

# Human Insulin Sample Protein Data (34)

## Summary Report

|                                |           |
|--------------------------------|-----------|
| Individual Codon Fitness (Max) | -0.073148 |
| Codon Context Fitness (Max)    | -0.11852  |

## Input Sequence As Protein

MALWMRLLPLLALLALWGPDPAAAFVNQHLCGSHLVEALYLVCGERGFFYTPKTRREAEDLQVGQV  
ELGGPGAGSLQPLALEGSLQKRGIVEQCCTSICSLYQLENYCN\*

## Optimized Nucleotide Sequence

ATGGCTTTATGGATGAGGCTTCTGCCCTTGCTAGCACTACTGGCCCTTTGGGGTCCTGACCCAGCT  
GCTGCATTTGTCAACCAACATTTATGCGGGAGTCACTTAGTAGAGGCACTCTACTTGGTTTGTGGT  
GAAAGAGGATTTTTCTACACTCCAAAGACAAGAAGAGAAGCTGAAGATTTACAGGTTGGCCAGGTG  
GAGCTAGGTGGTGGACCTGGTGCGGGATCATTGCAACCGTTGGCCTTAGAAGGTTCCCTTCAAAAA  
CGTGGCATAGTTGAACAATGTTGCACCAGCATTGTCTTTATATCAATTGGAAAATTATTGTAAT  
TAA

## Output Sequence Relative Frequency Distribution

Note: Colour of codons indicates the frequency for that codon, with respect to the host.  
Block colour between codons indicates the frequency of the adjacent codon pairs (i.e. the  
codons to the left and right), with respect to the host.

### Rarely Used (0)

### Frequently Used (1)

| Number | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1      | ATG | GCT | TTA | TGG | ATG | AGG | CTT | CTG | CCC | TTG |
| 11     | CTA | GCA | CTA | CTG | GCC | CTT | TGG | GGT | CCT | GAC |
| 21     | CCA | GCT | GCT | GCA | TTT | GTC | AAC | CAA | CAT | TTA |
| 31     | TGC | GGG | AGT | CAC | TTA | GTA | GAG | GCA | CTC | TAC |
| 41     | TTG | GTT | TGT | GGT | GAA | AGA | GGA | TTT | TTC | TAC |
| 51     | ACT | CCA | AAG | ACA | AGA | AGA | GAA | GCT | GAA | GAT |
| 61     | TTA | CAG | GTT | GGC | CAG | GTG | GAG | CTA | GGT | GGT |
| 71     | GGA | CCT | GGT | GCG | GGA | TCA | TTG | CAA | CCG | TTG |
| 81     | GCC | TTA | GAA | GGT | TCC | CTT | CAA | AAA | CGT | GGC |
| 91     | ATA | GTT | GAA | CAA | TGT | TGC | ACC | AGC | ATT | TGT |
| 101    | TCT | TTA | TAT | CAA | TTG | GAA | AAT | TAT | TGT | AAT |
| 111    | TAA |     |     |     |     |     |     |     |     |     |

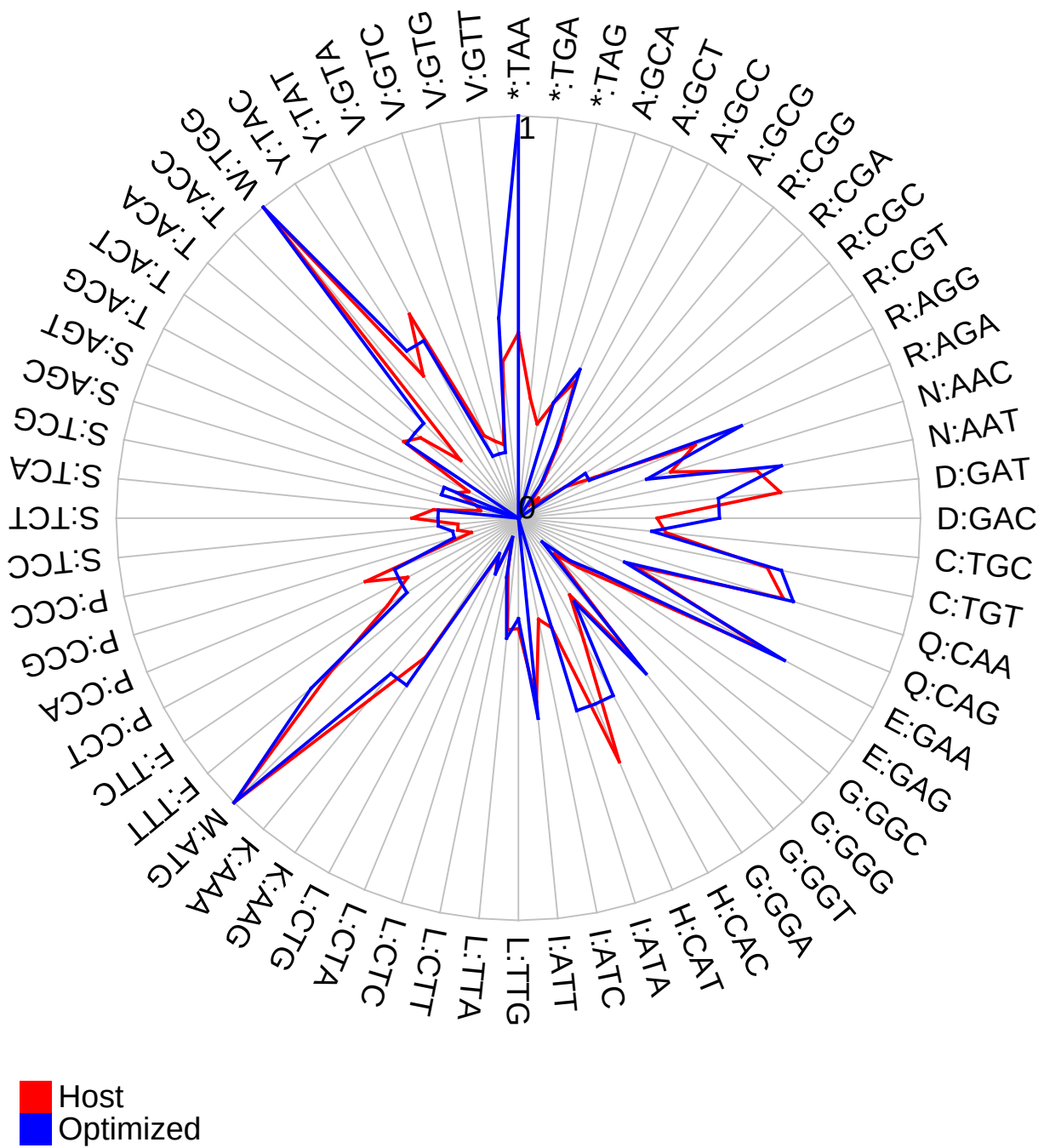
## Consecutive Repeat Fitness as Constraint (Total Consecutive Repeat Bases: 0)

- Remove Consecutive Repeats with motif length of 3 repeated 3 or more times

## Output Sequence with Consecutive Repeat Highlight

```
1      a t g g c t t t a t g g a t g a g g c t t c t g c c c t t g
31     c t a g c a c t a c t g g c c c t t t g g g g t c c t g a c
61     c c a g c t g c t g c a t t t g t c a a c c a a c a t t t a
91     t g c g g g a g t c a c t t a g t a g a g g c a c t c t a c
121    t t g g t t t g t g g t g a a a g a g g a t t t t t c t a c
151    a c t c c a a a g a c a a g a a g a g a a g c t g a a g a t
181    t t a c a g g t t g g c c a g g t g g a g c t a g g t g g t
211    g g a c c t g g t g c g g g a t c a t t g c a a c c g t t g
241    g c c t t a g a a g g t t c c c t t c a a a a a c g t g g c
271    a t a g t t g a a c a a t g t t g c a c c a g c a t t t g t
301    t c t t t a t a t c a a t t g g a a a a t t a t t g t a a t
331    t a a
```

## Host vs Optimized Individual Codon Usage



**Expression Host:** *Saccharomyces cerevisiae*

**Individual Codon Frequency and Colour Table**

| Amino Acid | Codon | Host Relative Frequency | Optimized Usage Count | Optimized Synonymous Total | Optimized Relative Frequency |
|------------|-------|-------------------------|-----------------------|----------------------------|------------------------------|
| *          | TGA   | 0.3003                  | 0                     | 1                          | 0                            |
| *          | TAA   | 0.4608                  | 1                     | 1                          | 1                            |
| *          | TAG   | 0.2389                  | 0                     | 1                          | 0                            |
| A          | GCA   | 0.2976                  | 3                     | 10                         | 0.3                          |
| A          | GCC   | 0.221                   | 2                     | 10                         | 0.2                          |
| A          | GCT   | 0.3665                  | 4                     | 10                         | 0.4                          |
| A          | GCG   | 0.1149                  | 1                     | 10                         | 0.1                          |
| C          | TGC   | 0.3689                  | 2                     | 6                          | 0.3333                       |
| C          | TGT   | 0.6311                  | 4                     | 6                          | 0.6667                       |
| D          | GAC   | 0.345                   | 1                     | 2                          | 0.5                          |
| D          | GAT   | 0.655                   | 1                     | 2                          | 0.5                          |
| E          | GAA   | 0.7013                  | 6                     | 8                          | 0.75                         |
| E          | GAG   | 0.2987                  | 2                     | 8                          | 0.25                         |
| F          | TTT   | 0.6076                  | 2                     | 3                          | 0.6667                       |
| F          | TTC   | 0.3924                  | 1                     | 3                          | 0.3333                       |
| G          | GGA   | 0.2297                  | 3                     | 12                         | 0.25                         |
| G          | GGG   | 0.1259                  | 1                     | 12                         | 0.08333                      |
| G          | GGC   | 0.1928                  | 2                     | 12                         | 0.1667                       |
| G          | GGT   | 0.4516                  | 6                     | 12                         | 0.5                          |
| H          | CAT   | 0.6554                  | 1                     | 2                          | 0.5                          |
| H          | CAC   | 0.3446                  | 1                     | 2                          | 0.5                          |
| I          | ATA   | 0.2848                  | 1                     | 2                          | 0.5                          |
| I          | ATC   | 0.2563                  | 0                     | 2                          | 0                            |
| I          | ATT   | 0.4589                  | 1                     | 2                          | 0.5                          |
| K          | AAA   | 0.5848                  | 1                     | 2                          | 0.5                          |
| K          | AAG   | 0.4152                  | 1                     | 2                          | 0.5                          |
| L          | TTA   | 0.2787                  | 6                     | 20                         | 0.3                          |
| L          | CTG   | 0.1124                  | 2                     | 20                         | 0.1                          |
| L          | TTG   | 0.2747                  | 5                     | 20                         | 0.25                         |
| L          | CTT   | 0.1315                  | 3                     | 20                         | 0.15                         |
| L          | CTC   | 0.05795                 | 1                     | 20                         | 0.05                         |
| L          | CTA   | 0.1447                  | 3                     | 20                         | 0.15                         |
| M          | ATG   | 1                       | 2                     | 2                          | 1                            |
| N          | AAC   | 0.3955                  | 1                     | 3                          | 0.3333                       |
| N          | AAT   | 0.6045                  | 2                     | 3                          | 0.6667                       |
| P          | CCA   | 0.412                   | 2                     | 6                          | 0.3333                       |
| P          | CCC   | 0.1536                  | 1                     | 6                          | 0.1667                       |
| P          | CCT   | 0.3121                  | 2                     | 6                          | 0.3333                       |
| P          | CCG   | 0.1222                  | 1                     | 6                          | 0.1667                       |
| Q          | CAA   | 0.6884                  | 5                     | 7                          | 0.7143                       |
| Q          | CAG   | 0.3116                  | 2                     | 7                          | 0.2857                       |
| R          | CGT   | 0.1396                  | 1                     | 5                          | 0.2                          |
| R          | AGG   | 0.2166                  | 1                     | 5                          | 0.2                          |
| R          | CGC   | 0.05648                 | 0                     | 5                          | 0                            |

|   |     |         |   |   |        |
|---|-----|---------|---|---|--------|
| R | CGG | 0.0414  | 0 | 5 | 0      |
| R | CGA | 0.07025 | 0 | 5 | 0      |
| R | AGA | 0.4757  | 3 | 5 | 0.6    |
| S | TCG | 0.09597 | 0 | 5 | 0      |
| S | TCC | 0.151   | 1 | 5 | 0.2    |
| S | TCT | 0.2648  | 1 | 5 | 0.2    |
| S | TCA | 0.2122  | 1 | 5 | 0.2    |
| S | AGT | 0.1653  | 1 | 5 | 0.2    |
| S | AGC | 0.1107  | 1 | 5 | 0.2    |
| T | ACT | 0.3427  | 1 | 3 | 0.3333 |
| T | ACA | 0.3147  | 1 | 3 | 0.3333 |
| T | ACC | 0.2027  | 1 | 3 | 0.3333 |
| T | ACG | 0.1399  | 0 | 3 | 0      |
| V | GTG | 0.1867  | 1 | 6 | 0.1667 |
| V | GTT | 0.3914  | 3 | 6 | 0.5    |
| V | GTA | 0.2219  | 1 | 6 | 0.1667 |
| V | GTC | 0.2     | 1 | 6 | 0.1667 |
| W | TGG | 1       | 2 | 2 | 1      |
| Y | TAC | 0.4254  | 2 | 4 | 0.5    |
| Y | TAT | 0.5746  | 2 | 4 | 0.5    |

#### Codon Context Frequency and Colour Table

| Amino Acid | Codon Pair | Host Relative Frequency | Optimized Usage Count | Optimized Synonymous Total | Optimized Relative Frequency |
|------------|------------|-------------------------|-----------------------|----------------------------|------------------------------|
| A*         | GCATAA     | 0.1111                  | 0                     | 0                          | 0                            |
| A*         | GCTTGA     | 0.07407                 | 0                     | 0                          | 0                            |
| A*         | GCATAG     | 0.03704                 | 0                     | 0                          | 0                            |
| A*         | GCGTAA     | 0.1111                  | 0                     | 0                          | 0                            |
| A*         | GCGTAG     | 0.07407                 | 0                     | 0                          | 0                            |
| A*         | GCCTGA     | 0.1111                  | 0                     | 0                          | 0                            |
| A*         | GCTTAG     | 0.07407                 | 0                     | 0                          | 0                            |
| A*         | GCATGA     | 0.1481                  | 0                     | 0                          | 0                            |
| A*         | GCCTAG     | 0.07407                 | 0                     | 0                          | 0                            |
| A*         | GCCTAA     | 0.03704                 | 0                     | 0                          | 0                            |
| A*         | GCTTAA     | 0.1111                  | 0                     | 0                          | 0                            |
| A*         | GCGTGA     | 0.03704                 | 0                     | 0                          | 0                            |
| AA         | GCAGCA     | 0.08247                 | 0                     | 2                          | 0                            |
| AA         | GCAGCC     | 0.05928                 | 0                     | 2                          | 0                            |
| AA         | GCGGCT     | 0.04038                 | 0                     | 2                          | 0                            |
| AA         | GCGGCA     | 0.05326                 | 0                     | 2                          | 0                            |
| AA         | GCGGCC     | 0.02062                 | 0                     | 2                          | 0                            |
| AA         | GCGGCG     | 0.01031                 | 0                     | 2                          | 0                            |
| AA         | GCAGCT     | 0.0799                  | 0                     | 2                          | 0                            |
| AA         | GCAGCG     | 0.02663                 | 0                     | 2                          | 0                            |
| AA         | GCCGCT     | 0.0799                  | 0                     | 2                          | 0                            |
| AA         | GCCGCG     | 0.01031                 | 0                     | 2                          | 0                            |
| AA         | GCTGCA     | 0.1211                  | 1                     | 2                          | 0.5                          |
| AA         | GCTGCC     | 0.09966                 | 0                     | 2                          | 0                            |
| AA         | GCTGCT     | 0.1838                  | 1                     | 2                          | 0.5                          |

|    |        |          |   |   |   |
|----|--------|----------|---|---|---|
| AA | GCTGCG | 0.04124  | 0 | 2 | 0 |
| AA | GCCGCA | 0.04467  | 0 | 2 | 0 |
| AA | GCCGCC | 0.04639  | 0 | 2 | 0 |
| AC | GCGTGT | 0.05641  | 0 | 0 | 0 |
| AC | GCGTGC | 0.0359   | 0 | 0 | 0 |
| AC | GCCTGT | 0.1692   | 0 | 0 | 0 |
| AC | GCATGC | 0.1897   | 0 | 0 | 0 |
| AC | GCTTGT | 0.2051   | 0 | 0 | 0 |
| AC | GCTTGC | 0.04615  | 0 | 0 | 0 |
| AC | GCATGT | 0.2103   | 0 | 0 | 0 |
| AC | GCCTGC | 0.08718  | 0 | 0 | 0 |
| AD | GCTGAT | 0.2724   | 0 | 0 | 0 |
| AD | GCAGAT | 0.2171   | 0 | 0 | 0 |
| AD | GCGGAC | 0.04474  | 0 | 0 | 0 |
| AD | GCTGAC | 0.1145   | 0 | 0 | 0 |
| AD | GCCGAC | 0.04868  | 0 | 0 | 0 |
| AD | GCCGAT | 0.1184   | 0 | 0 | 0 |
| AD | GCGGAT | 0.06842  | 0 | 0 | 0 |
| AD | GCAGAC | 0.1158   | 0 | 0 | 0 |
| AE | GCGGAG | 0.02815  | 0 | 1 | 0 |
| AE | GCGGAA | 0.06982  | 0 | 1 | 0 |
| AE | GCTGAG | 0.09234  | 0 | 1 | 0 |
| AE | GCCGAA | 0.1182   | 0 | 1 | 0 |
| AE | GCAGAA | 0.2579   | 0 | 1 | 0 |
| AE | GCCGAG | 0.04167  | 0 | 1 | 0 |
| AE | GCTGAA | 0.2894   | 1 | 1 | 1 |
| AE | GCAGAG | 0.1025   | 0 | 1 | 0 |
| AF | GCTTTT | 0.1852   | 0 | 1 | 0 |
| AF | GCTTTC | 0.1536   | 0 | 1 | 0 |
| AF | GCGTTC | 0.0512   | 0 | 1 | 0 |
| AF | GCATTT | 0.2018   | 1 | 1 | 1 |
| AF | GCATTC | 0.1099   | 0 | 1 | 0 |
| AF | GCCTTC | 0.07982  | 0 | 1 | 0 |
| AF | GCCTTT | 0.1265   | 0 | 1 | 0 |
| AF | GCGTTT | 0.09187  | 0 | 1 | 0 |
| AG | GCTGGT | 0.2292   | 0 | 1 | 0 |
| AG | GCGGGC | 0.02602  | 0 | 1 | 0 |
| AG | GCGGGG | 0.01735  | 0 | 1 | 0 |
| AG | GCTGGG | 0.0347   | 0 | 1 | 0 |
| AG | GCCGGG | 0.007435 | 0 | 1 | 0 |
| AG | GCTGGA | 0.06196  | 0 | 1 | 0 |
| AG | GCCGGT | 0.1301   | 0 | 1 | 0 |
| AG | GCGGGA | 0.0347   | 1 | 1 | 1 |
| AG | GCCGGC | 0.03965  | 0 | 1 | 0 |
| AG | GCCGGA | 0.03965  | 0 | 1 | 0 |
| AG | GCGGGT | 0.04461  | 0 | 1 | 0 |
| AG | GCAGGG | 0.02478  | 0 | 1 | 0 |
| AG | GCAGGA | 0.06568  | 0 | 1 | 0 |
| AG | GCAGGT | 0.109    | 0 | 1 | 0 |
| AG | GCAGGC | 0.05948  | 0 | 1 | 0 |
| AG | GCTGGC | 0.07559  | 0 | 1 | 0 |

|    |         |         |   |   |     |
|----|---------|---------|---|---|-----|
| AH | GCTCAT  | 0.2434  | 0 | 0 | 0   |
| AH | GCACAC  | 0.09384 | 0 | 0 | 0   |
| AH | GCCCCAC | 0.02639 | 0 | 0 | 0   |
| AH | GCCCCAT | 0.132   | 0 | 0 | 0   |
| AH | GCTCAC  | 0.1554  | 0 | 0 | 0   |
| AH | GCACAT  | 0.2229  | 0 | 0 | 0   |
| AH | GCGCAT  | 0.08211 | 0 | 0 | 0   |
| AH | GCGCAC  | 0.04399 | 0 | 0 | 0   |
| AI | GCGATA  | 0.02072 | 0 | 0 | 0   |
| AI | GCAATT  | 0.1036  | 0 | 0 | 0   |
| AI | GCCATT  | 0.1488  | 0 | 0 | 0   |
| AI | GCCATC  | 0.0838  | 0 | 0 | 0   |
| AI | GCTATT  | 0.1977  | 0 | 0 | 0   |
| AI | GCAATC  | 0.06874 | 0 | 0 | 0   |
| AI | GCTATC  | 0.08475 | 0 | 0 | 0   |
| AI | GCGATC  | 0.01789 | 0 | 0 | 0   |
| AI | GCAATA  | 0.07345 | 0 | 0 | 0   |
| AI | GCTATA  | 0.08569 | 0 | 0 | 0   |
| AI | GCGATT  | 0.04143 | 0 | 0 | 0   |
| AI | GCCATA  | 0.07345 | 0 | 0 | 0   |
| AK | GCCAAA  | 0.1631  | 0 | 0 | 0   |
| AK | GCCAAG  | 0.1515  | 0 | 0 | 0   |
| AK | GCAAAG  | 0.1248  | 0 | 0 | 0   |
| AK | GCAAAA  | 0.18    | 0 | 0 | 0   |
| AK | GCGAAG  | 0.0508  | 0 | 0 | 0   |
| AK | GCTAAG  | 0.1078  | 0 | 0 | 0   |
| AK | GCTAAA  | 0.1515  | 0 | 0 | 0   |
| AK | GCGAAA  | 0.07041 | 0 | 0 | 0   |
| AL | GCTTTA  | 0.1135  | 1 | 5 | 0.2 |
| AL | GCGCTT  | 0.0198  | 0 | 5 | 0   |
| AL | GCGCTA  | 0.02376 | 0 | 5 | 0   |
| AL | GCCTTA  | 0.0495  | 1 | 5 | 0.2 |
| AL | GCCTTG  | 0.05611 | 0 | 5 | 0   |
| AL | GCGCTC  | 0.01452 | 0 | 5 | 0   |
| AL | GCGCTG  | 0.02508 | 0 | 5 | 0   |
| AL | GCGTTG  | 0.03432 | 0 | 5 | 0   |
| AL | GCGTTA  | 0.0429  | 0 | 5 | 0   |
| AL | GCACTT  | 0.03366 | 0 | 5 | 0   |
| AL | GCTTTG  | 0.1221  | 0 | 5 | 0   |
| AL | GCACTG  | 0.02178 | 0 | 5 | 0   |
| AL | GCTCTC  | 0.01452 | 0 | 5 | 0   |
| AL | GCTCTG  | 0.02508 | 0 | 5 | 0   |
| AL | GCTCTT  | 0.05215 | 0 | 5 | 0   |
| AL | GCTCTA  | 0.04488 | 0 | 5 | 0   |
| AL | GCCCTC  | 0.01188 | 0 | 5 | 0   |
| AL | GCATTA  | 0.08185 | 0 | 5 | 0   |
| AL | GCCCTA  | 0.03696 | 0 | 5 | 0   |
| AL | GCCCTT  | 0.02508 | 1 | 5 | 0.2 |
| AL | GCCCTG  | 0.02046 | 0 | 5 | 0   |
| AL | GCACTC  | 0.01518 | 1 | 5 | 0.2 |
| AL | GCACTA  | 0.0429  | 1 | 5 | 0.2 |

|    |        |          |   |   |   |
|----|--------|----------|---|---|---|
| AL | GCATTG | 0.07195  | 0 | 5 | 0 |
| AM | GCAATG | 0.3199   | 0 | 0 | 0 |
| AM | GCGATG | 0.1268   | 0 | 0 | 0 |
| AM | GCCATG | 0.2334   | 0 | 0 | 0 |
| AM | GCTATG | 0.3199   | 0 | 0 | 0 |
| AN | GCGAAC | 0.03596  | 0 | 0 | 0 |
| AN | GCGAAT | 0.05568  | 0 | 0 | 0 |
| AN | GCTAAC | 0.1334   | 0 | 0 | 0 |
| AN | GCTAAT | 0.1578   | 0 | 0 | 0 |
| AN | GCAAAT | 0.2158   | 0 | 0 | 0 |
| AN | GCCAAT | 0.1752   | 0 | 0 | 0 |
| AN | GCAAAC | 0.1381   | 0 | 0 | 0 |
| AN | GCCAAC | 0.08817  | 0 | 0 | 0 |
| AP | GCCCCA | 0.1041   | 0 | 0 | 0 |
| AP | GCGCCT | 0.05128  | 0 | 0 | 0 |
| AP | GCGCCG | 0.01207  | 0 | 0 | 0 |
| AP | GCGCCA | 0.04827  | 0 | 0 | 0 |
| AP | GCGCCC | 0.02866  | 0 | 0 | 0 |
| AP | GCCCCC | 0.02866  | 0 | 0 | 0 |
| AP | GCACCC | 0.04827  | 0 | 0 | 0 |
| AP | GCTCCT | 0.09351  | 0 | 0 | 0 |
| AP | GCCCCT | 0.04525  | 0 | 0 | 0 |
| AP | GCACCT | 0.1086   | 0 | 0 | 0 |
| AP | GCACCA | 0.1448   | 0 | 0 | 0 |
| AP | GCTCCG | 0.03318  | 0 | 0 | 0 |
| AP | GCACCG | 0.01659  | 0 | 0 | 0 |
| AP | GCCCCG | 0.01357  | 0 | 0 | 0 |
| AP | GCTCCA | 0.1538   | 0 | 0 | 0 |
| AP | GCTCCC | 0.06938  | 0 | 0 | 0 |
| AQ | GCTCAA | 0.3166   | 0 | 0 | 0 |
| AQ | GCGCAA | 0.08878  | 0 | 0 | 0 |
| AQ | GCTCAG | 0.0871   | 0 | 0 | 0 |
| AQ | GCGCAG | 0.05193  | 0 | 0 | 0 |
| AQ | GCACAA | 0.2027   | 0 | 0 | 0 |
| AQ | GCCCAG | 0.03853  | 0 | 0 | 0 |
| AQ | GCCCAA | 0.129    | 0 | 0 | 0 |
| AQ | GCACAG | 0.08543  | 0 | 0 | 0 |
| AR | GCAAGA | 0.2068   | 0 | 0 | 0 |
| AR | GCCCGT | 0.04898  | 0 | 0 | 0 |
| AR | GCACGC | 0.01905  | 0 | 0 | 0 |
| AR | GCCCGA | 0.005442 | 0 | 0 | 0 |
| AR | GCGAGG | 0.02177  | 0 | 0 | 0 |
| AR | GCGAGA | 0.02993  | 0 | 0 | 0 |
| AR | GCCCCG | 0.01224  | 0 | 0 | 0 |
| AR | GCCCCG | 0.001361 | 0 | 0 | 0 |
| AR | GCCAGA | 0.09932  | 0 | 0 | 0 |
| AR | GCCAGG | 0.04354  | 0 | 0 | 0 |
| AR | GCACGA | 0.01361  | 0 | 0 | 0 |
| AR | GCGCGG | 0.001361 | 0 | 0 | 0 |
| AR | GCTCGA | 0.02177  | 0 | 0 | 0 |
| AR | GCAAGG | 0.08435  | 0 | 0 | 0 |



