	A	-	-	-	-	-	-	-	-	-
230 Ce	C	-	A	A	C	G	A	G	C	A	-	-	-	-	-	-	-	-	-
231 Cv	C	-	A	A	C	G	A	G	C	A	-	-	-	-	-	-	-	-	-

234 Hs	-	-	-	A	A	G	C	G	C	A	A	G	-	-	-	-	-	-	-
241 Rn	-	-	-	A	A	G	C	A	C	A	A	-	-	-	-	-	-	-	-
243 Rn	-	-	-	A	A	G	C	A	C	A	A	-	-	-	-	-	-	-	-
247 Sp	-	-	-	G	A	C	U	U	A	-	-	-	-	-	-	-	-	-	-
248 P1	-	-	-	G	A	C	U	U	A	-	-	-	-	-	-	-	-	-	-
253 Gm	U	-	A	A	C	G	A	G	C	A	-	-	-	-	-	-	-	-	-
255 Cr	-	-	-	C	U	U	G	C	C	-	-	-	-	-	-	-	-	-	-
256 Sc	A	U	A	A	C	G	A	G	C	A	-	-	-	-	-	-	-	-	-
258 Sc	A	U	A	A	C	G	A	G	C	A	-	-	-	-	-	-	-	-	-
260 An	U	-	A	A	C	G	A	G	C	A	-	-	-	-	-	-	-	-	-
261 Sp	U	U	A	A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
262 Pa	G	G	-	A	A	U	A	A	C	G	A	-	-	-	-	-	-	-	-
269 Lt	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
270 Ls	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

2890

2900

2910

2920

2930

2940

	3010	3020	3030	3040	3050	3060
1 Hs						
7 Oc						
11 Ec						
12 Tm						
13 Dm						
16 Le						
19 At						
20 Zp						
22 Vc						
23 Cv						
24 Ne						
27 Sc						
30 Pc						
33 Pp						
51 Pf	U U U		A U U			
52 Pf	U U U U U U	A U U				
53 Pl	U U U A A U A U C					
56 Ng						
59 Ld						
62 Gl						
<hr/>						
63 Hc						
68 Ms						
72 Tc						
73 Ta						
75 Po						
<hr/>						
95 Ng						
96 Pa						
100 Ap						
101 Ap						
102 Cv						
105 Ec						
153 Mg						
173 Oh						
188 Me						
189 Mb						
201 Sa						
203 St						
207 Tt						
208 Dr						
<hr/>						
222 Zm						
223 Os						
225 Gm						
228 Cm						
229 Ce						
230 Ce						
231 Cv						
<hr/>						
P41-1'						
<hr/>						
			P41-2			
<hr/>						
234 Hs						
241 Rn						
243 Rc						
247 Sp						
248 Pl						
253 Gm	U U G A G C G C C A G		C A C G U A G C U G U G C U G U C A G U A A G A A			G G G A G C C G G C
255 Cr						
256 Sc						
258 Sc						
260 An						
261 Sp						
262 Pa						
269 Lt						
270 Ls						

	3070	3080	3090	3100	3110	3120	
-----							Hs 1
-----							Oc 7
-----							Ec 11
-----							Tm 12
-----							Dm 13
-----							Le 16
-----							At 19
-----							Zp 20
-----							Vc 22
-----							Cv 23
-----							Ne 24
-----							Sc 27
-----							Pc 30
-----							Pp 33
-----							Pf 51
-----							Pf 52
-----							P1 53
-----							Ng 56
-----							Ld 59
-----							G1 62

-----							Hc 63
-----							Ms 68
-----							Tc 72
-----							Ta 73
-----							Po 75

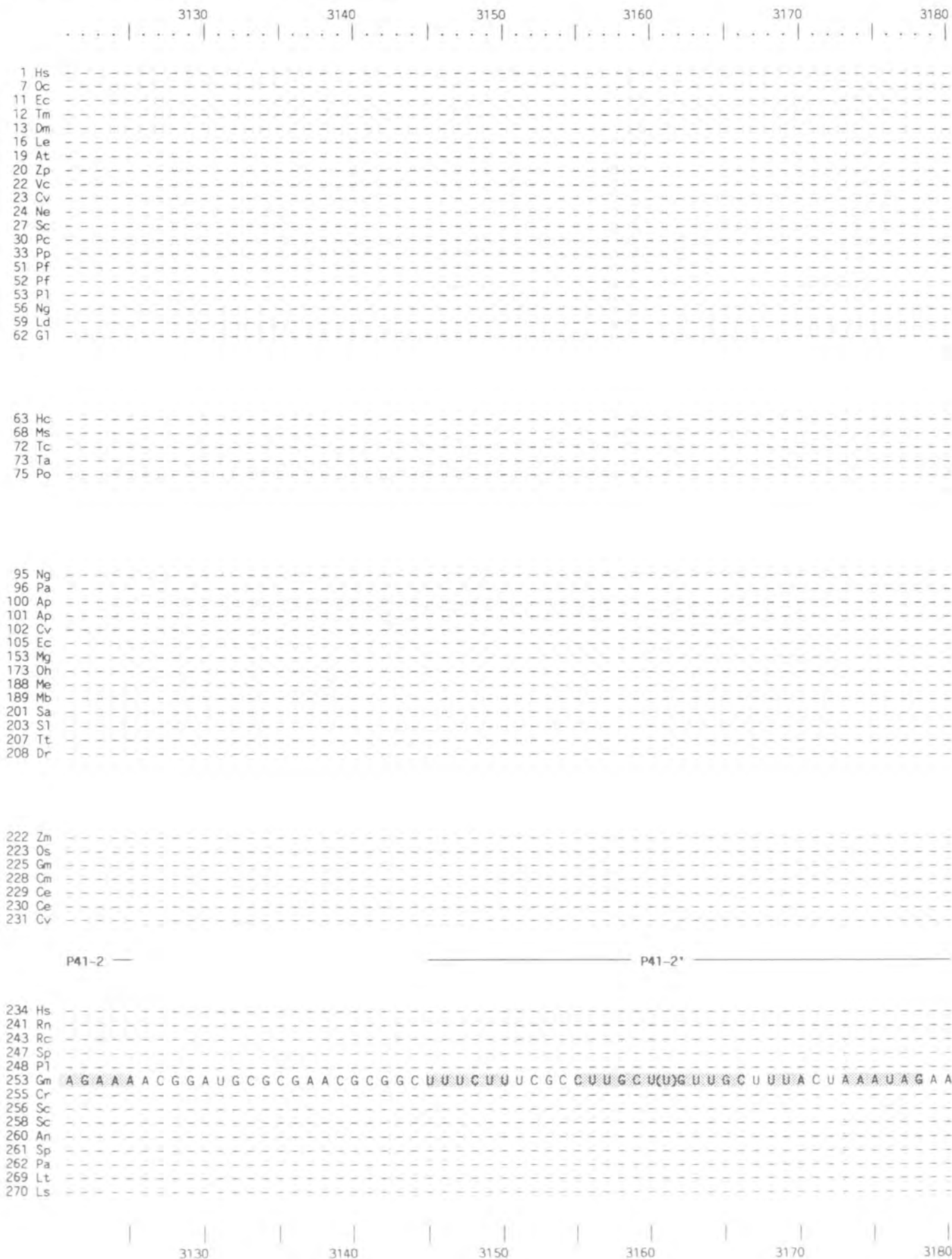
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-----							Pa 96
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-----							Cv 102
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-----							Mg 153
-----							Oh 173
-----							Me 188
-----							Mb 189
-----							Sa 201
-----							S1 203
-----							Tt 207
-----							Dr 208

-----							Zm 222
-----							Os 223
-----							Gm 225
-----							Cm 228
-----							Ce 229
-----							Ce 230
-----							Cv 231

P41-2

-----							Hs 234
-----							Rn 241
-----							Rc 243
-----							Sp 247
-----							P1 248
G C C U U U C G A A U U C G A A G C A C U U U C U A G U G U G C G C U G U U U U U G A U U G C A G C (U) A G C C G A G C A							Gm 253
-----							Cr 255
-----							Sc 256
-----							Sc 258
-----							An 260
-----							Sp 261
-----							Pa 262
-----							Lt 269
-----							Ls 270

3070 3080 3090 3100 3110 3120





P41-2'

P41-3

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3190

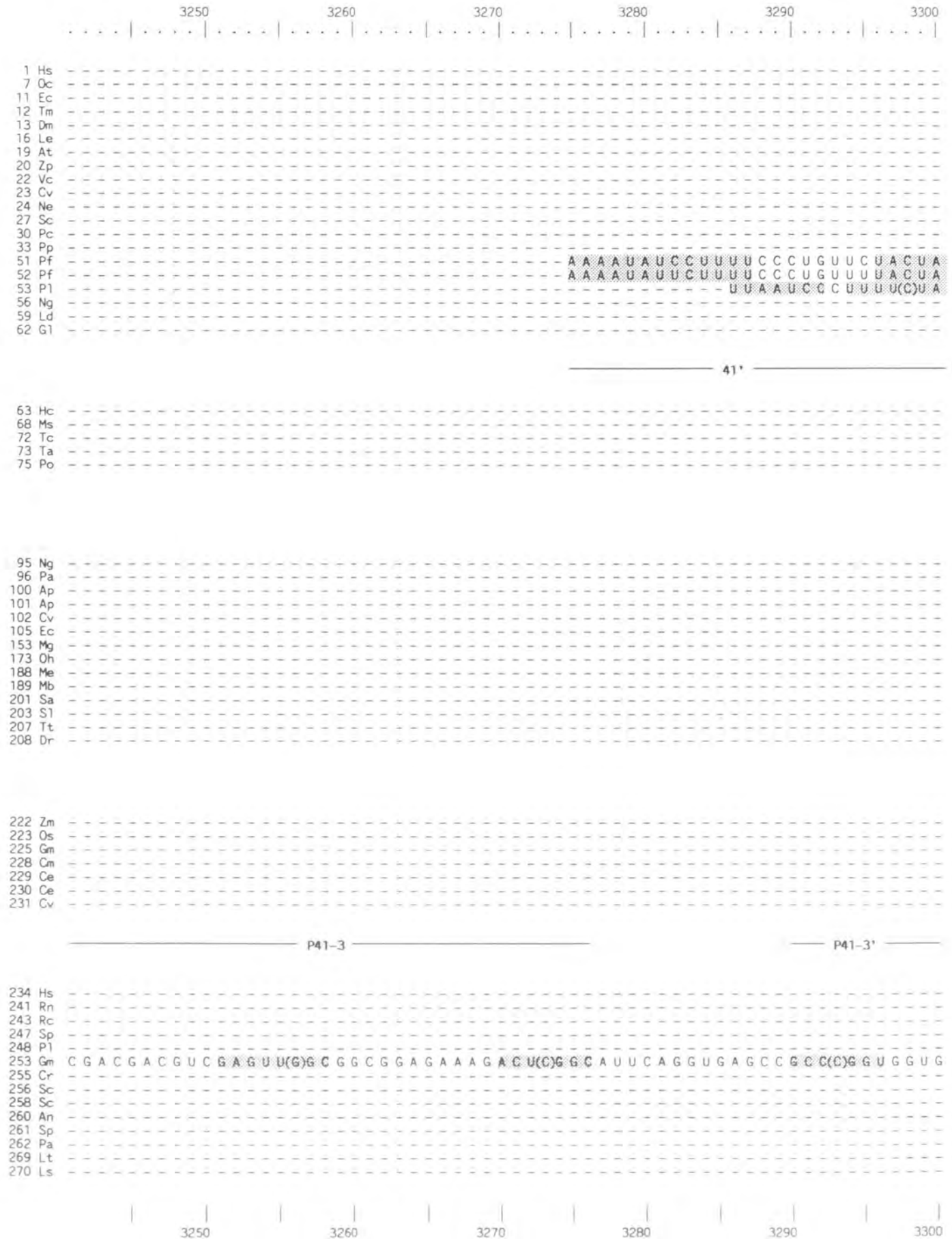
3200

3210

3220

3230

3240



	3310	3320	3330	3340	3350	3360	
	----- ----- ----- ----- ----- -----						
	-----						Hs 1
	-----						Oc 7
	-----						Ec 11
	-----						Tm 12
	-----						Dm 13
	-----						Le 16
	-----						At 19
	-----						Zp 20
	-----						Vc 22
	-----						Cv 23
	-----						Ne 24
	-----						Sc 27
	-----						Pc 30
	-----						Pp 33
	-----						PF 51
	-----						PF 52
	-----						Pf 53
	-----						Ng 56
	-----						Ld 59
	-----						Gf 62

41'

	-----						Hc 63
	-----						Ms 68
	-----						Tc 72
	-----						Ta 73
	-----						Po 75

