

**Additional File 3.** Synonymous codon class assignments in *Saccharomyces spp.*

| AA  | Codon | status* | $J^2$  | AA    | Codon | status* | $J^2$  |
|-----|-------|---------|--------|-------|-------|---------|--------|
| Phe | UUU   | u       | 728.4  | Ala   | GCU   | p       | 2953.3 |
|     | UUC   | p       | 728.4  |       | GCC   | p       | 75.5   |
| Leu | UUA   | u       | 124.2  |       | GCA   | u       | 1795.0 |
|     | UUG   | p       | 4017.0 |       | GCG   | u       | 427.2  |
|     | CUU   | u       | 289.4  | Tyr   | UAU   | u       | 730.2  |
|     | CUC   | u       | 87.1   |       | UAC   | p       | 730.2  |
|     | CUA   | u       | 72.7   | His   | CAU   | u       | 319.7  |
|     | CUG   | u       | 301.6  |       | CAC   | p       | 319.7  |
| Ile | AUU   | p       | 19.0   | Gln   | CAA   | p       | 568.3  |
|     | AUC   | p       | 727.6  |       | CAG   | u       | 568.3  |
|     | AUA   | u       | 981.5  | Asn   | AAU   | u       | 1237.0 |
| Met | AUG   | n/a     | n/a    |       | AAC   | p       | 1237.0 |
|     | Val   | GUU     | p      | 762.6 | Lys   | AAA     | u      |
| GUC |       | p       | 850.7  | AAG   |       | p       | 2220.5 |
| GUA |       | u       | 945.2  | Asp   | GAU   | u       | 363.0  |
| GUG |       | u       | 677.9  |       | GAC   | p       | 363.0  |
| Ser | UCU   | p       | 1580.2 | Glu   | GAA   | p       | 693.1  |
|     | UCC   | p       | 674.6  |       | GAG   | u       | 693.1  |
|     | UCA   | u       | 463.3  | Cys   | UGU   | p       | 114.0  |
|     | UCG   | u       | 253.3  |       | UGC   | u       | 114.0  |
|     | AGU   | u       | 266.6  | Trp   | UGG   | n/a     | n/a    |
|     | AGC   | u       | 143.0  |       | Arg   | CGU     | p      |
| Pro | CCU   | u       | 255.2  | CGC   |       | u       | 1365.3 |
|     | CCC   | u       | 283.2  | CGA   |       | u       | 1739.0 |
|     | CCA   | p       | 2291.9 | CGG   |       | u       | 1465.5 |
|     | CCG   | u       | 227.0  | AGA   | p     | 2844.8  |        |
| Thr | ACU   | p       | 479.8  |       | AGG   | u       | 889.1  |
|     | ACC   | p       | 784.5  | Gly   | GGU   | p       | 5172.7 |
|     | ACA   | u       | 907.8  |       | GGC   | u       | 427.6  |
|     | ACG   | u       | 391.4  |       | GGA   | u       | 1001.0 |
|     |       |         |        |       | GGG   | u       | 384.4  |

\* p = preferred codon; u = unpreferred codon; e = equal codon