|    |        |          |   |   |   |
|----|--------|----------|---|---|---|
| AR | GCTAGG | 0.0585   | 0 | 0 | 0 |
| AR | GCTCGC | 0.01769  | 0 | 0 | 0 |
| AR | GCTCGG | 0.02313  | 0 | 0 | 0 |
| AR | GCACGT | 0.03537  | 0 | 0 | 0 |
| AR | GCACGG | 0.008163 | 0 | 0 | 0 |
| AR | GCTCGT | 0.06803  | 0 | 0 | 0 |
| AR | GCGCGA | 0.008163 | 0 | 0 | 0 |
| AR | GCTAGA | 0.1551   | 0 | 0 | 0 |
| AR | GCGCGT | 0.009524 | 0 | 0 | 0 |
| AR | GCGCGC | 0.006803 | 0 | 0 | 0 |
| AS | GCAAGT | 0.05559  | 0 | 0 | 0 |
| AS | GCGTCA | 0.01985  | 0 | 0 | 0 |
| AS | GCCAGC | 0.02449  | 0 | 0 | 0 |
| AS | GCCTCT | 0.05758  | 0 | 0 | 0 |
| AS | GCCTCG | 0.02118  | 0 | 0 | 0 |
| AS | GCGTCC | 0.01191  | 0 | 0 | 0 |
| AS | GCCTCC | 0.03772  | 0 | 0 | 0 |
| AS | GCGTCT | 0.02581  | 0 | 0 | 0 |
| AS | GCTTCG | 0.03508  | 0 | 0 | 0 |
| AS | GCTTCC | 0.07809  | 0 | 0 | 0 |
| AS | GCTTCT | 0.1145   | 0 | 0 | 0 |
| AS | GCTTCA | 0.09332  | 0 | 0 | 0 |
| AS | GCTAGT | 0.05361  | 0 | 0 | 0 |
| AS | GCAAGC | 0.04169  | 0 | 0 | 0 |
| AS | GCGTCG | 0.01522  | 0 | 0 | 0 |
| AS | GCCTCA | 0.02515  | 0 | 0 | 0 |
| AS | GCATCA | 0.05692  | 0 | 0 | 0 |
| AS | GCGAGT | 0.01125  | 0 | 0 | 0 |
| AS | GCCAGT | 0.03375  | 0 | 0 | 0 |
| AS | GCGAGC | 0.01324  | 0 | 0 | 0 |
| AS | GCATCC | 0.04897  | 0 | 0 | 0 |
| AS | GCATCT | 0.0728   | 0 | 0 | 0 |
| AS | GCATCG | 0.02449  | 0 | 0 | 0 |
| AS | GCTAGC | 0.0278   | 0 | 0 | 0 |
| AT | GCTACC | 0.08132  | 0 | 0 | 0 |
| AT | GCTACA | 0.1099   | 0 | 0 | 0 |
| AT | GCAACA | 0.0967   | 0 | 0 | 0 |
| AT | GCCACA | 0.06593  | 0 | 0 | 0 |
| AT | GCAACG | 0.02637  | 0 | 0 | 0 |
| AT | GCAACT | 0.07143  | 0 | 0 | 0 |
| AT | GCTACG | 0.05165  | 0 | 0 | 0 |
| AT | GCGACC | 0.01099  | 0 | 0 | 0 |
| AT | GCGACA | 0.04176  | 0 | 0 | 0 |
| AT | GCAACC | 0.04286  | 0 | 0 | 0 |
| AT | GCGACG | 0.01429  | 0 | 0 | 0 |
| AT | GCCACG | 0.04396  | 0 | 0 | 0 |
| AT | GCCACT | 0.1176   | 0 | 0 | 0 |
| AT | GCTACT | 0.1242   | 0 | 0 | 0 |
| AT | GCGACT | 0.02747  | 0 | 0 | 0 |
| AT | GCCACC | 0.07363  | 0 | 0 | 0 |
| AV | GCAGTT | 0.1029   | 0 | 0 | 0 |

|    |        |         |   |   |   |
|----|--------|---------|---|---|---|
| AV | GCTGTC | 0.09172 | 0 | 0 | 0 |
| AV | GCTGTT | 0.1644  | 0 | 0 | 0 |
| AV | GCGGTT | 0.03691 | 0 | 0 | 0 |
| AV | GCTGTA | 0.07942 | 0 | 0 | 0 |
| AV | GCCGTA | 0.03915 | 0 | 0 | 0 |
| AV | GCCGTT | 0.08725 | 0 | 0 | 0 |
| AV | GCCGTG | 0.03915 | 0 | 0 | 0 |
| AV | GCCGTC | 0.03468 | 0 | 0 | 0 |
| AV | GCGGTG | 0.01566 | 0 | 0 | 0 |
| AV | GCTGTG | 0.08166 | 0 | 0 | 0 |
| AV | GCGGTC | 0.01342 | 0 | 0 | 0 |
| AV | GCAGTA | 0.08166 | 0 | 0 | 0 |
| AV | GCAGTG | 0.05928 | 0 | 0 | 0 |
| AV | GCAGTC | 0.04698 | 0 | 0 | 0 |
| AV | GCGGTA | 0.02573 | 0 | 0 | 0 |
| AW | GCGTGG | 0.1127  | 0 | 0 | 0 |
| AW | GCATGG | 0.2746  | 0 | 0 | 0 |
| AW | GCCTGG | 0.2324  | 0 | 0 | 0 |
| AW | GCTTGG | 0.3803  | 0 | 0 | 0 |
| AY | GCGTAT | 0.09485 | 0 | 0 | 0 |
| AY | GCCTAC | 0.1031  | 0 | 0 | 0 |
| AY | GCGTAC | 0.05361 | 0 | 0 | 0 |
| AY | GCCTAT | 0.1155  | 0 | 0 | 0 |
| AY | GCTTAC | 0.1485  | 0 | 0 | 0 |
| AY | GCTTAT | 0.1711  | 0 | 0 | 0 |
| AY | GCATAT | 0.2041  | 0 | 0 | 0 |
| AY | GCATAC | 0.1093  | 0 | 0 | 0 |
| C* | TGCTAA | 0.1111  | 0 | 0 | 0 |
| C* | TGCTAG | 0       | 0 | 0 | 0 |
| C* | TGTTGA | 0.2222  | 0 | 0 | 0 |
| C* | TGTTAG | 0.5556  | 0 | 0 | 0 |
| C* | TGCTGA | 0       | 0 | 0 | 0 |
| C* | TGTTAA | 0.1111  | 0 | 0 | 0 |
| CA | TGCGCT | 0.07429 | 0 | 0 | 0 |
| CA | TGTGCT | 0.2857  | 0 | 0 | 0 |
| CA | TGCGCG | 0.04    | 0 | 0 | 0 |
| CA | TGTGCG | 0.1029  | 0 | 0 | 0 |
| CA | TGTGCC | 0.1429  | 0 | 0 | 0 |
| CA | TGTGCA | 0.1886  | 0 | 0 | 0 |
| CA | TGCGCA | 0.08    | 0 | 0 | 0 |
| CA | TGCGCC | 0.08571 | 0 | 0 | 0 |
| CC | TGCTGC | 0.1446  | 0 | 1 | 0 |
| CC | TGTTGC | 0.2169  | 1 | 1 | 1 |
| CC | TGTTGT | 0.3133  | 0 | 1 | 0 |
| CC | TGCTGT | 0.3253  | 0 | 1 | 0 |
| CD | TGCGAC | 0.105   | 0 | 0 | 0 |
| CD | TGTGAC | 0.22    | 0 | 0 | 0 |
| CD | TGCGAT | 0.21    | 0 | 0 | 0 |
| CD | TGTGAT | 0.465   | 0 | 0 | 0 |
| CE | TGCGAG | 0.1338  | 0 | 0 | 0 |
| CE | TGTGAG | 0.2293  | 0 | 0 | 0 |

|    |        |         |   |   |     |
|----|--------|---------|---|---|-----|
| CE | TGTGAA | 0.465   | 0 | 0 | 0   |
| CE | TGCGAA | 0.172   | 0 | 0 | 0   |
| CF | TGTTTT | 0.3693  | 0 | 0 | 0   |
| CF | TGCTTT | 0.2614  | 0 | 0 | 0   |
| CF | TGCTTC | 0.1193  | 0 | 0 | 0   |
| CF | TGTTTC | 0.25    | 0 | 0 | 0   |
| CG | TGCGGC | 0.03731 | 0 | 2 | 0   |
| CG | TGCGGA | 0.04478 | 0 | 2 | 0   |
| CG | TGTGGC | 0.1642  | 0 | 2 | 0   |
| CG | TGCGGG | 0.05224 | 1 | 2 | 0.5 |
| CG | TGTGGG | 0.1007  | 0 | 2 | 0   |
| CG | TGTGGA | 0.1045  | 0 | 2 | 0   |
| CG | TGTGGT | 0.3918  | 1 | 2 | 0.5 |
| CG | TGCGGT | 0.1045  | 0 | 2 | 0   |
| CH | TGTCAC | 0.2157  | 0 | 0 | 0   |
| CH | TGTCAT | 0.402   | 0 | 0 | 0   |
| CH | TGCCAT | 0.2451  | 0 | 0 | 0   |
| CH | TGCCAC | 0.1373  | 0 | 0 | 0   |
| CI | TGTATC | 0.1901  | 0 | 0 | 0   |
| CI | TGTATA | 0.1074  | 0 | 0 | 0   |
| CI | TGCATA | 0.1364  | 0 | 0 | 0   |
| CI | TGTATT | 0.2355  | 0 | 0 | 0   |
| CI | TGCATT | 0.2066  | 0 | 0 | 0   |
| CI | TGCATC | 0.124   | 0 | 0 | 0   |
| CK | TGTAAG | 0.3812  | 0 | 0 | 0   |
| CK | TGTAAG | 0.2063  | 0 | 0 | 0   |
| CK | TGCAAG | 0.1614  | 0 | 0 | 0   |
| CK | TGCAAA | 0.2511  | 0 | 0 | 0   |
| CL | TGCCTT | 0.06322 | 0 | 0 | 0   |
| CL | TGCCTC | 0.02011 | 0 | 0 | 0   |
| CL | TGCCTA | 0.0546  | 0 | 0 | 0   |
| CL | TGTTTA | 0.1925  | 0 | 0 | 0   |
| CL | TGCTTA | 0.08333 | 0 | 0 | 0   |
| CL | TGCTTG | 0.07759 | 0 | 0 | 0   |
| CL | TGTCTA | 0.1063  | 0 | 0 | 0   |
| CL | TGTCTC | 0.03736 | 0 | 0 | 0   |
| CL | TGTCTG | 0.07184 | 0 | 0 | 0   |
| CL | TGTCTT | 0.07184 | 0 | 0 | 0   |
| CL | TGTTTG | 0.1925  | 0 | 0 | 0   |
| CL | TGCCTG | 0.02874 | 0 | 0 | 0   |
| CM | TGTATG | 0.4571  | 0 | 0 | 0   |
| CM | TGCATG | 0.5429  | 0 | 0 | 0   |
| CN | TGCAAC | 0.1366  | 0 | 1 | 0   |
| CN | TGCAAT | 0.3005  | 0 | 1 | 0   |
| CN | TGTAAC | 0.2186  | 0 | 1 | 0   |
| CN | TGTAAT | 0.3443  | 1 | 1 | 1   |
| CP | TGTCCC | 0.1638  | 0 | 0 | 0   |
| CP | TGTCCT | 0.2712  | 0 | 0 | 0   |
| CP | TGCCCC | 0.0226  | 0 | 0 | 0   |
| CP | TGTCCG | 0.06215 | 0 | 0 | 0   |
| CP | TGCCCA | 0.1073  | 0 | 0 | 0   |

|    |        |          |   |   |   |
|----|--------|----------|---|---|---|
| CP | TGCCCC | 0.0565   | 0 | 0 | 0 |
| CP | TGTCCA | 0.2147   | 0 | 0 | 0 |
| CP | TGCCCT | 0.1017   | 0 | 0 | 0 |
| CQ | TGTCAG | 0.1511   | 0 | 0 | 0 |
| CQ | TGCCAG | 0.08633  | 0 | 0 | 0 |
| CQ | TGTCAA | 0.5108   | 0 | 0 | 0 |
| CQ | TGCCAA | 0.2518   | 0 | 0 | 0 |
| CR | TGTAGG | 0.1399   | 0 | 0 | 0 |
| CR | TGCCGT | 0.09091  | 0 | 0 | 0 |
| CR | TGCCGC | 0.006993 | 0 | 0 | 0 |
| CR | TGCCGA | 0.06294  | 0 | 0 | 0 |
| CR | TGTCGG | 0.02797  | 0 | 0 | 0 |
| CR | TGTCGC | 0.05594  | 0 | 0 | 0 |
| CR | TGCAGA | 0.1469   | 0 | 0 | 0 |
| CR | TGCCGG | 0.02797  | 0 | 0 | 0 |
| CR | TGTCGT | 0.1049   | 0 | 0 | 0 |
| CR | TGCAGG | 0.07692  | 0 | 0 | 0 |
| CR | TGTAGA | 0.2378   | 0 | 0 | 0 |
| CR | TGTCGA | 0.02098  | 0 | 0 | 0 |
| CS | TGTAGC | 0.04651  | 0 | 1 | 0 |
| CS | TGCTCA | 0.07309  | 0 | 1 | 0 |
| CS | TGTTCC | 0.1163   | 0 | 1 | 0 |
| CS | TGTTCG | 0.04651  | 0 | 1 | 0 |
| CS | TGTTCT | 0.1894   | 1 | 1 | 1 |
| CS | TGCAGT | 0.0598   | 0 | 1 | 0 |
| CS | TGTTCA | 0.1196   | 0 | 1 | 0 |
| CS | TGCAGC | 0.0299   | 0 | 1 | 0 |
| CS | TGCTCT | 0.1296   | 0 | 1 | 0 |
| CS | TGCTCG | 0.03987  | 0 | 1 | 0 |
| CS | TGCTCC | 0.0897   | 0 | 1 | 0 |
| CS | TGTAGT | 0.0598   | 0 | 1 | 0 |
| CT | TGCACT | 0.09626  | 0 | 1 | 0 |
| CT | TGTACA | 0.1551   | 0 | 1 | 0 |
| CT | TGCACG | 0.05882  | 0 | 1 | 0 |
| CT | TGTACC | 0.1123   | 0 | 1 | 0 |
| CT | TGTACT | 0.2674   | 0 | 1 | 0 |
| CT | TGCACC | 0.08021  | 1 | 1 | 1 |
| CT | TGCACA | 0.1444   | 0 | 1 | 0 |
| CT | TGTACG | 0.08556  | 0 | 1 | 0 |
| CV | TGCGTA | 0.09705  | 0 | 0 | 0 |
| CV | TGCGTG | 0.05485  | 0 | 0 | 0 |
| CV | TGTGTA | 0.08439  | 0 | 0 | 0 |
| CV | TGTGTC | 0.1814   | 0 | 0 | 0 |
| CV | TGTGTT | 0.2869   | 0 | 0 | 0 |
| CV | TGTGTG | 0.09283  | 0 | 0 | 0 |
| CV | TGCGTT | 0.1308   | 0 | 0 | 0 |
| CV | TGCGTC | 0.07173  | 0 | 0 | 0 |
| CW | TGCTGG | 0.439    | 0 | 0 | 0 |
| CW | TGTTGG | 0.561    | 0 | 0 | 0 |
| CY | TGCTAT | 0.2707   | 0 | 0 | 0 |
| CY | TGCTAC | 0.1955   | 0 | 0 | 0 |

|    |        |         |   |   |   |
|----|--------|---------|---|---|---|
| CY | TGTTAT | 0.3233  | 0 | 0 | 0 |
| CY | TGTTAC | 0.2105  | 0 | 0 | 0 |
| D* | GACTAG | 0       | 0 | 0 | 0 |
| D* | GATTGA | 0.2143  | 0 | 0 | 0 |
| D* | GACTGA | 0.03571 | 0 | 0 | 0 |
| D* | GACTAA | 0.1786  | 0 | 0 | 0 |
| D* | GATTAG | 0.2857  | 0 | 0 | 0 |
| D* | GATTAA | 0.2857  | 0 | 0 | 0 |
| DA | GACGCT | 0.09036 | 0 | 0 | 0 |
| DA | GATGCT | 0.312   | 0 | 0 | 0 |
| DA | GATGCA | 0.1867  | 0 | 0 | 0 |
| DA | GATGCC | 0.1554  | 0 | 0 | 0 |
| DA | GACGCC | 0.05783 | 0 | 0 | 0 |
| DA | GACGCA | 0.09157 | 0 | 0 | 0 |
| DA | GATGCG | 0.07831 | 0 | 0 | 0 |
| DA | GACGCG | 0.02771 | 0 | 0 | 0 |
| DC | GATTGC | 0.1919  | 0 | 0 | 0 |
| DC | GATTGT | 0.3953  | 0 | 0 | 0 |
| DC | GACTGC | 0.1686  | 0 | 0 | 0 |
| DC | GACTGT | 0.2442  | 0 | 0 | 0 |
| DD | GATGAT | 0.4394  | 0 | 0 | 0 |
| DD | GATGAC | 0.243   | 0 | 0 | 0 |
| DD | GACGAT | 0.1971  | 0 | 0 | 0 |
| DD | GACGAC | 0.1204  | 0 | 0 | 0 |
| DE | GATGAG | 0.2278  | 0 | 0 | 0 |
| DE | GACGAA | 0.2068  | 0 | 0 | 0 |
| DE | GACGAG | 0.08098 | 0 | 0 | 0 |
| DE | GATGAA | 0.4845  | 0 | 0 | 0 |
| DF | GACTTT | 0.1952  | 0 | 0 | 0 |
| DF | GATTTT | 0.4233  | 0 | 0 | 0 |
| DF | GATTTC | 0.256   | 0 | 0 | 0 |
| DF | GACTTC | 0.1255  | 0 | 0 | 0 |
| DG | GATGGT | 0.3074  | 0 | 0 | 0 |
| DG | GATGGC | 0.1324  | 0 | 0 | 0 |
| DG | GACGGA | 0.06561 | 0 | 0 | 0 |
| DG | GATGGA | 0.1422  | 0 | 0 | 0 |
| DG | GACGGT | 0.1434  | 0 | 0 | 0 |
| DG | GATGGG | 0.1033  | 0 | 0 | 0 |
| DG | GACGGC | 0.07412 | 0 | 0 | 0 |
| DG | GACGGG | 0.03159 | 0 | 0 | 0 |
| DH | GATCAT | 0.4286  | 0 | 0 | 0 |
| DH | GATCAC | 0.2056  | 0 | 0 | 0 |
| DH | GACCAC | 0.1429  | 0 | 0 | 0 |
| DH | GACCAT | 0.223   | 0 | 0 | 0 |
| DI | GACATT | 0.1537  | 0 | 0 | 0 |
| DI | GACATA | 0.08762 | 0 | 0 | 0 |
| DI | GACATC | 0.09685 | 0 | 0 | 0 |
| DI | GATATA | 0.1806  | 0 | 0 | 0 |
| DI | GATATT | 0.3059  | 0 | 0 | 0 |
| DI | GATATC | 0.1752  | 0 | 0 | 0 |
| DK | GACAAG | 0.1655  | 0 | 0 | 0 |

|    |        |         |   |   |   |
|----|--------|---------|---|---|---|
| DK | GATAAG | 0.2281  | 0 | 0 | 0 |
| DK | GACAAA | 0.2341  | 0 | 0 | 0 |
| DK | GATAAA | 0.3724  | 0 | 0 | 0 |
| DL | GATCTT | 0.07233 | 0 | 1 | 0 |
| DL | GACTTA | 0.09057 | 0 | 1 | 0 |
| DL | GACTTG | 0.09811 | 0 | 1 | 0 |
| DL | GATTTA | 0.2075  | 1 | 1 | 1 |
| DL | GATTTG | 0.2208  | 0 | 1 | 0 |
| DL | GACCTT | 0.04528 | 0 | 1 | 0 |
| DL | GACCTG | 0.0327  | 0 | 1 | 0 |
| DL | GATCTG | 0.04654 | 0 | 1 | 0 |
| DL | GACCTA | 0.04025 | 0 | 1 | 0 |
| DL | GACCTC | 0.0195  | 0 | 1 | 0 |
| DL | GATCTA | 0.0761  | 0 | 1 | 0 |
| DL | GATCTC | 0.05031 | 0 | 1 | 0 |
| DM | GACATG | 0.3795  | 0 | 0 | 0 |
| DM | GATATG | 0.6205  | 0 | 0 | 0 |
| DN | GATAAC | 0.2082  | 0 | 0 | 0 |
| DN | GATAAT | 0.3905  | 0 | 0 | 0 |
| DN | GACAAT | 0.2245  | 0 | 0 | 0 |
| DN | GACAAC | 0.1768  | 0 | 0 | 0 |
| DP | GACCCA | 0.1736  | 1 | 1 | 1 |
| DP | GACCCG | 0.02917 | 0 | 1 | 0 |
| DP | GACCCT | 0.1222  | 0 | 1 | 0 |
| DP | GATCCG | 0.08056 | 0 | 1 | 0 |
| DP | GATCCT | 0.1958  | 0 | 1 | 0 |
| DP | GACCCC | 0.06528 | 0 | 1 | 0 |
| DP | GATCCC | 0.1014  | 0 | 1 | 0 |
| DP | GATCCA | 0.2319  | 0 | 1 | 0 |
| DQ | GATCAG | 0.1737  | 0 | 0 | 0 |
| DQ | GACCAG | 0.1475  | 0 | 0 | 0 |
| DQ | GACCAA | 0.2869  | 0 | 0 | 0 |
| DQ | GATCAA | 0.3919  | 0 | 0 | 0 |
| DR | GACCGG | 0.01307 | 0 | 0 | 0 |
| DR | GACCGT | 0.07843 | 0 | 0 | 0 |
| DR | GACAGA | 0.1683  | 0 | 0 | 0 |
| DR | GATAGA | 0.2647  | 0 | 0 | 0 |
| DR | GACCGC | 0.03758 | 0 | 0 | 0 |
| DR | GATCGG | 0.01307 | 0 | 0 | 0 |
| DR | GATCGC | 0.03758 | 0 | 0 | 0 |
| DR | GATCGA | 0.04412 | 0 | 0 | 0 |
| DR | GACCGA | 0.01307 | 0 | 0 | 0 |
| DR | GACAGG | 0.08987 | 0 | 0 | 0 |
| DR | GATCGT | 0.1176  | 0 | 0 | 0 |
| DR | GATAGG | 0.1225  | 0 | 0 | 0 |
| DS | GACAGC | 0.04102 | 0 | 0 | 0 |
| DS | GATTCT | 0.05882 | 0 | 0 | 0 |
| DS | GATAGC | 0.07043 | 0 | 0 | 0 |
| DS | GATAGT | 0.09752 | 0 | 0 | 0 |
| DS | GACTCT | 0.1138  | 0 | 0 | 0 |
| DS | GACTCG | 0.02941 | 0 | 0 | 0 |

