

Addition file 1

for

Mitochondrial-encoded membrane protein transcripts are pyrimidine-rich while soluble protein transcripts and ribosomal RNA are purine-rich

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Species	Genome		RNA-Coding							
	%Pur	%AT	%Pur	%Pyrim	Length	%A	%G	%C	%T	%AT
<i>Homo sapiens</i> (Human)	44	55.5	51.9	48.1	4024	33.3	18.7	23.1	25	58.3
<i>Mus musculus</i> (Mouse)	45.3	62.9	53.5	46.5	4038	36.7	16.9	18.2	28.3	65
<i>Gallus gallus</i> (Chicken)	43.8	54	51.2	48.8	4200	31.8	19.4	25.8	23	54.8
<i>Alligator mississippiensis</i> (Alligator)	44.8	57	52.7	47.3	4158	33	19.6	24.3	23	56.1
<i>Xenopus laevis</i> (African clawed frog)	46.6	63	52.8	47.2	3988	32.8	20	21.5	25.6	58.5
<i>Danio rerio</i> (Zebrafish)	46	60.7	54.6	45.4	4197	33.3	21.3	22	23.4	56.7
<i>Drosophila melanogaster</i> (Fruit fly)	49.3	82.2	51.9	48.1	3568	39.7	12.2	7.82	40.3	80
<i>Strongylocentrotus purpur.</i> (Sea urchin)	45.1	58.7	54.1	45.9	3953	33.5	20.6	19.3	26.7	60.2
<i>Caenorhabditis elegans</i> (Nematode)	46.3	76.2	51.4	48.6	2889	35.8	15.6	8.69	39.9	75.7
<i>Metridium senile</i> (Sea anemone)	48.2	61.9	56.9	43.1	3412	32.1	24.8	17.4	25.6	57.7
<i>Saccharomyces cerevi.</i> (Baker's yeast)	51.3	82.9	54	46	8410	40.4	13.7	9.82	36.1	76.5
<i>Dictyostelium discoideum</i> (Slime mold)	60.5	72.6	57.9	42.1	6444	36	21.8	13.8	28.3	64.3
<i>Chondrus Crispus</i> (Irish moss)	52.2	72.1	54.6	45.4	6280	36.2	18.3	13.9	31.6	67.8
<i>Porphyra purpurea</i> (Red algae)	53	66.5	55.4	44.6	10769	35	20.4	16.1	28.5	63.5
<i>Marchantia polymorpha</i> (Liverwort)	49.9	57.6	54.5	45.5	11202	28.5	26	21.6	23.8	52.3
<i>Arabidopsis thaliana</i> (Thale cress)	50.2	55.2	50.9	49.1	51413	26.8	24	22.7	26.4	53.3
<i>Chlamydomonas reinhardtii</i> (Grn algae)	50.5	54.8	53.6	46.4	3837	29.5	24.1	21.3	25.1	54.7
<i>Pedinomonas minor</i> (Green algae)	44.1	77.8	51.1	48.9	3969	36.4	14.7	10.3	38.6	75
<i>Physarum polycephalum</i> (Slime mold)	51.3	74.1								
<i>Schizosacc. Pombe</i> (Fission yeast)	49.5	69.9	52.7	47.3	6107	33.5	19.3	14.8	32.5	66
<i>Reclinomonas Americana</i> (Protozoan)	51.5	73.9	55.1	44.9	7246	30.9	24.1	17.4	27.6	58.5