	-----						Ng 95
	-----						Pa 96
	-----						Ap 100
	-----						Ap 101
	-----						Cv 102
	-----						Ec 105
	-----						Mg 153
	-----						Oh 173
	-----						Me 188
	-----						Mb 189
	-----						Sa 201
	-----						Sl 203
	-----						Tt 207
	-----						Dr 208

41'

	-----						Zm 222
	-----						Os 223
	-----						Gm 225
	-----						Cm 228
	-----						Ce 229
	-----						Ce 230
	-----						Cv 231

P41-3'

	-----						Hs 234
	-----						Rn 241
	-----						Rc 243
	-----						Sp 247
	-----						Pf 248
	-----						Gm 253
	-----						Cr 255
	-----						Sc 256
	-----						Sc 258
	-----						An 260
	-----						Sp 261
	-----						Pa 262
	-----						Lt 269
	-----						Ls 270

3310 3320 3330 3340 3350 3360

	3370	3380	3390	3400	3410	3420
1 Hs	C C C C A A C U U	- C U U A G A G G G G	- A C A A - G U G G C			
7 Oc	C C C C A A C U U	- C U U A G A G G G G	- A C A A - G U G -			
11 Ec	C C C G U U C U U	- C U U A G A G G G G	- A C A A - A U G G C			
12 Tm	A C A A U U C U U	- C U U A G A G G G G	- A C A G - G C G G C			
13 Dm	C A C U A (G) C U U	- C U U A A A U G G G	- A C A A - A U U G C			
16 Le	G G C C A G C U U	- C U U A G A G G G G	- A C U A - G (C) C U			
19 At	G G C C G G C U U	- C U U A G A G G G G	- A C U (A) - U G G C C			
20 Zp	G G C C A G C U U	- C U U A G A G G G G	- A C U A - U G G C C			
22 Vc	G G C A G A C U U	- C U U A G A G G G G	- A C U A - U U G G C			
23 Cv	G G C G G A C U U	- C U U A G A G G G G	- A C U A - U U G G C			
24 Ne	G G C G G A C U U	- C U U A G A G G G G	- A C U A - U U G G C			
27 Sc	C G A G G U C U U	- C U U A G A G G G G	- A C (G) U - U C A U U			
30 Pc	G G C G G G C U U	- C U U A G A G G G G	- A C U G - U U G G C			
33 Pp	G U U A A U G C U U	- (C) U U A G A C G U	- A U C A - G A G C C			
51 Pf	- - A A A G C U U	- C U U A G A G G G A	- A C A U U - G U G U			
52 Pf	A U A A A G C U U	- C U U A G A G G G A	- A C A G U - G U G U			
53 P1	- - A A A G C U U	- C U U A G A G G G G	- A C U U - G U G U			
56 Mg	U G U C A G C U U	- C U U A A A G G G G	- A C U U C - A U U G C			
59 Ld	C G A A U U C U U	- C U C U G C G G G G	- A U U C C U U U G U			
62 G1	- - - - -	- - - - -	- - - - -			

41' 42

63 Hc	G C U G G G U A C	- A U U A G G U G G	- A C U - (G) C - C G C U			
68 Ms	G A C G G G (U) A C	- A C U G U G G G G	- A C C - (G) C - C G C U			
72 Tc	A G G A G G C A C	- U C U G G G G G G	- A C C - (G) C - C G G C			
73 Ta	C A G A G G C A C	- U U U A G A G G G	- A C C - (G) C - C A G C			
75 Po	C G G G G C A C	- A C U A G G G G G	- A C U - (G) C - C G X C			

1140 1150 1160 1170

95 Ng	G U U G G G C A C	- U C U A A U G A G	- A C U - (G) C - C G G U			
96 Pa	G G U G G G (C) A C	- U C U A A G G A G	- A C U - (G) C - C G G U			
100 Ap	G C C G G G A A C	- U C A G (A) G G A G	- A C U - (G) C - C G G U			
101 Ap	G U C G G G A A C	- U C A A A G G A G	- A C U - (G) C - C G G U			
102 Cv	G G C G G G A A C	- U C U A A G G A G	- A C U - (G) C - C G G U			
105 Ec	G C C G G G A A C	- U C A A A G G A G	- A C U - (G) C - C A G U			
153 Mg	- - - - - U U G	- U C U A A C G A G	- A C U - (G) C - C A A C			
173 Oh	G G U G G G G A C	- U U U A G C A A G	- A C U - (G) C - C A G U			
188 Me	G C C G G G A A C	- U C A G G A G A G	- A C U - (G) C - C G C A			
189 Mb	G G U G G G G A C	- U C G U G A G A G	- A C U - (G) C - C G G G			
201 Sa	G U U G G G G A C	- U C A C G G G A G	- A C C - (G) C - C G G G			
203 S1	G U U G G G G A C	- U C A C G G G A G	- A C C - (G) C - C G G G			
207 Tt	G C C G G G C A C	- U C U A A C G G G	- A C U - (G) C - C G G C			
208 Dr	G U U G G G C A C	- U C U G G A G G G	- A C U - (G) C - C U G U			

41' 42

222 Zm	G U U U G G A A C	- C C U G A A C A G	- A C C - (G) C - C G G U			
223 Os	G U U U G G A A C	- C C U G A A C A G	- A C C - (G) C - C G G U			
225 Gm	G U U U G G A A C	- C C U G A G C A G	- A C C - (G) C - C G G U			
228 Cm	- - - - - A A U U C	- U C U G U G G A U	- A C U - (G) C - C G G U			
229 Ce	- - - - - A A U U C	- U C U G U G G A U	- A C U - (G) C - C G G U			
230 Ce	U G U G A A G G (A) A	- C U A C A A A G	- A C U - (G) C - C G G U			
231 Cv	- - - - - G G (A) A	- U U C A A A A G	- A C U - (G) C - C G G U			

234 Hs						
241 Rn						
243 Rc						
247 Sp						
248 P1						
253 Gm	A U G C C G C A C	- U C A C G A G G G	- A C U - (G) C - C A G U G			
255 Cr						
256 Sc	- - - - - A U U A U	- U U A U U A A U A U				
258 Sc	U U A (U) A U U A U	- U U A U U A A U A U				
260 An		- - - - - A U A A A G	- U U G - A U - C G			
261 Sp		- - - - - U - U C U U U G U	- - - - - S U - U A G U			
262 Pa		- - - - - U C U A - A A A U A A A G C	- A G U - U C - A C C U G			
269 Lt						
270 Ls						

3370 3380 3390 3400 3410 3420

	3430	3440	3450	3460	3470	3480	
-- G C C A - C C - C	G A G A U U G A - G	C A A(U)A A C A - G	G U C - U G U G A U G C -	C(C)U U A G A - -	U G(U)C C G G	Hs	1
-- - C A - C C - C	G A G A U U G A - G	C A A(U)A A C A - G	G U C - U G U G A U G C -	C(C)U U A G A - -	U G(U)C C G G	Ec	7
-- G C C G - C A - C	G A G A U U G A - G	C A A(U)A A C A - G	G U C - U G U G A U G C -	C(C)U U A G A - -	U G(U)C C G G	Oc	11
-- G C C G - A A - C	G A G A U U G A - G	C A A(U)A A C A - G	G U C - U G U G A U G C -	C(C)U U A G A - -	U G(U)C C G G	Tm	12
-- G C C A - U A U G A	G A G A U U G A - G	C A A(U)A A C A - G	G U C - U G U G A U G C -	C(C)U U A G A - -	U G(U)C C G G	Dm	13
-- G G(C)C - G C G G A	G A G A U U G A - G	C A A(U)A A C A - G	G U C - U G U G A U G C -	C(C)U U A G A - -	U G(U)C C G G	Le	16
-- G G C C - A(A)G G A	G A G A U U G A - G	C A A(U)A A C A - G	G U C - U G U G A U G C -	C(C)U U A G A - -	U G(U)C C G G	At	19
-- G G C C - A U G G A	G A G A U U G A - G	C A A(U)A A C A - G	G U C - U G U G A U G C -	C(C)U U A G A - -	U G(U)C C G G	Zp	20
-- G C C A - A U G G A	G A G A U U G A - G	C A A(U)A A C A - G	G U C - U G U G A U G C -	C(C)U U A G A - -	U G(U)C C G G	Zp	22
-- G C C A - A U G G A	G A G A U U G A - G	C A A(U)A A C A - G	G U C - U G U G A U G C -	C(C)U U A G A - -	U G(U)C C G G	Cv	23
-- G C C A - A U G G A	G A G A U U G A - G	C A A(U)A A C A - G	G U C - U G U G A U G C -	C(C)U U A G A - -	U G(U)C C G G	Ne	24
-- G A U G - A A(G)G A	G A G A U U G A - G	C A A(U)A A C A - G	G U C - U G U G A U G C -	C(C)U U A G A - -	U G(U)C C G G	Sc	27
-- G G C C - A U G G A	G A G A U U G A - G	C A A(U)A A C A - G	G U C - U G U G A U G C -	C(C)U U A G A - -	U G(U)C C G G	Pc	30
-- G G C C - A U G G A	G A G A U U G A - G	C A A(U)A A C A - G	G U C - U G U G A U G C -	C(C)U U A G A - -	U G(U)C C G G	Pp	33
-- A C A C - A A G G A	G A G A U U G A - G	C A A(U)A A C A - G	G U C - U G U G A U G C -	C(C)U U A G A - -	U G(U)C C G G	Pf	51
-- A C A C - A A G G A	G A G A U U G A - G	C A A(U)A A C A - G	G U C - U G U G A U G C -	C(C)U U A G A - -	U G(U)C C G G	Pf	52
-- A C A C - A A G G A	G A G A U U G A - G	C A A(U)A A C A - G	G U C - U G U G A U G C -	C(C)U U A G A - -	U G(U)C C G G	P1	53
-- A G A U - G A G G A	G A G A U U G A - G	C A A(U)A A C A - G	G U C - U G U G A U G C -	C(C)U U A G A - -	U G(U)C C G G	Ng	56
-- A C A - A G G U G	G A G A U U G A - G	C A A(U)A A C A - G	G U C - U G U G A U G C -	C(C)U U A G A - -	U G(U)C C G G	Ld	59
-- G C G G - G A G G A	G A G A U U G A - G	C A A(U)A A C A - G	G U C - U G U G A U G C -	C(C)U U A G A - -	C G(C)C U G	GI	62

42' 40' 36' 34'

-- A G C G - G(A)G G	A A G G A A C G G G	C A A C G G U A - G	G U C - A G U - A U G C	C C C G - - -	G A A - U G G C C U G	Hc	63
-- A G C G - G(A)G G	A A G G A A C G G G	C A A C G G U A - G	G U C - A G U - A U G C	C C C G - - -	G A A - U A U C C C G	Ms	68
-- G C C G - G(A)G G	A A G G A A C G G G	C A A C G G U A - G	G U C - A G U - A U G C	C C C G - - -	G A A - A C C C C C G	Tc	72
-- G C U G - G(A)G G	A A G G A A C G G G	C A A C G G U A - G	G U C - A G U - A C G C	C C C G - - -	G A A - U C U C C C G	Ta	73
-- G G C G - G(A)G G	A A G G A A C G G G	C A A C G G U A - G	G U C - A G C - A U G C	C C C G - - -	G A A - U C C C C C G	Po	75

1180 1190 1200 1210 1220

-- G C C G - G(A)G G	A A G G U G G G G A	U G A C G(U)C A - A	G U C - (C)U C A U G G	C(C)C U U A - - -	U G A C C A G	Ng	95
-- A C C G - G(A)G G	A A G G U G G G G A	U G A C G(U)C A - A	G U C - A U C A U G G	C(C)C U U A - - -	C G G C C A G	Pa	96
-- A C C G - G(A)G G	A A G G U G G G G A	U G A C G(U)C A - A	G U C - A U C A U G G	C(C)C U U A - - -	C G A C C A G	Ap	100
-- A C C G - G(A)G G	A A G G U G G G G A	U G A C G(U)C A - A	G U C - A U C A U G G	C(C)C U U A - - -	C G G C C U G	Ap	101
-- A C U G - G(A)G G	A A G G U G G G G A	U G A C G(U)C A - A	G U C - A U C A U G G	C(C)C U U A - - -	C G A C C A G	Cv	102
-- G U U G - G(A)G G	A A G G U G G G G A	U G A C G(U)C A - A	G U C - A U C A U G G	C(C)C U U A - - -	U G U C C A G	Mc	105
-- A U U G - G(A)G G	A A G G U G G G G A	U G A C G(U)C A - A	G U C - A U C A U G G	C(C)C U U A - - -	U G A C C U G	Mj	153
-- U G C G - G(A)G G	A A G G U G G G G A	U G A C G(U)C A - A	G U C - (A)U C A U G G	C(C)C U U A - - -	U G C C U U G	Oh	173
-- C U C G - G(A)G G	A A G G U G G G G A	U G A C G(U)C A - A	G U C - A U C A U G G	C(C)C U U A - - -	U G U C C A G	Me	188
-- C U C G - G(A)G G	A A G G U G G G G A	U G A C G(U)C A - A	G U C - A U C A U G G	C(C)C U U A - - -	U G U C C U G	Mb	189
-- C U C G - G(A)G G	A A G G U G G G G A	U G A C G(U)C A - A	G U C - A U C A U G G	C(C)C U U A - - -	U G U C C U G	Sa	201
-- C U C G - G(A)G G	A A G G U G G G G A	U G A C G(U)C A - A	G U C - A U C A U G G	C(C)C U U A - - -	U G U C C U G	S1	203
-- G C G G - G(A)G G	A A G G U G G G G A	U G A C G(U)C U - A	G U C - A G C A U G G	C(C)C U U A - - -	C G C C U U G	Tt	207
-- G C A G - G(A)G G	A A G G U G G G G A	U G A C G(U)C U - A	G U C - A G C A U G G	C(C)C U U A - - -	C G(U)C C U G	Dr	208