|    |        |         |   |   |     |
|----|--------|---------|---|---|-----|
| DS | GACAGT | 0.05805 | 0 | 0 | 0   |
| DS | GATTCA | 0.1455  | 0 | 0 | 0   |
| DS | GATTCT | 0.1749  | 0 | 0 | 0   |
| DS | GACTCA | 0.05418 | 0 | 0 | 0   |
| DS | GACTCC | 0.05108 | 0 | 0 | 0   |
| DS | GATTCC | 0.1053  | 0 | 0 | 0   |
| DT | GATACA | 0.1953  | 0 | 0 | 0   |
| DT | GACACC | 0.1012  | 0 | 0 | 0   |
| DT | GACACG | 0.02588 | 0 | 0 | 0   |
| DT | GACACT | 0.14    | 0 | 0 | 0   |
| DT | GATACG | 0.08941 | 0 | 0 | 0   |
| DT | GATACT | 0.2153  | 0 | 0 | 0   |
| DT | GATACC | 0.1153  | 0 | 0 | 0   |
| DT | GACACA | 0.1176  | 0 | 0 | 0   |
| DV | GATGTA | 0.146   | 0 | 0 | 0   |
| DV | GACGTT | 0.1366  | 0 | 0 | 0   |
| DV | GACGTA | 0.07143 | 0 | 0 | 0   |
| DV | GACGTC | 0.04762 | 0 | 0 | 0   |
| DV | GACGTG | 0.04658 | 0 | 0 | 0   |
| DV | GATGTG | 0.1263  | 0 | 0 | 0   |
| DV | GATGTC | 0.1429  | 0 | 0 | 0   |
| DV | GATGTT | 0.2826  | 0 | 0 | 0   |
| DW | GATTGG | 0.604   | 0 | 0 | 0   |
| DW | GACTGG | 0.396   | 0 | 0 | 0   |
| DY | GACTAC | 0.1672  | 0 | 0 | 0   |
| DY | GATTAT | 0.3763  | 0 | 0 | 0   |
| DY | GACTAT | 0.2056  | 0 | 0 | 0   |
| DY | GATTAC | 0.2509  | 0 | 0 | 0   |
| E* | GAGTAG | 0.04167 | 0 | 0 | 0   |
| E* | GAATAG | 0.1875  | 0 | 0 | 0   |
| E* | GAGTAA | 0.1875  | 0 | 0 | 0   |
| E* | GAGTGA | 0.0625  | 0 | 0 | 0   |
| E* | GAATAA | 0.3333  | 0 | 0 | 0   |
| E* | GAATGA | 0.1875  | 0 | 0 | 0   |
| EA | GAAGCA | 0.1987  | 0 | 2 | 0   |
| EA | GAGGCA | 0.1009  | 1 | 2 | 0.5 |
| EA | GAAGCC | 0.1493  | 0 | 2 | 0   |
| EA | GAGGCG | 0.03575 | 0 | 2 | 0   |
| EA | GAGGCC | 0.07361 | 0 | 2 | 0   |
| EA | GAGGCT | 0.1062  | 0 | 2 | 0   |
| EA | GAAGCG | 0.0694  | 0 | 2 | 0   |
| EA | GAAGCT | 0.266   | 1 | 2 | 0.5 |
| EC | GAATGT | 0.4892  | 0 | 0 | 0   |
| EC | GAGTGT | 0.1183  | 0 | 0 | 0   |
| EC | GAATGC | 0.2527  | 0 | 0 | 0   |
| EC | GAGTGC | 0.1398  | 0 | 0 | 0   |
| ED | GAGGAC | 0.1132  | 0 | 1 | 0   |
| ED | GAAGAC | 0.2223  | 0 | 1 | 0   |
| ED | GAAGAT | 0.4678  | 1 | 1 | 1   |
| ED | GAGGAT | 0.1967  | 0 | 1 | 0   |
| EE | GAGGAG | 0.09137 | 0 | 0 | 0   |

|    |        |         |   |   |   |
|----|--------|---------|---|---|---|
| EE | GAGGAA | 0.1844  | 0 | 0 | 0 |
| EE | GAAGAG | 0.207   | 0 | 0 | 0 |
| EE | GAAGAA | 0.5172  | 0 | 0 | 0 |
| EF | GAGTTT | 0.2567  | 0 | 0 | 0 |
| EF | GAGTTC | 0.1052  | 0 | 0 | 0 |
| EF | GAATTT | 0.425   | 0 | 0 | 0 |
| EF | GAATTC | 0.2132  | 0 | 0 | 0 |
| EG | GAGGGA | 0.07602 | 0 | 1 | 0 |
| EG | GAGGGG | 0.03801 | 0 | 1 | 0 |
| EG | GAAGGC | 0.1376  | 0 | 1 | 0 |
| EG | GAAGGG | 0.09305 | 0 | 1 | 0 |
| EG | GAGGGT | 0.09567 | 0 | 1 | 0 |
| EG | GAAGGA | 0.1638  | 0 | 1 | 0 |
| EG | GAAGGT | 0.3316  | 1 | 1 | 1 |
| EG | GAGGGC | 0.06422 | 0 | 1 | 0 |
| EH | GAGCAT | 0.2704  | 0 | 0 | 0 |
| EH | GAACAC | 0.2     | 0 | 0 | 0 |
| EH | GAGCAC | 0.1437  | 0 | 0 | 0 |
| EH | GAACAT | 0.3859  | 0 | 0 | 0 |
| EI | GAAATA | 0.2061  | 0 | 0 | 0 |
| EI | GAAATC | 0.1778  | 0 | 0 | 0 |
| EI | GAGATA | 0.07761 | 0 | 0 | 0 |
| EI | GAGATC | 0.07033 | 0 | 0 | 0 |
| EI | GAGATT | 0.1124  | 0 | 0 | 0 |
| EI | GAAATT | 0.3557  | 0 | 0 | 0 |
| EK | GAAAAA | 0.3895  | 0 | 0 | 0 |
| EK | GAGAAG | 0.118   | 0 | 0 | 0 |
| EK | GAGAAA | 0.1851  | 0 | 0 | 0 |
| EK | GAAAAG | 0.3074  | 0 | 0 | 0 |
| EL | GAGTTA | 0.0776  | 0 | 1 | 0 |
| EL | GAGTTG | 0.07541 | 0 | 1 | 0 |
| EL | GAATTG | 0.1798  | 0 | 1 | 0 |
| EL | GAATTA | 0.1836  | 0 | 1 | 0 |
| EL | GAACTA | 0.1126  | 0 | 1 | 0 |
| EL | GAACTC | 0.0377  | 0 | 1 | 0 |
| EL | GAGCTT | 0.04426 | 0 | 1 | 0 |
| EL | GAACTT | 0.07596 | 0 | 1 | 0 |
| EL | GAGCTC | 0.0235  | 0 | 1 | 0 |
| EL | GAGCTA | 0.06175 | 1 | 1 | 1 |
| EL | GAACTG | 0.07923 | 0 | 1 | 0 |
| EL | GAGCTG | 0.04863 | 0 | 1 | 0 |
| EM | GAGATG | 0.2391  | 0 | 0 | 0 |
| EM | GAAATG | 0.7609  | 0 | 0 | 0 |
| EN | GAAAAT | 0.4459  | 1 | 1 | 1 |
| EN | GAAAAC | 0.2611  | 0 | 1 | 0 |
| EN | GAGAAT | 0.1744  | 0 | 1 | 0 |
| EN | GAGAAC | 0.1186  | 0 | 1 | 0 |
| EP | GAACCG | 0.08318 | 0 | 0 | 0 |
| EP | GAGCCG | 0.04521 | 0 | 0 | 0 |
| EP | GAACCA | 0.226   | 0 | 0 | 0 |
| EP | GAACCC | 0.09765 | 0 | 0 | 0 |



|    |        |          |   |   |   |
|----|--------|----------|---|---|---|
| EP | GAGCCT | 0.1465   | 0 | 0 | 0 |
| EP | GAACCT | 0.1899   | 0 | 0 | 0 |
| EP | GAGCCA | 0.1429   | 0 | 0 | 0 |
| EP | GAGCCC | 0.06872  | 0 | 0 | 0 |
| EQ | GAACAA | 0.4405   | 1 | 1 | 1 |
| EQ | GAGCAG | 0.119    | 0 | 1 | 0 |
| EQ | GAACAG | 0.2024   | 0 | 1 | 0 |
| EQ | GAGCAA | 0.2381   | 0 | 1 | 0 |
| ER | GAACGG | 0.04815  | 0 | 1 | 0 |
| ER | GAACGA | 0.06173  | 0 | 1 | 0 |
| ER | GAAAGG | 0.1556   | 0 | 1 | 0 |
| ER | GAGAGG | 0.0642   | 0 | 1 | 0 |
| ER | GAAAGA | 0.3753   | 1 | 1 | 1 |
| ER | GAGCGA | 0.01358  | 0 | 1 | 0 |
| ER | GAGCGG | 0.009877 | 0 | 1 | 0 |
| ER | GAGCGT | 0.03333  | 0 | 1 | 0 |
| ER | GAGCGC | 0.01358  | 0 | 1 | 0 |
| ER | GAACGT | 0.08642  | 0 | 1 | 0 |
| ER | GAACGC | 0.02716  | 0 | 1 | 0 |
| ER | GAGAGA | 0.1111   | 0 | 1 | 0 |
| ES | GAGTCT | 0.05997  | 0 | 0 | 0 |
| ES | GAGTCA | 0.053    | 0 | 0 | 0 |
| ES | GAGTCG | 0.03278  | 0 | 0 | 0 |
| ES | GAATCG | 0.05718  | 0 | 0 | 0 |
| ES | GAGTCC | 0.02929  | 0 | 0 | 0 |
| ES | GAAAGT | 0.1681   | 0 | 0 | 0 |
| ES | GAATCT | 0.1778   | 0 | 0 | 0 |
| ES | GAGAGT | 0.04812  | 0 | 0 | 0 |
| ES | GAGAGC | 0.03626  | 0 | 0 | 0 |
| ES | GAATCC | 0.1046   | 0 | 0 | 0 |
| ES | GAATCA | 0.1353   | 0 | 0 | 0 |
| ES | GAAAGC | 0.09763  | 0 | 0 | 0 |
| ET | GAAACG | 0.1312   | 0 | 0 | 0 |
| ET | GAGACG | 0.03748  | 0 | 0 | 0 |
| ET | GAGACC | 0.04339  | 0 | 0 | 0 |
| ET | GAAACT | 0.286    | 0 | 0 | 0 |
| ET | GAGACA | 0.08679  | 0 | 0 | 0 |
| ET | GAAACC | 0.1203   | 0 | 0 | 0 |
| ET | GAGACT | 0.07692  | 0 | 0 | 0 |
| ET | GAAACA | 0.2179   | 0 | 0 | 0 |
| EV | GAAGTG | 0.1398   | 0 | 0 | 0 |
| EV | GAAGTT | 0.2797   | 0 | 0 | 0 |
| EV | GAAGTC | 0.1459   | 0 | 0 | 0 |
| EV | GAAGTA | 0.1459   | 0 | 0 | 0 |
| EV | GAGGTC | 0.05734  | 0 | 0 | 0 |
| EV | GAGGTT | 0.1107   | 0 | 0 | 0 |
| EV | GAGGTG | 0.0493   | 0 | 0 | 0 |
| EV | GAGGTA | 0.07143  | 0 | 0 | 0 |
| EW | GAATGG | 0.6452   | 0 | 0 | 0 |
| EW | GAGTGG | 0.3548   | 0 | 0 | 0 |
| EY | GAATAT | 0.3866   | 0 | 0 | 0 |

|    |        |         |   |   |   |
|----|--------|---------|---|---|---|
| EY | GAATAC | 0.292   | 0 | 0 | 0 |
| EY | GAGTAT | 0.2055  | 0 | 0 | 0 |
| EY | GAGTAC | 0.1158  | 0 | 0 | 0 |
| F* | TTTTGA | 0.129   | 0 | 0 | 0 |
| F* | TTCTAA | 0.2258  | 0 | 0 | 0 |
| F* | TTTTAA | 0.2581  | 0 | 0 | 0 |
| F* | TTCTAG | 0.09677 | 0 | 0 | 0 |
| F* | TTCTGA | 0.03226 | 0 | 0 | 0 |
| F* | TTTTAG | 0.2581  | 0 | 0 | 0 |
| FA | TTCGCT | 0.07439 | 0 | 0 | 0 |
| FA | TTTGCG | 0.09585 | 0 | 0 | 0 |
| FA | TTCGCG | 0.01288 | 0 | 0 | 0 |
| FA | TTCGCA | 0.06581 | 0 | 0 | 0 |
| FA | TTTGCT | 0.2876  | 0 | 0 | 0 |
| FA | TTTGCA | 0.206   | 0 | 0 | 0 |
| FA | TTTGCC | 0.206   | 0 | 0 | 0 |
| FA | TTCGCC | 0.0515  | 0 | 0 | 0 |
| FC | TTTTGT | 0.3216  | 0 | 0 | 0 |
| FC | TTTTGC | 0.2281  | 0 | 0 | 0 |
| FC | TTCTGC | 0.2105  | 0 | 0 | 0 |
| FC | TTCTGT | 0.2398  | 0 | 0 | 0 |
| FD | TTCGAT | 0.1947  | 0 | 0 | 0 |
| FD | TTCGAC | 0.09597 | 0 | 0 | 0 |
| FD | TTTGAC | 0.2406  | 0 | 0 | 0 |
| FD | TTTGAT | 0.4687  | 0 | 0 | 0 |
| FE | TTCGAG | 0.1029  | 0 | 0 | 0 |
| FE | TTCGAA | 0.1966  | 0 | 0 | 0 |
| FE | TTTGAG | 0.1887  | 0 | 0 | 0 |
| FE | TTTGAA | 0.5119  | 0 | 0 | 0 |
| FF | TTCTTT | 0.1985  | 0 | 1 | 0 |
| FF | TTTTTT | 0.2987  | 0 | 1 | 0 |
| FF | TTTTTC | 0.3297  | 1 | 1 | 1 |
| FF | TTCTTC | 0.173   | 0 | 1 | 0 |
| FG | TTTGGA | 0.1706  | 0 | 0 | 0 |
| FG | TTCGGA | 0.03357 | 0 | 0 | 0 |
| FG | TTCGGG | 0.02797 | 0 | 0 | 0 |
| FG | TTCGGC | 0.05315 | 0 | 0 | 0 |
| FG | TTTGGC | 0.1343  | 0 | 0 | 0 |
| FG | TTTGGG | 0.07692 | 0 | 0 | 0 |
| FG | TTTGGT | 0.3259  | 0 | 0 | 0 |
| FG | TTCGGT | 0.1776  | 0 | 0 | 0 |
| FH | TTCCAC | 0.153   | 0 | 0 | 0 |
| FH | TTTCAT | 0.3488  | 0 | 0 | 0 |
| FH | TTCCAT | 0.3025  | 0 | 0 | 0 |
| FH | TTTCAC | 0.1957  | 0 | 0 | 0 |
| FI | TTCATA | 0.09797 | 0 | 0 | 0 |
| FI | TTTATA | 0.1266  | 0 | 0 | 0 |
| FI | TTTATT | 0.2748  | 0 | 0 | 0 |
| FI | TTTATC | 0.1458  | 0 | 0 | 0 |
| FI | TTCATC | 0.1338  | 0 | 0 | 0 |
| FI | TTCATT | 0.221   | 0 | 0 | 0 |

|    |        |          |   |   |   |
|----|--------|----------|---|---|---|
| FK | TTTAAG | 0.146    | 0 | 0 | 0 |
| FK | TTCAAA | 0.3759   | 0 | 0 | 0 |
| FK | TTCAAG | 0.2402   | 0 | 0 | 0 |
| FK | TTTAAA | 0.2379   | 0 | 0 | 0 |
| FL | TTCTTG | 0.113    | 0 | 0 | 0 |
| FL | TTTCTA | 0.06436  | 0 | 0 | 0 |
| FL | TTTCTG | 0.06023  | 0 | 0 | 0 |
| FL | TTCCTC | 0.01815  | 0 | 0 | 0 |
| FL | TTCCTG | 0.03548  | 0 | 0 | 0 |
| FL | TTCCTT | 0.0429   | 0 | 0 | 0 |
| FL | TTTTTG | 0.1922   | 0 | 0 | 0 |
| FL | TTCCTA | 0.05033  | 0 | 0 | 0 |
| FL | TTCTTA | 0.09983  | 0 | 0 | 0 |
| FL | TTTTTA | 0.2071   | 0 | 0 | 0 |
| FL | TTTCTT | 0.07756  | 0 | 0 | 0 |
| FL | TTTCTC | 0.03878  | 0 | 0 | 0 |
| FM | TTTATG | 0.5157   | 0 | 0 | 0 |
| FM | TTCATG | 0.4843   | 0 | 0 | 0 |
| FN | TTCAAC | 0.249    | 0 | 0 | 0 |
| FN | TTTAAT | 0.2337   | 0 | 0 | 0 |
| FN | TTTAAC | 0.1867   | 0 | 0 | 0 |
| FN | TTCAAT | 0.3306   | 0 | 0 | 0 |
| FP | TTTCCA | 0.2314   | 0 | 0 | 0 |
| FP | TTTCCG | 0.0742   | 0 | 0 | 0 |
| FP | TTTCCC | 0.1166   | 0 | 0 | 0 |
| FP | TTTCCT | 0.1643   | 0 | 0 | 0 |
| FP | TTCCCG | 0.0371   | 0 | 0 | 0 |
| FP | TTCCCA | 0.1625   | 0 | 0 | 0 |
| FP | TTCCCC | 0.08304  | 0 | 0 | 0 |
| FP | TTCCCT | 0.1307   | 0 | 0 | 0 |
| FQ | TTCCAA | 0.3055   | 0 | 0 | 0 |
| FQ | TTCCAG | 0.1618   | 0 | 0 | 0 |
| FQ | TTTCAG | 0.1564   | 0 | 0 | 0 |
| FQ | TTTCAA | 0.3764   | 0 | 0 | 0 |
| FR | TTCCGA | 0.0251   | 0 | 0 | 0 |
| FR | TTTCGG | 0.0251   | 0 | 0 | 0 |
| FR | TTCCGT | 0.07531  | 0 | 0 | 0 |
| FR | TTCCGC | 0.0251   | 0 | 0 | 0 |
| FR | TTCCGG | 0.008368 | 0 | 0 | 0 |
| FR | TTTCGC | 0.03766  | 0 | 0 | 0 |
| FR | TTTCGT | 0.05858  | 0 | 0 | 0 |
| FR | TTCAGA | 0.2469   | 0 | 0 | 0 |
| FR | TTTAGA | 0.2531   | 0 | 0 | 0 |
| FR | TTTCGA | 0.04184  | 0 | 0 | 0 |
| FR | TTCAGG | 0.09833  | 0 | 0 | 0 |
| FR | TTTAGG | 0.1046   | 0 | 0 | 0 |
| FS | TTTAGC | 0.05289  | 0 | 0 | 0 |
| FS | TTCTCC | 0.05389  | 0 | 0 | 0 |
| FS | TTCTCT | 0.07784  | 0 | 0 | 0 |
| FS | TTCTCG | 0.02894  | 0 | 0 | 0 |
| FS | TTCTCA | 0.05788  | 0 | 0 | 0 |

|    |        |         |   |   |   |
|----|--------|---------|---|---|---|
| FS | TTTTCA | 0.1417  | 0 | 0 | 0 |
| FS | TTTTCT | 0.2006  | 0 | 0 | 0 |
| FS | TTCAGC | 0.04491 | 0 | 0 | 0 |
| FS | TTTTCC | 0.1088  | 0 | 0 | 0 |
| FS | TTTAGT | 0.08683 | 0 | 0 | 0 |
| FS | TTTTCG | 0.06587 | 0 | 0 | 0 |
| FS | TTCAGT | 0.07984 | 0 | 0 | 0 |
| FT | TTCACA | 0.1097  | 0 | 0 | 0 |
| FT | TTCACC | 0.1255  | 0 | 0 | 0 |
| FT | TTCACG | 0.06638 | 0 | 0 | 0 |
| FT | TTTACA | 0.1299  | 0 | 0 | 0 |
| FT | TTCACT | 0.1602  | 0 | 0 | 0 |
| FT | TTTACG | 0.07792 | 0 | 0 | 0 |
| FT | TTTACC | 0.1255  | 0 | 0 | 0 |
| FT | TTTACT | 0.2049  | 0 | 0 | 0 |
| FV | TTTGTC | 0.1437  | 1 | 1 | 1 |
| FV | TTCGTT | 0.1178  | 0 | 1 | 0 |
| FV | TTCGTG | 0.04454 | 0 | 1 | 0 |
| FV | TTCGTC | 0.05747 | 0 | 1 | 0 |
| FV | TTCGTA | 0.04454 | 0 | 1 | 0 |
| FV | TTTGTT | 0.1193  | 0 | 1 | 0 |
| FV | TTTGTA | 0.1552  | 0 | 1 | 0 |
| FV | TTTGTT | 0.3175  | 0 | 1 | 0 |
| FW | TTTTGG | 0.625   | 0 | 0 | 0 |
| FW | TTCTGG | 0.375   | 0 | 0 | 0 |
| FY | TTTTAT | 0.3499  | 0 | 1 | 0 |
| FY | TTTTAC | 0.3251  | 0 | 1 | 0 |
| FY | TTCTAC | 0.1491  | 1 | 1 | 1 |
| FY | TTCTAT | 0.176   | 0 | 1 | 0 |
| G* | GGGTAG | 0       | 0 | 0 | 0 |
| G* | GGGTAA | 0       | 0 | 0 | 0 |
| G* | GGCTAA | 0.1176  | 0 | 0 | 0 |
| G* | GGCTGA | 0.1176  | 0 | 0 | 0 |
| G* | GGCTAG | 0       | 0 | 0 | 0 |
| G* | GGGTGA | 0.05882 | 0 | 0 | 0 |
| G* | GGATAA | 0.05882 | 0 | 0 | 0 |
| G* | GGTTGA | 0.2353  | 0 | 0 | 0 |
| G* | GGTTAG | 0       | 0 | 0 | 0 |
| G* | GGTTAA | 0.1765  | 0 | 0 | 0 |
| G* | GGATAG | 0.05882 | 0 | 0 | 0 |
| G* | GGATGA | 0.1765  | 0 | 0 | 0 |
| GA | GGCGCG | 0.0224  | 0 | 1 | 0 |
| GA | GGCGCT | 0.07378 | 0 | 1 | 0 |
| GA | GGAGCT | 0.04348 | 0 | 1 | 0 |
| GA | GGTGCG | 0.04611 | 1 | 1 | 1 |
| GA | GGAGCC | 0.0527  | 0 | 1 | 0 |
| GA | GGCGCC | 0.0448  | 0 | 1 | 0 |
| GA | GGCGCA | 0.04084 | 0 | 1 | 0 |
| GA | GGTGCC | 0.1542  | 0 | 1 | 0 |
| GA | GGTGCA | 0.1212  | 0 | 1 | 0 |
| GA | GGTGCT | 0.2134  | 0 | 1 | 0 |

|    |        |          |   |   |     |
|----|--------|----------|---|---|-----|
| GA | GGAGCA | 0.06851  | 0 | 1 | 0   |
| GA | GGAGCG | 0.01449  | 0 | 1 | 0   |
| GA | GGGGCC | 0.02767  | 0 | 1 | 0   |
| GA | GGGGCA | 0.04348  | 0 | 1 | 0   |
| GA | GGGGCT | 0.02503  | 0 | 1 | 0   |
| GA | GGGGCG | 0.007905 | 0 | 1 | 0   |
| GC | GGATGT | 0.1745   | 0 | 0 | 0   |
| GC | GGCTGC | 0.06132  | 0 | 0 | 0   |
| GC | GGGTGT | 0.0566   | 0 | 0 | 0   |
| GC | GGGTGC | 0.0283   | 0 | 0 | 0   |
| GC | GGCTGT | 0.1698   | 0 | 0 | 0   |
| GC | GGATGC | 0.09906  | 0 | 0 | 0   |
| GC | GGTTGC | 0.1415   | 0 | 0 | 0   |
| GC | GGTTGT | 0.2689   | 0 | 0 | 0   |
| GD | GGCGAT | 0.13     | 0 | 0 | 0   |
| GD | GGAGAT | 0.1108   | 0 | 0 | 0   |
| GD | GGCGAC | 0.07934  | 0 | 0 | 0   |
| GD | GGGGAC | 0.03146  | 0 | 0 | 0   |
| GD | GGTGAC | 0.2052   | 0 | 0 | 0   |
| GD | GGAGAC | 0.07387  | 0 | 0 | 0   |
| GD | GGGGAT | 0.05198  | 0 | 0 | 0   |
| GD | GGTGAT | 0.3174   | 0 | 0 | 0   |
| GE | GGGGAA | 0.07627  | 0 | 1 | 0   |
| GE | GGGGAG | 0.03632  | 0 | 1 | 0   |
| GE | GGTGAA | 0.3632   | 1 | 1 | 1   |
| GE | GGTGAG | 0.1114   | 0 | 1 | 0   |
| GE | GGCGAA | 0.1199   | 0 | 1 | 0   |
| GE | GGCGAG | 0.04479  | 0 | 1 | 0   |
| GE | GGAGAG | 0.08959  | 0 | 1 | 0   |
| GE | GGAGAA | 0.1586   | 0 | 1 | 0   |
| GF | GGCTTC | 0.06122  | 0 | 1 | 0   |
| GF | GGATTC | 0.07692  | 0 | 1 | 0   |
| GF | GGCTTT | 0.09576  | 0 | 1 | 0   |
| GF | GGATTT | 0.2245   | 1 | 1 | 1   |
| GF | GGGTTT | 0.1507   | 0 | 1 | 0   |
| GF | GGGTTC | 0.08634  | 0 | 1 | 0   |
| GF | GGTTTT | 0.1429   | 0 | 1 | 0   |
| GF | GGTTTC | 0.1617   | 0 | 1 | 0   |
| GG | GGAGGA | 0.06805  | 0 | 2 | 0   |
| GG | GGGGGT | 0.02537  | 0 | 2 | 0   |
| GG | GGGGGA | 0.02537  | 0 | 2 | 0   |
| GG | GGTGGT | 0.323    | 1 | 2 | 0.5 |
| GG | GGGGGC | 0.02191  | 0 | 2 | 0   |
| GG | GGGGGG | 0.009227 | 0 | 2 | 0   |
| GG | GGAGGC | 0.02076  | 0 | 2 | 0   |
| GG | GGTGGA | 0.1073   | 1 | 2 | 0.5 |
| GG | GGAGGG | 0.03114  | 0 | 2 | 0   |
| GG | GGTGGC | 0.07497  | 0 | 2 | 0   |
| GG | GGCGGC | 0.03922  | 0 | 2 | 0   |
| GG | GGCGGG | 0.0173   | 0 | 2 | 0   |
| GG | GGCGGT | 0.06574  | 0 | 2 | 0   |