<i>Plasmodium falciparum</i> (Malaria)	48.3	68.4								
<i>Polysphondylium pallidum</i> (Slime mold)	55.9	77.2	57.4	42.6	6267	37.3	20.2	12.4	30.1	67.4
	Soluble Proteins		Protein-Coding							
			%Pur	%Pyrim	Length	%A	%G	%C	%T	%AT
<i>Homo sapiens</i> (Human)	no		42	58	11389	28.9	13.1	31.9	26.1	55
<i>Mus musculus</i> (Mouse)	no		44.8	55.2	11403	32.6	12.2	25.1	30.1	62.7
<i>Gallus gallus</i> (Chicken)	no		41.6	58.4	11396	28.3	13.4	33.6	24.8	53.1
<i>Alligator mississippiensis</i> (Alligator)	no		42.6	57.4	11398	29.1	13.4	30	27.4	56.5
<i>Xenopus laevis</i> (African clawed frog)	no		44	56	11375	30.6	13.4	23.8	32.2	62.8
<i>Danio rerio</i> (Zebrafish)	no		45.3	54.7	11409	29.8	15.5	23.8	30.9	60.7
<i>Drosophila melanogaster</i> (Fruit fly)	no		44.4	55.6	11181	32.4	11.9	10.8	44.8	77.2
<i>Strongylocentrotus purpur.</i> (Sea urchin)	no		44.1	55.9	11507	26.1	18	23.5	32.4	58.5
<i>Caenorhabditis elegans</i> (Nematode)	no		44.8	55.2	10299	29.6	15.3	9.22	45.9	75.5
<i>Metridium senile</i> (Sea anemone)	1		45.6	54.4	12600	25.1	20.4	16.9	37.6	62.7
<i>Saccharomyces cerevi.</i> (Baker's yeast)	yes		51.4	48.6	24429	38.5	12.8	9.94	38.7	77.2
<i>Dictyostelium discoideum</i> (Slime mold)	yes		60.8	39.2	40053	44.5	16.2	9.73	29.5	74
<i>Chondrus Crispus</i> (Irish moss)	yes		44.5	55.5	18390	30.9	13.5	13.6	41.9	72.9
<i>Porphyra purpurea</i> (Red algae)	yes		49.4	50.6	25917	32.8	16.6	16.6	34	66.9
<i>Marchantia polymorpha</i> (Liverwort)	yes		50.5	49.5	68999	29.2	21.3	19.2	30.3	59.4
<i>Arabidopsis thaliana</i> (Thale cress)	yes		48.3	51.7	68940	26.3	22	22.2	29.6	55.9
<i>Chlamydomonas reinhardtii</i> (Grn algae)	1		42.8	57.2	9261	19.9	22.9	22.1	35.1	55
<i>Pedinomonas minor</i> (Green algae)	no		39.5	60.5	10398	26.3	13.2	9.71	50.8	77.1
<i>Physarum polycephalum</i> (Slime mold)	yes		52	48	21039	40.3	11.7	12.2	35.7	76.1
<i>Schizosacc. Pombe</i> (Fission yeast)	yes		48.4	51.6	9907	33.5	14.9	14.4	37.2	70.7
<i>Reclinomonas Americana</i> (Protozoan)	yes		51.6	48.4	55920	37.5	14.1	11.2	37.1	74.6
<i>Plasmodium falciparum</i> (Malaria)	no		45.2	54.8	3510	31.1	14	13.5	41.3	72.4
<i>Polysphondylium pallidum</i> (Slime mold)	yes		55.4	44.6	38490	41.7	13.6	7.97	36.7	78.4