42' 40' 36' 34'

-- G C C G - G(A)G G	A A G G A G G G A	U G A(G)G(C)C A - A	G U C - A U C A U G G	C(C)C U U A - - -	U G C C C U G	Zm	222
-- G C C G - G(A)G G	A A G G A G G G A	U G A(G)G(C)C A - A	G U C - A U C A U G G	C(C)C U U A - - -	U G C C C U G	Os	223
-- G C C G - G(A)G G	A A G G U G G G A	U G A C G(U)C A - A	G U C - A U C A U G G	C(C)C U U A - - -	U G C C C U(U)	Gm	225
-- A C U G - G(A)G G	A A G G U G G G A	U G A C G(U)C A - A	G U C - A G C A U G G	C(C)C U U A - - -	C A C C C U G	Gm	228
-- A C U G - G(A)G G	A A G G U G G G A	U G A C G(U)C A - A	G U C - A G C A U G G	C(C)C U U A - - -	C A C C C U G	Ce	229
-- G C C G - G(A)G G	A A G G U G G G A	U G A C G(U)C A - A	G U C - A G C A U G G	C(C)C U U A - - -	U G C C C U G	Ce	230
-- G C C G - G(A)G G	A A G G U G G G A	U G A C G(U)C A - A	G U C - A G C A U G G	C(C)C U U A - - -	C G U C C U G	Cv	231

-- - - - - - - - - -	A A A G A C G U -	U A G - G U C A A G G U -	- - - - -	G U A G C - C C - - -	- - - - -	U G A G G U G	Hs	234
-- - - - - - - - - -	A A A A A C G U -	U A G - G U C A A G G U -	- - - - -	G U A G C - C A - - -	- - - - -	U G A A G C G	Rn	241
-- - - - - - - - - -	- - - - - - - - -	- - - - - - - - -	- - - - -	G C A G C - U U - - -	- - - - -	A G A A A U G	Rc	243
-- - - - - - - - - -	- - - - - - - - -	- - - - - - - - -	- - - - -	G C - - - - A G(C)C U -	- - - - -	U A A G U U G	Sp	247
-- - - - - - - - - -	- - - - - - - - -	- - - - - - - - -	- - - - -	G C A G C - A C - - -	- - - - -	U A A G(C)U G	P1	248
-- U A C U G - G(A)G	A A G G U G G G A	U G A C G(U)C A - A	G U C - C G C A U G G	C(C)C U U A - - -	U G G G C U G	Gm	253	
-- - - - - - - - - -	A A A G A A A G G A	U U A A G A C A - A	A U C - A U C A U G G	G(C)U U A - - -	U A A G U G	Cr	255	
-- - - - - - - - - -	A A A G A A A G G A	U U A A G A C A - A	A U C - A U A A U G A	U(C)U U A - - -	U A A U A U G	Sc	256	
-- - - - - - - - - -	A A A G A A A G G A	U U A A G A C A - A	A U C - A U C A U G G	C(C)U U A - - -	U A C U G U G	Sc	258	
-- - - - - - - - - -	- - - - - - - - -	- - - - - - - - -	- - - - -	A U A U G G - U(C)U U A -	- - - - -	U A C U G U G	An	260
-- G C U A - A C - U	A A A G A A A G G A	U U A A G A C A - A	G U C - A U A U A G G	C(C)C U U A - - -	U G A A A A G	Sp	261	
-- U G G G U - (U)A	U A A A A G G G A	U C A A G A C A - A	G U C - C U C A U G G	C(C)U U A - - -	U G U U G U G	Pa	262	
-- - - - - - - - - -	- - - - - - - - -	- - - - - - - - -	- - - - -	- - - - - - - - -	- - - - -	- - - - -	Lt	269
-- - - - - - - - - -	- - - - - - - - -	- - - - - - - - -	- - - - -	- - - - - - - - -	- - - - -	- - - - -	Ls	270

3430 3440 3450 3460 3470 3480

	3490	3500	3510	3520	3530	3540
1 Hs	G G C U U G C A C G C G C G C G C U A C A C U G	--- A C U G G C U C A G C G U G	---	---	---	---
7 Oc	G G C U U G C A C G C G C G C G C U A C A C U G	--- A C U G G C U C A G C G U G	---	---	---	---
11 Ec	G G C C C G C A C G C G C G C G C U A C A C U G	--- A A G G A A U C A G C G U G	---	---	---	---
12 Tm	G G C C C G C A C G C G C G C G C U A C A C U G	--- A A G G A A U C A G C G U G	---	---	---	---
13 Dm	G G C C C G C A C G C G C G C G C U A C A C U G	--- A A G G A A U C A G C G U G	---	---	---	---
16 Le	G G C C C G C A C G C G C G C G C U A C A C U G	--- A A G G A A U C A G C G U G	---	---	---	---
19 At	G G C C C G C A C G C G C G C G C U A C A C U G	--- A A G G A A U C A G C G U G	---	---	---	---
20 Zp	G G C C C G C A C G C G C G C G C U A C A C U G	--- A A G G A A U C A G C G U G	---	---	---	---
22 Vc	G G C C C G C A C G C G C G C G C U A C A C U G	--- A A G G A A U C A G C G U G	---	---	---	---
23 Cv	G G C C C G C A C G C G C G C G C U A C A C U G	--- A A G G A A U C A G C G U G	---	---	---	---
24 Ne	G G C C C G C A C G C G C G C G C U A C A C U G	--- A A G G A A U C A G C G U G	---	---	---	---
27 Sc	G G C C C G C A C G C G C G C G C U A C A C U G	--- A A G G A A U C A G C G U G	---	---	---	---
30 Pc	G G C C C G C A C G C G C G C G C U A C A C U G	--- A A G G A A U C A G C G U G	---	---	---	---
33 Pp	G G C C C G C A C G C G C G C G C U A C A C U G	--- A A G G A A U C A G C G U G	---	---	---	---
51 Pf	G G C C C G C A C G C G C G C G C U A C A C U G	--- A A G G A A U C A G C G U G	---	---	---	---
52 Pf	G G C C C G C A C G C G C G C G C U A C A C U G	--- A A G G A A U C A G C G U G	---	---	---	---
53 P1	G G C C C G C A C G C G C G C G C U A C A C U G	--- A A G G A A U C A G C G U G	---	---	---	---
56 Ng	G G C C C G C A C G C G C G C G C U A C A C U G	--- A A G G A A U C A G C G U G	---	---	---	---
59 Ld	G G C C C G C A C G C G C G C G C U A C A C U G	--- A A G G A A U C A G C G U G	---	---	---	---
62 G1	G G C C C G C A C G C G C G C G C U A C A C U G	--- A A G G A A U C A G C G U G	---	---	---	---

34* 32* 43 E43-1

63 Hc	G G C A A C A C G C G G G C U A C A A U G	--- G U C G G A G A C A A U	---	---	---	---
68 Ms	G G C U A C A C G C G A G G C U A C A A U G	--- G U U G G U A C A A U	---	---	---	---
72 Tc	G G C U A C A C G C G C G C U A C A A U G	--- G G C G G G A C A A U	---	---	---	---
73 Ta	G G C U A C A C G C G C G C U A C A A U G	--- G A C G G G A C A A U	---	---	---	---
75 Po	G G C U A C A C G C G C G C U A C A A U G	--- G C G G G A C A G C	---	---	---	---

1230 1240 1250

95 Ng	G G C U U C A C A C G U C A U A C A A U G	--- G U C G G U A C A G A	---	---	---	---
96 Pa	G G C U U C A C A C G U G C U A C A A U G	--- G U C G G U A C A A A	---	---	---	---
100 Ap	G G C U A C A C A C G U G C U A C A A U G	--- G U U U A U A C A A A	---	---	---	---
101 Ap	G G C U A C A C A C G U G C U A C A A U G	--- G C G G U A U A C A A	---	---	---	---
102 Cv	G G C U A C A C A C G U G C U A C A A U G	--- G U C G G U A C A G A	---	---	---	---
105 Ec	G G C U A C A C A C G U G C U A C A A U G	--- G C G C A U A C A A A	---	---	---	---
153 Mg	G G C U G G A A A C G U G C U A C A A U G	--- G C C A U A C A A A	---	---	---	---
173 Oh	G G C U A C A A A C G U G A U A C A A U G	--- G C U G U U A C A A A	---	---	---	---
188 Me	G G C U U C A C A C A C U A C A A U G	--- G C U C U U A A U A G	---	---	---	---
189 Mb	G G C U U C A C A C A C U A C A A U G	--- G C C G G U A C A A A	---	---	---	---
201 Sa	G G C U G C A C A C G U G C U A C A A U G	--- G C C G G U A C A A U	---	---	---	---
203 S1	G G C U G C A C A C G U G C U A C A A U G	--- G C C G G U A C A A U	---	---	---	---
207 Tt	G G C G A C A C A C G U G C U A C A A U G	--- G C C U A C A A A	---	---	---	---
208 Or	G G C U A C A C A C G U G C U A C A A U G	--- G A U A G A C A A C	---	---	---	---

34* 32* 43

222 Zm	G G C G A C A C A C G U G C U A C A A U G	--- G G C G G G A C A A A	---	---	---	---
223 Os	G G C G A C A C A C G U G C U A C A A U G	--- G G C G G G A C A A A	---	---	---	---
225 Gm	G G C G A C A C A C G U G C U A C A A U	--- G G A C A A A	---	---	---	---
228 Cm	G G C G A C A C A C G U A U A C A A U G	--- G U U G G G A C A A	---	---	---	---
229 Ce	G G C G A C A C A C G U A U A C A A U G	--- G U U G G G A C A A	---	---	---	---
230 Ce	G G C G A C A C A C G U G C U A C A A U G	--- G C C A G G A C A A U	---	---	---	---
231 Cv	G G C G A C A C A C G U G C U A C A A U G	--- G C C G G G A C A A A	---	---	---	---

234 Hs	G - C A A G A A A U G G G C U A C - A U U	--- U U C U A C C -	---	---	---	---
241 Rn	G - A A A G A A A U G G G C U A C - A U U	--- U U C U U U U C -	---	---	---	---
243 Rc	G - G A A G U A A U G G G C U A C - A A U	--- U U C U A A -	---	---	---	---
247 Sp	G - G G A A G A G U G A G C U A C - A A U	--- G U U U G - A A C -	---	---	---	---
248 P1	G - G A A U G A G U G A G C U A C - A A U	--- G U U U U A A C -	---	---	---	---
253 Gm	G G C C A C A C A C G U G C U A C A A U G	--- G C A A U U - A C A A -	---	---	---	---
255 Cr	G G C U A C A C A C G C U A U U A C A U U G	--- G A C A C C C A C A A G	---	---	---	---
256 Sc	G G U A A U A G A C G U G C U A C A A U A	--- A A A U G A U A A U	---	---	---	---
258 Sc	G G U A A U A G A C G U G C U A C A A U A	--- A A A U G A U A A U	---	---	---	---
260 An	G G C U A U A G A C G U G C C A C A U A U	--- G C C U U U - A C A A A	---	---	---	---
261 Sp	G G C U A U A G A C G U G A U A A A A	--- U C U A U C A -	---	---	---	---
262 Pa	G G C U A U A G A C G U G C C A C A U G U	--- A C C U A - A C A A	---	---	---	---
259 Lt						
270 Ls						