|    |        |         |   |   |   |
|----|--------|---------|---|---|---|
| GG | GGTGGG | 0.06805 | 0 | 2 | 0 |
| GG | GGCGGA | 0.04729 | 0 | 2 | 0 |
| GG | GGAGGT | 0.05536 | 0 | 2 | 0 |
| GH | GGACAC | 0.1233  | 0 | 0 | 0 |
| GH | GGACAT | 0.1133  | 0 | 0 | 0 |
| GH | GGCCAC | 0.1133  | 0 | 0 | 0 |
| GH | GGGCAT | 0.08333 | 0 | 0 | 0 |
| GH | GGCCAT | 0.1733  | 0 | 0 | 0 |
| GH | GGTCAT | 0.2333  | 0 | 0 | 0 |
| GH | GGGCAC | 0.03333 | 0 | 0 | 0 |
| GH | GGTCAC | 0.1267  | 0 | 0 | 0 |
| GI | GGAATT | 0.08465 | 0 | 1 | 0 |
| GI | GGAATA | 0.07185 | 0 | 1 | 0 |
| GI | GGAATC | 0.05512 | 0 | 1 | 0 |
| GI | GGGATC | 0.01673 | 0 | 1 | 0 |
| GI | GGCATA | 0.06102 | 1 | 1 | 1 |
| GI | GGCATC | 0.04823 | 0 | 1 | 0 |
| GI | GGCATT | 0.07579 | 0 | 1 | 0 |
| GI | GGTATA | 0.1152  | 0 | 1 | 0 |
| GI | GGGATA | 0.04429 | 0 | 1 | 0 |
| GI | GGTATC | 0.1398  | 0 | 1 | 0 |
| GI | GGGATT | 0.03839 | 0 | 1 | 0 |
| GI | GGTATT | 0.249   | 0 | 1 | 0 |
| GK | GGTAAA | 0.2114  | 0 | 0 | 0 |
| GK | GGTAAG | 0.1797  | 0 | 0 | 0 |
| GK | GGGAAA | 0.0971  | 0 | 0 | 0 |
| GK | GGAAAA | 0.1588  | 0 | 0 | 0 |
| GK | GGGAAG | 0.06171 | 0 | 0 | 0 |
| GK | GGCAAA | 0.108   | 0 | 0 | 0 |
| GK | GGCAAG | 0.08076 | 0 | 0 | 0 |
| GK | GGAAAG | 0.1025  | 0 | 0 | 0 |
| GL | GGATTG | 0.05856 | 0 | 0 | 0 |
| GL | GGCCTA | 0.02553 | 0 | 0 | 0 |
| GL | GGATTA | 0.06081 | 0 | 0 | 0 |
| GL | GGACTG | 0.03003 | 0 | 0 | 0 |
| GL | GGACTA | 0.02628 | 0 | 0 | 0 |
| GL | GGTTTG | 0.1119  | 0 | 0 | 0 |
| GL | GGTTTA | 0.1329  | 0 | 0 | 0 |
| GL | GGACTC | 0.01201 | 0 | 0 | 0 |
| GL | GGCCTC | 0.01201 | 0 | 0 | 0 |
| GL | GGACTT | 0.02853 | 0 | 0 | 0 |
| GL | GGCCTT | 0.02703 | 0 | 0 | 0 |
| GL | GGGCTC | 0.00976 | 0 | 0 | 0 |
| GL | GGGCTA | 0.03453 | 0 | 0 | 0 |
| GL | GGGCTG | 0.02553 | 0 | 0 | 0 |
| GL | GGGCTT | 0.03153 | 0 | 0 | 0 |
| GL | GGGTTA | 0.04354 | 0 | 0 | 0 |
| GL | GGTCTA | 0.07432 | 0 | 0 | 0 |
| GL | GGTCTC | 0.02102 | 0 | 0 | 0 |
| GL | GGCTTA | 0.0458  | 0 | 0 | 0 |
| GL | GGGTTG | 0.04354 | 0 | 0 | 0 |

|    |        |          |   |   |     |
|----|--------|----------|---|---|-----|
| GL | GGCTTG | 0.03679  | 0 | 0 | 0   |
| GL | GGTCTT | 0.04955  | 0 | 0 | 0   |
| GL | GGTCTG | 0.03453  | 0 | 0 | 0   |
| GL | GGCCTG | 0.02402  | 0 | 0 | 0   |
| GM | GGTATG | 0.5      | 0 | 0 | 0   |
| GM | GGAATG | 0.2361   | 0 | 0 | 0   |
| GM | GGGATG | 0.125    | 0 | 0 | 0   |
| GM | GGCATG | 0.1389   | 0 | 0 | 0   |
| GN | GGGAAT | 0.07666  | 0 | 0 | 0   |
| GN | GGCAAC | 0.07201  | 0 | 0 | 0   |
| GN | GGGAAC | 0.04065  | 0 | 0 | 0   |
| GN | GGTAAT | 0.2265   | 0 | 0 | 0   |
| GN | GGAAAC | 0.09524  | 0 | 0 | 0   |
| GN | GGCAAT | 0.1196   | 0 | 0 | 0   |
| GN | GGTAAC | 0.1858   | 0 | 0 | 0   |
| GN | GGAAAT | 0.1835   | 0 | 0 | 0   |
| GP | GGTCCC | 0.05333  | 0 | 2 | 0   |
| GP | GGGCCC | 0.04     | 0 | 2 | 0   |
| GP | GGTCCG | 0.02476  | 0 | 2 | 0   |
| GP | GGTCCT | 0.1429   | 1 | 2 | 0.5 |
| GP | GGTCCA | 0.1657   | 0 | 2 | 0   |
| GP | GGGCCT | 0.0819   | 0 | 2 | 0   |
| GP | GGCCCG | 0.01714  | 0 | 2 | 0   |
| GP | GGCCCC | 0.04     | 0 | 2 | 0   |
| GP | GGCCCA | 0.0781   | 0 | 2 | 0   |
| GP | GGGCCA | 0.08952  | 0 | 2 | 0   |
| GP | GGCCCT | 0.06095  | 0 | 2 | 0   |
| GP | GGGCCG | 0.02667  | 0 | 2 | 0   |
| GP | GGACCC | 0.03048  | 0 | 2 | 0   |
| GP | GGACCT | 0.05714  | 1 | 2 | 0.5 |
| GP | GGACCG | 0.02857  | 0 | 2 | 0   |
| GP | GGACCA | 0.06286  | 0 | 2 | 0   |
| GQ | GGCCAG | 0.09595  | 1 | 1 | 1   |
| GQ | GGTCAA | 0.2836   | 0 | 1 | 0   |
| GQ | GGTCAG | 0.07676  | 0 | 1 | 0   |
| GQ | GGACAA | 0.1748   | 0 | 1 | 0   |
| GQ | GGGCAA | 0.08316  | 0 | 1 | 0   |
| GQ | GGACAG | 0.0597   | 0 | 1 | 0   |
| GQ | GGCCAA | 0.1962   | 0 | 1 | 0   |
| GQ | GGGCAG | 0.02985  | 0 | 1 | 0   |
| GR | GGCCGT | 0.03535  | 0 | 0 | 0   |
| GR | GGGCGA | 0.005051 | 0 | 0 | 0   |
| GR | GGGAGG | 0.02525  | 0 | 0 | 0   |
| GR | GGGAGA | 0.06734  | 0 | 0 | 0   |
| GR | GGGCGT | 0.01852  | 0 | 0 | 0   |
| GR | GGCCGG | 0.005051 | 0 | 0 | 0   |
| GR | GGGCGC | 0.005051 | 0 | 0 | 0   |
| GR | GGTAGA | 0.202    | 0 | 0 | 0   |
| GR | GGTAGG | 0.07071  | 0 | 0 | 0   |
| GR | GGACGA | 0.006734 | 0 | 0 | 0   |
| GR | GGACGC | 0.01515  | 0 | 0 | 0   |

|    |        |          |   |   |        |
|----|--------|----------|---|---|--------|
| GR | GGACGG | 0.0101   | 0 | 0 | 0      |
| GR | GGTCGG | 0.008418 | 0 | 0 | 0      |
| GR | GGAAGG | 0.06734  | 0 | 0 | 0      |
| GR | GGAAGA | 0.1549   | 0 | 0 | 0      |
| GR | GGTCGT | 0.07071  | 0 | 0 | 0      |
| GR | GGCCGC | 0.01347  | 0 | 0 | 0      |
| GR | GGACGT | 0.03367  | 0 | 0 | 0      |
| GR | GGTCGA | 0.01852  | 0 | 0 | 0      |
| GR | GGCAGA | 0.07912  | 0 | 0 | 0      |
| GR | GGCCGA | 0.008418 | 0 | 0 | 0      |
| GR | GGTCGC | 0.02694  | 0 | 0 | 0      |
| GR | GGGCGG | 0.008418 | 0 | 0 | 0      |
| GR | GGCAGG | 0.04377  | 0 | 0 | 0      |
| GS | GGTTCA | 0.07961  | 0 | 3 | 0      |
| GS | GGTTCC | 0.07143  | 1 | 3 | 0.3333 |
| GS | GGTTCT | 0.1287   | 0 | 3 | 0      |
| GS | GGTTCG | 0.03125  | 0 | 3 | 0      |
| GS | GGTAGT | 0.06027  | 0 | 3 | 0      |
| GS | GGGTCG | 0.01042  | 0 | 3 | 0      |
| GS | GGGTCC | 0.01563  | 0 | 3 | 0      |
| GS | GGGTCA | 0.01786  | 0 | 3 | 0      |
| GS | GGGTCT | 0.03199  | 0 | 3 | 0      |
| GS | GGTAGC | 0.04836  | 0 | 3 | 0      |
| GS | GGCTCT | 0.0625   | 0 | 3 | 0      |
| GS | GGATCT | 0.05729  | 0 | 3 | 0      |
| GS | GGGAGT | 0.01786  | 1 | 3 | 0.3333 |
| GS | GGCAGT | 0.04464  | 0 | 3 | 0      |
| GS | GGCTCA | 0.03497  | 0 | 3 | 0      |
| GS | GGATCG | 0.03274  | 0 | 3 | 0      |
| GS | GGATCC | 0.0253   | 0 | 3 | 0      |
| GS | GGAAGC | 0.03646  | 0 | 3 | 0      |
| GS | GGAAGT | 0.05952  | 0 | 3 | 0      |
| GS | GGATCA | 0.04613  | 1 | 3 | 0.3333 |
| GS | GGCTCC | 0.03869  | 0 | 3 | 0      |
| GS | GGCAGC | 0.02232  | 0 | 3 | 0      |
| GS | GGGAGC | 0.0119   | 0 | 3 | 0      |
| GS | GGCTCG | 0.01414  | 0 | 3 | 0      |
| GT | GGTACG | 0.04704  | 0 | 0 | 0      |
| GT | GGGACT | 0.03619  | 0 | 0 | 0      |
| GT | GGGACG | 0.0193   | 0 | 0 | 0      |
| GT | GGAACT | 0.07961  | 0 | 0 | 0      |
| GT | GGAACG | 0.04584  | 0 | 0 | 0      |
| GT | GGAACA | 0.09168  | 0 | 0 | 0      |
| GT | GGAACC | 0.03016  | 0 | 0 | 0      |
| GT | GGGACC | 0.01689  | 0 | 0 | 0      |
| GT | GGGACA | 0.03619  | 0 | 0 | 0      |
| GT | GGCACT | 0.08685  | 0 | 0 | 0      |
| GT | GGTACA | 0.117    | 0 | 0 | 0      |
| GT | GGCACG | 0.0193   | 0 | 0 | 0      |
| GT | GGCACC | 0.04946  | 0 | 0 | 0      |
| GT | GGTACT | 0.1653   | 0 | 0 | 0      |



|    |         |         |   |   |   |
|----|---------|---------|---|---|---|
| GT | GGCACA  | 0.06514 | 0 | 0 | 0 |
| GT | GGTACC  | 0.09409 | 0 | 0 | 0 |
| GV | GGCGTA  | 0.0315  | 0 | 0 | 0 |
| GV | GGCGTT  | 0.06524 | 0 | 0 | 0 |
| GV | GGGGTA  | 0.0225  | 0 | 0 | 0 |
| GV | GGGGTC  | 0.01012 | 0 | 0 | 0 |
| GV | GGGGTG  | 0.01912 | 0 | 0 | 0 |
| GV | GGCGTG  | 0.01912 | 0 | 0 | 0 |
| GV | GGCGTC  | 0.03262 | 0 | 0 | 0 |
| GV | GGAGTA  | 0.03712 | 0 | 0 | 0 |
| GV | GGAGTG  | 0.02812 | 0 | 0 | 0 |
| GV | GGAGTT  | 0.06187 | 0 | 0 | 0 |
| GV | GGGGTT  | 0.027   | 0 | 0 | 0 |
| GV | GGAGTC  | 0.03037 | 0 | 0 | 0 |
| GV | GGTGTC  | 0.1384  | 0 | 0 | 0 |
| GV | GGTGTT  | 0.2621  | 0 | 0 | 0 |
| GV | GGTGTA  | 0.1159  | 0 | 0 | 0 |
| GV | GGTG TG | 0.09899 | 0 | 0 | 0 |
| GW | GGTTGG  | 0.4483  | 0 | 0 | 0 |
| GW | GGATGG  | 0.202   | 0 | 0 | 0 |
| GW | GGCTGG  | 0.2365  | 0 | 0 | 0 |
| GW | GGGTGG  | 0.1133  | 0 | 0 | 0 |
| GY | GGTTAC  | 0.1889  | 0 | 0 | 0 |
| GY | GGTTAT  | 0.2462  | 0 | 0 | 0 |
| GY | GGGTAC  | 0.03435 | 0 | 0 | 0 |
| GY | GGATAC  | 0.07443 | 0 | 0 | 0 |
| GY | GGATAT  | 0.1737  | 0 | 0 | 0 |
| GY | GGGTAT  | 0.06298 | 0 | 0 | 0 |
| GY | GGCTAC  | 0.09733 | 0 | 0 | 0 |
| GY | GGCTAT  | 0.1221  | 0 | 0 | 0 |
| H* | CACTAG  | 0       | 0 | 0 | 0 |
| H* | CACTAA  | 0.09524 | 0 | 0 | 0 |
| H* | CATTGA  | 0.09524 | 0 | 0 | 0 |
| H* | CATTAG  | 0.4762  | 0 | 0 | 0 |
| H* | CATTAA  | 0.2857  | 0 | 0 | 0 |
| H* | CACTGA  | 0.04762 | 0 | 0 | 0 |
| HA | CATGCC  | 0.1829  | 0 | 0 | 0 |
| HA | CATGCA  | 0.1921  | 0 | 0 | 0 |
| HA | CACGCG  | 0.03354 | 0 | 0 | 0 |
| HA | CACGCT  | 0.1189  | 0 | 0 | 0 |
| HA | CATGCG  | 0.06707 | 0 | 0 | 0 |
| HA | CATGCT  | 0.2866  | 0 | 0 | 0 |
| HA | CACGCA  | 0.04878 | 0 | 0 | 0 |
| HA | CACGCC  | 0.07012 | 0 | 0 | 0 |
| HC | CACTGT  | 0.2418  | 0 | 0 | 0 |
| HC | CATTGT  | 0.4286  | 0 | 0 | 0 |
| HC | CATTGC  | 0.2747  | 0 | 0 | 0 |
| HC | CACTGC  | 0.05495 | 0 | 0 | 0 |
| HD | CATGAT  | 0.368   | 0 | 0 | 0 |
| HD | CATGAC  | 0.2344  | 0 | 0 | 0 |
| HD | CACGAC  | 0.1662  | 0 | 0 | 0 |

|    |         |         |   |   |     |
|----|---------|---------|---|---|-----|
| HD | CACGAT  | 0.2315  | 0 | 0 | 0   |
| HE | CACGAG  | 0.07507 | 0 | 0 | 0   |
| HE | CACGAA  | 0.2413  | 0 | 0 | 0   |
| HE | CATGAA  | 0.4879  | 0 | 0 | 0   |
| HE | CATGAG  | 0.1957  | 0 | 0 | 0   |
| HF | CACTTC  | 0.1316  | 0 | 0 | 0   |
| HF | CATTTT  | 0.3647  | 0 | 0 | 0   |
| HF | CATTTTC | 0.3045  | 0 | 0 | 0   |
| HF | CACTTT  | 0.1992  | 0 | 0 | 0   |
| HG | CATGGT  | 0.3187  | 0 | 0 | 0   |
| HG | CACGGT  | 0.1462  | 0 | 0 | 0   |
| HG | CATGGG  | 0.08772 | 0 | 0 | 0   |
| HG | CATGGA  | 0.1462  | 0 | 0 | 0   |
| HG | CACGGC  | 0.06725 | 0 | 0 | 0   |
| HG | CATGGC  | 0.1374  | 0 | 0 | 0   |
| HG | CACGGG  | 0.02632 | 0 | 0 | 0   |
| HG | CACGGA  | 0.07018 | 0 | 0 | 0   |
| HH | CATCAC  | 0.234   | 0 | 0 | 0   |
| HH | CATCAT  | 0.5053  | 0 | 0 | 0   |
| HH | CACCAC  | 0.09574 | 0 | 0 | 0   |
| HH | CACCAT  | 0.1649  | 0 | 0 | 0   |
| HI | CACATA  | 0.07436 | 0 | 0 | 0   |
| HI | CATATA  | 0.1974  | 0 | 0 | 0   |
| HI | CACATT  | 0.1744  | 0 | 0 | 0   |
| HI | CACATC  | 0.07436 | 0 | 0 | 0   |
| HI | CATATC  | 0.1846  | 0 | 0 | 0   |
| HI | CATATT  | 0.2949  | 0 | 0 | 0   |
| HK | CACAAA  | 0.2582  | 0 | 0 | 0   |
| HK | CATAAA  | 0.3424  | 0 | 0 | 0   |
| HK | CACAAG  | 0.2092  | 0 | 0 | 0   |
| HK | CATAAG  | 0.1902  | 0 | 0 | 0   |
| HL | CACCTT  | 0.05431 | 0 | 2 | 0   |
| HL | CATTTA  | 0.2316  | 1 | 2 | 0.5 |
| HL | CACCTC  | 0.02556 | 0 | 2 | 0   |
| HL | CACCTA  | 0.03994 | 0 | 2 | 0   |
| HL | CATTTG  | 0.2109  | 0 | 2 | 0   |
| HL | CACCTG  | 0.03355 | 0 | 2 | 0   |
| HL | CACTTA  | 0.07508 | 1 | 2 | 0.5 |
| HL | CATCTG  | 0.03994 | 0 | 2 | 0   |
| HL | CATCTC  | 0.04473 | 0 | 2 | 0   |
| HL | CATCTA  | 0.07987 | 0 | 2 | 0   |
| HL | CATCTT  | 0.09425 | 0 | 2 | 0   |
| HL | CACTTG  | 0.07029 | 0 | 2 | 0   |
| HM | CACATG  | 0.3922  | 0 | 0 | 0   |
| HM | CATATG  | 0.6078  | 0 | 0 | 0   |
| HN | CATAAC  | 0.2132  | 0 | 0 | 0   |
| HN | CATAAT  | 0.3423  | 0 | 0 | 0   |
| HN | CACAAC  | 0.1742  | 0 | 0 | 0   |
| HN | CACAAT  | 0.2703  | 0 | 0 | 0   |
| HP | CACCCG  | 0.02989 | 0 | 0 | 0   |
| HP | CACCCC  | 0.02989 | 0 | 0 | 0   |

|    |         |          |   |   |   |
|----|---------|----------|---|---|---|
| HP | CACCCT  | 0.0625   | 0 | 0 | 0 |
| HP | CATCCG  | 0.1332   | 0 | 0 | 0 |
| HP | CATCCC  | 0.09783  | 0 | 0 | 0 |
| HP | CATCCT  | 0.2473   | 0 | 0 | 0 |
| HP | CATCCA  | 0.2418   | 0 | 0 | 0 |
| HP | CACCCA  | 0.1576   | 0 | 0 | 0 |
| HQ | CATCAG  | 0.1841   | 0 | 0 | 0 |
| HQ | CATCAA  | 0.4603   | 0 | 0 | 0 |
| HQ | CACCAG  | 0.08368  | 0 | 0 | 0 |
| HQ | CACCAA  | 0.272    | 0 | 0 | 0 |
| HR | CATCGA  | 0.1      | 0 | 0 | 0 |
| HR | CACCGT  | 0.06333  | 0 | 0 | 0 |
| HR | CATCGG  | 0.01667  | 0 | 0 | 0 |
| HR | CACAGA  | 0.1767   | 0 | 0 | 0 |
| HR | CATAGA  | 0.2633   | 0 | 0 | 0 |
| HR | CACCGG  | 0.02333  | 0 | 0 | 0 |
| HR | CATAGG  | 0.1      | 0 | 0 | 0 |
| HR | CACCGC  | 0.006667 | 0 | 0 | 0 |
| HR | CATCGC  | 0.05     | 0 | 0 | 0 |
| HR | CACAGG  | 0.06     | 0 | 0 | 0 |
| HR | CATCGT  | 0.1267   | 0 | 0 | 0 |
| HR | CACCGA  | 0.01333  | 0 | 0 | 0 |
| HS | CATAGT  | 0.06998  | 0 | 0 | 0 |
| HS | CATTCT  | 0.1786   | 0 | 0 | 0 |
| HS | CATAGC  | 0.05341  | 0 | 0 | 0 |
| HS | CATTCTG | 0.08656  | 0 | 0 | 0 |
| HS | CATTCC  | 0.1013   | 0 | 0 | 0 |
| HS | CACAGC  | 0.05157  | 0 | 0 | 0 |
| HS | CACAGT  | 0.05157  | 0 | 0 | 0 |
| HS | CACTCG  | 0.0221   | 0 | 0 | 0 |
| HS | CACTCA  | 0.08471  | 0 | 0 | 0 |
| HS | CACTCT  | 0.09576  | 0 | 0 | 0 |
| HS | CATTCA  | 0.1547   | 0 | 0 | 0 |
| HS | CACTCC  | 0.04972  | 0 | 0 | 0 |
| HT | CACACC  | 0.07099  | 0 | 0 | 0 |
| HT | CACACG  | 0.03086  | 0 | 0 | 0 |
| HT | CATACA  | 0.216    | 0 | 0 | 0 |
| HT | CATACG  | 0.0679   | 0 | 0 | 0 |
| HT | CACACT  | 0.1728   | 0 | 0 | 0 |
| HT | CACACA  | 0.1512   | 0 | 0 | 0 |
| HT | CATACT  | 0.2068   | 0 | 0 | 0 |
| HT | CATACC  | 0.08333  | 0 | 0 | 0 |
| HV | CATGTA  | 0.1656   | 0 | 0 | 0 |
| HV | CATGTG  | 0.1401   | 0 | 0 | 0 |
| HV | CATGTT  | 0.2166   | 0 | 0 | 0 |
| HV | CATGTC  | 0.1338   | 0 | 0 | 0 |
| HV | CACGTA  | 0.09236  | 0 | 0 | 0 |
| HV | CACGTC  | 0.07962  | 0 | 0 | 0 |
| HV | CACGTG  | 0.05414  | 0 | 0 | 0 |
| HV | CACGTT  | 0.1178   | 0 | 0 | 0 |
| HW | CACTGG  | 0.3368   | 0 | 0 | 0 |

|    |        |         |   |   |   |
|----|--------|---------|---|---|---|
| HW | CATTGG | 0.6632  | 0 | 0 | 0 |
| HY | CATTAC | 0.2488  | 0 | 0 | 0 |
| HY | CACTAC | 0.1596  | 0 | 0 | 0 |
| HY | CACTAT | 0.1878  | 0 | 0 | 0 |
| HY | CATTAT | 0.4038  | 0 | 0 | 0 |
| I* | ATTTAG | 0.1081  | 0 | 0 | 0 |
| I* | ATTTAA | 0.2703  | 0 | 0 | 0 |
| I* | ATCTGA | 0.02703 | 0 | 0 | 0 |
| I* | ATCTAG | 0.02703 | 0 | 0 | 0 |
| I* | ATTTGA | 0.1351  | 0 | 0 | 0 |
| I* | ATCTAA | 0.08108 | 0 | 0 | 0 |
| I* | ATATAA | 0.1892  | 0 | 0 | 0 |
| I* | ATATAG | 0.1081  | 0 | 0 | 0 |
| I* | ATATGA | 0.05405 | 0 | 0 | 0 |
| IA | ATTGCC | 0.1384  | 0 | 0 | 0 |
| IA | ATAGCA | 0.06591 | 0 | 0 | 0 |
| IA | ATTGCA | 0.1638  | 0 | 0 | 0 |
| IA | ATTGCG | 0.07533 | 0 | 0 | 0 |
| IA | ATTGCT | 0.209   | 0 | 0 | 0 |
| IA | ATAGCC | 0.04331 | 0 | 0 | 0 |
| IA | ATCGCT | 0.06591 | 0 | 0 | 0 |
| IA | ATCGCA | 0.04049 | 0 | 0 | 0 |
| IA | ATAGCG | 0.0452  | 0 | 0 | 0 |
| IA | ATCGCC | 0.0452  | 0 | 0 | 0 |
| IA | ATCGCG | 0.02919 | 0 | 0 | 0 |
| IA | ATAGCT | 0.07815 | 0 | 0 | 0 |
| IC | ATATGT | 0.1626  | 0 | 1 | 0 |
| IC | ATTTGC | 0.1903  | 0 | 1 | 0 |
| IC | ATATGC | 0.1073  | 0 | 1 | 0 |
| IC | ATTTGT | 0.3149  | 1 | 1 | 1 |
| IC | ATCTGC | 0.1003  | 0 | 1 | 0 |
| IC | ATCTGT | 0.1246  | 0 | 1 | 0 |
| ID | ATTGAC | 0.1769  | 0 | 0 | 0 |
| ID | ATTGAT | 0.3123  | 0 | 0 | 0 |
| ID | ATAGAT | 0.1599  | 0 | 0 | 0 |
| ID | ATCGAC | 0.09407 | 0 | 0 | 0 |
| ID | ATCGAT | 0.1627  | 0 | 0 | 0 |
| ID | ATAGAC | 0.09407 | 0 | 0 | 0 |
| IE | ATCGAG | 0.07253 | 0 | 0 | 0 |
| IE | ATCGAA | 0.1496  | 0 | 0 | 0 |
| IE | ATTGAG | 0.1342  | 0 | 0 | 0 |
| IE | ATTGAA | 0.3898  | 0 | 0 | 0 |
| IE | ATAGAG | 0.08885 | 0 | 0 | 0 |
| IE | ATAGAA | 0.165   | 0 | 0 | 0 |
| IF | ATATTT | 0.2067  | 0 | 0 | 0 |
| IF | ATCTTC | 0.09797 | 0 | 0 | 0 |
| IF | ATATTC | 0.1099  | 0 | 0 | 0 |
| IF | ATTTTT | 0.2581  | 0 | 0 | 0 |
| IF | ATCTTT | 0.1219  | 0 | 0 | 0 |
| IF | ATTTTC | 0.2055  | 0 | 0 | 0 |
| IG | ATCGGC | 0.04091 | 0 | 0 | 0 |