Table S1. Percent purine of the entire mitochondrial genome (+ strand) of selected species and individual base composition in just the protein-coding or just the RNA-coding (both tRNA and rRNA) sections.

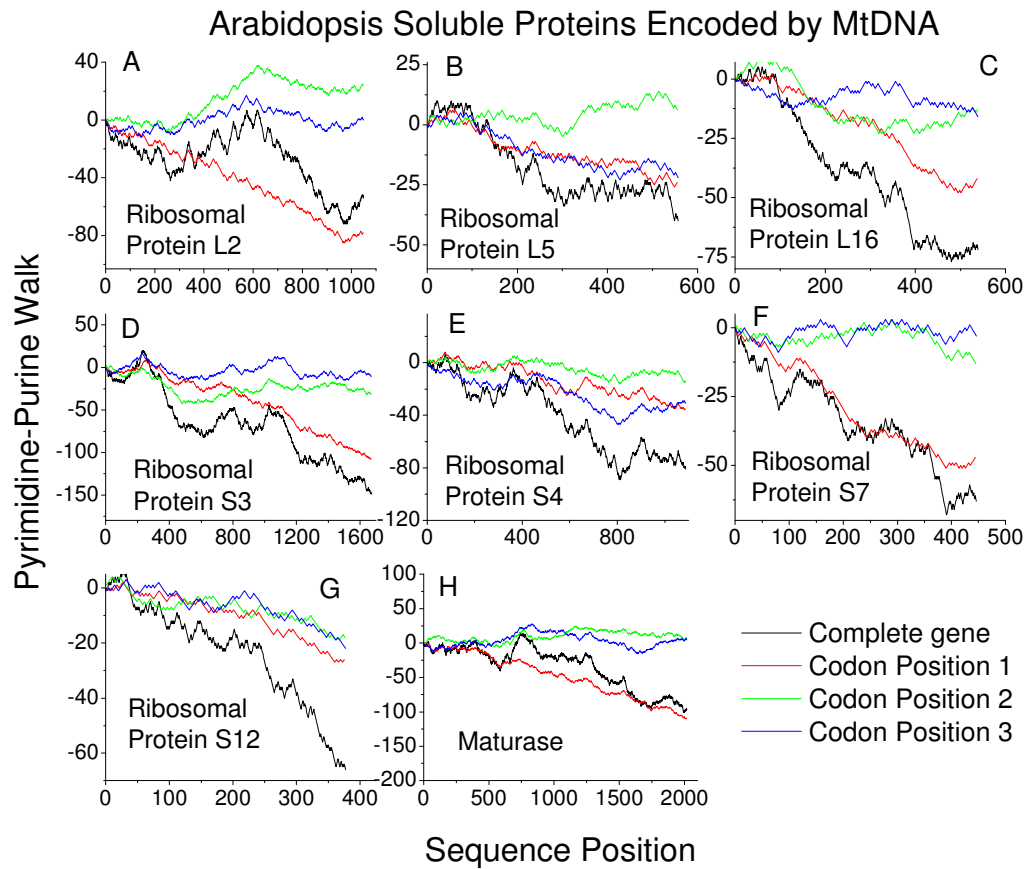


Figure S1 The pyrimidine-purine walk of each codon position of eight soluble mitochondrial-encoded protein transcripts from *Arabidopsis thaliana*.

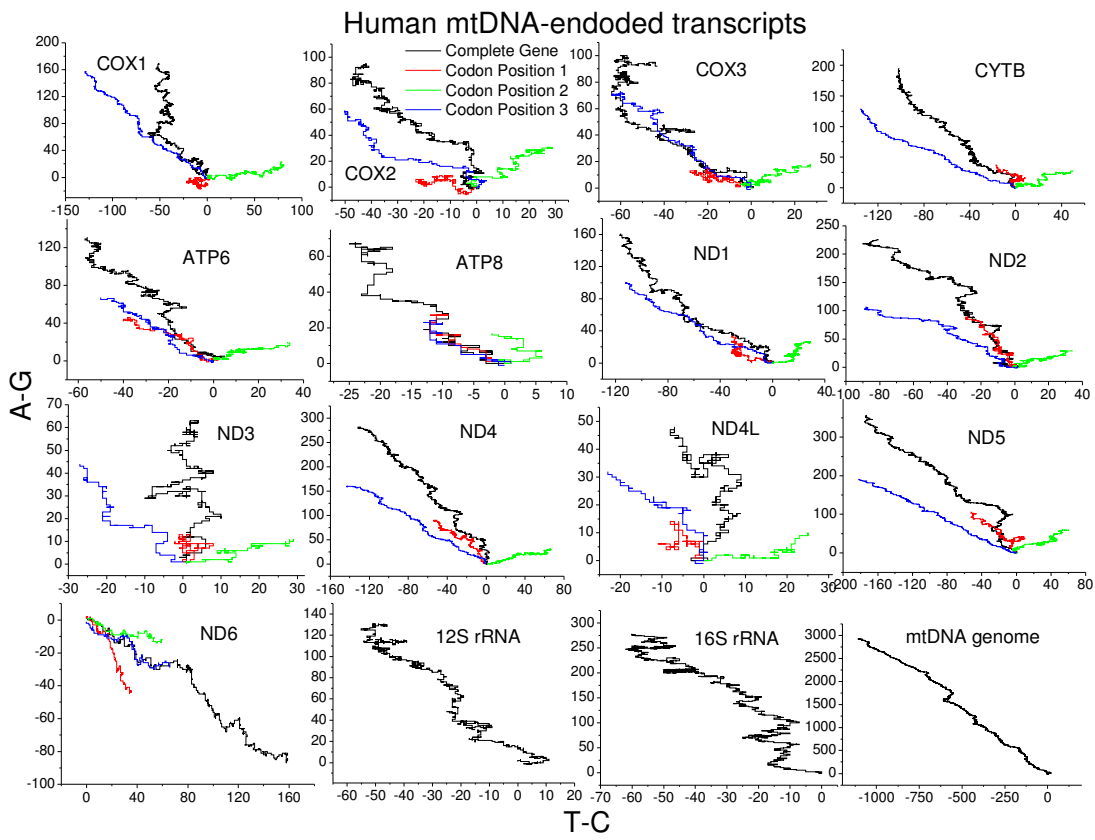


Figure S2 The 2-dimensional A-G and T-C walks of human mtDNA-encoded transcripts.

