**Supplementary File 1.** Additional oligonucleotide sequences (not listed in the key resources table). Sequences of oligonucleotides used for tRNA charging assay (Figure 1 and 2) and for Northern blotting (Figure 1G) are listed.

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| **Name** | **Assay** | **Sequence** |
| ValMAC\_FW | qPCR primer,tRNA charging assay | 5’-GTTTCCGTAGTGTAGTGGTTATCACGTTCG-3’ |
| ValMAC\_RV | qPCR primer,tRNA charging assay | 5’-GAGAATTCCATGGTGTTTCCGCCC-3’ |
| iMetCAT\_FW | qPCR primer,tRNA charging assay | 5’-AGCAGAGTGGCGCAGCG-3’ |
| iMetCAT\_RV | qPCR primer,tRNA charging assay | 5’-GAGAATTCCATGGTAGCAGAGGATGGTTTCG-3’ |
| eMetCAT\_FW | qPCR primer,tRNA charging assay | 5’-GCCTCSTTAGCGCAGTAGGTAG-3’ |
| eMetCAT\_RV | qPCR primer,tRNA charging assay | 5’-GAGAATTCCATGGTGCCCCSTS-3’ |
| GlnCTG\_FW | qPCR primer,tRNA charging assay | 5’-GGTTCCATGGTGTAATGGTNAGCACTCTG-3’ |
| GlnCTG\_RV | qPCR primer,tRNA charging assay | 5’-GAGAATTCCATGGAGGTTCCACCGAGATTTG-3’ |
| LeuWAG\_FW | qPCR primer,tRNA charging assay | 5’-GGTAGYGTGGCCGAGCG-3’ |
| LeuWAG\_RV | qPCR primer,tRNA charging assay | 5’-GAGAATTCCATGGCAGYGGTGGG-3’ |
| ArgACG\_FW | qPCR primer,tRNA charging assay | 5’-GGGCCAGTGGCGCAATG-3’ |
| ArgACG\_RV | qPCR primer,tRNA charging assay | 5’-GAGAATTCCATGGCGAGCCAGC-3’ |
| yPhe\_FW | qPCR primer,tRNA charging assay | 5’-GCGGAYTTAGCTCAGTTGGGAGAG-3’ |
| yPhe\_RV | qPCR primer,tRNA charging assay | 5’-GAGAATTCCATGGTGCGAAYTCTGTGG-3’ |
| tRNAGlnCTG | Northern probe | 5’- /5Biosg/CTAACCATTACACCATGGAAC-3’ |
| tRNAValMAC | Northern probe | 5’-/5Biosg/GATAACCACTACACTACGGAA-3’ |
| tRNAiMetCAT | Northern probe | 5’-/5Biosg/GCTTCCGCTGCGCCACTCTGC-3’ |