|    |        |         |   |   |   |
|----|--------|---------|---|---|---|
| IG | ATCGGA | 0.05    | 0 | 0 | 0 |
| IG | ATTGGA | 0.1068  | 0 | 0 | 0 |
| IG | ATTGGC | 0.09205 | 0 | 0 | 0 |
| IG | ATCGGG | 0.02159 | 0 | 0 | 0 |
| IG | ATAGGT | 0.07159 | 0 | 0 | 0 |
| IG | ATAGGC | 0.04205 | 0 | 0 | 0 |
| IG | ATAGGA | 0.06477 | 0 | 0 | 0 |
| IG | ATTGGG | 0.07955 | 0 | 0 | 0 |
| IG | ATAGGG | 0.03068 | 0 | 0 | 0 |
| IG | ATCGGT | 0.1136  | 0 | 0 | 0 |
| IG | ATTGGT | 0.2864  | 0 | 0 | 0 |
| IH | ATTCAT | 0.3411  | 0 | 0 | 0 |
| IH | ATTCAC | 0.1833  | 0 | 0 | 0 |
| IH | ATCCAC | 0.058   | 0 | 0 | 0 |
| IH | ATACAC | 0.09977 | 0 | 0 | 0 |
| IH | ATCCAT | 0.1392  | 0 | 0 | 0 |
| IH | ATACAT | 0.1787  | 0 | 0 | 0 |
| II | ATTATA | 0.114   | 0 | 0 | 0 |
| II | ATTATC | 0.1148  | 0 | 0 | 0 |
| II | ATTATT | 0.2108  | 0 | 0 | 0 |
| II | ATAATA | 0.1037  | 0 | 0 | 0 |
| II | ATAATT | 0.102   | 0 | 0 | 0 |
| II | ATAATC | 0.06255 | 0 | 0 | 0 |
| II | ATCATC | 0.09597 | 0 | 0 | 0 |
| II | ATCATT | 0.1285  | 0 | 0 | 0 |
| II | ATCATA | 0.06769 | 0 | 0 | 0 |
| IK | ATCAAG | 0.1673  | 0 | 0 | 0 |
| IK | ATCAAA | 0.2411  | 0 | 0 | 0 |
| IK | ATAAAA | 0.1629  | 0 | 0 | 0 |
| IK | ATAAAG | 0.1183  | 0 | 0 | 0 |
| IK | ATTAAA | 0.1885  | 0 | 0 | 0 |
| IK | ATTAAG | 0.122   | 0 | 0 | 0 |
| IL | ATCCTA | 0.03985 | 0 | 0 | 0 |
| IL | ATCCTT | 0.03439 | 0 | 0 | 0 |
| IL | ATCTTG | 0.06114 | 0 | 0 | 0 |
| IL | ATATTG | 0.07151 | 0 | 0 | 0 |
| IL | ATCTTA | 0.05622 | 0 | 0 | 0 |
| IL | ATCCTC | 0.01528 | 0 | 0 | 0 |
| IL | ATATTA | 0.07806 | 0 | 0 | 0 |
| IL | ATCCTG | 0.02293 | 0 | 0 | 0 |
| IL | ATACTC | 0.0131  | 0 | 0 | 0 |
| IL | ATTCTT | 0.07751 | 0 | 0 | 0 |
| IL | ATTCTG | 0.04148 | 0 | 0 | 0 |
| IL | ATTCTC | 0.02511 | 0 | 0 | 0 |
| IL | ATACTA | 0.04913 | 0 | 0 | 0 |
| IL | ATTTTA | 0.1605  | 0 | 0 | 0 |
| IL | ATACTT | 0.0393  | 0 | 0 | 0 |
| IL | ATTTTG | 0.1157  | 0 | 0 | 0 |
| IL | ATACTG | 0.03603 | 0 | 0 | 0 |
| IL | ATTCTA | 0.06277 | 0 | 0 | 0 |
| IM | ATAATG | 0.2627  | 0 | 0 | 0 |

|    |         |         |   |   |   |
|----|---------|---------|---|---|---|
| IM | ATCATG  | 0.3731  | 0 | 0 | 0 |
| IM | ATTATG  | 0.3642  | 0 | 0 | 0 |
| IN | ATTAAC  | 0.1354  | 0 | 0 | 0 |
| IN | ATAAAC  | 0.1371  | 0 | 0 | 0 |
| IN | ATAAAT  | 0.1939  | 0 | 0 | 0 |
| IN | ATCAAC  | 0.138   | 0 | 0 | 0 |
| IN | ATTAAT  | 0.193   | 0 | 0 | 0 |
| IN | ATCAAT  | 0.2026  | 0 | 0 | 0 |
| IP | ATCCCG  | 0.01668 | 0 | 0 | 0 |
| IP | ATCCCT  | 0.06569 | 0 | 0 | 0 |
| IP | ATCCCC  | 0.01773 | 0 | 0 | 0 |
| IP | ATCCCA  | 0.08446 | 0 | 0 | 0 |
| IP | ATTCCA  | 0.2013  | 0 | 0 | 0 |
| IP | ATACCG  | 0.05527 | 0 | 0 | 0 |
| IP | ATACCA  | 0.1147  | 0 | 0 | 0 |
| IP | ATTCCT  | 0.1564  | 0 | 0 | 0 |
| IP | ATTCCG  | 0.08446 | 0 | 0 | 0 |
| IP | ATACCT  | 0.08968 | 0 | 0 | 0 |
| IP | ATTCCC  | 0.07091 | 0 | 0 | 0 |
| IP | ATACCC  | 0.04275 | 0 | 0 | 0 |
| IQ | ATCCAA  | 0.1615  | 0 | 0 | 0 |
| IQ | ATACAA  | 0.1572  | 0 | 0 | 0 |
| IQ | ATCCAG  | 0.08499 | 0 | 0 | 0 |
| IQ | ATACAG  | 0.08074 | 0 | 0 | 0 |
| IQ | ATTCAG  | 0.1487  | 0 | 0 | 0 |
| IQ | ATTCAA  | 0.3669  | 0 | 0 | 0 |
| IR | ATTCGG  | 0.01381 | 0 | 0 | 0 |
| IR | ATCAGA  | 0.1496  | 0 | 0 | 0 |
| IR | ATTCGT  | 0.05754 | 0 | 0 | 0 |
| IR | ATTCGC  | 0.02301 | 0 | 0 | 0 |
| IR | ATTCGA  | 0.03222 | 0 | 0 | 0 |
| IR | ATACGG  | 0.02417 | 0 | 0 | 0 |
| IR | ATACGC  | 0.02071 | 0 | 0 | 0 |
| IR | ATACGA  | 0.02992 | 0 | 0 | 0 |
| IR | ATAAGG  | 0.07135 | 0 | 0 | 0 |
| IR | ATCAGG  | 0.06559 | 0 | 0 | 0 |
| IR | ATTAGA  | 0.1807  | 0 | 0 | 0 |
| IR | ATCCGA  | 0.01151 | 0 | 0 | 0 |
| IR | ATCCGT  | 0.03797 | 0 | 0 | 0 |
| IR | ATACGT  | 0.03567 | 0 | 0 | 0 |
| IR | ATTAGG  | 0.06789 | 0 | 0 | 0 |
| IR | ATCCGC  | 0.01726 | 0 | 0 | 0 |
| IR | ATAAGA  | 0.1507  | 0 | 0 | 0 |
| IR | ATCCGG  | 0.01036 | 0 | 0 | 0 |
| IS | ATTAGC  | 0.02796 | 0 | 0 | 0 |
| IS | ATTAGT  | 0.04316 | 0 | 0 | 0 |
| IS | ATAAGT  | 0.04681 | 0 | 0 | 0 |
| IS | ATTTCT  | 0.1271  | 0 | 0 | 0 |
| IS | ATTTCTG | 0.03951 | 0 | 0 | 0 |
| IS | ATTTCC  | 0.08936 | 0 | 0 | 0 |
| IS | ATAAGC  | 0.02371 | 0 | 0 | 0 |

|    |        |         |   |   |   |
|----|--------|---------|---|---|---|
| IS | ATATCA | 0.08511 | 0 | 0 | 0 |
| IS | ATTTCA | 0.09848 | 0 | 0 | 0 |
| IS | ATCAGT | 0.04681 | 0 | 0 | 0 |
| IS | ATCTCT | 0.05106 | 0 | 0 | 0 |
| IS | ATCTCG | 0.01945 | 0 | 0 | 0 |
| IS | ATCTCC | 0.03404 | 0 | 0 | 0 |
| IS | ATCTCA | 0.04802 | 0 | 0 | 0 |
| IS | ATATCT | 0.0924  | 0 | 0 | 0 |
| IS | ATATCG | 0.0462  | 0 | 0 | 0 |
| IS | ATCAGC | 0.03222 | 0 | 0 | 0 |
| IS | ATATCC | 0.04863 | 0 | 0 | 0 |
| IT | ATAACG | 0.03886 | 0 | 0 | 0 |
| IT | ATAACT | 0.09479 | 0 | 0 | 0 |
| IT | ATCACT | 0.1422  | 0 | 0 | 0 |
| IT | ATCACC | 0.06445 | 0 | 0 | 0 |
| IT | ATAACA | 0.11    | 0 | 0 | 0 |
| IT | ATTACA | 0.1128  | 0 | 0 | 0 |
| IT | ATTACT | 0.1403  | 0 | 0 | 0 |
| IT | ATTACG | 0.04645 | 0 | 0 | 0 |
| IT | ATCACA | 0.09005 | 0 | 0 | 0 |
| IT | ATAACC | 0.04645 | 0 | 0 | 0 |
| IT | ATCACG | 0.03602 | 0 | 0 | 0 |
| IT | ATTACC | 0.07773 | 0 | 0 | 0 |
| IV | ATTGTG | 0.1382  | 0 | 1 | 0 |
| IV | ATTGTT | 0.2265  | 0 | 1 | 0 |
| IV | ATTGTA | 0.1147  | 0 | 1 | 0 |
| IV | ATTGTC | 0.1127  | 0 | 1 | 0 |
| IV | ATCGTT | 0.06667 | 0 | 1 | 0 |
| IV | ATAGTT | 0.07745 | 1 | 1 | 1 |
| IV | ATCGTA | 0.04314 | 0 | 1 | 0 |
| IV | ATAGTG | 0.05    | 0 | 1 | 0 |
| IV | ATAGTC | 0.03824 | 0 | 1 | 0 |
| IV | ATCGTC | 0.05098 | 0 | 1 | 0 |
| IV | ATAGTA | 0.05392 | 0 | 1 | 0 |
| IV | ATCGTG | 0.02745 | 0 | 1 | 0 |
| IW | ATTTGG | 0.4115  | 0 | 0 | 0 |
| IW | ATCTGG | 0.1483  | 0 | 0 | 0 |
| IW | ATATGG | 0.4402  | 0 | 0 | 0 |
| IY | ATCTAC | 0.1119  | 0 | 0 | 0 |
| IY | ATATAC | 0.1463  | 0 | 0 | 0 |
| IY | ATATAT | 0.222   | 0 | 0 | 0 |
| IY | ATTTAT | 0.2565  | 0 | 0 | 0 |
| IY | ATCTAT | 0.09811 | 0 | 0 | 0 |
| IY | ATTTAC | 0.1652  | 0 | 0 | 0 |
| K* | AAGTAA | 0.08974 | 0 | 0 | 0 |
| K* | AAGTGA | 0.05128 | 0 | 0 | 0 |
| K* | AAATAA | 0.359   | 0 | 0 | 0 |
| K* | AAATGA | 0.1923  | 0 | 0 | 0 |
| K* | AAGTAG | 0.05128 | 0 | 0 | 0 |
| K* | AAATAG | 0.2564  | 0 | 0 | 0 |
| KA | AAAGCG | 0.05421 | 0 | 0 | 0 |

|    |        |         |   |   |   |
|----|--------|---------|---|---|---|
| KA | AAAGCA | 0.1551  | 0 | 0 | 0 |
| KA | AAAGCC | 0.1037  | 0 | 0 | 0 |
| KA | AAAGCT | 0.1654  | 0 | 0 | 0 |
| KA | AAGGCT | 0.2056  | 0 | 0 | 0 |
| KA | AAGGCC | 0.1262  | 0 | 0 | 0 |
| KA | AAGGCG | 0.06168 | 0 | 0 | 0 |
| KA | AAGGCA | 0.128   | 0 | 0 | 0 |
| KC | AAATGT | 0.4286  | 0 | 0 | 0 |
| KC | AAGTGT | 0.2166  | 0 | 0 | 0 |
| KC | AAGTGC | 0.1244  | 0 | 0 | 0 |
| KC | AAATGC | 0.2304  | 0 | 0 | 0 |
| KD | AAGGAT | 0.2695  | 0 | 0 | 0 |
| KD | AAAGAT | 0.3704  | 0 | 0 | 0 |
| KD | AAAGAC | 0.1883  | 0 | 0 | 0 |
| KD | AAGGAC | 0.1718  | 0 | 0 | 0 |
| KE | AAGGAG | 0.1435  | 0 | 0 | 0 |
| KE | AAAGAG | 0.1879  | 0 | 0 | 0 |
| KE | AAGGAA | 0.3164  | 0 | 0 | 0 |
| KE | AAAGAA | 0.3523  | 0 | 0 | 0 |
| KF | AAATTC | 0.245   | 0 | 0 | 0 |
| KF | AAGTTC | 0.1564  | 0 | 0 | 0 |
| KF | AAATTT | 0.3755  | 0 | 0 | 0 |
| KF | AAGTTT | 0.2231  | 0 | 0 | 0 |
| KG | AAGGGA | 0.1095  | 0 | 0 | 0 |
| KG | AAAGGG | 0.07267 | 0 | 0 | 0 |
| KG | AAAGGC | 0.09978 | 0 | 0 | 0 |
| KG | AAGGGG | 0.04772 | 0 | 0 | 0 |
| KG | AAGGGT | 0.2137  | 0 | 0 | 0 |
| KG | AAAGGT | 0.2332  | 0 | 0 | 0 |
| KG | AAAGGA | 0.1226  | 0 | 0 | 0 |
| KG | AAGGGC | 0.1009  | 0 | 0 | 0 |
| KH | AAGCAC | 0.1995  | 0 | 0 | 0 |
| KH | AAACAC | 0.1731  | 0 | 0 | 0 |
| KH | AAGCAT | 0.3173  | 0 | 0 | 0 |
| KH | AAACAT | 0.3101  | 0 | 0 | 0 |
| KI | AAGATT | 0.1613  | 0 | 0 | 0 |
| KI | AAGATA | 0.09921 | 0 | 0 | 0 |
| KI | AAGATC | 0.08922 | 0 | 0 | 0 |
| KI | AAAATA | 0.2084  | 0 | 0 | 0 |
| KI | AAAATC | 0.1627  | 0 | 0 | 0 |
| KI | AAAATT | 0.2791  | 0 | 0 | 0 |
| KK | AAAAAG | 0.2182  | 0 | 0 | 0 |
| KK | AAAAAA | 0.2634  | 0 | 0 | 0 |
| KK | AAGAAG | 0.2265  | 0 | 0 | 0 |
| KK | AAGAAA | 0.2919  | 0 | 0 | 0 |
| KL | AAGTTA | 0.08243 | 0 | 0 | 0 |
| KL | AAATTG | 0.1421  | 0 | 0 | 0 |
| KL | AAATTA | 0.1691  | 0 | 0 | 0 |
| KL | AAACTA | 0.1137  | 0 | 0 | 0 |
| KL | AAGCTC | 0.01611 | 0 | 0 | 0 |
| KL | AAGCTA | 0.07106 | 0 | 0 | 0 |



|    |        |         |   |   |   |
|----|--------|---------|---|---|---|
| KL | AAGTTG | 0.09948 | 0 | 0 | 0 |
| KL | AAACTT | 0.08243 | 0 | 0 | 0 |
| KL | AAGCTG | 0.0559  | 0 | 0 | 0 |
| KL | AAGCTT | 0.05353 | 0 | 0 | 0 |
| KL | AAACTC | 0.02984 | 0 | 0 | 0 |
| KL | AAACTG | 0.08432 | 0 | 0 | 0 |
| KM | AAAATG | 0.6243  | 0 | 0 | 0 |
| KM | AAGATG | 0.3757  | 0 | 0 | 0 |
| KN | AAAAAC | 0.2231  | 0 | 0 | 0 |
| KN | AAGAAT | 0.2633  | 0 | 0 | 0 |
| KN | AAAAAT | 0.3536  | 0 | 0 | 0 |
| KN | AAGAAC | 0.1601  | 0 | 0 | 0 |
| KP | AAGCCA | 0.164   | 0 | 0 | 0 |
| KP | AAGCCG | 0.0485  | 0 | 0 | 0 |
| KP | AAGCCT | 0.1305  | 0 | 0 | 0 |
| KP | AAGCCC | 0.0485  | 0 | 0 | 0 |
| KP | AAACCT | 0.1882  | 0 | 0 | 0 |
| KP | AAACCG | 0.08661 | 0 | 0 | 0 |
| KP | AAACCA | 0.246   | 0 | 0 | 0 |
| KP | AAACCC | 0.08776 | 0 | 0 | 0 |
| KQ | AAACAA | 0.3606  | 0 | 0 | 0 |
| KQ | AAGCAG | 0.1445  | 0 | 0 | 0 |
| KQ | AAACAG | 0.196   | 0 | 0 | 0 |
| KQ | AAGCAA | 0.299   | 0 | 0 | 0 |
| KR | AAACGC | 0.02172 | 0 | 1 | 0 |
| KR | AAACGG | 0.02423 | 0 | 1 | 0 |
| KR | AAGCGT | 0.03843 | 0 | 1 | 0 |
| KR | AAGCGC | 0.02005 | 0 | 1 | 0 |
| KR | AAAAGA | 0.3016  | 0 | 1 | 0 |
| KR | AAGAGG | 0.1078  | 0 | 1 | 0 |
| KR | AAAAGG | 0.1546  | 0 | 1 | 0 |
| KR | AAGCGA | 0.02005 | 0 | 1 | 0 |
| KR | AAACGT | 0.04845 | 1 | 1 | 1 |
| KR | AAGCGG | 0.0117  | 0 | 1 | 0 |
| KR | AAACGA | 0.04595 | 0 | 1 | 0 |
| KR | AAGAGA | 0.2055  | 0 | 1 | 0 |
| KS | AAGAGC | 0.05109 | 0 | 0 | 0 |
| KS | AAAAGT | 0.1405  | 0 | 0 | 0 |
| KS | AAGTCT | 0.07786 | 0 | 0 | 0 |
| KS | AAGTCG | 0.02251 | 0 | 0 | 0 |
| KS | AAAAGC | 0.09063 | 0 | 0 | 0 |
| KS | AAATCG | 0.06326 | 0 | 0 | 0 |
| KS | AAATCT | 0.1569  | 0 | 0 | 0 |
| KS | AAGTCA | 0.06387 | 0 | 0 | 0 |
| KS | AAATCA | 0.1381  | 0 | 0 | 0 |
| KS | AAGAGT | 0.06022 | 0 | 0 | 0 |
| KS | AAGTCC | 0.05049 | 0 | 0 | 0 |
| KS | AAATCC | 0.08455 | 0 | 0 | 0 |
| KT | AAGACC | 0.07192 | 0 | 1 | 0 |
| KT | AAAACG | 0.08818 | 0 | 1 | 0 |
| KT | AAAACC | 0.1096  | 0 | 1 | 0 |

|    |        |         |   |   |        |
|----|--------|---------|---|---|--------|
| KT | AAAAC  | 0.1832  | 0 | 1 | 0      |
| KT | AAAACA | 0.2295  | 0 | 1 | 0      |
| KT | AAGACT | 0.1241  | 0 | 1 | 0      |
| KT | AAGACG | 0.07363 | 0 | 1 | 0      |
| KT | AAGACA | 0.1199  | 1 | 1 | 1      |
| KV | AAAGTC | 0.1238  | 0 | 0 | 0      |
| KV | AAAGTG | 0.1103  | 0 | 0 | 0      |
| KV | AAAGTT | 0.2409  | 0 | 0 | 0      |
| KV | AAAGTA | 0.1349  | 0 | 0 | 0      |
| KV | AAGGTC | 0.09754 | 0 | 0 | 0      |
| KV | AAGGTA | 0.08058 | 0 | 0 | 0      |
| KV | AAGGTT | 0.1535  | 0 | 0 | 0      |
| KV | AAGGTG | 0.05852 | 0 | 0 | 0      |
| KW | AAGTGG | 0.2767  | 0 | 0 | 0      |
| KW | AAATGG | 0.7233  | 0 | 0 | 0      |
| KY | AAATAT | 0.3462  | 0 | 0 | 0      |
| KY | AAATAC | 0.2777  | 0 | 0 | 0      |
| KY | AAGTAT | 0.1968  | 0 | 0 | 0      |
| KY | AAGTAC | 0.1793  | 0 | 0 | 0      |
| L* | CTCTAA | 0.03226 | 0 | 0 | 0      |
| L* | CTTTAA | 0.01613 | 0 | 0 | 0      |
| L* | CTATAG | 0.03226 | 0 | 0 | 0      |
| L* | CTCTGA | 0       | 0 | 0 | 0      |
| L* | TTATGA | 0.08065 | 0 | 0 | 0      |
| L* | TTATAA | 0.129   | 0 | 0 | 0      |
| L* | CTATGA | 0       | 0 | 0 | 0      |
| L* | TTATAG | 0.1129  | 0 | 0 | 0      |
| L* | CTTTGA | 0.09677 | 0 | 0 | 0      |
| L* | CTATAA | 0.06452 | 0 | 0 | 0      |
| L* | CTTTAG | 0.01613 | 0 | 0 | 0      |
| L* | CTCTAG | 0       | 0 | 0 | 0      |
| L* | CTGTAA | 0.06452 | 0 | 0 | 0      |
| L* | CTGTAG | 0       | 0 | 0 | 0      |
| L* | TTGTGA | 0.03226 | 0 | 0 | 0      |
| L* | TTGTAG | 0.03226 | 0 | 0 | 0      |
| L* | TTGTAA | 0.2419  | 0 | 0 | 0      |
| L* | CTGTGA | 0.04839 | 0 | 0 | 0      |
| LA | TTAGCC | 0.04394 | 0 | 3 | 0      |
| LA | TTAGCG | 0.02929 | 0 | 3 | 0      |
| LA | TTAGCA | 0.08256 | 0 | 3 | 0      |
| LA | CTTGCT | 0.04794 | 0 | 3 | 0      |
| LA | CTTGCG | 0.01931 | 0 | 3 | 0      |
| LA | TTAGCT | 0.0719  | 0 | 3 | 0      |
| LA | CTGGCT | 0.03462 | 0 | 3 | 0      |
| LA | CTGGCC | 0.03662 | 1 | 3 | 0.3333 |
| LA | TTGGCG | 0.03395 | 0 | 3 | 0      |
| LA | CTGGCA | 0.03262 | 0 | 3 | 0      |
| LA | CTGGCG | 0.01864 | 0 | 3 | 0      |
| LA | CTCGCA | 0.01465 | 0 | 3 | 0      |
| LA | CTTGCC | 0.02597 | 0 | 3 | 0      |
| LA | CTTGCA | 0.04527 | 0 | 3 | 0      |