3490 3500 3510 3520 3530 3540

	3610	3620	3630	3640	3650	3660
1 Hs	- C A - G G C G C -	G G G U A A C -	- - - - -	C C G U U G A A C C C C A(U)U -	- C G U G A U G G G G A U	
7 Oc	- C A - G G C G C -	G G G U A A C -	- - - - -	C C G U U G A A C C C C C A(U)U -	- C G U G A U G G G G A U	
11 Ec	- U A - G G A C(U) -	G G G(U)A A C -	- - - - -	C C G U U C A A C C C U C U U -	- C G U G A U A G G G A U	
12 Tm	- G C - G G C C(C) -	G G G U A A C -	- - - - -	C C G C U G A A C C U C C U U -	- C G U G C U A G G G A U	
13 Dm	- G A - G G U C(C) -	G G G U A A A -	- - - - -	C C G C U G A A C C A C U U U -	- C A U G C U U G G G A U	
16 Le	- C A - G G C C C -	G G G U A A U -	- - - - -	C U U U - G A A A U U U C A U -	- C G U G A U G G G G A U	
19 At	- C A - G G C C C -	G G G U A A U -	- - - - -	C U U - U G A A A U U U C A U -	- C G U G A U G G G G A U	
20 Zp	- G A - G G U C C -	G G G U A A U -	- - - - -	C U G G C G A A A U U U C A U -	- C G U G A U G G G G A U	
22 Vc	- G A - G G C C C -	G G G U A A U -	- - - - -	C U U U - G A A A C C U G C U -	- C G U G A U G G G G A U	
23 Cv	- G A - G G C C C -	G G G U A A U -	- - - - -	C U U U G - A A A C U G C A U -	- C G U G A U G G G G A U	
24 Ne	- G A - G G U C C -	G G G U A A U -	- - - - -	C U U U G - A A U C U G C A U -	- C G U G A C G G G A U	
27 Sc	- G A - G G C C(U) -	G G G U A A U -	- - - - -	C U U G U U A A C U U G C A U -	- C G U G A U A G G G A U	
30 Pc	- A A - G G U C(U) -	G G G U A A U -	- - - - -	C U U G U A A A C U C U G U -	- C G U G C U G G G A U	
33 Pp	- A A - G G U C G -	U G G U A A C -	- - - - -	- C C U U A A G U C C(U)U G U -	- U U G A C U G G G A C	
51 Pf	- A A G G C G(U) -	A G G(U)A A U -	- - - - -	C U U U A U C A A U A U A U A U -	- C G U G A U U G G G A U	
52 Pf	- A A A G U A U -	A G G(U)A A U -	- - - - -	C U U U A U C A G U A U A U A U -	- C G U A A U G G G A U	
53 Pl	- A A A G U G(U) -	A G G(U)A A U -	- - - - -	C U U U A U C A A U A U A U -	- C G U G A U G G G A U	
56 Ng	- G - A U U -	G G A A A C -	- - - - -	U U U C G A A A C A C -	- U A U C A C A G G G A U	
59 Ld	- A A - G A G U G G G G A A -	- - - - -	- - - - -	C C C - G A A U C A U(A)G A C	- C G U G C C G G G A C	
62 G1	- G A G G(A)C G C G C G G A G C -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
	44'			43'		
63 Hc	- G A - G G A G G -	C G C U A A U C U C -	- - - - -	C U A A A C U C G A U -	- C G U A G U U C G G A U	
68 Ms	- A A - G G G G A -	C G G G A A U C U C -	- - - - -	C U A A A A C C G A U -	- C U U A G U U C G G A U	
72 Tc	- A A - G G G G A -	A G G G A A U C C C -	- - - - -	C U A A A C C C G C U -	- C C C A G U U C G G A U	
73 Ta	- A A - G G G G A -	A G G G A A C C U C -	- - - - -	- G A A A C C C G U -	- C G U A G U C A G G A C	
75 Po	- A A - G G G G -	A G G C A A U C C G -	- - - - -	- U U A A C C C G C -	- C G C A G U U G G G A U	
	1270	1280	1290	1300		
95 Ng	- G A - G G C G G -	A G C C A A U C U C -	- - - - -	A C A A A A C C G A U -	- C G U A G U C C G G A U	
96 Pa	- G A - G(U)G G G -	A G C C A A U C C C -	- - - - -	A U A A A A C C C G A U -	- C G U A G U C C G G A C	
100 Ap	- A A - A G A C A -	A G C A A A C C U C -	- - - - -	A U A A A A G U C A A U -	- C G U A G U C C G G A C	
101 Ap	- G A - G A G C A -	A G C G G A A C C U C -	- - - - -	A C A A A A G U A C G U -	- A G U A G U C C G G A U	
102 Cv	- G A - G G U G G -	A G C C A A U C G C -	- - - - -	A C A A A A G C C G A U -	- C G U A G U C C G G A U	
105 Ec	- G A - G A G C A -	A G C G G A A C C U C -	- - - - -	A U A A A A G U U G G U -	- C G U A G U C C G G A U	
153 Mg	- A A - G G U G G -	A G C U A A U C U -	- - - - -	G U A A A A G U U G G U -	- C U C A G U U C G G A U	
173 Oh	- A A - G U U U U -	G G C G A A U C U C -	- - - - -	A A A A A A A C A G U -	- C U C A G U U C G G A U	
188 Me	- G A - U C C G G -	A G C A A A C C C C -	- - - - -	A A A A A A C A G G U -	- C C C A G U U C G G A U	
189 Mb	- G A - G G U U A -	A G C G A A A U C C U -	- - - - -	U A A A A A G C C G G U -	- C U C A G U U C G G A U	
201 Sa	- G A - G G U G G -	A G C G A A U C U C -	- - - - -	A A A A A A G C C G G U -	- C U C A G U U C G G A U	
203 Sl	- A A - G G U G G -	A G C G A A U C U C -	- - - - -	A A A A A A A G C G G U -	- C U C A G U U C G G A U	
207 Tt	- A A - C G G G G -	A G C U A A U C G C -	- - - - -	A A A A A A G G U G G -	- C C C A G U U C G G A U	
208 Dr	- G A - G U G U A -	A G C G A A U C G C -	- - - - -	- U G A A A C C U A U C -	- C C C A G U U C A G A U	
	44'			43'		
222 Zn	- G A - G G C U G -	A G C U A A C U C C -	- - - - -	A A A A A C C C G U C -	- C U C A G U U C G G A U	
223 Ds	- G A - G G G U G -	A G C U A A C U C C -	- - - - -	A A A A A C C C G U C -	- C U C A G U U C G G A U	
225 Gm	- G A - G G - U G -	A G C U A A C U C C -	- - - - -	A A A A A C C C G U C -	- C U C A G U U C G G A U	
228 Cm	- G A - A G U U U -	G G C A A A U C U G A	- - - - -	- G A A A C C C A A C -	- C U C A G U U C G G A U	
229 Ce	- G A - A G U U U -	G G C A A A U C U G A	- - - - -	- G A A A C C C A A C -	- C U C A G U U C G G A U	
230 Ce	- G A - G A G C A -	A G C U A A C C U C -	- - - - -	- A A A A C C C U G G U -	- C U C A G U U C G G A U	
231 Cv	- G A - G G G C(U) -	A G C A A A C C U C -	- - - - -	- A A A A C C C U G G U -	- C U C A G U U C G G A U	
	44'			43'		
234 Hs	- - - - -	- - - - -	- - - - -	C C - - A G A A A A -	- - - - -	C U A C G A U A
241 Rn	- - - - -	- - - - -	- - - - -	C C - - A G A G A A -	- - - - -	C A U A C G A A A A
243 Rc	- - - - -	- - - - -	- - - - -	U C - - U A G A A -	- - - - -	- C A A A C G A A A A
247 Sp	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- C A G U U G G A -
248 Pl	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- C A G C G - - - -
253 Gm	- A A - G G C G G -	A G C G A A U C C G -	- - - - -	G A A A G A U U G C -	- C U C A G U U C G G A U	
255 Cr	- A - - - - -	- C C A A -	- - - - -	- A A C U G U C C G A -	- A U A - U A C G G A U	
256 Sc	- A A U - A A U A U A A A C A A U U U A A U U U U A A U A U A U U U U -	- - - - -	- - - - -	- U U U A U A U A U A U A U A U U U -	- A U A U A A U A U G A A U	
258 Sc	- A A U - A A U A U A A A C A A U U U A A U U U U U A U A U A U U U U -	- - - - -	- - - - -	- U U U A U A U A U A U A U A U U U -	- A U A U A A U A U G A A U	
260 An	- G A - A A U U G -	A G C U A A U C C C -	- - - - -	C C A A A A A A G G -	- - - - -	A U A U A A U A U G G A U
261 Sp	- A A - S A - U U -	S A A G U A U U A U -	- - - - -	U A U A A - - - -	- - - - -	- U A U A U A U C A G A U
262 Pa	- G A - A U U U U -	(A)S C U A A U C U C -	- - - - -	C C A A A A U A G G A U (A)A -	- - - - -	- U A G A U A U G G A U
269 Lt	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
270 Ls	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -	- - - - -
	3610	3620	3630	3640	3650	3660

	3670	3680	3690	3700	3710	3720	
C G G G G - A U							U G C A A U Hs 1
C G G G G - A U							U G C A A U Oc 7
A G G G G - C U							U G U A A U Ec 11
U G G G G - C U							U G C A A U Tm 12
U G U G A - A C							U G A A A C Dm 13
A G A U C - A U							U G C A A U Le 16
A G A U C - A U							U G C A A U At 19
A G A U C - A U							U G C A A U Zp 20
A G A U U - A U							U G C A A U Vc 22
A G A U U - A U							U G C A A U Cv 23
A G A U U - A U							U G C A A U Ne 24
A G A U U - A U							U G C A A U Sc 27
A G A G C - A U							U G C A A U Pc 30
A G A U C - U U							U G C A A U Pp 33
A G A U U - A U							U G C A A U Pf 51
A G A U U - A U							U G C A A U Pf 52
A G A U U - A U							U G C A A U Pt 53
C G A G G - A U							U G G A A C Ng 56
C G A G G - A U							U G C A A U Ld 59
C G(C)G G - G C							U G - A A C Gt 62

45

U G A G G - G C							U G A A A C Hc 63
U G A G G - G C							U G C A A C Ms 68
C G C G G - G C							U G C A A C Tc 72
U G A G G - G C							U G U A A C Ta 73
C G A G G - G C							U G C A A C Po 75

1310

1320

U G C A C - U C							U G C A A C Ng 95
C G C A G - U C							U G C A A C Pa 96
U G G A G - U C							U G C A A C Ap 100
U G G A G - U C							U G C A A C Ap 101
C G C A G - U C							U G C A A C Cv 102
U G G A G - U C							U G C A A C Ec 105
U G A G G - G C							U G C A A U Mg 153
U G A A G - U C							U G C A A C Oh 173
C G C A G - G C							U G C A A C Me 188
U G G G G - U C							U G C A A C Mb 189
U G G G G - U C							U G C A A C Sa 201
U G G G G - U C							U G C A A C St 203
U G G G G - U C							U G C A A C Tt 207
C G G A G - U C							U G C A A C Dr 208

45

P45-1

P45-1'

P45-2

P45-2'

U G C A G - G C							U G C A A C Zm 222
U G C A G - G C							U G C A A C Os 223
U G U A G - G C							U G C A A C Gm 225
U G C A G - G C							U G C A A C Cm 228
U G C A G - G C							U G C A A C Ce 229
U G C A G - G C							U G C A A C Ce 230
U G C A G - G C							U G C A A C Cv 231

G C C C U - U A							U G A A A C Hs 234
C C U - U - U A							U G A A A C Rn 241
G A(C)U A - U A							U G A A A U Rc 243
G G(A)G G - G A							U G A A A U Sp 247
A A A A U A G A						A A	U G A A A C Pt 248
U G U U C - U C							U G C A A C Gm 253
U G G A G - U A	G C A A A A C G A G A G A A C U A U A C A G U U C G U U G C A U C G U U A U G C C U U G C						U G A A A C Cr 255
U A U A A - U C							U G A A A U Sc 256
U A U A A - U C							U G A A A U Sc 258
U G U A G - U C							U G U A A C Ar 260
U A U A A - U C							U G U A A U Sp 261
U G U A G - U C							U G A A A C Pa 262
							Lt 269
							Ls 270