MtDNA intron-containing transcripts

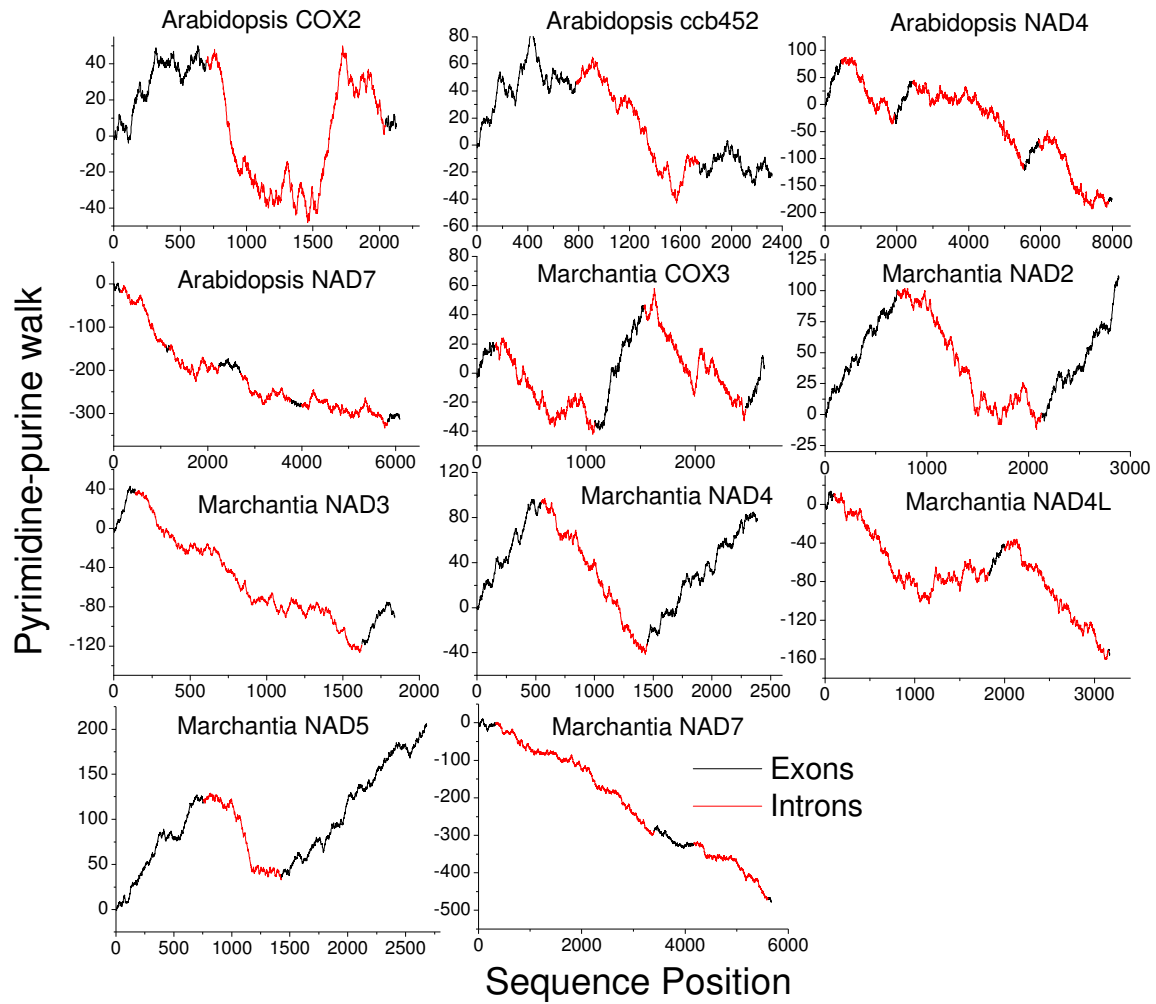


Figure S3 Pyrimidine-purine walks of unspliced mitochondrial-encoded transcripts from *Arabidopsis thaliana* and *Marchantia polymorpha*. The introns in these transcripts do not encode known proteins.