|    |        |         |   |   |        |
|----|--------|---------|---|---|--------|
| LA | TTGGCA | 0.09454 | 0 | 3 | 0      |
| LA | TTGGCC | 0.07257 | 1 | 3 | 0.3333 |
| LA | TTGGCT | 0.1305  | 0 | 3 | 0      |
| LA | CTCGCG | 0.00466 | 0 | 3 | 0      |
| LA | CTCGCT | 0.01132 | 0 | 3 | 0      |
| LA | CTAGCC | 0.02597 | 0 | 3 | 0      |
| LA | CTAGCG | 0.01598 | 0 | 3 | 0      |
| LA | CTAGCT | 0.05459 | 0 | 3 | 0      |
| LA | CTCGCC | 0.01065 | 0 | 3 | 0      |
| LA | CTAGCA | 0.04194 | 1 | 3 | 0.3333 |
| LC | CTCTGC | 0.03409 | 0 | 1 | 0      |
| LC | CTCTGT | 0.06818 | 0 | 1 | 0      |
| LC | CTGTGT | 0.0483  | 0 | 1 | 0      |
| LC | CTGTGC | 0.03977 | 0 | 1 | 0      |
| LC | CTTTGT | 0.1335  | 0 | 1 | 0      |
| LC | CTTTGC | 0.06534 | 0 | 1 | 0      |
| LC | CTATGT | 0.09659 | 0 | 1 | 0      |
| LC | CTATGC | 0.04261 | 0 | 1 | 0      |
| LC | TTGTGC | 0.08807 | 0 | 1 | 0      |
| LC | TTGTGT | 0.1222  | 0 | 1 | 0      |
| LC | TTATGC | 0.1023  | 1 | 1 | 1      |
| LC | TTATGT | 0.1591  | 0 | 1 | 0      |
| LD | CTCGAC | 0.0143  | 0 | 0 | 0      |
| LD | CTCGAT | 0.04616 | 0 | 0 | 0      |
| LD | CTAGAT | 0.08973 | 0 | 0 | 0      |
| LD | CTTGAC | 0.03576 | 0 | 0 | 0      |
| LD | CTTGAT | 0.08257 | 0 | 0 | 0      |
| LD | CTAGAC | 0.05007 | 0 | 0 | 0      |
| LD | TTGGAC | 0.08843 | 0 | 0 | 0      |
| LD | CTGGAT | 0.08192 | 0 | 0 | 0      |
| LD | CTGGAC | 0.04616 | 0 | 0 | 0      |
| LD | TTAGAT | 0.1853  | 0 | 0 | 0      |
| LD | TTAGAC | 0.09363 | 0 | 0 | 0      |
| LD | TTGGAT | 0.186   | 0 | 0 | 0      |
| LE | CTGGAA | 0.08381 | 0 | 2 | 0      |
| LE | TTAGAG | 0.09644 | 0 | 2 | 0      |
| LE | CTTGAG | 0.0287  | 0 | 2 | 0      |
| LE | CTAGAG | 0.03961 | 0 | 2 | 0      |
| LE | TTGGAA | 0.2101  | 1 | 2 | 0.5    |
| LE | CTAGAA | 0.09931 | 0 | 2 | 0      |
| LE | CTGGAG | 0.03904 | 0 | 2 | 0      |
| LE | TTGGAG | 0.08324 | 0 | 2 | 0      |
| LE | CTTGAA | 0.08266 | 0 | 2 | 0      |
| LE | TTAGAA | 0.1935  | 1 | 2 | 0.5    |
| LE | CTCGAG | 0.01493 | 0 | 2 | 0      |
| LE | CTCGAA | 0.0287  | 0 | 2 | 0      |
| LF | CTATTT | 0.07968 | 0 | 0 | 0      |
| LF | CTGTTC | 0.05551 | 0 | 0 | 0      |
| LF | TTATTT | 0.1638  | 0 | 0 | 0      |
| LF | CTATTC | 0.04834 | 0 | 0 | 0      |
| LF | CTCTTT | 0.04476 | 0 | 0 | 0      |

|    |        |          |   |   |   |
|----|--------|----------|---|---|---|
| LF | TTGTTT | 0.1218   | 0 | 0 | 0 |
| LF | CTCTTC | 0.03133  | 0 | 0 | 0 |
| LF | TTGTTC | 0.08953  | 0 | 0 | 0 |
| LF | CTTTTT | 0.1056   | 0 | 0 | 0 |
| LF | CTGTTT | 0.05461  | 0 | 0 | 0 |
| LF | CTTTTC | 0.09042  | 0 | 0 | 0 |
| LF | TTATTC | 0.1146   | 0 | 0 | 0 |
| LG | CTGGGC | 0.03369  | 0 | 1 | 0 |
| LG | CTGGGG | 0.01914  | 0 | 1 | 0 |
| LG | CTAGGT | 0.0536   | 1 | 1 | 1 |
| LG | CTGGGA | 0.0291   | 0 | 1 | 0 |
| LG | CTGGGT | 0.04441  | 0 | 1 | 0 |
| LG | CTTGGG | 0.01685  | 0 | 1 | 0 |
| LG | TTAGGC | 0.04441  | 0 | 1 | 0 |
| LG | CTTGGA | 0.03828  | 0 | 1 | 0 |
| LG | CTAGGC | 0.0268   | 0 | 1 | 0 |
| LG | CTAGGA | 0.0245   | 0 | 1 | 0 |
| LG | TTGGGT | 0.134    | 0 | 1 | 0 |
| LG | CTTGGT | 0.06432  | 0 | 1 | 0 |
| LG | TTGGGG | 0.03599  | 0 | 1 | 0 |
| LG | TTAGGG | 0.04441  | 0 | 1 | 0 |
| LG | CTCGGT | 0.03369  | 0 | 1 | 0 |
| LG | CTCGGG | 0.002297 | 0 | 1 | 0 |
| LG | CTCGGC | 0.01302  | 0 | 1 | 0 |
| LG | TTAGGA | 0.06815  | 0 | 1 | 0 |
| LG | CTAGGG | 0.01531  | 0 | 1 | 0 |
| LG | TTGGGA | 0.05819  | 0 | 1 | 0 |
| LG | TTGGGC | 0.04364  | 0 | 1 | 0 |
| LG | TTAGGT | 0.1095   | 0 | 1 | 0 |
| LG | CTTGGC | 0.03522  | 0 | 1 | 0 |
| LG | CTCGGA | 0.01149  | 0 | 1 | 0 |
| LH | CTGCAC | 0.04674  | 0 | 0 | 0 |
| LH | CTCCAC | 0.01503  | 0 | 0 | 0 |
| LH | CTCCAT | 0.03339  | 0 | 0 | 0 |
| LH | CTACAT | 0.1102   | 0 | 0 | 0 |
| LH | CTACAC | 0.04174  | 0 | 0 | 0 |
| LH | CTGCAT | 0.05676  | 0 | 0 | 0 |
| LH | CTTCAC | 0.05008  | 0 | 0 | 0 |
| LH | TTGCAC | 0.1135   | 0 | 0 | 0 |
| LH | TTACAT | 0.1619   | 0 | 0 | 0 |
| LH | TTACAC | 0.1052   | 0 | 0 | 0 |
| LH | TTGCAT | 0.1736   | 0 | 0 | 0 |
| LH | CTTCAT | 0.09182  | 0 | 0 | 0 |
| LI | CTCATA | 0.02654  | 0 | 0 | 0 |
| LI | CTCATC | 0.01481  | 0 | 0 | 0 |
| LI | TTAATT | 0.1142   | 0 | 0 | 0 |
| LI | TTAATA | 0.07346  | 0 | 0 | 0 |
| LI | TTAATC | 0.06728  | 0 | 0 | 0 |
| LI | TTGATA | 0.07963  | 0 | 0 | 0 |
| LI | CTAATC | 0.03704  | 0 | 0 | 0 |
| LI | CTAATA | 0.04444  | 0 | 0 | 0 |

|    |        |          |   |   |        |
|----|--------|----------|---|---|--------|
| LI | CTAATT | 0.05247  | 0 | 0 | 0      |
| LI | TTGATT | 0.1599   | 0 | 0 | 0      |
| LI | TTGATC | 0.07654  | 0 | 0 | 0      |
| LI | CTTATT | 0.04753  | 0 | 0 | 0      |
| LI | CTCATT | 0.02901  | 0 | 0 | 0      |
| LI | CTTATC | 0.03025  | 0 | 0 | 0      |
| LI | CTTATA | 0.0284   | 0 | 0 | 0      |
| LI | CTGATC | 0.02778  | 0 | 0 | 0      |
| LI | CTGATT | 0.05432  | 0 | 0 | 0      |
| LI | CTGATA | 0.03642  | 0 | 0 | 0      |
| LK | CTTAAA | 0.04096  | 0 | 0 | 0      |
| LK | CTCAAG | 0.02485  | 0 | 0 | 0      |
| LK | CTCAAA | 0.03682  | 0 | 0 | 0      |
| LK | CTGAAG | 0.04234  | 0 | 0 | 0      |
| LK | TTGAAG | 0.1643   | 0 | 0 | 0      |
| LK | CTGAAA | 0.07317  | 0 | 0 | 0      |
| LK | TTGAAA | 0.2025   | 0 | 0 | 0      |
| LK | CTAAAA | 0.07639  | 0 | 0 | 0      |
| LK | CTTAAG | 0.02301  | 0 | 0 | 0      |
| LK | TTAAAG | 0.1137   | 0 | 0 | 0      |
| LK | TTAAAA | 0.1454   | 0 | 0 | 0      |
| LK | CTAAAG | 0.0566   | 0 | 0 | 0      |
| LL | TTGTTA | 0.05614  | 0 | 3 | 0      |
| LL | TTGTTG | 0.0547   | 0 | 3 | 0      |
| LL | CTGCTG | 0.01691  | 0 | 3 | 0      |
| LL | CTCTTG | 0.01151  | 0 | 3 | 0      |
| LL | CTGCTC | 0.006477 | 0 | 3 | 0      |
| LL | TTGCTA | 0.03598  | 1 | 3 | 0.3333 |
| LL | TTGCTT | 0.02195  | 0 | 3 | 0      |
| LL | CTACTG | 0.02087  | 1 | 3 | 0.3333 |
| LL | TTGCTG | 0.02555  | 0 | 3 | 0      |
| LL | TTGCTC | 0.01475  | 0 | 3 | 0      |
| LL | CTACTA | 0.02375  | 0 | 3 | 0      |
| LL | CTACTC | 0.009356 | 0 | 3 | 0      |
| LL | CTACTT | 0.01691  | 0 | 3 | 0      |
| LL | TTACTA | 0.04822  | 0 | 3 | 0      |
| LL | CTTTTG | 0.05182  | 0 | 3 | 0      |
| LL | CTCCTT | 0.007557 | 0 | 3 | 0      |
| LL | CTCCTG | 0.006117 | 0 | 3 | 0      |
| LL | CTCCTC | 0.002159 | 0 | 3 | 0      |
| LL | CTTTTA | 0.06081  | 0 | 3 | 0      |
| LL | CTTCTT | 0.02159  | 0 | 3 | 0      |
| LL | CTTCTA | 0.02015  | 0 | 3 | 0      |
| LL | CTTCTC | 0.01187  | 0 | 3 | 0      |
| LL | CTTCTG | 0.01511  | 1 | 3 | 0.3333 |
| LL | CTCCTA | 0.008996 | 0 | 3 | 0      |
| LL | CTGCTA | 0.01799  | 0 | 3 | 0      |
| LL | TTACTC | 0.01655  | 0 | 3 | 0      |
| LL | TTACTG | 0.0439   | 0 | 3 | 0      |
| LL | TTACTT | 0.04282  | 0 | 3 | 0      |
| LL | TTATTA | 0.07413  | 0 | 3 | 0      |

|    |        |          |   |   |   |
|----|--------|----------|---|---|---|
| LL | CTATTA | 0.03958  | 0 | 3 | 0 |
| LL | CTATTG | 0.03742  | 0 | 3 | 0 |
| LL | CTGTTG | 0.02591  | 0 | 3 | 0 |
| LL | CTGTTA | 0.02411  | 0 | 3 | 0 |
| LL | CTCTTA | 0.01367  | 0 | 3 | 0 |
| LL | TTATTG | 0.07593  | 0 | 3 | 0 |
| LL | CTGCTT | 0.01871  | 0 | 3 | 0 |
| LM | CTCATG | 0.04475  | 0 | 0 | 0 |
| LM | CTTATG | 0.07393  | 0 | 0 | 0 |
| LM | CTGATG | 0.09728  | 0 | 0 | 0 |
| LM | CTAATG | 0.1556   | 0 | 0 | 0 |
| LM | TTGATG | 0.3171   | 0 | 0 | 0 |
| LM | TTAATG | 0.3113   | 0 | 0 | 0 |
| LN | TTGAAC | 0.1361   | 0 | 0 | 0 |
| LN | CTTAAC | 0.02943  | 0 | 0 | 0 |
| LN | CTGAAC | 0.05089  | 0 | 0 | 0 |
| LN | CTGAAT | 0.07174  | 0 | 0 | 0 |
| LN | CTTAAT | 0.04537  | 0 | 0 | 0 |
| LN | TTGAAT | 0.1901   | 0 | 0 | 0 |
| LN | CTCAAC | 0.02514  | 0 | 0 | 0 |
| LN | CTAAAC | 0.06193  | 0 | 0 | 0 |
| LN | CTCAAT | 0.04108  | 0 | 0 | 0 |
| LN | CTAAAT | 0.09442  | 0 | 0 | 0 |
| LN | TTAAAT | 0.1441   | 0 | 0 | 0 |
| LN | TTAAAC | 0.1097   | 0 | 0 | 0 |
| LP | CTACCG | 0.01309  | 0 | 1 | 0 |
| LP | TTGCCT | 0.06255  | 0 | 1 | 0 |
| LP | CTACCC | 0.02836  | 0 | 1 | 0 |
| LP | CTTCCT | 0.04364  | 0 | 1 | 0 |
| LP | CTCCCA | 0.02618  | 0 | 1 | 0 |
| LP | TTGCCC | 0.04582  | 0 | 1 | 0 |
| LP | CTACCT | 0.05164  | 0 | 1 | 0 |
| LP | CTTCCC | 0.02182  | 0 | 1 | 0 |
| LP | TTGCCG | 0.02836  | 0 | 1 | 0 |
| LP | CTTCCG | 0.01673  | 0 | 1 | 0 |
| LP | CTCCCT | 0.01891  | 0 | 1 | 0 |
| LP | CTGCCA | 0.03345  | 0 | 1 | 0 |
| LP | TTACCT | 0.08291  | 0 | 1 | 0 |
| LP | TTACCG | 0.04436  | 0 | 1 | 0 |
| LP | TTACCA | 0.1236   | 0 | 1 | 0 |
| LP | TTACCC | 0.04     | 0 | 1 | 0 |
| LP | CTGCCC | 0.02545  | 1 | 1 | 1 |
| LP | CTGCCG | 0.01527  | 0 | 1 | 0 |
| LP | CTCCCC | 0.01091  | 0 | 1 | 0 |
| LP | CTTCCA | 0.06909  | 0 | 1 | 0 |
| LP | CTCCCG | 0.003636 | 0 | 1 | 0 |
| LP | CTGCCT | 0.02618  | 0 | 1 | 0 |
| LP | TTGCCA | 0.09745  | 0 | 1 | 0 |
| LP | CTACCA | 0.07055  | 0 | 1 | 0 |
| LQ | CTTCAG | 0.0392   | 0 | 3 | 0 |
| LQ | TTGCAG | 0.07533  | 0 | 3 | 0 |

|    |        |          |   |   |        |
|----|--------|----------|---|---|--------|
| LQ | CTTCAA | 0.08148  | 1 | 3 | 0.3333 |
| LQ | CTCCAG | 0.0123   | 0 | 3 | 0      |
| LQ | TTGCAA | 0.1845   | 1 | 3 | 0.3333 |
| LQ | TTACAG | 0.09915  | 1 | 3 | 0.3333 |
| LQ | TTACAA | 0.2175   | 0 | 3 | 0      |
| LQ | CTGCAA | 0.08301  | 0 | 3 | 0      |
| LQ | CTACAA | 0.1015   | 0 | 3 | 0      |
| LQ | CTGCAG | 0.04074  | 0 | 3 | 0      |
| LQ | CTCCAA | 0.01614  | 0 | 3 | 0      |
| LQ | CTACAG | 0.04919  | 0 | 3 | 0      |
| LR | CTGAGG | 0.01779  | 0 | 0 | 0      |
| LR | CTTCGT | 0.02243  | 0 | 0 | 0      |
| LR | CTTCGG | 0.003094 | 0 | 0 | 0      |
| LR | CTGAGA | 0.0464   | 0 | 0 | 0      |
| LR | CTAAGA | 0.07193  | 0 | 0 | 0      |
| LR | CTACGC | 0.007734 | 0 | 0 | 0      |
| LR | CTACGA | 0.009281 | 0 | 0 | 0      |
| LR | CTTCGC | 0.008507 | 0 | 0 | 0      |
| LR | CTTCGA | 0.0232   | 0 | 0 | 0      |
| LR | CTGCGA | 0.007734 | 0 | 0 | 0      |
| LR | CTGCGC | 0.01005  | 0 | 0 | 0      |
| LR | CTGCGG | 0.006187 | 0 | 0 | 0      |
| LR | CTTAGA | 0.02552  | 0 | 0 | 0      |
| LR | CTAAGG | 0.03326  | 0 | 0 | 0      |
| LR | CTTAGG | 0.01624  | 0 | 0 | 0      |
| LR | CTACGG | 0.007734 | 0 | 0 | 0      |
| LR | CTGCGT | 0.01547  | 0 | 0 | 0      |
| LR | CTCCGT | 0.003094 | 0 | 0 | 0      |
| LR | CTCAGG | 0.01315  | 0 | 0 | 0      |
| LR | CTCCGA | 0.003867 | 0 | 0 | 0      |
| LR | TTACGT | 0.03326  | 0 | 0 | 0      |
| LR | TTACGG | 0.0116   | 0 | 0 | 0      |
| LR | TTGCGT | 0.03558  | 0 | 0 | 0      |
| LR | TTGCGG | 0.009281 | 0 | 0 | 0      |
| LR | TTGAGA | 0.1562   | 0 | 0 | 0      |
| LR | TTGAGG | 0.06961  | 0 | 0 | 0      |
| LR | TTGCGA | 0.01701  | 0 | 0 | 0      |
| LR | TTGCGC | 0.01315  | 0 | 0 | 0      |
| LR | TTACGC | 0.02398  | 0 | 0 | 0      |
| LR | CTCAGA | 0.01547  | 0 | 0 | 0      |
| LR | CTCCGC | 0.00232  | 0 | 0 | 0      |
| LR | TTAAGG | 0.0611   | 0 | 0 | 0      |
| LR | CTACGT | 0.02862  | 0 | 0 | 0      |
| LR | TTAAGA | 0.1469   | 0 | 0 | 0      |
| LR | CTCCGG | 0.001547 | 0 | 0 | 0      |
| LR | TTACGA | 0.02166  | 0 | 0 | 0      |
| LS | CTAAGT | 0.02362  | 0 | 0 | 0      |
| LS | TTATCG | 0.03821  | 0 | 0 | 0      |
| LS | CTGTCC | 0.01116  | 0 | 0 | 0      |
| LS | CTGTCA | 0.02233  | 0 | 0 | 0      |
| LS | TTATCC | 0.04294  | 0 | 0 | 0      |

|    |         |          |   |   |   |
|----|---------|----------|---|---|---|
| LS | CTAAGC  | 0.02147  | 0 | 0 | 0 |
| LS | CTCAGT  | 0.01374  | 0 | 0 | 0 |
| LS | TTAAGT  | 0.04723  | 0 | 0 | 0 |
| LS | CTGTCTG | 0.009446 | 0 | 0 | 0 |
| LS | CTCAGC  | 0.008158 | 0 | 0 | 0 |
| LS | CTGAGT  | 0.01632  | 0 | 0 | 0 |
| LS | TTATCA  | 0.06183  | 0 | 0 | 0 |
| LS | TTAAGC  | 0.03006  | 0 | 0 | 0 |
| LS | CTGAGC  | 0.01546  | 0 | 0 | 0 |
| LS | CTATCT  | 0.04165  | 0 | 0 | 0 |
| LS | TTGTCT  | 0.0438   | 0 | 0 | 0 |
| LS | CTCTCA  | 0.009875 | 0 | 0 | 0 |
| LS | TTGTCTG | 0.01288  | 0 | 0 | 0 |
| LS | CTGTCT  | 0.02147  | 0 | 0 | 0 |
| LS | TTGTCA  | 0.04122  | 0 | 0 | 0 |
| LS | CTCTCC  | 0.0103   | 0 | 0 | 0 |
| LS | CTCTCG  | 0.01202  | 0 | 0 | 0 |
| LS | CTTTCTG | 0.01589  | 0 | 0 | 0 |
| LS | CTTTCC  | 0.03564  | 0 | 0 | 0 |
| LS | CTTTCA  | 0.04422  | 0 | 0 | 0 |
| LS | CTCTCT  | 0.01675  | 0 | 0 | 0 |
| LS | CTATCA  | 0.0365   | 0 | 0 | 0 |
| LS | TTGTCC  | 0.03006  | 0 | 0 | 0 |
| LS | CTATCC  | 0.02877  | 0 | 0 | 0 |
| LS | CTATCG  | 0.01245  | 0 | 0 | 0 |
| LS | CTTTCT  | 0.05453  | 0 | 0 | 0 |
| LS | TTATCT  | 0.07471  | 0 | 0 | 0 |
| LS | TTGAGC  | 0.03349  | 0 | 0 | 0 |
| LS | CTTAGT  | 0.008158 | 0 | 0 | 0 |
| LS | CTTAGC  | 0.009446 | 0 | 0 | 0 |
| LS | TTGAGT  | 0.04422  | 0 | 0 | 0 |
| LT | CTCACC  | 0.01761  | 0 | 0 | 0 |
| LT | CTCACA  | 0.02013  | 0 | 0 | 0 |
| LT | CTAACT  | 0.03836  | 0 | 0 | 0 |
| LT | CTGACC  | 0.02201  | 0 | 0 | 0 |
| LT | CTAACG  | 0.01761  | 0 | 0 | 0 |
| LT | CTGACG  | 0.01824  | 0 | 0 | 0 |
| LT | CTGACA  | 0.03333  | 0 | 0 | 0 |
| LT | CTCACT  | 0.02516  | 0 | 0 | 0 |
| LT | CTTACG  | 0.01698  | 0 | 0 | 0 |
| LT | CTTACT  | 0.04151  | 0 | 0 | 0 |
| LT | CTCACG  | 0.007547 | 0 | 0 | 0 |
| LT | CTTACC  | 0.02201  | 0 | 0 | 0 |
| LT | TTGACA  | 0.08868  | 0 | 0 | 0 |
| LT | TTGACC  | 0.07421  | 0 | 0 | 0 |
| LT | TTGACT  | 0.09371  | 0 | 0 | 0 |
| LT | TTGACG  | 0.04025  | 0 | 0 | 0 |
| LT | CTAACC  | 0.02516  | 0 | 0 | 0 |
| LT | CTTACA  | 0.02704  | 0 | 0 | 0 |
| LT | CTAACA  | 0.0478   | 0 | 0 | 0 |
| LT | TTAACC  | 0.06918  | 0 | 0 | 0 |



|    |        |          |   |   |     |
|----|--------|----------|---|---|-----|
| LT | TTAACA | 0.09748  | 0 | 0 | 0   |
| LT | TTAACG | 0.0434   | 0 | 0 | 0   |
| LT | TTAACT | 0.09057  | 0 | 0 | 0   |
| LT | CTGACT | 0.02201  | 0 | 0 | 0   |
| LV | CTAGTT | 0.04106  | 0 | 2 | 0   |
| LV | CTAGTG | 0.0341   | 0 | 2 | 0   |
| LV | CTAGTC | 0.02644  | 0 | 2 | 0   |
| LV | TTGGTT | 0.1232   | 1 | 2 | 0.5 |
| LV | CTCGTC | 0.007655 | 0 | 2 | 0   |
| LV | CTAGTA | 0.03619  | 0 | 2 | 0   |
| LV | TTAGTT | 0.09534  | 0 | 2 | 0   |
| LV | TTAGTC | 0.05289  | 0 | 2 | 0   |
| LV | TTAGTA | 0.05567  | 1 | 2 | 0.5 |
| LV | TTAGTG | 0.05567  | 0 | 2 | 0   |
| LV | CTCGTG | 0.01044  | 0 | 2 | 0   |
| LV | TTGGTC | 0.05985  | 0 | 2 | 0   |
| LV | TTGGTA | 0.05637  | 0 | 2 | 0   |
| LV | TTGGTG | 0.05846  | 0 | 2 | 0   |
| LV | CTCGTA | 0.009047 | 0 | 2 | 0   |
| LV | CTTGTT | 0.02644  | 0 | 2 | 0   |
| LV | CTCGTT | 0.02157  | 0 | 2 | 0   |
| LV | CTTGTC | 0.02714  | 0 | 2 | 0   |
| LV | CTTGTT | 0.05498  | 0 | 2 | 0   |
| LV | CTGGTT | 0.03619  | 0 | 2 | 0   |
| LV | CTTGTA | 0.02436  | 0 | 2 | 0   |
| LV | CTGGTG | 0.02436  | 0 | 2 | 0   |
| LV | CTGGTC | 0.02436  | 0 | 2 | 0   |
| LV | CTGGTA | 0.03827  | 0 | 2 | 0   |
| LW | CTATGG | 0.1868   | 0 | 2 | 0   |
| LW | CTTTGG | 0.1946   | 1 | 2 | 0.5 |
| LW | CTCTGG | 0.07004  | 0 | 2 | 0   |
| LW | TTATGG | 0.2957   | 1 | 2 | 0.5 |
| LW | TTGTGG | 0.1479   | 0 | 2 | 0   |
| LW | CTGTGG | 0.1051   | 0 | 2 | 0   |
| LY | CTGTAT | 0.0555   | 0 | 2 | 0   |
| LY | TTATAC | 0.1001   | 0 | 2 | 0   |
| LY | TTATAT | 0.161    | 1 | 2 | 0.5 |
| LY | CTGTAC | 0.04026  | 0 | 2 | 0   |
| LY | CTTTAT | 0.1121   | 0 | 2 | 0   |
| LY | TTGTAC | 0.09249  | 0 | 2 | 0   |
| LY | CTTTAC | 0.07291  | 0 | 2 | 0   |
| LY | TTGTAT | 0.1251   | 0 | 2 | 0   |
| LY | CTCTAC | 0.03264  | 1 | 2 | 0.5 |
| LY | CTATAT | 0.09249  | 0 | 2 | 0   |
| LY | CTATAC | 0.06638  | 0 | 2 | 0   |
| LY | CTCTAT | 0.04897  | 0 | 2 | 0   |
| M* | ATGTAA | 0.3333   | 0 | 0 | 0   |
| M* | ATGTGA | 0.3333   | 0 | 0 | 0   |
| M* | ATGTAG | 0.3333   | 0 | 0 | 0   |
| MA | ATGGCC | 0.212    | 0 | 1 | 0   |
| MA | ATGGCG | 0.1172   | 0 | 1 | 0   |