3670

3680

3690

3700

3710

3720

	3730	3740	3750	3760	3770	3780
7 Hs	U A U U C C C C C	- A U G A A C C G A G G A A U U C C C C A G U A A A G U G C C G G G U C A U A A - A G C U U U G C G U U G A U U A A A				
11 Ec	U U G U C C C C C C	- U U G A A C C G A G G A A A U U C C C C A G U A A A G U G C C G G G U C A U A A - A G C U U U G C G U U G A U U A A C				
12 Tm	U G U U C C C C C	- A U G A A C C G A G G A A A U U C C C C A G U A A A G U G C C G G G U C A U A A - A G C U U U G C G U U G A U U A A C				
13 Dm	U G U U C C A C C G	- A U U C A A C C U U G G A A A U U C C C C A G U A A A G U G C C G G G U C A U U - A A C U C C G C A U U G A U U A C				
16 Le	U G U U G G G U C	- U U C A A C C G A G G A A A U U C C C U (A) G U A A A G C G C C G A G U C A U C - A G C U C C G C G U U G A C U A C				
19 At	U G U U G G G U C	- U U C A A C C G A G G A A A U U C C C U (A) G U A A A G C G C C G A G U C A U C - A G C U C C G C G U U G A C U A C				
20 Zp	U A U U G A U C	- U U C A A C C G A G G A A A U U C C C U (A) G U A A A G C G C C G A G U C A U C - A G C U C C G C G U U G A C U A C				
22 Vc	U A U U A G U C	- U U C A A C C G A G G A A A U G C C U (A) G U A A A G C G C C G A G U C A U C - A G C U C C G C G U U G A U U A C				
23 Cv	U A U U A A U C	- U U C A A C C G A G G A A A U G C C U (A) G U A A A G C G C C A A G U C A U C - A G C U U U G C G U U G A U U A C				
24 Ne	U A U U A A U C	- U U C A A C C G A G G A A A U G C C U (A) G U A A A G C G C C A A G U C A U C - A G C U U U G C G U U G A U U A C				
27 Sc	U A U U A A U C	- U U C A A C C G A G G A A A U U C C U (A) G U A A A U (C) G C A G U C A U C - A A A C U G C (A) U G A U U A C				
30 Pc	U A U U G G U C	- U U C A A C C G A G G A A A U C C U (A) G U A A A G C G C C A A G U C A U C - A G C U U U G C G U U G A U U A C				
33 Pp	U A U U G G U C	- U U C A A C C G A G G A A A U U U U A G U A A A G C G C C A G G U C A U U - A A C C U U G C G U U G A A U U G C				
51 Pf	U A U U A A U C	- U U G A A C C G A G G A A A U G C C U (A) G U A A A G C A U G A U U C A U C - A G A U U U G U G C U G A C U A C				
52 Pf	U A U U A A U C	- U U G A A C C G A G G A A A U G C C U (A) G U A A A G C A U G A U U C A U U - A G A U U U G U G C U G A C U A C				
53 P1	U A U U A A U C	- U U G A A C C G A G G A A A U G C C U (A) G U A A A G C A U G A U U C A U C - A G A U U U G U G C U G A C U A C				
56 Ng	- A U U C - U C G	- U G C A A C C G A G G A A A U U C C U (A) G U A A A G (C) G U G G U C A U C - A U A C C A C (A) U G A U U A C				
59 Ld	U A U U G G U C	- U G C A A C C G A G G A A A U G U C U (C) G U A A A G C C A G (C) U C A U C - A A (A) C U G U G C C G A U U A C				
62 G1	- - G C C C (C) C	- G C G C A C C A G G A A U G U C U (U) G U A A G G C G C (C) C G C C C - A C C G (C) G C G C C G G A C G C				

45° 31° 46° 46°

63 Hc	U C G C C C U C	- A U G A A G C U G G A A U U C G G U (A) G U A A U C G C C G U G U C A G C - A G C G C G C G G U G A A U A C
68 Ms	U C G C C C U C	- A U G A A G C U G G A A U U C C G U (A) G U A A U C G C C G U U U C A A C - A G C A C G C G G U G A A U A C
72 Tc	U C G C C C G C	- G U G A A G C U G G A A U C C C U (A) G U A A C C C G C G U G U C A U C - A U C C C G C G G C G A A U A C
73 Ta	U C G C C C U C	- A U G A A G C U G G A A U U C C G U (A) G U A A U C G C C A G G U C A A C - A G C C U A C G C G U G A A U A U
75 Po	U C G C C C U C	- G U G A A C G C G G A A U C C C U (A) G U A A U C G C C G C G U C A A C - A U C G C C G G U G A A U A C

1330 1340 1350 1360 1370

95 Ng	U C G A G U G C	- A U G A A G U C G G A A U C G C U (A) G U A A U C G C C A G G U C A G C - A U A C U G C G G U G A A U A C
96 Pa	U C G A C U G C	- G U G A A G U C G G A A U C G C U (A) G U A A U C G U G A A A U C A G A - A U G U C A C G G U G A A U A C
100 Ap	U C G A C U C C	- A C G A A G U C G G A A U C G C U (A) G U A A U C G U G G A U C A G A - A U G C C A C G G U G A A U A C
101 Ap	U C G A C U C C	- A U G A A G U C G G A A U C G C U (A) G U A A U C G U G G A U C A G A - A U G C C A C G G U G A A U A C
102 Cv	U C G A C U G C	- G U G A A G U C G G A A U C G C U (A) G U A A U C G C C G G A U C A G C - A U G C C C A C G G U G A A U A C
105 Ec	U C G A C U C C	- A U G A A G U C G G A A U C G C U (A) G U A A U C G U G G A U C A G A - A U G C C A C G G U G A A U A C
153 Mg	U C G C C C U C	- A U G A A G U C G G A A U C A C U (A) G U A A U C G C C G A A U C A G C C A U G C C C G G U G A A U A C
173 Oh	U C G A C U U C	- A U G A A G U U G G A A U C G C U (A) G U A A U C G C C G A A U C C A G C A U G U C C G C G G U G A A U A C
188 Me	U C G C C C U C	- A U G A A G C A G G A A U C G C U (A) G U A A U C G C C A G G U C A G C - A U A C U G C G G U G A A U A C
189 Mb	U C G A C U C C	- G U G A A G U C G G A A G U C G C U (A) G U A A U C G C C A G A U C A G C A U C G C C G G U G A A U A C
201 Sa	U C G A C C C C	- A U G A A G U C G G A A G U C G C U (A) G U A A U C G C C A G A U C A G C A U U G C U G C G G U G A A U A C
203 S1	U C G A C C C C	- A U G A A G U C G G A A G U C G C U (A) G U A A U C G C C A G A U C A G C A U U G C U G C G G U G A A U A C
207 Tt	C C G A C C C C	- A U G A A G C C G G A A U C G C U (A) G U A A U C G C C G G A U C A G C C A U G C C G C G G U G A A U A C
208 Dr	U C G A C U C	- G U G A A G U U G G A A U C G C U (A) G U A A U C G C C G G U C A G C - A U A C C G C G G U G A A U A C

45° 31° 46° 46°

222 Zm	U C G C C U G C	- A U G A A G C A G G A A U C G C U (A) G U A A U C G C C G G U C A G C C A U A C G G C G G C G A A U C C
223 Os	U C G C C U G C	- A U G A A G C A G G A A U C G C U (A) G U A A U C G C C G G U C A G C C C A U A C G G C G G U G A A U C C
225 Gm	U C G C C U G C	- A U G A A G C C G G A A U C G C U (A) G U A A U C G C C G G U C A G C C C A U A C G G C G G U G A A U C C
228 Cm	U C G C C U G C	- A U G A A G U C G G A A U U G A U (A) G U A A U C G C C A A U C A G C C A U G U G C G G U G A A U A C
229 Ce	U C G C C U G C	- A U G A A G U C G G A A U U G A U (A) G U A A U C G C C A A U C A G C C A U G U G G C G G U G A A U A C
230 Ce	U C G C C G A C	- A U G A A G U C G G A A U C G C U (A) G U A A U C G C C A U C A G C C A U A C A G C G G U G A A U A C
231 Cv	U C G C C U G C	- A U G A A G U C G G A A U C G C U (A) G U A A U C G C C A G G U C A G C C A U A C U G C G G U G A A U A C

234 Hs	U - U A A G G G - U	C G A A G G U G G A U U U A G C A G U A A A C U A A G A G U A G A - G U G C U U A G U U G A A C A G
241 Rn	- - U A A A G G - A	C A A A G G U G G A U U U A G U A G U A A A A U A G A A A U A G A - G A G C U U A U U U G A A C A G
243 Rc	- - U A U A (A) U C	A A A G G U G G A U U U A G U A G U A A A A A G A A A U A G A - G U G U C U U U U U A A C C C
247 Sp	A - - C C C (C) U	C G A A A G U G G A U U C A G C A G U A A G G C C C A C A U A - A G A - G A A U G G G C U G A A A A G
248 P1	A - - A U U C U U	A G A A G U U G G A U U C A G C A G U A A A G C C C C A A U A G A - A A A U G G G C U G A A A A G
253 Gm	U C G G G A C	A A G U U G G A A U C G C U (A) G U A A U C G C C G G A U C A G C - A U G C C G C G G U G A A U U
255 Cr	U A G C C U C U	- A U G A A G A A A G A A U C G C G (A) G U A A U C G U A G A A U C A U U A G C U A C G G U G A A - G G
256 Sc	U C G A U U A U	- A U G A A A A A G A A U U G C U (A) G U A A A U C G U A U U A U G U A U G U A C G G U G A A U - A
258 Sc	U C G A U U A U	- A U G A A A A A G A A U U G C U (A) G U A A U A C G U A A A U U A G U A U G U U A C G G U G A A U - A
260 An	U C G A C U A C	- A U G A A A A G G A A U U A C U (A) G U A A U C G U G A A U C C A U C A C C A U C G C G G U G A A U - U
261 Sp	U C G A U U A U	- A U G A A G G A A A U U G C U (A) G U A A U U - C A C U A A U C A U C G G U G A A A U -
262 Pa	U C G G C U A U	- A U G A A U A A G A A A U U G C U (A) G U A A U C G U G - G A U C A C C A U G A C A G C G U G A A U U
269 Lt	- - - - -	- - - - - U U A U U - (A) U A U U A A U A G C - A U G U A G A U A (A) A A C A
270 Ls	- - - - -	- - - - - U U A U U - (A) U A U U A A U A U A U A U A U A U U A G A U A (A) A A A

3730 3740 3750 3760 3770 3780

3790	3800	3810	3820	3830	3840	
GUU - CC CUGG C C U U U G U A C A C A C C C G C C C G U C G C U A C U (A) C C G A U U - - G G A U G G U U (U) A G - - - U Hs 1						
GUU - CC CUGG C C U U U G U A C A C A C C C G C C C G U C G C U A C U (A) C C G A U U - - G G A U G G U U (U) A G - - - U Oc 7						
GUU - CC CUGG C C U U U G U A C A C A C C C G C C C G U C G C U A C U (A) C C G A U U - - G A A U G A U U (U) A G - - - U Ec 11						
GUU - CC CUGG C C U U U G U A C A C A C C C G C C C G U C G C U A C U (A) C C G A U U - - G A A U G A U U (U) A G - - - U Tm 12						
GUU - CC CUGG C C U U U G U A C A C A C C C G C C C G U C G C U A C U (A) C C G A U U - - G A A U (U) A U U (U) A G - - - U Dm 13						
GUU - CC CUGG C C U U U G U A C A C A C C C G C C C G U C G C U A C U (A) C C G A U U - - G A A U G A U U C C G G - - - U Le 16						
GUU - CC CUGG C C U U U G U A C A C A C C C G C C C G U C G C U A C U (A) C C G A U U - - G A A U G A U C C G G - - - U At 19						
GUU - CC CUGG C C U U U G U A C A C A C C C G C C C G U C G C U A C U (A) C C G A U U - - G A A U G A U C C G G - - - U Zp 20						
GUU - CC CUGG C C U U U G U A C A C A C C C G C C C G U C G C U A C U (A) C C G A U U - - G G G U G (U) G C U G G - - - U Vc 22						
GUU - CC CUGG C C U U U G U A C A C A C C C G C C C G U C G C U A C U (A) C C G A U U - - G G G U G (U) G C U G G - - - U Cv 23						
GUU - CC CUGG C C U U U G U A C A C A C C C G C C C G U C G C U A C U (A) C C G A U U - - G G G U G (U) G C U G G - - - U Ne 24						
GUU - CC CUGG C C U U U G U A C A C A C C C G C C C G U C G C U A C U (A) C C G A U U - - G A A U G A U C C G G - - - U Sc 27						
GUU - CC CUGG C C U U U G U A C A C A C C C G C C C G U C G C U A C U (A) C C G A U U - - G A A U G A U C C G G - - - U Pz 30						
GUU - CC CUGG C C U U U G U A C A C A C C C G C C C G U C G C U A C U (A) C C G A U U - - G G G U G (U) U A C G - - - U Pp 33						
GUU - CC CUGG C C U U U G U A C A C A C C C G C C C G U C G C U A C U (A) C C G A U U - - G A A U G A U A U (U) G A - - - U Pf 51						
GUU - CC CUGG C C U U U G U A C A C A C C C G C C C G U C G C U A C U (A) C C G A U U - - G A A U G A U A U (U) G A - - - U Pf 52						
GUU - CC CUGG C C U U U G U A C A C A C C C G C C C G U C G C U A C U (A) C C G A U U - - G A A U G A U A U (U) G A - - - U P1 53						
GUU - CC CUGG C C U U U G U A C A C A C C C G C C C G U C G C U A C U (A) C C (G) A U - - G G G A C G A G A G A - - - U Ng 56						
GUU - CC CUGG C C U U U G U A C A C A C C C G C C C G U C G C U A C U (A) C C G A U U - - G (A) U G G U G C A - - - U Ld 59						
GUU - CC CUGG C C U U U G U A C A C A C C G - C C G U C G C U A C U (A) C C G A C U - - G G C G C G G C (C) G G - - - C G1 62						

