

**Supplemental Table S6**

Plasmids employed in this work.

| Strain number | Parent Strain | Description                                                                                               | Source     |
|---------------|---------------|-----------------------------------------------------------------------------------------------------------|------------|
| EEVN391       |               | RFP- P <sub>GAL1,10</sub> FN-FN-GFP reporter                                                              | This study |
| EEVN652       | EEVN391       | EEVN 391 with OOOO (R-R CGT-CGT at positions 1, 3, 4 and L-P TTG-CCA at position; gbEP029 in Apal Eagl    | This study |
| EEVN660       | EEVN391       | EEVN 391 with IOII (R-R CGA-CGA at positions 1, 3, 4) and L-P TTG-CCG at position 2, gbEP031 in Apal Eagl | This study |
| EBB008        | EEVN391       | EEVN391 with gbEP017 insert in Apal_Sbfl, OOO                                                             | This study |
| EBB012        | EEVN391       | EEVN391 with gbEP018 insert in Apal_Sbfl; IOO                                                             | This study |
| EBB016        | EEVN391       | EEVN391 with gbEP019 insert in Apal_Sbfl, IOI                                                             | This study |
| EBB020        | EEVN391       | EEVN391 with gbEP020 insert in Apal_Sbfl, III                                                             | This study |
| EBB034        | EBB008        | EBB008 with TTG-CCA insert in BsiWI-Eagl                                                                  | This study |
| EBB043        | EBB012        | EBB012 with CTC-CCG insert in BsiWI_Eagl                                                                  | This study |
| EBB046        | EBB016        | EBB016 with TTG-CCA insert in BsiWI-Eagl                                                                  | This study |
| EBB049        | EBB016        | EBB016 with CTG-CCG insert in BsiWI-Eagl                                                                  | This study |
| EBB052        | EBB020        | EBB020 TTG-CCA insert in BsiWI-Eagl                                                                       | This study |
| EBB055        | EBB020        | EBB020 CTC-CCG insert in BsiWI-Eagl                                                                       | This study |
| EBB194        | EBB034        | OOOO,                                                                                                     | This study |
| EBB198        | EBB034        | EBB034 with CAC-CTC-CCG-caa inserted into Apal-Sall, TTGCCA x 3 and CTCCCG, IOOO                          | This study |
| EBB227        | EBB043        | EBB043 with CAC-TTG-CCA-caa inserted into Apal-Sall, TTG-CCA x3, CTC-CCG, OOOI                            | This study |
| EBB 231       | EBB043        | 2, IOOI                                                                                                   | This study |
| EBB234        | EBB046        | EEVN046 CAC-TTG-CCA-caa inserted into Apal_Sall, TTG-CCA x 2, CTC-CCG x 2, OOIO,                          | This study |
| EBB240        | EBB046        | EEVN046 CAC-CTC-CCG-caa inserted into Apal_Sall, TTG-CCA x 2, CTC-CCG x 2, IOIO,                          | This study |
| EBB246        | EBB049        | EBB049 with CAC-TTG-CCA-caa inserted into Apal_Sall, TTGCCA and CTCCCG x 3, OOII                          | This study |
| EBB252        | EBB049        | EBB049 with CAC-CTC-CCG-caa inserted into Apal_Sall, TTGCCA and CTCCCG x 3, IOII                          | This study |