|    |        |         |   |   |   |
|----|--------|---------|---|---|---|
| MA | ATGGCA | 0.3217  | 0 | 1 | 0 |
| MA | ATGGCT | 0.3491  | 1 | 1 | 1 |
| MC | ATGTGT | 0.6032  | 0 | 0 | 0 |
| MC | ATGTGC | 0.3968  | 0 | 0 | 0 |
| MD | ATGGAC | 0.3978  | 0 | 0 | 0 |
| MD | ATGGAT | 0.6022  | 0 | 0 | 0 |
| ME | ATGGAA | 0.735   | 0 | 0 | 0 |
| ME | ATGGAG | 0.265   | 0 | 0 | 0 |
| MF | ATGTTT | 0.6531  | 0 | 0 | 0 |
| MF | ATGTTC | 0.3469  | 0 | 0 | 0 |
| MG | ATGGGA | 0.217   | 0 | 0 | 0 |
| MG | ATGGGG | 0.1466  | 0 | 0 | 0 |
| MG | ATGGGT | 0.4223  | 0 | 0 | 0 |
| MG | ATGGGC | 0.2141  | 0 | 0 | 0 |
| MH | ATGCAC | 0.3039  | 0 | 0 | 0 |
| MH | ATGCAT | 0.6961  | 0 | 0 | 0 |
| MI | ATGATC | 0.2109  | 0 | 0 | 0 |
| MI | ATGATT | 0.5208  | 0 | 0 | 0 |
| MI | ATGATA | 0.2682  | 0 | 0 | 0 |
| MK | ATGAAG | 0.4093  | 0 | 0 | 0 |
| MK | ATGAAA | 0.5907  | 0 | 0 | 0 |
| ML | ATGCTC | 0.06654 | 0 | 0 | 0 |
| ML | ATGCTG | 0.1616  | 0 | 0 | 0 |
| ML | ATGTTG | 0.1844  | 0 | 0 | 0 |
| ML | ATGTTA | 0.2224  | 0 | 0 | 0 |
| ML | ATGCTT | 0.1958  | 0 | 0 | 0 |
| ML | ATGCTA | 0.1692  | 0 | 0 | 0 |
| MM | ATGATG | 1       | 0 | 0 | 0 |
| MN | ATGAAT | 0.5829  | 0 | 0 | 0 |
| MN | ATGAAC | 0.4171  | 0 | 0 | 0 |
| MP | ATGCCG | 0.09955 | 0 | 0 | 0 |
| MP | ATGCCC | 0.1719  | 0 | 0 | 0 |
| MP | ATGCCT | 0.371   | 0 | 0 | 0 |
| MP | ATGCCA | 0.3575  | 0 | 0 | 0 |
| MQ | ATGCAA | 0.7228  | 0 | 0 | 0 |
| MQ | ATGCAG | 0.2772  | 0 | 0 | 0 |
| MR | ATGCGC | 0.04693 | 0 | 1 | 0 |
| MR | ATGCGA | 0.05776 | 0 | 1 | 0 |
| MR | ATGCGT | 0.13    | 0 | 1 | 0 |
| MR | ATGAGA | 0.5271  | 0 | 1 | 0 |
| MR | ATGCGG | 0.04332 | 0 | 1 | 0 |
| MR | ATGAGG | 0.1949  | 1 | 1 | 1 |
| MS | ATGAGC | 0.1264  | 0 | 0 | 0 |
| MS | ATGTCT | 0.2599  | 0 | 0 | 0 |
| MS | ATGTCA | 0.1895  | 0 | 0 | 0 |
| MS | ATGTCG | 0.1137  | 0 | 0 | 0 |
| MS | ATGAGT | 0.1679  | 0 | 0 | 0 |
| MS | ATGTCC | 0.1426  | 0 | 0 | 0 |
| MT | ATGACG | 0.1055  | 0 | 0 | 0 |
| MT | ATGACA | 0.397   | 0 | 0 | 0 |
| MT | ATGACT | 0.3065  | 0 | 0 | 0 |

|    |         |         |   |   |   |
|----|---------|---------|---|---|---|
| MT | ATGACC  | 0.191   | 0 | 0 | 0 |
| MV | ATGGTC  | 0.1943  | 0 | 0 | 0 |
| MV | ATGGTA  | 0.2357  | 0 | 0 | 0 |
| MV | ATGGTT  | 0.3662  | 0 | 0 | 0 |
| MV | ATGGTG  | 0.2038  | 0 | 0 | 0 |
| MW | ATGTGG  | 1       | 0 | 0 | 0 |
| MY | ATGTAC  | 0.5146  | 0 | 0 | 0 |
| MY | ATGTAT  | 0.4854  | 0 | 0 | 0 |
| N* | AATTAA  | 0.1892  | 1 | 1 | 1 |
| N* | AATTAG  | 0.1081  | 0 | 1 | 0 |
| N* | AACTAA  | 0.2162  | 0 | 1 | 0 |
| N* | AACTAG  | 0.1081  | 0 | 1 | 0 |
| N* | AATTGA  | 0.2162  | 0 | 1 | 0 |
| N* | AACTGA  | 0.1622  | 0 | 1 | 0 |
| NA | AACGCT  | 0.1143  | 0 | 0 | 0 |
| NA | AATGCC  | 0.1547  | 0 | 0 | 0 |
| NA | AACGCG  | 0.02803 | 0 | 0 | 0 |
| NA | AATGCA  | 0.2096  | 0 | 0 | 0 |
| NA | AATGCG  | 0.1031  | 0 | 0 | 0 |
| NA | AATGCT  | 0.2298  | 0 | 0 | 0 |
| NA | AACGCA  | 0.09865 | 0 | 0 | 0 |
| NA | AACGCC  | 0.06166 | 0 | 0 | 0 |
| NC | AATTGT  | 0.3676  | 0 | 0 | 0 |
| NC | AACTGT  | 0.299   | 0 | 0 | 0 |
| NC | AATTGC  | 0.1814  | 0 | 0 | 0 |
| NC | AACTGC  | 0.152   | 0 | 0 | 0 |
| ND | AACGAC  | 0.1156  | 0 | 0 | 0 |
| ND | AATGAT  | 0.4138  | 0 | 0 | 0 |
| ND | AATGAC  | 0.2339  | 0 | 0 | 0 |
| ND | AACGAT  | 0.2367  | 0 | 0 | 0 |
| NE | AACGAG  | 0.09524 | 0 | 0 | 0 |
| NE | AATGAG  | 0.1977  | 0 | 0 | 0 |
| NE | AATGAA  | 0.4778  | 0 | 0 | 0 |
| NE | AACGAA  | 0.2292  | 0 | 0 | 0 |
| NF | AATTTTC | 0.2651  | 0 | 0 | 0 |
| NF | AATTTT  | 0.3501  | 0 | 0 | 0 |
| NF | AACTTC  | 0.1513  | 0 | 0 | 0 |
| NF | AACTTT  | 0.2334  | 0 | 0 | 0 |
| NG | AATGGG  | 0.09921 | 0 | 0 | 0 |
| NG | AATGGA  | 0.1582  | 0 | 0 | 0 |
| NG | AATGGC  | 0.1493  | 0 | 0 | 0 |
| NG | AACGGT  | 0.1493  | 0 | 0 | 0 |
| NG | AACGGA  | 0.07367 | 0 | 0 | 0 |
| NG | AATGGT  | 0.2593  | 0 | 0 | 0 |
| NG | AACGGC  | 0.0668  | 0 | 0 | 0 |
| NG | AACGGG  | 0.0442  | 0 | 0 | 0 |
| NH | AACCAC  | 0.1243  | 0 | 0 | 0 |
| NH | AACCAT  | 0.2655  | 0 | 0 | 0 |
| NH | AATCAT  | 0.4266  | 0 | 0 | 0 |
| NH | AATCAC  | 0.1836  | 0 | 0 | 0 |
| NI | AACATT  | 0.19    | 0 | 0 | 0 |

|    |        |         |   |   |   |
|----|--------|---------|---|---|---|
| NI | AACATA | 0.1062  | 0 | 0 | 0 |
| NI | AATATT | 0.2913  | 0 | 0 | 0 |
| NI | AATATA | 0.1627  | 0 | 0 | 0 |
| NI | AACATC | 0.09793 | 0 | 0 | 0 |
| NI | AATATC | 0.1519  | 0 | 0 | 0 |
| NK | AACAAA | 0.25    | 0 | 0 | 0 |
| NK | AACAAG | 0.2154  | 0 | 0 | 0 |
| NK | AATAAG | 0.2066  | 0 | 0 | 0 |
| NK | AATAAA | 0.328   | 0 | 0 | 0 |
| NL | AACTTG | 0.1213  | 0 | 0 | 0 |
| NL | AACTTA | 0.08681 | 0 | 0 | 0 |
| NL | AATCTA | 0.07952 | 0 | 0 | 0 |
| NL | AATTTA | 0.1789  | 0 | 0 | 0 |
| NL | AACCTC | 0.02319 | 0 | 0 | 0 |
| NL | AACCTG | 0.03777 | 0 | 0 | 0 |
| NL | AACCTT | 0.06097 | 0 | 0 | 0 |
| NL | AACCTA | 0.05434 | 0 | 0 | 0 |
| NL | AATCTG | 0.05036 | 0 | 0 | 0 |
| NL | AATTTG | 0.1915  | 0 | 0 | 0 |
| NL | AATCTC | 0.03777 | 0 | 0 | 0 |
| NL | AATCTT | 0.07753 | 0 | 0 | 0 |
| NM | AACATG | 0.3754  | 0 | 0 | 0 |
| NM | AATATG | 0.6246  | 0 | 0 | 0 |
| NN | AATAAT | 0.3444  | 0 | 0 | 0 |
| NN | AATAAC | 0.2445  | 0 | 0 | 0 |
| NN | AACAAC | 0.1559  | 0 | 0 | 0 |
| NN | AACAAT | 0.2551  | 0 | 0 | 0 |
| NP | AATCCA | 0.2221  | 0 | 0 | 0 |
| NP | AATCCG | 0.09885 | 0 | 0 | 0 |
| NP | AATCCT | 0.2221  | 0 | 0 | 0 |
| NP | AACCCG | 0.03295 | 0 | 0 | 0 |
| NP | AATCCC | 0.08309 | 0 | 0 | 0 |
| NP | AACCCT | 0.1232  | 0 | 0 | 0 |
| NP | AACCCC | 0.06877 | 0 | 0 | 0 |
| NP | AACCCA | 0.149   | 0 | 0 | 0 |
| NQ | AATCAG | 0.1339  | 0 | 1 | 0 |
| NQ | AACCAA | 0.3193  | 1 | 1 | 1 |
| NQ | AACCAG | 0.1633  | 0 | 1 | 0 |
| NQ | AATCAA | 0.3835  | 0 | 1 | 0 |
| NR | AACCGA | 0.01943 | 0 | 0 | 0 |
| NR | AACCGG | 0.01196 | 0 | 0 | 0 |
| NR | AACCGC | 0.01943 | 0 | 0 | 0 |
| NR | AATAGG | 0.142   | 0 | 0 | 0 |
| NR | AATAGA | 0.2212  | 0 | 0 | 0 |
| NR | AACCGT | 0.07623 | 0 | 0 | 0 |
| NR | AATCGT | 0.06428 | 0 | 0 | 0 |
| NR | AACAGG | 0.09268 | 0 | 0 | 0 |
| NR | AACAGA | 0.2377  | 0 | 0 | 0 |
| NR | AATCGG | 0.01794 | 0 | 0 | 0 |
| NR | AATCGC | 0.04634 | 0 | 0 | 0 |
| NR | AATCGA | 0.05082 | 0 | 0 | 0 |

|    |        |         |   |   |   |
|----|--------|---------|---|---|---|
| NS | AACAGC | 0.06146 | 0 | 0 | 0 |
| NS | AATAGC | 0.07122 | 0 | 0 | 0 |
| NS | AACTCT | 0.1034  | 0 | 0 | 0 |
| NS | AACAGT | 0.08788 | 0 | 0 | 0 |
| NS | AACTCG | 0.03331 | 0 | 0 | 0 |
| NS | AATTCA | 0.1298  | 0 | 0 | 0 |
| NS | AATTCT | 0.06146 | 0 | 0 | 0 |
| NS | AATTCT | 0.1327  | 0 | 0 | 0 |
| NS | AACTCA | 0.0741  | 0 | 0 | 0 |
| NS | AATAGT | 0.1022  | 0 | 0 | 0 |
| NS | AACTCC | 0.07007 | 0 | 0 | 0 |
| NS | AATTCC | 0.07237 | 0 | 0 | 0 |
| NT | AACACC | 0.08977 | 0 | 0 | 0 |
| NT | AACACA | 0.1326  | 0 | 0 | 0 |
| NT | AACACT | 0.1639  | 0 | 0 | 0 |
| NT | AACACG | 0.05428 | 0 | 0 | 0 |
| NT | AATACC | 0.1075  | 0 | 0 | 0 |
| NT | AATACT | 0.1816  | 0 | 0 | 0 |
| NT | AATACG | 0.07307 | 0 | 0 | 0 |
| NT | AATACA | 0.1973  | 0 | 0 | 0 |
| NV | AACGTT | 0.1821  | 0 | 0 | 0 |
| NV | AATGTA | 0.1429  | 0 | 0 | 0 |
| NV | AACGTG | 0.05231 | 0 | 0 | 0 |
| NV | AACGTC | 0.09557 | 0 | 0 | 0 |
| NV | AACGTA | 0.07143 | 0 | 0 | 0 |
| NV | AATGTG | 0.1046  | 0 | 0 | 0 |
| NV | AATGTC | 0.1268  | 0 | 0 | 0 |
| NV | AATGTT | 0.2243  | 0 | 0 | 0 |
| NW | AATTGG | 0.5668  | 0 | 0 | 0 |
| NW | AACTGG | 0.4332  | 0 | 0 | 0 |
| NY | AATTAT | 0.3502  | 1 | 1 | 1 |
| NY | AATTAC | 0.2526  | 0 | 1 | 0 |
| NY | AACTAC | 0.1812  | 0 | 1 | 0 |
| NY | AACTAT | 0.216   | 0 | 1 | 0 |
| P* | CCCTAA | 0.125   | 0 | 0 | 0 |
| P* | CCCTAG | 0       | 0 | 0 | 0 |
| P* | CCGTAA | 0       | 0 | 0 | 0 |
| P* | CCGTAG | 0       | 0 | 0 | 0 |
| P* | CCCTGA | 0       | 0 | 0 | 0 |
| P* | CCTTAA | 0       | 0 | 0 | 0 |
| P* | CCTTAG | 0.125   | 0 | 0 | 0 |
| P* | CCATAA | 0.125   | 0 | 0 | 0 |
| P* | CCATGA | 0.375   | 0 | 0 | 0 |
| P* | CCGTGA | 0.25    | 0 | 0 | 0 |
| P* | CCATAG | 0       | 0 | 0 | 0 |
| P* | CCTTGA | 0       | 0 | 0 | 0 |
| PA | CCCGCC | 0.01274 | 0 | 1 | 0 |
| PA | CCTGCA | 0.1369  | 0 | 1 | 0 |
| PA | CCTGCC | 0.05096 | 0 | 1 | 0 |
| PA | CCTGCG | 0.03981 | 0 | 1 | 0 |
| PA | CCCGCA | 0.04936 | 0 | 1 | 0 |

|    |        |         |   |   |   |
|----|--------|---------|---|---|---|
| PA | CCCGCT | 0.05732 | 0 | 1 | 0 |
| PA | CCTGCT | 0.1608  | 0 | 1 | 0 |
| PA | CCCGCG | 0.01274 | 0 | 1 | 0 |
| PA | CCAGCC | 0.07166 | 0 | 1 | 0 |
| PA | CCAGCG | 0.03981 | 0 | 1 | 0 |
| PA | CCAGCA | 0.1162  | 0 | 1 | 0 |
| PA | CCAGCT | 0.1401  | 1 | 1 | 1 |
| PA | CCGGCA | 0.03822 | 0 | 1 | 0 |
| PA | CCGGCT | 0.03662 | 0 | 1 | 0 |
| PA | CCGGCC | 0.01911 | 0 | 1 | 0 |
| PA | CCGGCG | 0.01752 | 0 | 1 | 0 |
| PC | CCTTGT | 0.1622  | 0 | 0 | 0 |
| PC | CCTTGC | 0.1081  | 0 | 0 | 0 |
| PC | CCGTGC | 0.02703 | 0 | 0 | 0 |
| PC | CCCTGT | 0.06306 | 0 | 0 | 0 |
| PC | CCATGT | 0.3063  | 0 | 0 | 0 |
| PC | CCATGC | 0.2252  | 0 | 0 | 0 |
| PC | CCGTGT | 0.05405 | 0 | 0 | 0 |
| PC | CCCTGC | 0.05405 | 0 | 0 | 0 |
| PD | CCCGAC | 0.02932 | 0 | 1 | 0 |
| PD | CCGGAT | 0.07655 | 0 | 1 | 0 |
| PD | CCGGAC | 0.04397 | 0 | 1 | 0 |
| PD | CCTGAC | 0.1156  | 1 | 1 | 1 |
| PD | CCTGAT | 0.2638  | 0 | 1 | 0 |
| PD | CCCGAT | 0.08143 | 0 | 1 | 0 |
| PD | CCAGAT | 0.2704  | 0 | 1 | 0 |
| PD | CCAGAC | 0.1189  | 0 | 1 | 0 |
| PE | CCGGAA | 0.07446 | 0 | 0 | 0 |
| PE | CCTGAG | 0.1306  | 0 | 0 | 0 |
| PE | CCCGAG | 0.03666 | 0 | 0 | 0 |
| PE | CCCGAA | 0.07331 | 0 | 0 | 0 |
| PE | CCAGAG | 0.1226  | 0 | 0 | 0 |
| PE | CCGGAG | 0.03436 | 0 | 0 | 0 |
| PE | CCAGAA | 0.3162  | 0 | 0 | 0 |
| PE | CCTGAA | 0.2119  | 0 | 0 | 0 |
| PF | CCCTTT | 0.1183  | 0 | 0 | 0 |
| PF | CCATTC | 0.1452  | 0 | 0 | 0 |
| PF | CCTTTT | 0.1577  | 0 | 0 | 0 |
| PF | CCCTTC | 0.06989 | 0 | 0 | 0 |
| PF | CCGTTC | 0.04122 | 0 | 0 | 0 |
| PF | CCATTT | 0.2903  | 0 | 0 | 0 |
| PF | CCGTTT | 0.05914 | 0 | 0 | 0 |
| PF | CCTTTC | 0.1183  | 0 | 0 | 0 |
| PG | CCGGGT | 0.01898 | 0 | 1 | 0 |
| PG | CCGGGG | 0.02657 | 0 | 1 | 0 |
| PG | CCGGGC | 0.03605 | 0 | 1 | 0 |
| PG | CCCGGA | 0.03226 | 0 | 1 | 0 |
| PG | CCTGGT | 0.1727  | 1 | 1 | 1 |
| PG | CCTGGG | 0.06452 | 0 | 1 | 0 |
| PG | CCTGGC | 0.074   | 0 | 1 | 0 |
| PG | CCCGGC | 0.01328 | 0 | 1 | 0 |

|    |        |          |   |   |     |
|----|--------|----------|---|---|-----|
| PG | CCCGGG | 0.001898 | 0 | 1 | 0   |
| PG | CCGGGA | 0.04744  | 0 | 1 | 0   |
| PG | CCCGGT | 0.05693  | 0 | 1 | 0   |
| PG | CCAGGT | 0.2049   | 0 | 1 | 0   |
| PG | CCTGGA | 0.06452  | 0 | 1 | 0   |
| PG | CCAGGA | 0.07021  | 0 | 1 | 0   |
| PG | CCAGGC | 0.08918  | 0 | 1 | 0   |
| PG | CCAGGG | 0.02657  | 0 | 1 | 0   |
| PH | CCGCAT | 0.09278  | 0 | 0 | 0   |
| PH | CCACAT | 0.2371   | 0 | 0 | 0   |
| PH | CCACAC | 0.1168   | 0 | 0 | 0   |
| PH | CCCCAT | 0.1134   | 0 | 0 | 0   |
| PH | CCGCAC | 0.05155  | 0 | 0 | 0   |
| PH | CCTCAT | 0.244    | 0 | 0 | 0   |
| PH | CCCCAC | 0.03436  | 0 | 0 | 0   |
| PH | CCTCAC | 0.11     | 0 | 0 | 0   |
| PI | CCGATA | 0.0461   | 0 | 0 | 0   |
| PI | CCGATT | 0.06265  | 0 | 0 | 0   |
| PI | CCGATC | 0.0331   | 0 | 0 | 0   |
| PI | CCAATT | 0.1891   | 0 | 0 | 0   |
| PI | CCTATC | 0.0721   | 0 | 0 | 0   |
| PI | CCTATT | 0.1135   | 0 | 0 | 0   |
| PI | CCAATC | 0.09338  | 0 | 0 | 0   |
| PI | CCAATA | 0.1348   | 0 | 0 | 0   |
| PI | CCCATA | 0.05792  | 0 | 0 | 0   |
| PI | CCTATA | 0.06738  | 0 | 0 | 0   |
| PI | CCCATT | 0.07447  | 0 | 0 | 0   |
| PI | CCCATC | 0.05556  | 0 | 0 | 0   |
| PK | CCTAAA | 0.1464   | 0 | 1 | 0   |
| PK | CCTAAG | 0.08452  | 0 | 1 | 0   |
| PK | CCCAAG | 0.07738  | 0 | 1 | 0   |
| PK | CCAAAA | 0.2369   | 0 | 1 | 0   |
| PK | CCAAAG | 0.2107   | 1 | 1 | 1   |
| PK | CCCAAA | 0.1226   | 0 | 1 | 0   |
| PK | CCGAAG | 0.04762  | 0 | 1 | 0   |
| PK | CCGAAA | 0.07381  | 0 | 1 | 0   |
| PL | CCACTC | 0.02183  | 0 | 2 | 0   |
| PL | CCCTTA | 0.05255  | 0 | 2 | 0   |
| PL | CCACTG | 0.03557  | 0 | 2 | 0   |
| PL | CCTCTT | 0.03961  | 0 | 2 | 0   |
| PL | CCCTTG | 0.03638  | 1 | 2 | 0.5 |
| PL | CCACTA | 0.0485   | 0 | 2 | 0   |
| PL | CCCCTA | 0.02344  | 0 | 2 | 0   |
| PL | CCTTTG | 0.1027   | 0 | 2 | 0   |
| PL | CCTTTA | 0.07599  | 0 | 2 | 0   |
| PL | CCTCTG | 0.03557  | 0 | 2 | 0   |
| PL | CCACTT | 0.04446  | 0 | 2 | 0   |
| PL | CCCCTG | 0.01213  | 0 | 2 | 0   |
| PL | CCCCTT | 0.01213  | 0 | 2 | 0   |
| PL | CCGCTA | 0.0291   | 0 | 2 | 0   |
| PL | CCGCTC | 0.008892 | 0 | 2 | 0   |

|    |        |          |   |   |     |
|----|--------|----------|---|---|-----|
| PL | CCGCTT | 0.0194   | 0 | 2 | 0   |
| PL | CCGCTG | 0.02183  | 0 | 2 | 0   |
| PL | CCGTTA | 0.04608  | 0 | 2 | 0   |
| PL | CCGTTG | 0.02991  | 1 | 2 | 0.5 |
| PL | CCTCTA | 0.03314  | 0 | 2 | 0   |
| PL | CCCCTC | 0.01132  | 0 | 2 | 0   |
| PL | CCATTA | 0.1229   | 0 | 2 | 0   |
| PL | CCTCTC | 0.02183  | 0 | 2 | 0   |
| PL | CCATTG | 0.1148   | 0 | 2 | 0   |
| PM | CCCATG | 0.1796   | 0 | 0 | 0   |
| PM | CCAATG | 0.4327   | 0 | 0 | 0   |
| PM | CCTATG | 0.249    | 0 | 0 | 0   |
| PM | CCGATG | 0.1388   | 0 | 0 | 0   |
| PN | CCCAAC | 0.07873  | 0 | 0 | 0   |
| PN | CCAAAT | 0.2666   | 0 | 0 | 0   |
| PN | CCTAAC | 0.1064   | 0 | 0 | 0   |
| PN | CCAAAC | 0.1436   | 0 | 0 | 0   |
| PN | CCTAAT | 0.1602   | 0 | 0 | 0   |
| PN | CCGAAT | 0.06906  | 0 | 0 | 0   |
| PN | CCCAAT | 0.1064   | 0 | 0 | 0   |
| PN | CCGAAC | 0.06906  | 0 | 0 | 0   |
| PP | CCGCCC | 0.01828  | 0 | 0 | 0   |
| PP | CCGCCA | 0.05222  | 0 | 0 | 0   |
| PP | CCCCCA | 0.03786  | 0 | 0 | 0   |
| PP | CCCCCT | 0.03003  | 0 | 0 | 0   |
| PP | CCGCCG | 0.005222 | 0 | 0 | 0   |
| PP | CCCCCG | 0.009138 | 0 | 0 | 0   |
| PP | CCACCT | 0.1358   | 0 | 0 | 0   |
| PP | CCGCCT | 0.03264  | 0 | 0 | 0   |
| PP | CCACCG | 0.06789  | 0 | 0 | 0   |
| PP | CCACCC | 0.04439  | 0 | 0 | 0   |
| PP | CCTCCC | 0.047    | 0 | 0 | 0   |
| PP | CCACCA | 0.2389   | 0 | 0 | 0   |
| PP | CCCCCC | 0.003916 | 0 | 0 | 0   |
| PP | CCTCCT | 0.09399  | 0 | 0 | 0   |
| PP | CCTCCA | 0.1423   | 0 | 0 | 0   |
| PP | CCTCCG | 0.04047  | 0 | 0 | 0   |
| PQ | CCCCAA | 0.07325  | 0 | 0 | 0   |
| PQ | CCACAG | 0.1533   | 0 | 0 | 0   |
| PQ | CCCCAG | 0.02896  | 0 | 0 | 0   |
| PQ | CCTCAG | 0.09199  | 0 | 0 | 0   |
| PQ | CCTCAA | 0.2879   | 0 | 0 | 0   |
| PQ | CCGCAG | 0.08688  | 0 | 0 | 0   |
| PQ | CCACAA | 0.1993   | 0 | 0 | 0   |
| PQ | CCGCAA | 0.07836  | 0 | 0 | 0   |
| PR | CCAAGA | 0.2588   | 0 | 0 | 0   |
| PR | CCTAGA | 0.0689   | 0 | 0 | 0   |
| PR | CCCAGG | 0.02607  | 0 | 0 | 0   |
| PR | CCACGT | 0.05959  | 0 | 0 | 0   |
| PR | CCAAGG | 0.1099   | 0 | 0 | 0   |
| PR | CCCAGA | 0.0838   | 0 | 0 | 0   |