30'

47

GUU - CC CUGG C C U U U G U A C A C A C C C G C C C G U C G C U A C U (A) C C G A - - - - G U G G G G U U C G G A - - - U Hc 63
GUU - CC CUGG C C U U U G U A C A C A C C C G C C C G U C G C U A C U (A) C C G A - - - - G U A G G G U C U G A A - - - U Ms 68
GUU - CC CUGG C C U U U G U A C A C A C C C G C C C G U C G C U A C U (A) C C G A - - - - G C G G G G U C C G G A - - - U Tc 72
GCC - CC CUGG C C U U U G U A C A C A C C C G C C C G U C G C U A C U (A) C C G A - - - - G C U G G G U U U G G A - - - U Ta 73
GUU - CC CUGG C C U U U G U A C A C A C C C G C C C G U C G C U A C U (A) C C G A - - - - G C G G G G G A G G G G - - - U Po 75

1380	1390	1400	1410	1420	1430	
GUU - CC CCGG G C C U U G U A C A C A C C C G C C C G U C A C A C C (A) U G G G A - - - - G U - - G G G G G A U A C C - A Ng 95						
GUU - CC CCGG G C C U U G U A C A C A C C C G C C C G U C A C A C C (A) U G G G A - - - - G U - - G G G U U G C A U C - A Pa 96						
GUU - CC CCGG G C C U U G U A C A C A C C C G C C C G U C A C A C C (A) U G G G A - - - - G U - - G G G U U G C A A A - A Ap 100						
GUU - CC CCGG G C C U U G U A C A C A C C C G C C C G U C A C A C C (A) U G G G A - - - - G U - - G G G U U G C A A A - A Ap 101						
GUU - CC CCGG G C C U U G U A C A C A C C C G C C C G U C A C A C C (A) U G G G A - - - - G U - - G G G U U G C A C C - A Cv 102						
GUU - CC CCGG G C C U U G U A C A C A C C C G C C C G U C A C A C C (A) U G G G A - - - - G U - - G G G U U G C A A A - A Ec 105						
GUU - CC CCGG G C C U U G U A C A C A C C C G C C C G U C A C A C C (A) U G G G A - - - - G C - - U G G U A A U A U C - U Hg 153						
GUU - CC CCGG G C C U U G U A C A C A C C C G C C C G U C A C A C C (A) G A A A - - - - G U - - U G G C A A U A C C - C Oh 173						
GUU - CC CCGG G C C U U G U A C A C A C C C G C C C G U C A C A C C (A) G A A A - - - - G U - - C (A) U C (A) C C C - C Me 188						
GUU - CC CCGG G C C U U G U A C A C A C C C G C C C G U C A C A C C (A) U G G A A A - - - - G U - - C G G U A A C A C C - C Mb 189						
GUU - CC CCGG G C C U U G U A C A C A C C C G C C C G U C A C A C C (A) G A A A - - - - G U - - C G G U A A C A C C - C Sa 201						
GUU - CC CCGG G C C U U G U A C A C A C C C G C C C G U C A C A C C (A) G A A A - - - - G U - - C G G U A A C A C C - C S1 203						
GUU - CC CCGG G C C U U G U A C A C A C C C G C C C G U C A C A C C (A) U G G A A - - - - G C - - G G G C U C U A C C - C Tt 207						
GUU - CC CCGG G C C U U G U A C A C A C C C G C C C G U C A C A C C (A) U G G A - - - - G U - - A G A U U G C A G U - U Dr 208						

30'

47

GUU - CC CCGG G C C U U G U A C A C A C C C G C C C G U C A C A C U (A) U A G G A - - - - G C - (U) G G C C (A) G G U U - U Zn 222
GUU - CC CCGG G C C U U G U A C A C A C C C G C C C G U C A C A C U (A) U A G G A - - - - G C - (U) G G C C (A) U G G U - U Os 223
GUU - CC CCGG G C C U U G U A C A C A C C C G C C C G U C A C A C U (A) U G G G A - - - - G C - U G G C C (A) U G G C - C Gm 225
GUU - CC CCGG G C C U U G U A C A C A C C C G C C C G U C A C A C C (A) G A A A - - - - G A - U (U) G U A G U (C) G G - C Gm 228
GUU - CC CCGG G C C U U G U A C A C A C C C G C C C G U C A C A C C (A) G A A A - - - - G A - U (U) G U A G U (C) G G - C Ce 229
GUU - CC CCGG G C C U U G U A C A C A C C C G C C C G U C A C A C U A C C A G A - - - - G U - - C G G C U U G (G) C C - C Ce 230
GUU - CC CCGG G C C U U G U A C A C A C C C G C C C G U C A C A C C (A) U G G A - - - - G C - U G G C U (A) U G C C - C Cv 231

GSC - CC CUGG A A G C G C G U A C A C A C C C G C C C G U C A C C C U C C U C A A - - - - G U - A U A C U U C A A A - G Hs 234
AGC - CC CUGG G G A A C C G U A C A C A C C C G C C C G U C A C C C U C C U C A A - - - - A U - U A G A U U G A (C) A - U Rn 241
AGC - CC CUGG G G A A C C G U A C A C A C C C G C C C G U C A C C C U C C U C A A - - - - (U) - A G U (A) U - - - - Rn 243
AGC - CC CUGG G G A A C C G U A C A C A C C C G C C C G U C A C C U C C (G) C C U (A) - - - - G U - U A - - - - Sp 247
AGC - CC CUGG G G A A C C G U A C A C A C C C G C C C G U C A C C U C C (G) C C U (A) - - - - G C U A - - - - P1 248
GUA - CC CCGG G C C U U G U A C A C A C C C G C C C G U C A C A C C C C G A U A A - - - - A U - U G G U U U C G C C - C Gm 253
UAA - CC CUGG A A U G U G C A C A C A U U G C C C G U C A C C C C G A U A A - - - - U A - G U A U U G U (A) C A - G Cr 255
UUC - UAA C U G U U U C G C A C U A A U C A U C A U C A G G C G U U G A A A - - - - C A - U A U A U A U A C - U Sc 256
UUC - UAA C U G U U U C G C A C U A A U C A U C A U C A G G C G U U G A A A - - - - C A - U A U A U A U A U C - U Sc 258
AAA - UAA C U G G U U U C G C A C U A A C U C A U C A U C A G G C G U U G A A A - - - - G A - A G U A U G U C A - A An 260
UUA - UUC C U G G A U U G G U A C U A A C C A C U C G U C A C A U G C U G A A A - - - - G U - A U A A U (C) U C U - U Sp 261
AAC - U - U C C G G A U U G G U A U - U G U U G C C C A C C A U C U U U A - - - - G G - A G U A U G C C A - A Pa 262
AUA - UAA U U G A - - A A G G U A U - U G U U G C C C A C C A A U U U U A - - - - - - - - - - Lt 269
AUA - UAA U U G A - - A A G G U A U - U G U U G C C C A C C A A U U U U A - - - - - - - - - - Ls 270

3790

3800

3810

3820

3830

3840

	3850	3860	3870	3880	3890	3900
1 Hs	G A G G C C	- C U C G G A U C G G C C C C G C C G G G U C G				- G
7 Oc	G A G G C C	- C U C G G A U C G G C C C C G C C G G G U C G				- G
11 Ec	G A G G U C	- U U C G G A U U G G C G C U C G G A G C G G C C				- G
12 Tm	G A G G U C	- U U C G G A C C G G U A C G G U G G C - G U				- U U
13 Dm	G A G G U C	- U C C G G A C G (U) G A U (C) A C U G U G A C G C				- C U
16 Le	G A A A U G	- U U C G G A U C G C G G C G (A) C G U G G G C G G				- U U
19 At	G A A G U G	- U U C G G A U C G C G G C G (A) C G U G G G U G G				- U U
20 Zp	G A A G U G	- U U C G G A U C G U G (C) - C G - - (A) C G A C G G C G				- G U U
22 Vc	G A A G U G	- U U C G G A U U G - A C U (U) U G A C U G G G - -				- G
23 Cv	G A A G U G	- U U C G G A U U G - G C G (A) C C (U) G G G C G G				- U C
24 Ne	G A A A U G	- U U C G G A U U G - G C G G C U U U G G G C G G				- U U
27 Sc	G A G G A G	- U C G A G A U U G U G G A U (U) A G C U C C - -				- U U
30 Pc	G A G G U C	- U U C G G A C U G G U G A U G G G U A U U G - -				- G
33 Pp	U A C G C G	- U U C G G A G G (A) C G A U G U U U (C) G G G U C U				- U
51 Pf	G A A U (U) G	- U U U G G A C A A G A A - - A A A U - U G A A - U				- U
52 Pf	A A A U (U) G	- U U U G G A U A U G A A U U A A A U A A U G A A - U				- U U
53 Pt	G A A U (U) G	- U U U G G A C A A G A A - - A A A A - U A A A - U				- U U
56 Ng	G A A C C U	- G G C G G A C C G A A C C - -				- G
59 Ld	A C A G G -	- U G A U C G G A C (A) G G C G U G U - -				- U U
62 Gt	G A G C G (C)	- C C C G G A - - (A) G - C G U G U - -				- C G

47

63 Hc	G A G G C C G G C					- A
68 Ms	G A G A G C G C U U U C					- U
72 Tc	G A G G C C U C C U C C C					- U
73 Ta	G A G G U C C G U C C					- U
75 Po	G A G G C C C G U C G					- C

1440

1450

95 Ng	G A A G U A G G U A G G G U	- A A C C				- G
96 Pa	G A A G U A G C U A G U C U	- A A C C				- G
100 Ap	G A A G (C) A G G U A U C C U	- A A C C				- C U U U A
101 Ap	G A A G U A G G U A G C U U	- A A C C				- U
102 Cv	G A A G U A G A U A G C U U	- A A C C				- U
105 Ec	G A A G U A G G U A G C U U	- A A C C				- U
153 Mg	A (A) A A C C G U G U U G C U	- A A C C				- G
173 Oh	A A A G (C) C G G U G G C C U	- A A C U U C				- G
188 Me	G A A G C C G G U G A G G U	- A A C C				- U U
189 Mb	G A A G (C) C A G U G G C C U	- A A C C				- C
201 Sa	G A A G C C G G U G G C (C) C	- A A C C C				- C U
203 Sl	G A A G C C G G U G G C (C) C	- A A C C C				- C U
207 Tt	G A A G (U) C G C G G G A	- - G C C				- U
208 Dr	(G) A (A) A C C G C C G G A	- - G C C				- U

47

222 Zm	G A (A) G U C A U U A C C C U	- A A C C				- G
223 Os	G A (A) G U C A U U A C C C U	- A A C C				- G
225 Gm	G A A G (U) C G U U A C C U U	- - - -				- A A C C G
228 Cm	A A A A U C C U U A G C U U	- A A C C				- G
229 Ce	A A A A U C C U U A G C U U	- A A C C				- G
230 Ce	A A A G (U) C G U A A C U C U	- A A C C				- U
231 Cv	A A A G (U) C G U U A C C C	- A A C C U				- U

234 Hs	G A C A U U U					- A A
241 Rn	U - - - -					- C A C A
243 Rc	- - - - -					- C U C A C C C G U U
247 Sp	- - - - -					- A G A
248 Pl	- - - - -					- A C
253 Gm	G A A G C A U C G G A C C A A U G A U C A C C A U G (A) C U U C U G U G U A C					- C A C
255 Cr	G A A G A A C U A U G G C U					- A C A C U
256 Sc	U A U A A U U A U A U A U A U A U U U - U U U A A U A A U A U A U A U					- A A
258 Sc	U A U A A U U A U A U A U A U U U - U U U A A U A A U A U A U A U					- A A
260 An	G A A G U U U G A U U U A C U U A U - A U U U A U A A U A U A U A U A					- U
261 Sp	G A A G A A G A C A - - - -					- U U C A
262 Pa	U A (A) G U U U G C U G U U - C U G U A - U U A A A C (A) A (G) A (U) A G A U G (A) C					- G G U G
269 Lt	- - - - -					- - - -
270 Ls	- - - - -					- - - -

3850

3860

3870

3880

3890

3900

3910 3920 3930 3940 3950 3960

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C C C A
C C C A
C C A A
C G A A
U G C
C G
C G
C A A
U
U
U A U U
C A A
A A C
A U
A U
C A A
U
C G

