

Supplemental Table S1. Primers and single-stranded synthetic DNAs (ssDNAs) for *in vitro* transcription of tRNAs.

Primers and single-strand synthetic DNAs	Sequence (5'-3')
Primers	
T7 primer	GGATCCTAATACGACTCACTATAGGG
tRNA ^{Leu} ^{GAG}	TGGTACCGAGGAGGGGACTC
tRNA ^{Leu} ^{CAG}	TGGTGCCCAGGAGAAGACTC
tRNA ^{Leu} ^{TAG}	TGGTGCGGACGGAGAGACTC
tRNA ^{His} ^{GTG}	TGGGGTGGACGATGGGAATC
tRNA ^{Pro} ^{GGG}	TGGTCGGGACGGAGTGATTC
tRNA ^{Pro} ^{CGG}	TGGTCGGAGCGACTGGATTC
tRNA ^{Pro} ^{TGG}	TGGTCGGGGTAGAGAGATTC
tRNA ^{Gln} ^{TTG}	TGGCAGGGGCGGCTGGATTC
BT4298	GCGAGATGCGGGTGGACT
BT4299	AATCGGCCAGCCATCGATAC
BT4316	CTGATCGAATTCGCACAAGCAGATGCAGAAGA
BT4317	TGATCGTCTAGAACATCTCCGGAAAGATGCTG
BT4318	TAGCCGGGTACCTTCTGGAGAAGAGCAGAAG
BT4319	CGGCGAGGGGCCCTTCGACAATATCCGCATTG
Single-strand synthetic DNAs	
tRNA ^{Leu} (GAG)	GGATCCTAATACGACTCACTATAGGGGCCGAGGT GGTGG AATTGGTAGACACGCTACCTTGAGGTGGT AGTGGCCATAGGCTGTAGGGGTTTCGAGTCCCCT CCTCGGTACCA
tRNA ^{Leu} (CAG)	GGATCCTAATACGACTCACTATAGGGGCCCAGGT GGCGGAATTGGTAGACGCACTAGGTTTCAGGTCC TAGCGGTGGCAACACCGTGGAAGTTTCGAGTCTTC TCCTGGGCACCA
tRNA ^{Leu} (UAG)	GGATCCTAATACGACTCACTATAGGGGCGGACGT GGTGG AATTGGTAGACACACTGGATTTAGGTTCC AGCGCCGCAAGGCGTGAGAGTTTCGAGTCTCTCC GTCCGCACCA
tRNA ^{His} (GUG)	GGATCCTAATACGACTCACTATAGGGGTGGGCGT AGCTCAGTTGGTAGAGCACAGGATTGTGGCTCCT GGTGTCGTGGGTTTCGATTCCCATCGTCCACCCCA

tRNA ^{Pro(GGG)}	GGATCCTAATACGACTCACTATAGGGCGGGGCG TAGCGCAGCCTGGTAGCGCACTTGCATGGGGTG CAAGGGGTTCGAGTGTTTGAATCACTCCGTCCCG ACCA
tRNA ^{Pro(CGG)}	GGATCCTAATACGACTCACTATAGGGCGGAGCGT AGCGCAGCTTGGTAGCGCGTCTCGTTCCGGGACG AGAAGGTCGCTGGTTTGAATCCAGTCGCTCCGA CCA
tRNA ^{Pro(UGG)}	GGATCCTAATACGACTCACTATAGGGCGGGGTAT AGCGCAGTCCGGTAGCGCGCCTGCTTTGGGAGC AGGATGTCGGGAGTTTGAATCTCTCTACCCCGAC CA
tRNA ^{Gln(UUG)}	GGATCCTAATACGACTCACTATAGGGAGGGGCGT CGCCAAGCGGTAAGGCAGCAGGTTTTGATCCTG CCATGCGTTGGTTTGAATCCAGCCGCCCTGCC A

Supplemental Table S2. Ribonucleosides identified by mass spectrometric analysis (Agilent 6460)

rN Name	Precursor ion (m/z)	Product ion (m/z)	Fragment (V)	Collision (V)	Retention time (min)
ψ	245.1	125.1	120	10	1.310
Cm	258.1	112.1	79	8	4.642
m ³ C	258.1	126.1	88	8	2.453
m ⁵ C	258.1	126.1	88	8	1.913
Um	259.1	113.1	100	8	8.280
m ⁵ U	259.1	127.1	79	8	5.839
s ² U	261.1	129.1	100	8	5.837
s ⁴ U	261.1	129.1	100	8	7.271
l	269.1	137.1	79	8	5.949
mo ⁵ U	275.1	143.1	100	8	6.913
Am	282.1	136.1	100	8	11.722
m ¹ A	282.1	150.1	100	8	2.708
m ² A	282.1	150.1	100	8	10.728
m ⁶ A	282.1	150.1	100	8	15.583
mnm ⁵ U	288.1	156.1	100	8	1.884
m ⁶ ₂ A	296.1	164.1	100	8	20.502
Gm	298.1	152.1	100	8	14.362
m ⁷ G	298.1	166.1	100	8	4.859
m ¹ G	298.1	166.1	100	8	13.740
m ² ₂ G	312.1	180.1	100	8	19.548
Cmo ⁵ U	319.1	187.1	100	8	6.174
i ⁶ A	336.1	204.1	100	8	22.536
t ⁶ A	413.1	136.1	100	8	21.960