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LETTER TO THE EDITOR

A new nomenclature of group I introns in ribosomal DNA

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The current nomenclature system of group I introns (see Cech, 1988; Michel & Westhof, 1990) has become insufficient to distinguish and categorize the complex collection of more than 900 group I introns in ribosomal DNA (rDNA) of nuclear, mitochondrial, chloroplast, and eubacterial genomes (http://www.rna.icmb.utexas.edu/; GenBank; our unpubl. results) in a rational way. The majority of these group I introns (~750) are found in nuclear rDNA of fungi and protists, but the distribution appears highly scattered since most species analyzed lack introns. Many of the rDNA introns are optional among strains of a particular species or between closely related species, and some have been shown in experimental settings to be true mobile genetic elements (see Belfort & Roberts, 1997). All group I rDNA introns are found at a limited number of insertion sites (~75) in highly conserved regions of the small subunit (SSU) and large subunit (LSU) rRNA genes, and some of these sites (~10) are shared by introns from the nuclei, mitochondria, or chloroplasts. There are numerous examples of multiple group I introns in a single rRNA gene, and as many as eight nuclear introns have been noted in the SSU rDNA of the lichen ascomycete *Lecanora dispersa* (accession number L37734) and in the LSU rDNA of the myxomycete *Fuligo septica* (our unpubl. results). Finally, group I introns that occupy the same site in rDNA, but in distantly related hosts, tend to share a number of structural features as well as high levels of primary sequence similarities compared to introns at different insertion sites (e.g., Suh et al., 1999).

We propose an alternative nomenclature system for the rDNA group I introns based on (1) three-letter abbreviation of host scientific name, (2) one letter abbreviation of host gene, and (3) insertion site in the rDNA according to the *Escherichia coli* SSU or LSU rRNA sequence numbering (accession number AB035922). Examples of renaming are Nja.S516 (former NjaSSU1) from *Naegleria jamiesoni* SSU rDNA at position 516, and Tth.L1925 (former TtLSU1) from *Tetrahymena thermophila* LSU rDNA at position 1925 (see Table 1, lines 1 and 4). Typical examples of the new rDNA group I intron nomenclature are included in Table 1 (lines 1–6).

When appropriate, introns in different genome types could be distinguished by adding an abbreviation in front of L or S (see Table 1, lines 7–12). An example is group I introns at position 2449 in LSU rDNA of *Physarum polycephalum* nuclei (Ppo.nL2449), *Saccharomyces cerevisiae* mitochondria (Sce.mL2449), and *Chlamydomonas pallidostigmatica* chloroplast (Cpa.cL2449). Flexibility in the nomenclature becomes necessary in a few exceptional cases. Distantly related introns present at the same insertion site in different strains of the same species are named numerically, for example the two very different group I introns at position 956 in SSU rDNA in *Didymium iridis* isolates Pan2 and CR8 are named Dir.S956-1 and Dir.S956-2, respectively (Table 1, lines 13 and 14). Finally, the three-letter abbreviation of host scientific names may sometimes be insufficient. An example is introns at position 1516 in SSU rDNA of different *Lecanora* species. The introns in *L. albescenc*, *L. allophana*, *L. concolor*, and *L. contractula* should be named Lalb.S1516, Lall.S1516, Lconc.S1516, and Lcont.S1516, respectively (Table 1, lines 15–18).

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TABLE 1. Representative examples of the new nomenclature of rDNA group I introns.

Line	New name	Old name	Host organism	Host gene[1]	Accession Number
1	Nja.S516	NaSSU1	*Naegleria jamiesoni*	n-SSU(516)	X78279
2	Uma.S943	UmSSU1	*Ustillago maydis*	n-SSU(943)	X62396
3	Pea.S1506	PcSSU1	*Pneumocystis carinii*	n-SSU(1506)	X12708
4	Tth.L1925	TtLSU1	*Tetrahymena thermophila*	n-LSU(1925)	V01416
5	Ppo.L1925	PpLSU3	*Physarum polycephalum*	n-LSU(1925)	L03183
6	Dir.L2449	DiLSU1	*Didymium iridis*	n-LSU(2449)	X60210
7	Ppo.nL2449	PpLSU1	*Physarum polycephalum*	n-LSU(2449)	X60211
8	Sce.mL2449	ScLSU1	*Saccharomyces cerevisiae*	m-LSU(2449)	V00699
9	Cpa.cL2449	CpLSU4	*Chlamydomonas pallidostigmatica*	c-LSU(2449)	Z17229
10	Ceu.mL1931	CeLSU1	*Chlamydomonas eugametos*	m-LSU(1931)	L28931
11	Cfr.cL1931	CfLSU2	*Chlamydomonas franki*	c-LSU(1931)	Z17230
12	Sne.bL1931	SnLSU1	*Simkania negevensis*	b-LSU(1931)	U68460
13	Dir.S956-1	DiSSU1	*Didymium iridis* Pan2	n-SSU(956)	X71792
14	Dir.S956-2	DiSSU1	*Didymium iridis* CR8	n-SSU(956)	—
15	Lalb.S1516	LaSSU1	*Lecanora albescenc*	n-SSU(1516)	AF070061
16	Lall.S1516	LaSSU1	*Lecanora allophana*	n-SSU(1516)	Af070056
17	Lconc.S1516	LcSSU1	*Lecanora concolor*	n-SSU(1516)	AF070059
18	Lcont.S1516	LcSSU1	*Lecanora contractula*	n-SSU(1516)	AF070057

[1]Small subunit (SSU) and large subunit (LSU) rRNA genes from eukaryotic nuclei (n), mitochondria (m), chloroplasts (c), bacteria (b), and archaea (a; if/when group I rDNA introns are found in these cells). Intron location site is indicated according to the *E. coli* SSU or LSU rRNA sequence numbering.

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