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GGCCCU - GGCGGAGCGGCU GAGAAAGACGGUCG Hs 1
CGGCCCU GCGGAGCGGCU GAGAAAGACGGUCG Oc 7
GUCGU - CGCCCG - AUGUUGCUGAGGAGAAUUGACCA Ec 11
GUGU - UACGG - U(U)GU(U)C GCAAGAUUGACCA Tm 12
CUGCCCG(A)C - GUC - G - CGAGAAGUCCAUUG Le 16
CGCCCG - CGC(A)C GUCGAGAAAGUCCAUUG At 19
CGCCUGGGCG(A) - CG(U) - CG - CGAGAAGUCCAUUG Zp 20
- - - - - C C U G G U C A (U) G G U G A G A A G U U C A U U A Vc 22
C C G C U C U (C) G (C) G C C G A G A A G U U C A U U A Cv 23
- - - - - C C G C C C U U G G C U G U C G A G A A G U U C A U U A Ne 24
- - - - - G G G G C U (A) U C C G C G A G A A C C U C A U C A Sc 27
- - - - - C G A U A A G C C U A U U A C U G G A A A G U U C A U C A Pc 30
G G G C U C (C) G G G C G U C G (G) C - A A A G U U - C U A A Pp 33
A U U - - - C U U U U U U U U C U G G A A A A A C (C) G U A Pf 51
A U U U C U G A U U U U U U C U A G A A G A A C U G U A Pf 52
A U - - - - - A U U - - - U G U U U U U U U G G A A A A C (C) G U A P1 53
C A A - - - - - - - - - - - G G U A A G G G A A A C C A G U A Ng 56
U - A U C C G C (C) G A A A G U U C A C C G G Ld 59
C G - C G A A G G (C) C G G Gt 62

47'

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U G C
U U
U C G
C U
U C G C C A

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GCUGGUC Hc 63
GAGGCGGUC Ms 68
GAGGCGGUC Tc 72
GAUGGAUUC Ta 73
GGCGGGGUC Po 75

1460

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C A A
C A A
A A A
U C G
U C G
C A A
C A A
U U
U G
U G U
U G U
A C G
C A C

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GGAUGC CGCUJACC Ng 95
GGAAGGACGGUJACC Pa 96
GGAAGGCGCU(A)C Ap 100
GGAAGGCGCUJACC Ap 101
GGAAGGCGCUUACC Cv 102
GGAAGGCGCUUACC Ec 105
GGAAGCGCAUGU(C)U Mg 153
G A A G A G G G A A C C G (U) C U Oh 173
GGAAGCGAGCCGUCG Me 188
GGAAGGAGCGU(C)G Mb 189
GGAAGG(A)GCUUCG Sa 201
GGAAGG(A)GCUUCG S1 203
GGCA - - - GGCG(C)G Tt 207
GGCA - - - GGCG(C)U Dr 208

47'

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U A A
U A A
C A A G A
A A A
A A A
U C G
U U

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GGAAGGGGGAUGC(C)U Zm 222
GGAAGGGGGAUGC(C)U Os 223
- - - GGCGGGAUG(C)G Gm 225
GGAAGGCGGGGCUU Cm 228
GGAAGGCGGGGCUU Ce 229
GGAAGAGAGAGCG(C)U Ce 230
AGGAGGGGGAUG(C)U Cv 231

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C U A
U A U A C A U
C C U A A C C C A C U A U U
U
U
U A
U A A G U C G C
U U
U U
C A G
U U
C A A
U A A
U A A

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A A A C C C - Hs 234
A A U (U) U C A Rn 241
- - - - - Rc 243
- - - - - Sp 247
- - - - - P1 248
GUGCCACA AAGG(C)U UUUUGGUGGUCUUAUUGGCGCAUACC Gm 253
- - - - - GGCCUAGGGAACG Cr 255
- - - - - AUUAUUUAUUUAUUUAUUUAUA Sc 256
- - - - - AUUAUUUAUUUAUUUAUUUAUA Sc 258
- - - - - UUAUAUUUAUUUAUUUAUUUAUA An 260
- - - - - UGUUUUUC Sp 261
G(C)U A G A U(U)U(A)U(U)UUAUAU - GGGGCUUUUC Pa 262
- - - - - Lt 269
- - - - - Ls 270

3910 3920 3930 3940 3950 3960

	3970	3980	3990	4000	4010	4020	
1 Hs	- A A C U(U)G	- A C U A U C U A G	- A G G(A)A G U A A	A A G U C G U A A C	- - - -	A A G G U U U C C G U - - - -	A G
7 Dc	- A A C U(U)G	- A C U A U C U A G	- A G G(A)A G U A A	A A G U C G U A A C	- - - -	A A G G U U U C C G U - - - -	A G
11 Ec	- A A C U(U)G	- A U C A U U U A G	- A G G(A)A G U A A	A A G U C G U A A C	- - - -	A A G G U U U C C G U - - - -	A G
12 Tm	- A A C U(U)G	- A U C A U U U A G	- A G G(A)A G U A A	A A G U C G U A A C	- - - -	A A G G U U U C C G U - - - -	A G
13 Dm	- A A C U(U)G	- A U(U)A U U U A G	- A G G(A)A G U A A	A A G U C G U A A C	- - - -	A A G G U U U C C G U - - - -	A G
16 Le	- A A C C U U	- A U C A U U U A G	- A G G(A)A G G A G A	A A G U C G U A A C	- - - -	A A G G U U U C C G U - - - -	A G
19 At	- A A C C U U	- A U C A U U U A G	- A G G(A)A G G A G A	A A G U C G U A A C	- - - -	A A G G U U U C C G U - - - -	A G
20 Zp	- A A C C U U	- A U C A U U U A G	- A G G(A)A G G A G A	A A G U C G U A A C	- - - -	A A G G U U U C C G U - - - -	A G
22 Vc	- A A C C C U	- C(C)C A C C U A G	- A G G(A)A G G A G A	A A G U C G U A A C	- - - -	A A G G U U U(A)C C G U - - - -	A G
23 Cv	- A A C C C U	- C(C)C A C C U A G	- A G G(A)A G G A G A	A A G U C G U A A C	- - - -	A A G G U U U C(C)C G U - - - -	A G
24 Ne	- A A C C C U	- C(C)C A C C U A G	- A G G(A)A G G A G A	A A G U C G U A A C	- - - -	A A G G U U U C(C)C G U - - - -	A G
27 Sc	- A A C C U U	- A U C A U U U A G	- A G G(A)A G G U G A	A A G U C G U A A C	- - - -	A A G G U U U C(C)G U - - - -	A G
30 Pp	- A A U U(U)G	- A U C A U U U A G	- A G G(A)A G U A A	A A G U C G U A A C	- - - -	A A G G U U U C C G U - - - -	A G
33 Pc	- C U A C U G	- G A C G G C(U)A G	- A G G(A)A G C A G A	A A G U C G U A A C	- - - -	A A G G U A A(U)C C G U - - - -	A G
51 Pf	- A A U C(C)U	- A U C U U U U A A	- A G G(A)A G G A G A	A A G U C G U A A C	- - - -	A A G G U U U C C G U - - - -	A G
52 Pf	- A A U C(C)U	- A U C U U U U A A	- A G G(A)A G G A G A	A A G U C G U A A C	- - - -	A A G G U U U C C G U - - - -	A G
53 Pt	- A A U C(C)U	- A U C U U U U A A	- A G G(A)A G G A G A	A A G U C G U A A C	- - - -	A A G G U U U C C G U - - - -	A G
56 Ng	- A A U C U C	- U U C G U C U G U	- (A)G G(A)A G G A A	A A G U C G U A A C	- - - -	A A G G U C U(U)C G U - - - -	A G
59 Ld	- A U A U U U	- C U U C A(A)U A G	- A G G A G C A A	A A G U C G U A A C	- - - -	A A G G U A A G C U G U - - - -	A G
62 Gt	- A G C C(C)C	- C G C C C U G G	- (A)G G(A)A G G A G A	A A G U C G U A A C	- - - -	A A G G U A U C C G U - - - -	A G

47*

48

63 Hc	- A A A U C U	- G G C U C C G C A	- A G G G(G)G A U U	A A G U C G U A A C	- - - -	A A G G U A G C C C G U - - - -	A G
68 Ms	- G A G U C U	- G G C U U C G G C A	- A G G G(G)G G U U	A A G U C G U A A C	- - - -	A A G G U A G C C C G U - - - -	A G
72 Tc	- G A G U C U	- G G C U C C G G U G	- A G G G(G)G G A G A	A A G U C G U A A C	- - - -	A A G G U A G C C C G U - - - -	A G
73 Ta	- G A A U C U	- G A U G U C A G U G	- A G G A(G)G G U U	A A G U C G U A A C	- - - -	A A G G U A U C C C G U - - - -	A G
75 Po	- G A A C C U	- C C C C C C G G	- A G G G(G)G G A G A	A A G U C G U A A C	- - - -	A A G G U A G C C C G U - - - -	A G

1470

1480

1490

1500

1510

95 Ng	- A C G G U A	- U G C U U C A U G	- A C U G(G)G G U G	A A G U C G U A A C	- - - -	A A G G U A G C C C G U - - - -	A G
96 Pa	- A C G G A G	- U G A U U C A U G	- A C U G(G)G G U G	A A G U C G U A A C	- - - -	A A G G U A A G C C C G U - - - -	A G
100 Ap	- A C U U U G	- U G A U U C A U G	- A C U G(G)G G U G	A A G U C G U A A C	- - - -	A A G G U A A C C C G U - - - -	A G
101 Cv	- A C U U U G	- U G A U U C A U G	- A C U G(G)G G U G	A A G U C G U A A C	- - - -	A A G G U A A C C C G U - - - -	A G
102 Ap	- A C G G U G	- U G G U C A A U G	- A C X X(G)G X X X X X X X X	A A G U C G U A A C	- - - -	A A G X X X X X X X X - - - -	X X
105 Ec	- A C U U U G	- U G A U U C A U G	- A C U G(G)G G U G	A A G U C G U A A C	- - - -	A A G G U A A C C C G U - - - -	A G
153 Mg	- A G G G U A	- G G G C C G G U G	- A U U G(G)A G U U	A A G U C G U A A C	- - - -	A A G G U A A C C C C U - - - -	A C
173 Oh	- A A G G U A	- G G G U C G A U G	- A U U G(G)G G U U	A A G U C G U A A C	- - - -	A A G G U A A C C C U - - - -	A C
188 Me	- A A G S U X	- (G)G G G(C)G A U G	- A U U A G G G X X X X X X X X	A A G U C G U A A C	- - - -	A A G X X X X X X X X - - - -	X X
189 Mb	- A A G G U G	- G G A C U G G C G	- A U U G(G)A C G A	A A G U C G U A A C	- - - -	A A G G U A A G C C C G U - - - -	A C
201 Sa	- A A G G U G	- G G A C U G G C G	- A U U G(G)A C G A	A A G U C G U A A C	- - - -	A A G G U A A G C C C G U - - - -	A C
203 St	- A A G G U G	- G G A C U G G C G	- A U U G(G)A C G A	A A G U C G U A A C	- - - -	A A G G U A A G C C C G U - - - -	A C
207 Tt	- A G G G U A	- G G G C C C G U G	- A C U G(G)G C G A	A A G U C G U A A C	- - - -	A A G G U A A G C U G U - - - -	A C
208 Dr	- (A)G A C U G	- U G G U U U A U G	- A C U G(G)G U G	A A G U C G U A A C	- - - -	A A G G U A A C U G U - - - -	A C

47*

48

222 Zm	- A A G G C U	- (A)G G C U(U)G C G	- A C U G(G)A G U G	A A G U C G U A A C	- - - -	A A G G U A G C C C G U - - - -	A C
223 Os	- A A G G C U	- (A)G G C U(U)G C G	- A C U G(G)A G U G	A A G U C G U A A C	- - - -	A A G G U A A G C C C G U - - - -	A C
225 Gm	- A A - G C G	- (G)G G C U A G U G	- A C U G(G)A G U G	A A G U C G U A A C	- - - -	A A G G U A A G C C C G U - - - -	A C
228 Cm	- A C C C(U)A	- U U A C(C)A U U G	- A U C(A)U G G U G	A A G U C G U A A C	- - - -	A A G G U A A G G G G U - - - -	U C
229 Ce	- A C C C(U)A	- U U A C(C)A U U G	- A U C(A)U G G U G	A A G U C G U A A C	- - - -	A A G G U A A G G G G U - - - -	U C
230 Ce	- A A G(G)C A	- - G G C U G G U A	- A U G A G A G U G	A A G U C G U A A C	- - - -	A A G G U A A G C C C G U - - - -	A C
231 Cv	- A A G G C A	- (G)A G C U A G U G	- A C U A(G)G G U G	A A G U C G U A A C	- - - -	A A G G U A A G C C C G U - - - -	A C