|          |          |                                                                                                                           |                   |
|----------|----------|---------------------------------------------------------------------------------------------------------------------------|-------------------|
| EBB258   | EBB052   | EBB052, CAC-TTG-CCA- <i>caa</i> inserted into <i>Apal_Sall</i> ; TTG-CCA, CTC-CCG x 3, OIIO                               | This study        |
| EBB262   | EBB052   | EBB052, CAC-CTC-CCG- <i>caa</i> inserted into <i>Apal_Sall</i> ; TTG-CCA, CTC-CCG x 3, IIIO                               | This study        |
| EBB266   | EBB055   | EBB055 with CAC-TTG-CCA- <i>caa</i> in <i>Apal_Sall</i> ; CTC-CCG x 4 OIII,                                               | This study        |
| EBB270   | EBB055   | EBB055 with CAC-CTC-CCG- <i>caa</i> in <i>Apal_Sall</i> ; CTC-CCG x 4 IIII,                                               | This study        |
| EAH118-2 |          | URA3 CEN plasmid with LYS2-LEU2-LYS2 flanked by <i>StuI</i> site, excised fragment used integration at LYS2               | This study        |
| EBB424   | EAH118-2 | EAH118-2 with tL(GAG) insert (gbBB004) in <i>BamHI</i> site                                                               | This study        |
| EBB529   | EAH118-2 | EAH118-2 with tL(GAG) U33C mutation insert (gbBB006) in <i>BamHI</i> site                                                 | This study        |
| EEVN535  |          | <i>URA3</i> Promoter $\Delta$ UAS (-142 to -157) FN-URA3 fusion, <i>S. pombe HIS5</i>                                     | This Study        |
| EBB543   | EAH118-2 | EAH118-2 with wt tP(UGG) YNCL001W                                                                                         | This study        |
| EBB553   | EAH118-2 | EAH118-2 with tP(UGG) to (CGG) mutation from YNCL0001W in YBB0984 into <i>BamHI</i>                                       | This study        |
| EBB564   | EAH118-2 | into <i>BamHI</i>                                                                                                         | This study        |
| ECB1635  | EKD1024  | CTCCCGACT at amino acid 6 in EKD1024 (codon insert-GFP) reporter                                                          | Gamble et al 2016 |
| ECB1637  | EKD1024  | TTGCCAACT at amino acid 6 in EKD1024 (codon insert-GFP) reporter                                                          | Gamble et al 2016 |
| ECB1378  | EKD1024  | CTGCCGACC at amino acid 6 in EKD1024 (codon insert-GFP) reporter                                                          | Gamble et al 2016 |
| ECB1380  | EKD1024  | TTGCCAACC at amino acid 6 in EKD1024 (codon insert-GFP) reporter                                                          | Gamble et al 2016 |
| ECB1667  | EKD1024  | CGACCGAGC at amino acid 6 in EKD1024 (codon insert-GFP) reporter                                                          | Gamble et al 2016 |
| ECB1669  | EKD1024  | AGACCAAGC at amino acid 6 in EKD1024 (codon insert-GFP) reporter                                                          | Gamble et al 2016 |
| ECB1820  | pEAW315  | CTC-CCG (Leu-Pro) inhibitory dimer at amino acid 100 in <i>GLN4-GFP</i> in pEAW315                                        | Gamble et al 2016 |
| ECB1822  | pEAW315  | CTC-CCA (Leu-Pro) inhibitory dimer at amino acid 100 in <i>GLN4-GFP</i> in pEAW315                                        | Gamble et al 2016 |
| ECB1840  | pEAW315  | TTG-CCA (Leu-Pro) optimal dimer at amino acid 100 in <i>GLN4-GFP</i> in pEAW315                                           | Gamble et al 2016 |
| ECB1810  | pEAW315  | CTG-CCA (Arg-Pro) inhibitory dimer at amino acid 100 in <i>GLN4-GFP</i> in pEAW315                                        | Gamble et al 2016 |
| ECB1834  | pEAW315  | AGA-CCA (Arg-Pro) optimal dimer at amino acid 100 in <i>GLN4-GFP</i> in pEAW315                                           | Gamble et al 2016 |
| EBB325   | EEVN535  | EEVN535- <i>URA3</i> reporter with $\Delta$ UAS and with FN-FN fusion at N terminus of <i>URA3</i> , <i>S. pombe HIS5</i> | This study        |
| EBB439   | EEVN535  | (IOIO <i>URA3</i> -- $\Delta$ UAS); EEVN535 with Leu-Pro IOIO FN-FN domain for EBB240 inserted at <i>BamHI</i> site       | This study        |
| EBB443   | EEVN535  | (OIIO <i>URA3</i> -- $\Delta$ UAS); EEVN535 with Leu-Pro OIIO FN-FN domain from EBB252 inserted at <i>BamHI</i> site      | This study        |
| EBB447   | EEVN535  | (IOII <i>URA3</i> -- $\Delta$ UAS); EEVN535 with Leu-Pro IOII FN-FN domain from EBB258 inserted at <i>BamHI</i> site      | This study        |

|         |         |                                                                                                  |                        |
|---------|---------|--------------------------------------------------------------------------------------------------|------------------------|
| EBB451  | EEVN535 | (III URA3- ΔUAS) EEVN535 with EBB270 III Leu-Pro CUC-CCG in FN-FN domains, inserted at BamHI III | This study             |
| EEVN634 |         | <i>RPL7A URA3 CEN</i> plasmid                                                                    | This study             |
| EEVN646 |         | <i>RPL36B URA3 CEN</i> plasmid                                                                   | This study             |
| EAU080  |         | <i>RPL1B (URA3 CEN)</i>                                                                          | <b>Letzring , 2013</b> |
| EBB024  |         | <i>GAL1,10</i> promoter FLAG tag-RFP-GFP fusion plasmid (PSC55)                                  | This study             |
| EBB027  | EBB024  | EBB024 with 5'UTR from YDL2224C                                                                  | This study             |
| EBB274  | EBB024  | EBB024 with Leu-Pro OOOO (UUG-CCA) form EBB194                                                   | This study             |
| EBB278  | EBB024  | EBB024 with Leu-Pro IOOI(CUC-CCG; UUG-CCA) form EBB231                                           | This study             |
| EBB500  | EBB024  | EBB024 with Leu-Pro IOOI (CUC-CCG;UUG-CCA) from EBB473                                           | This study             |
| EBB299  | EBB027  | EBB027 with Leu-Pro OOOO (UUG-CCA) form EBB194                                                   | This study             |
| EBB302  | EBB027  | EBB027 with Leu-Pro IOOI(CUC-CCG; UUG-CCA) form EBB231                                           | This study             |
| EBB504  | EBB027  | EBB027 with Leu-Pro IOOI (CUC-CCG;UUG-CCA) from EBB476                                           | This study             |
| EBB463  | EBB024  | EBB024 with Arg-Arg at position 1,2 and 4 OOOO (AGA-AGA); O3 is Leu Pro UUG-CCA                  | This study             |
| EBB481  | EBB024  | EBB024 with Arg-Arg at position 1,2 and 4 IOOI ( CGA-CGA;AGA-AGA) O3 is Leu Pro UUG-CCA          | This study             |
| EBB488  | EBB024  | EBB024 with Arg-Arg at position 1,2 and 4 IOOI (CGA-CGA; AGA-AGA) O3 is Leu Pro UUG-CCA          | This study             |
| EBB496  | EBB027  | EBB027 with Arg-Arg at position 1,2 and 4-OOOO (AGA-AGA); O3 is Leu Pro UUG-CCA                  | This study             |
| EBB484  | EBB027  | EBB027 with Arg-Arg at position 1,2 and 4 IOOI (CGA-CGA; AGA-AGA);O3 is Leu Pro UUG-CCA          | This study             |
| EBB493  | EBB027  | EBB027 with Arg-Arg at position 1,2 and 4 IOOI (CGA-CGA; AGA-AGA);O3 is Leu Pro UUG-CCA          | This study             |
| PSC007  |         | <i>2m, HEL2, URA3</i>                                                                            | <b>Houston, 2021</b>   |
| EEVN679 |         | <i>SCH9</i> wild type - <i>K. lactis URA5</i>                                                    | This study             |
| EEVN689 |         | <i>SCH9</i> N543S (from YBB1108) <i>K. lactis URA5</i>                                           | This study             |
| EEVN691 |         | <i>SCH9</i> Q618* ( from YBB1114) <i>K. lactis URA5</i>                                          | This study             |

Gamble CE, Brule CE, Dean KM, Fields S, Grayhack EJ. 2016. Adjacent Codons Act in Concert to Modulate Translation Efficiency in Yeast. Cell 166: 679-690.

Letzring DP, Wolf AS, Brule CE, Grayhack EJ. 2013. Translation of CGA codon repeats in yeast involves quality control components and ribosomal protein L1. *RNA* 19: 1208-1217.

Houston L, Platten EM, Connelly SM, Wang J, Grayhack EJ. 2022. Frameshifting at collided ribosomes is modulated by elongation factor eEF3 and by integrated stress response regulators Gcn1 and Gcn20. *RNA* 28: 320-339.