234 Hs	- - - U A C G	- C A U U U A U A U	- A G A G G A G A C	A A G U C G U A A C	- - - -	A U G G U A A G U G U - - - -	A C
241 Rn	- C U A A C	- - A A U U U A U G	- A G A G G A G A U	A A G U C G U A A C	- - - -	A A G G U A A G C U A U - - - -	A C
243 Rc	- - - - -	- - A(C)A U U(U)A	- G A A G A G G - C	A A G U C G U A A C	- - - -	A U G U A A A C C G U - - - -	A C
247 Sp	- - - - -	- - U A C A C(A)	- A G G(G)G A G A C	A A G U C G U A A C	- - - -	- - - A C A A U - - - -	(A)G
248 Pl	- - - - -	- - U A A G U(A)	- A G G(G)G A G A A	A A G U C G U A A C	- - - -	- - - A C A A U - - - -	(A)G
253 Gm	- A G G S U G	- G G G U C U C G	- A C U G G G G U G	A A G U C G U A A C	- - - -	A A G G U A A G C C G U - - - -	A G
255 Cr	- U A U G C G	- U G A U A U U A G	- A G U U G G A G U	A A G U C G U A A C	- - - -	A A G G U U G G G G U - - - -	A G
256 Sc	- U C A G A A	- A U A A U A U G A	- A U U A A U G C G	A A G U U G A A U	- - - -	A C A G U U A C C G U - - - -	A G
258 Sc	- U C A G A A	- A U A A U A U G A	- A U U A A U G C G	A A G U U G A A U	- - - -	A C A G U U A C C G U - - - -	A G
260 An	- G C A U G C	- A U S A C U U U G	- A U U G G U G U U	A A G U C G A A A U	- - - -	A U G G U U C C G U - - - -	A A
261 Sp	- C C A A G	- G(U)G U U U G C A	- A U U A G U G U A	A A G U C G A A A U	- - - -	A A G G U A A C C C G U - - - -	A G
262 Pa	- (S)U A U G U	- G U G A C U C U G	- A U U A G U G U A	A A G U C G A A A U	- - - -	A C G G U U C C G U G U - - - -	A G
269 Lt	- - - - -	- - - - -	- - - U A A A G A C	A A C G U G C A G U	- - - -	A A U U - A A U A U A - - - -	U U
270 Ls	- - - - -	- - - - -	- - - U A A A A A U	A A C G U G C A G U	- - - -	A A U U - A A U G(A)A - - - -	C U

3970

3980

3990

4000

4010

4020

	4030	4040	4050	4060	4070	4080	
GUGGAAACCUUGC	CGGGAAGG	GAUACA	UUUA				Hs 1
GUGGAAACCUUGC	CGGGAAGG	GAUACA	UUUA				Oc 7
GUGGAAACCUUGC	CGGGAAGG	GAUACA	UUUA				Ec 11
GUGGAAACCUUGC	CGGGAAGG	GAUACA	UUUA				Tm 12
GUGGAAACCUUGC	CGGGAAGG	GAUACA	UUUA				Dm 13
GUGGAAACCUUGC	CGGGAAGG	GAUACA	UUUA				Le 16
GUGGAAACCUUGC	CGGGAAGG	GAUACA	UUUA				At 19
GUGGAAACCUUGC	CGGGAAGG	GAUACA	UUUA				Zp 20
GUGGAAACCUUGC	CGGGAAGG	GAUACA	UUUA				Vc 22
GUGGAAACCUUGC	CGGGAAGG	GAUACA	UUUA				Cv 23
GUGGAAACCUUGC	CGGGAAGG	GAUACA	UUUA				Ne 24
GUGGAAACCUUGC	CGGGAAGG	GAUACA	UUUA				Sc 27
GUGGAAACCUUGC	CGGGAAGG	GAUACA	UUUA				Pc 30
GUGGAAACCUUGC	CGGGAAGG	GAUACA	UUUA				Pp 33
GUGGAAACCUUGC	CGGGAAGG	GAUACA	UUUA				Pf 51
GUGGAAACCUUGC	CGGGAAGG	GAUACA	UUUA				Pf 52
GUGGAAACCUUGC	CGGGAAGG	GAUACA	UUUA				P1 53
GUGGAAACCUUGC	CGGGAAGG	GAUACA	UUUA				Ng 56
GUGGAAACCUUGC	CGGGAAGG	GAUACA	UUUA				Ld 59
GUGGAAACCUUGC	CGGGAAGG	GAUACA	UUUA				G1 62

48 ——— 48' ———

GGGAAAUUCUG	CGGCUUG	GAUACA	CCUCCU				Hc 63
GGGAAAUUCUG	CGGCUUG	GAUACA	CCUCCU				Ms 68
GGGAAAUUCUG	CGGCUUG	GAUACA	CCUCCU				Te 72
GGGAAAUUCUG	CGGCUUG	GAUACA	CCUCCU				Ta 73
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1520 1530 1540

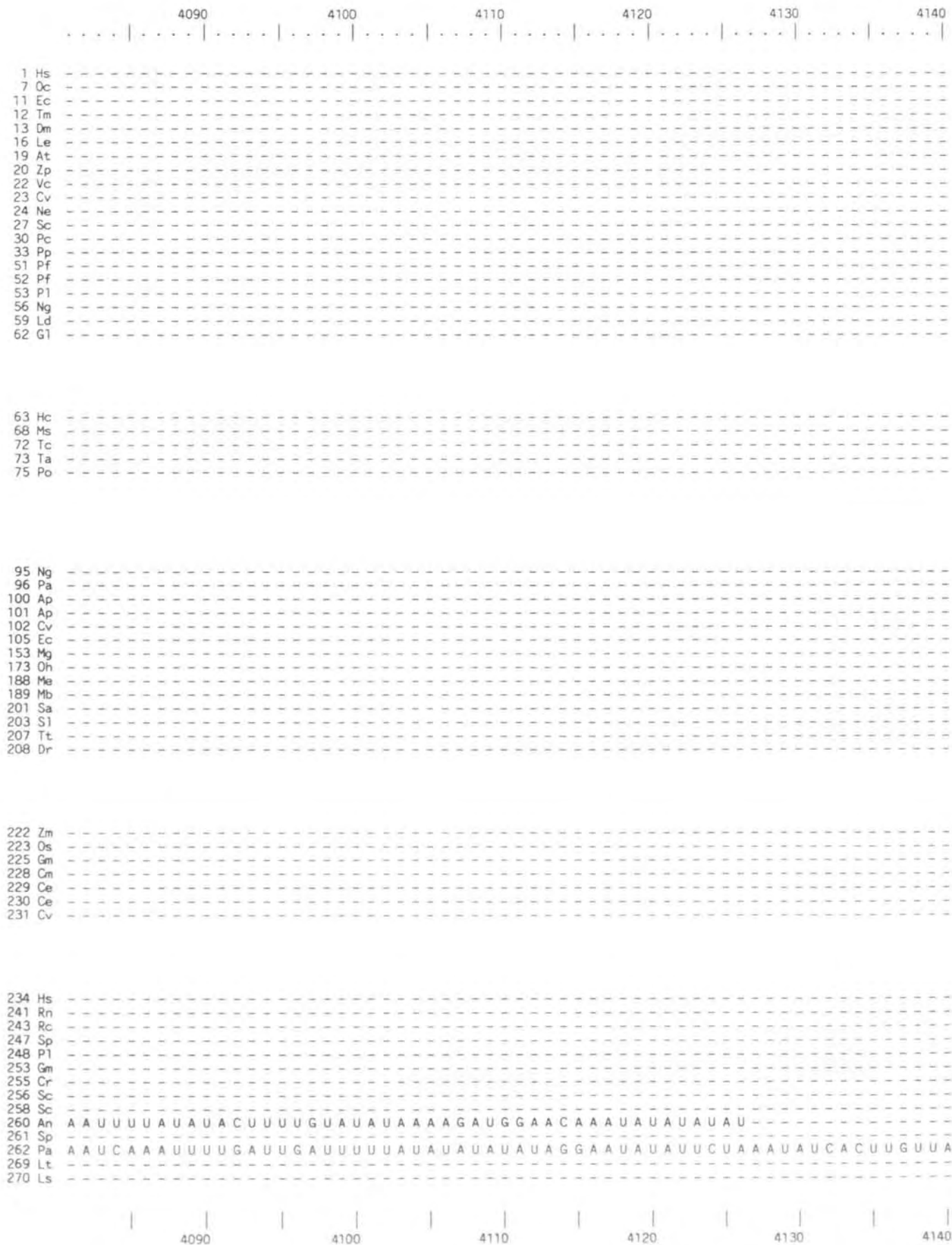
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XXXXXXXXXX	XXXXXXXXXX	XXXXXXXXXX	CCUCCU				Cv 102
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GAGAAACCUUGC	CGGCUUG	GAUACA	CCUCCU	UUUA	CU		Mg 153
GGGAAAGGUG	CGGCUUG	GAUACA	CCUCCU	UUUA	CU		Oh 173
XXGAAAGX	XXGAAAGX	XXGAAAGX	CCUCCU	UUUA	CU		Me 188
CGGAAAGGUG	CGGCUUG	GAUACA	CCUCCU	UUUA	CU		Mb 189
CGGAAAGGUG	CGGCUUG	GAUACA	CCUCCU	UUUA	CU		Sa 201
CGGAAAGGUG	CGGCUUG	GAUACA	CCUCCU	UUUA	CU		S1 203
CGGAAAGGUG	CGGCUUG	GAUACA	CCUCCU	UUUA	CU		Tt 207
CGGAAAGGUG	CGGCUUG	GAUACA	CCUCCU	UUUA	CU		Dr 208

48 ——— 48' ———

UGGAAAGGUG	CGGCUUG	GAUACA	CCUCCU	UUUA			Zm 222
UGGAAAGGUG	CGGCUUG	GAUACA	CCUCCU	UUUA			Os 223
UGGAAAGGUG	CGGCUUG	GAUACA	CCUCCU	UUUA			Gm 225
UGGAAAGGUG	CGGCUUG	GAUACA	CCUCCU	UUUA			Cm 228
UGGAAAGGUG	CGGCUUG	GAUACA	CCUCCU	UUUA			Ce 229
UGGAAAGGUG	CGGCUUG	GAUACA	CCUCCU	UUUA			Ce 230
UGGAAAGGUG	WGGYUG	GAUACA	CCUCCU	UUUA			Cv 231

UGGAAAGGUG	CACUUG	GACGA	AC				Hs 234
UGGAAAGGUG	CACUUG	GACGA	AU				Rn 241
UGGAAAGGUG	CACUUG	GACGA	AUA				Rc 243
GACACAC	CACUUG	GACGA	AUA				Sp 247
GACACAC	CACUUG	GACGA	AUA				P1 248
GGGAAACCUUGC	CGGCUUG	GAUACA	CCUCCU	UUUA			Gm 253
GGGAAACCUUGC	CGGCUUG	GAUACA	CCUCCU	UUUA			Cr 255
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GGGAAACCUUGC	CGGCUUG	GAUACA	CCUCCU	UUUA			Sc 258
UGGAAAGGUG	CACUUG	GAUACA	CCUCCU	UUUA			An 260
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UGGAAAGGUG	CACUUG	GAUACA	CCUCCU	UUUA			Pa 262
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4030 4040 4050 4060 4070 4080



	4150	4160	
.....			
-----			Hs 1
-----			Oc 7
-----			Ec 11
-----			Tm 12
-----			Dm 13
-----			Le 16
-----			At 19
-----			Zp 20
-----			Vc 22
-----			Cv 23
-----			Ne 24
-----			Sc 27
-----			Pc 30
-----			Pp 33
-----			Pf 51
-----			Pf 52
-----			P1 53
-----			Ng 56
-----			Ld 59
-----			G1 62

-----			Hc 63
-----			Ms 68
-----			Tc 72
-----			Ta 73
-----			Po 75

-----			Ng 95
-----			Pa 96
-----			Ap 100
-----			Ap 101
-----			Cv 102
-----			Ec 105
-----			Mg 153
-----			Oh 173
-----			Me 188
-----			Mb 189
-----			Sa 201
-----			S1 203
-----			Tt 207
-----			Dr 208

-----			Zm 222
-----			Os 223
-----			Gm 225
-----			Om 228
-----			Ce 229
-----			Ce 230
-----			Cv 231

-----			Hs 234
-----			Rn 241
-----			Rc 243
-----			Sp 247
-----			P1 248
-----			Gm 253
-----			Cr 255
-----			Sc 256
-----			Sc 258
-----			An 260
-----			Sp 261
U A U U U A U U A U A U A C U A U A U A			Pa 262
-----			Lt 269
-----			Ls 270

4150 4160