|    |        |          |   |   |   |
|----|--------|----------|---|---|---|
| PR | CCGCGC | 0.01117  | 0 | 0 | 0 |
| PR | CCTCGG | 0.0149   | 0 | 0 | 0 |
| PR | CCTCGC | 0.01862  | 0 | 0 | 0 |
| PR | CCTCGA | 0.04469  | 0 | 0 | 0 |
| PR | CCTCGT | 0.04842  | 0 | 0 | 0 |
| PR | CCACGA | 0.03352  | 0 | 0 | 0 |
| PR | CCACGG | 0.03166  | 0 | 0 | 0 |
| PR | CCACGC | 0.0149   | 0 | 0 | 0 |
| PR | CCCCGA | 0.007449 | 0 | 0 | 0 |
| PR | CCGAGA | 0.05773  | 0 | 0 | 0 |
| PR | CCCCGT | 0.02048  | 0 | 0 | 0 |
| PR | CCCCGG | 0.007449 | 0 | 0 | 0 |
| PR | CCCCGC | 0.005587 | 0 | 0 | 0 |
| PR | CCGAGG | 0.01676  | 0 | 0 | 0 |
| PR | CCTAGG | 0.03724  | 0 | 0 | 0 |
| PR | CCGCGA | 0.001862 | 0 | 0 | 0 |
| PR | CCGCGT | 0.01304  | 0 | 0 | 0 |
| PR | CCGCGG | 0.007449 | 0 | 0 | 0 |
| PS | CCATCG | 0.03495  | 0 | 0 | 0 |
| PS | CCATCT | 0.1193   | 0 | 0 | 0 |
| PS | CCTAGT | 0.03799  | 0 | 0 | 0 |
| PS | CCTTCA | 0.08587  | 0 | 0 | 0 |
| PS | CCTAGC | 0.01672  | 0 | 0 | 0 |
| PS | CCATCA | 0.09726  | 0 | 0 | 0 |
| PS | CCATCC | 0.05395  | 0 | 0 | 0 |
| PS | CCGTCA | 0.02128  | 0 | 0 | 0 |
| PS | CCGAGC | 0.007599 | 0 | 0 | 0 |
| PS | CCGAGT | 0.01748  | 0 | 0 | 0 |
| PS | CCAAGT | 0.05623  | 0 | 0 | 0 |
| PS | CCGTCC | 0.01216  | 0 | 0 | 0 |
| PS | CCTTCG | 0.03419  | 0 | 0 | 0 |
| PS | CCTTCT | 0.08891  | 0 | 0 | 0 |
| PS | CCCTCT | 0.06155  | 0 | 0 | 0 |
| PS | CCCTCG | 0.01748  | 0 | 0 | 0 |
| PS | CCCTCC | 0.02584  | 0 | 0 | 0 |
| PS | CCCTCA | 0.03495  | 0 | 0 | 0 |
| PS | CCCAGT | 0.0266   | 0 | 0 | 0 |
| PS | CCAAGC | 0.04711  | 0 | 0 | 0 |
| PS | CCTTCC | 0.04711  | 0 | 0 | 0 |
| PS | CCGTCT | 0.01976  | 0 | 0 | 0 |
| PS | CCCAGC | 0.02204  | 0 | 0 | 0 |
| PS | CCGTCC | 0.01368  | 0 | 0 | 0 |
| PT | CCTACT | 0.09657  | 0 | 0 | 0 |
| PT | CCTACG | 0.03558  | 0 | 0 | 0 |
| PT | CCGACA | 0.03685  | 0 | 0 | 0 |
| PT | CCGACC | 0.01652  | 0 | 0 | 0 |
| PT | CCGACG | 0.01017  | 0 | 0 | 0 |
| PT | CCTACA | 0.08005  | 0 | 0 | 0 |
| PT | CCGACT | 0.0305   | 0 | 0 | 0 |
| PT | CCAACA | 0.1258   | 0 | 0 | 0 |
| PT | CCTACC | 0.07497  | 0 | 0 | 0 |

|    |        |         |   |   |   |
|----|--------|---------|---|---|---|
| PT | CCCACG | 0.02287 | 0 | 0 | 0 |
| PT | CCCACT | 0.06226 | 0 | 0 | 0 |
| PT | CCAACT | 0.1817  | 0 | 0 | 0 |
| PT | CCAACG | 0.05718 | 0 | 0 | 0 |
| PT | CCCACA | 0.0521  | 0 | 0 | 0 |
| PT | CCCACC | 0.05083 | 0 | 0 | 0 |
| PT | CCAACC | 0.06607 | 0 | 0 | 0 |
| PV | CCTGTT | 0.1578  | 0 | 0 | 0 |
| PV | CCCGTG | 0.02993 | 0 | 0 | 0 |
| PV | CCCGTT | 0.06395 | 0 | 0 | 0 |
| PV | CCCGTC | 0.03129 | 0 | 0 | 0 |
| PV | CCCGTA | 0.04354 | 0 | 0 | 0 |
| PV | CCGGTG | 0.01769 | 0 | 0 | 0 |
| PV | CCGGTT | 0.03946 | 0 | 0 | 0 |
| PV | CCGGTC | 0.01361 | 0 | 0 | 0 |
| PV | CCGGTA | 0.04082 | 0 | 0 | 0 |
| PV | CCTGTA | 0.07891 | 0 | 0 | 0 |
| PV | CCAGTA | 0.09524 | 0 | 0 | 0 |
| PV | CCTGTC | 0.07483 | 0 | 0 | 0 |
| PV | CCAGTG | 0.0517  | 0 | 0 | 0 |
| PV | CCTGTG | 0.07347 | 0 | 0 | 0 |
| PV | CCAGTT | 0.1374  | 0 | 0 | 0 |
| PV | CCAGTC | 0.05034 | 0 | 0 | 0 |
| PW | CCATGG | 0.4365  | 0 | 0 | 0 |
| PW | CCTTGG | 0.2937  | 0 | 0 | 0 |
| PW | CCCTGG | 0.1667  | 0 | 0 | 0 |
| PW | CCGTGG | 0.1032  | 0 | 0 | 0 |
| PY | CCCTAT | 0.08874 | 0 | 0 | 0 |
| PY | CCCTAC | 0.06926 | 0 | 0 | 0 |
| PY | CCTTAC | 0.132   | 0 | 0 | 0 |
| PY | CCATAC | 0.1537  | 0 | 0 | 0 |
| PY | CCGTAC | 0.08009 | 0 | 0 | 0 |
| PY | CCATAT | 0.2143  | 0 | 0 | 0 |
| PY | CCGTAT | 0.08225 | 0 | 0 | 0 |
| PY | CCTTAT | 0.1797  | 0 | 0 | 0 |
| Q* | CAGTAG | 0.1364  | 0 | 0 | 0 |
| Q* | CAGTAA | 0.04545 | 0 | 0 | 0 |
| Q* | CAATAG | 0.1818  | 0 | 0 | 0 |
| Q* | CAATGA | 0.2727  | 0 | 0 | 0 |
| Q* | CAGTGA | 0.1364  | 0 | 0 | 0 |
| Q* | CAATAA | 0.2273  | 0 | 0 | 0 |
| QA | CAAGCG | 0.07207 | 0 | 0 | 0 |
| QA | CAGGCG | 0.05045 | 0 | 0 | 0 |
| QA | CAGGCC | 0.06486 | 0 | 0 | 0 |
| QA | CAAGCT | 0.2523  | 0 | 0 | 0 |
| QA | CAGGCT | 0.09369 | 0 | 0 | 0 |
| QA | CAAGCC | 0.1694  | 0 | 0 | 0 |
| QA | CAGGCA | 0.1045  | 0 | 0 | 0 |
| QA | CAAGCA | 0.1928  | 0 | 0 | 0 |
| QC | CAATGT | 0.5106  | 1 | 1 | 1 |
| QC | CAGTGC | 0.1915  | 0 | 1 | 0 |

|    |        |         |   |   |   |
|----|--------|---------|---|---|---|
| QC | CAATGC | 0.1206  | 0 | 1 | 0 |
| QC | CAGTGT | 0.1773  | 0 | 1 | 0 |
| QD | CAGGAT | 0.2084  | 0 | 0 | 0 |
| QD | CAAGAT | 0.4538  | 0 | 0 | 0 |
| QD | CAGGAC | 0.1227  | 0 | 0 | 0 |
| QD | CAAGAC | 0.2151  | 0 | 0 | 0 |
| QE | CAAGAG | 0.2018  | 0 | 0 | 0 |
| QE | CAAGAA | 0.5089  | 0 | 0 | 0 |
| QE | CAGGAA | 0.1878  | 0 | 0 | 0 |
| QE | CAGGAG | 0.1015  | 0 | 0 | 0 |
| QF | CAGTTC | 0.1115  | 0 | 0 | 0 |
| QF | CAATTC | 0.2382  | 0 | 0 | 0 |
| QF | CAGTTT | 0.259   | 0 | 0 | 0 |
| QF | CAATTT | 0.3913  | 0 | 0 | 0 |
| QG | CAAGGT | 0.3243  | 0 | 0 | 0 |
| QG | CAAGGG | 0.104   | 0 | 0 | 0 |
| QG | CAAGGA | 0.1455  | 0 | 0 | 0 |
| QG | CAGGGT | 0.106   | 0 | 0 | 0 |
| QG | CAGGGA | 0.106   | 0 | 0 | 0 |
| QG | CAAGGC | 0.1227  | 0 | 0 | 0 |
| QG | CAGGGC | 0.05821 | 0 | 0 | 0 |
| QG | CAGGGG | 0.03326 | 0 | 0 | 0 |
| QH | CAGCAT | 0.2731  | 0 | 1 | 0 |
| QH | CAGCAC | 0.1218  | 0 | 1 | 0 |
| QH | CAACAC | 0.1639  | 0 | 1 | 0 |
| QH | CAACAT | 0.4412  | 1 | 1 | 1 |
| QI | CAAATT | 0.3381  | 0 | 0 | 0 |
| QI | CAAATC | 0.1534  | 0 | 0 | 0 |
| QI | CAAATA | 0.223   | 0 | 0 | 0 |
| QI | CAGATT | 0.1094  | 0 | 0 | 0 |
| QI | CAGATC | 0.06676 | 0 | 0 | 0 |
| QI | CAGATA | 0.1094  | 0 | 0 | 0 |
| QK | CAAAAA | 0.3851  | 1 | 1 | 1 |
| QK | CAGAAG | 0.1086  | 0 | 1 | 0 |
| QK | CAGAAA | 0.2045  | 0 | 1 | 0 |
| QK | CAAAAG | 0.3018  | 0 | 1 | 0 |
| QL | CAACTC | 0.03015 | 0 | 1 | 0 |
| QL | CAATTA | 0.1826  | 0 | 1 | 0 |
| QL | CAATTG | 0.1947  | 1 | 1 | 1 |
| QL | CAACTA | 0.1068  | 0 | 1 | 0 |
| QL | CAACTT | 0.08096 | 0 | 1 | 0 |
| QL | CAGCTC | 0.01809 | 0 | 1 | 0 |
| QL | CAGCTA | 0.04651 | 0 | 1 | 0 |
| QL | CAGCTG | 0.04048 | 0 | 1 | 0 |
| QL | CAGCTT | 0.03618 | 0 | 1 | 0 |
| QL | CAGTTG | 0.09475 | 0 | 1 | 0 |
| QL | CAACTG | 0.09044 | 0 | 1 | 0 |
| QL | CAGTTA | 0.07838 | 0 | 1 | 0 |
| QM | CAAATG | 0.7761  | 0 | 0 | 0 |
| QM | CAGATG | 0.2239  | 0 | 0 | 0 |
| QN | CAAAAT | 0.4429  | 0 | 0 | 0 |

|    |        |         |   |   |   |
|----|--------|---------|---|---|---|
| QN | CAGAAT | 0.1943  | 0 | 0 | 0 |
| QN | CAAAAC | 0.2743  | 0 | 0 | 0 |
| QN | CAGAAC | 0.08857 | 0 | 0 | 0 |
| QP | CAACCG | 0.1092  | 1 | 1 | 1 |
| QP | CAGCCG | 0.05782 | 0 | 1 | 0 |
| QP | CAGCCT | 0.1113  | 0 | 1 | 0 |
| QP | CAACCA | 0.2827  | 0 | 1 | 0 |
| QP | CAACCT | 0.2163  | 0 | 1 | 0 |
| QP | CAGCCC | 0.04283 | 0 | 1 | 0 |
| QP | CAACCC | 0.06424 | 0 | 1 | 0 |
| QP | CAGCCA | 0.1156  | 0 | 1 | 0 |
| QQ | CAACAA | 0.3851  | 0 | 0 | 0 |
| QQ | CAACAG | 0.2213  | 0 | 0 | 0 |
| QQ | CAGCAA | 0.2262  | 0 | 0 | 0 |
| QQ | CAGCAG | 0.1675  | 0 | 0 | 0 |
| QR | CAACGC | 0.03087 | 0 | 0 | 0 |
| QR | CAACGA | 0.05146 | 0 | 0 | 0 |
| QR | CAACGG | 0.01887 | 0 | 0 | 0 |
| QR | CAACGT | 0.09605 | 0 | 0 | 0 |
| QR | CAAAGG | 0.1887  | 0 | 0 | 0 |
| QR | CAAAGA | 0.3242  | 0 | 0 | 0 |
| QR | CAGCGG | 0.0223  | 0 | 0 | 0 |
| QR | CAGCGC | 0.02916 | 0 | 0 | 0 |
| QR | CAGCGA | 0.02573 | 0 | 0 | 0 |
| QR | CAGAGG | 0.0566  | 0 | 0 | 0 |
| QR | CAGAGA | 0.08919 | 0 | 0 | 0 |
| QR | CAGCGT | 0.0669  | 0 | 0 | 0 |
| QS | CAGTCG | 0.03476 | 0 | 0 | 0 |
| QS | CAGAGC | 0.03129 | 0 | 0 | 0 |
| QS | CAGAGT | 0.04635 | 0 | 0 | 0 |
| QS | CAGTCC | 0.02202 | 0 | 0 | 0 |
| QS | CAAAGC | 0.09154 | 0 | 0 | 0 |
| QS | CAGTCA | 0.06721 | 0 | 0 | 0 |
| QS | CAAAGT | 0.1587  | 0 | 0 | 0 |
| QS | CAGTCT | 0.07416 | 0 | 0 | 0 |
| QS | CAATCC | 0.08343 | 0 | 0 | 0 |
| QS | CAATCA | 0.1286  | 0 | 0 | 0 |
| QS | CAATCT | 0.1866  | 0 | 0 | 0 |
| QS | CAATCG | 0.07532 | 0 | 0 | 0 |
| QT | CAAAC  | 0.2958  | 0 | 0 | 0 |
| QT | CAAACA | 0.2377  | 0 | 0 | 0 |
| QT | CAGACT | 0.07985 | 0 | 0 | 0 |
| QT | CAAACC | 0.1071  | 0 | 0 | 0 |
| QT | CAGACG | 0.02722 | 0 | 0 | 0 |
| QT | CAAACG | 0.1089  | 0 | 0 | 0 |
| QT | CAGACC | 0.0363  | 0 | 0 | 0 |
| QT | CAGACA | 0.1071  | 0 | 0 | 0 |
| QV | CAAGTT | 0.2301  | 0 | 2 | 0 |
| QV | CAAGTG | 0.1558  | 0 | 2 | 0 |
| QV | CAGGTA | 0.05978 | 0 | 2 | 0 |
| QV | CAAGTA | 0.183   | 0 | 2 | 0 |

|    |        |          |   |   |     |
|----|--------|----------|---|---|-----|
| QV | CAGGTC | 0.0471   | 0 | 2 | 0   |
| QV | CAGGTG | 0.07971  | 1 | 2 | 0.5 |
| QV | CAGGTT | 0.09964  | 1 | 2 | 0.5 |
| QV | CAAGTC | 0.1449   | 0 | 2 | 0   |
| QW | CAGTGG | 0.2137   | 0 | 0 | 0   |
| QW | CAATGG | 0.7863   | 0 | 0 | 0   |
| QY | CAGTAC | 0.1799   | 0 | 0 | 0   |
| QY | CAGTAT | 0.2126   | 0 | 0 | 0   |
| QY | CAATAC | 0.2523   | 0 | 0 | 0   |
| QY | CAATAT | 0.3551   | 0 | 0 | 0   |
| R* | CGTTAA | 0.1786   | 0 | 0 | 0   |
| R* | CGGTGA | 0        | 0 | 0 | 0   |
| R* | AGGTAA | 0.1071   | 0 | 0 | 0   |
| R* | CGTTGA | 0.1429   | 0 | 0 | 0   |
| R* | AGGTGA | 0.1071   | 0 | 0 | 0   |
| R* | AGGTAG | 0        | 0 | 0 | 0   |
| R* | CGCTGA | 0        | 0 | 0 | 0   |
| R* | CGATAA | 0.07143  | 0 | 0 | 0   |
| R* | CGTTAG | 0.07143  | 0 | 0 | 0   |
| R* | AGATGA | 0.1071   | 0 | 0 | 0   |
| R* | CGATGA | 0        | 0 | 0 | 0   |
| R* | CGGTAA | 0.03571  | 0 | 0 | 0   |
| R* | AGATAG | 0.07143  | 0 | 0 | 0   |
| R* | AGATAA | 0.03571  | 0 | 0 | 0   |
| R* | CGATAG | 0        | 0 | 0 | 0   |
| R* | CGGTAG | 0        | 0 | 0 | 0   |
| R* | CGCTAG | 0        | 0 | 0 | 0   |
| R* | CGCTAA | 0.07143  | 0 | 0 | 0   |
| RA | CGTGCC | 0.03614  | 0 | 0 | 0   |
| RA | CGTGCG | 0.02108  | 0 | 0 | 0   |
| RA | CGCGCC | 0.006024 | 0 | 0 | 0   |
| RA | CGAGCA | 0.0241   | 0 | 0 | 0   |
| RA | CGCGCT | 0.01506  | 0 | 0 | 0   |
| RA | CGCGCG | 0.003012 | 0 | 0 | 0   |
| RA | CGCGCA | 0.01355  | 0 | 0 | 0   |
| RA | CGTGCA | 0.04819  | 0 | 0 | 0   |
| RA | AGAGCG | 0.0497   | 0 | 0 | 0   |
| RA | AGGGCA | 0.07982  | 0 | 0 | 0   |
| RA | AGAGCA | 0.1566   | 0 | 0 | 0   |
| RA | AGAGCC | 0.08735  | 0 | 0 | 0   |
| RA | AGAGCT | 0.1657   | 0 | 0 | 0   |
| RA | AGGGCC | 0.04066  | 0 | 0 | 0   |
| RA | AGGGCG | 0.02259  | 0 | 0 | 0   |
| RA | CGAGCC | 0.01205  | 0 | 0 | 0   |
| RA | CGAGCT | 0.01657  | 0 | 0 | 0   |
| RA | AGGGCT | 0.113    | 0 | 0 | 0   |
| RA | CGTGCT | 0.06024  | 0 | 0 | 0   |
| RA | CGAGCG | 0.00753  | 0 | 0 | 0   |
| RA | CGGGCT | 0.009036 | 0 | 0 | 0   |
| RA | CGGGCG | 0.003012 | 0 | 0 | 0   |
| RA | CGGGCC | 0.006024 | 0 | 0 | 0   |

|    |        |          |   |   |   |
|----|--------|----------|---|---|---|
| RA | CGGGCA | 0.003012 | 0 | 0 | 0 |
| RC | AGGTGC | 0.1034   | 0 | 0 | 0 |
| RC | CGGTGC | 0.005747 | 0 | 0 | 0 |
| RC | CGCTGT | 0.02874  | 0 | 0 | 0 |
| RC | CGGTGT | 0.005747 | 0 | 0 | 0 |
| RC | CGTTGC | 0.08621  | 0 | 0 | 0 |
| RC | CGATGT | 0.05172  | 0 | 0 | 0 |
| RC | AGATGT | 0.2184   | 0 | 0 | 0 |
| RC | AGATGC | 0.1264   | 0 | 0 | 0 |
| RC | AGGTGT | 0.1264   | 0 | 0 | 0 |
| RC | CGCTGC | 0.05172  | 0 | 0 | 0 |
| RC | CGTTGT | 0.1379   | 0 | 0 | 0 |
| RC | CGATGC | 0.05747  | 0 | 0 | 0 |
| RD | AGAGAT | 0.3414   | 0 | 0 | 0 |
| RD | AGAGAC | 0.1431   | 0 | 0 | 0 |
| RD | CGAGAC | 0.0255   | 0 | 0 | 0 |
| RD | CGTGAT | 0.0864   | 0 | 0 | 0 |
| RD | CGTGAC | 0.04533  | 0 | 0 | 0 |
| RD | CGAGAT | 0.04108  | 0 | 0 | 0 |
| RD | CGCGAC | 0.01983  | 0 | 0 | 0 |
| RD | AGGGAT | 0.1289   | 0 | 0 | 0 |
| RD | AGGGAC | 0.07649  | 0 | 0 | 0 |
| RD | CGCGAT | 0.04391  | 0 | 0 | 0 |
| RD | CGGGAT | 0.02833  | 0 | 0 | 0 |
| RD | CGGGAC | 0.01983  | 0 | 0 | 0 |
| RE | CGAGAG | 0.02275  | 0 | 1 | 0 |
| RE | CGTGAA | 0.09461  | 0 | 1 | 0 |
| RE | CGGGAG | 0.009581 | 0 | 1 | 0 |
| RE | CGAGAA | 0.03713  | 0 | 1 | 0 |
| RE | CGTGAG | 0.03832  | 0 | 1 | 0 |
| RE | CGCGAG | 0.02635  | 0 | 1 | 0 |
| RE | AGGGAG | 0.07305  | 0 | 1 | 0 |
| RE | CGGGAA | 0.03473  | 0 | 1 | 0 |
| RE | CGCGAA | 0.02156  | 0 | 1 | 0 |
| RE | AGAGAG | 0.1437   | 0 | 1 | 0 |
| RE | AGGGAA | 0.1425   | 0 | 1 | 0 |
| RE | AGAGAA | 0.3557   | 1 | 1 | 1 |
| RF | CGCTTT | 0.02627  | 0 | 0 | 0 |
| RF | AGGTTC | 0.09457  | 0 | 0 | 0 |
| RF | CGTTTT | 0.04553  | 0 | 0 | 0 |
| RF | CGATTC | 0.02102  | 0 | 0 | 0 |
| RF | CGCTTC | 0.01926  | 0 | 0 | 0 |
| RF | CGTTTC | 0.03853  | 0 | 0 | 0 |
| RF | AGGTTT | 0.1786   | 0 | 0 | 0 |
| RF | CGATTT | 0.04553  | 0 | 0 | 0 |
| RF | CGGTTC | 0.01751  | 0 | 0 | 0 |
| RF | CGGTTT | 0.03152  | 0 | 0 | 0 |
| RF | AGATTT | 0.3327   | 0 | 0 | 0 |
| RF | AGATTC | 0.1489   | 0 | 0 | 0 |
| RG | CGAGGT | 0.0254   | 0 | 2 | 0 |
| RG | AGGGGT | 0.0619   | 0 | 2 | 0 |

|    |        |          |   |   |     |
|----|--------|----------|---|---|-----|
| RG | CGAGGG | 0.006349 | 0 | 2 | 0   |
| RG | CGGGGT | 0.0127   | 0 | 2 | 0   |
| RG | CGAGGC | 0.009524 | 0 | 2 | 0   |
| RG | AGAGGA | 0.1238   | 1 | 2 | 0.5 |
| RG | AGAGGG | 0.03175  | 0 | 2 | 0   |
| RG | CGGGGC | 0.004762 | 0 | 2 | 0   |
| RG | AGGGGA | 0.03333  | 0 | 2 | 0   |
| RG | CGGGGA | 0.004762 | 0 | 2 | 0   |
| RG | AGGGGG | 0.01746  | 0 | 2 | 0   |
| RG | CGAGGA | 0.01429  | 0 | 2 | 0   |
| RG | AGAGGT | 0.2476   | 0 | 2 | 0   |
| RG | AGAGGC | 0.1      | 0 | 2 | 0   |
| RG | CGTGGT | 0.1111   | 0 | 2 | 0   |
| RG | CGCGGG | 0.004762 | 0 | 2 | 0   |
| RG | CGGGGG | 0.003175 | 0 | 2 | 0   |
| RG | CGCGGC | 0.0127   | 0 | 2 | 0   |
| RG | CGCGGT | 0.0127   | 0 | 2 | 0   |
| RG | CGTGGA | 0.04286  | 0 | 2 | 0   |
| RG | AGGGGC | 0.0381   | 0 | 2 | 0   |
| RG | CGTGGG | 0.03175  | 0 | 2 | 0   |
| RG | CGTGGC | 0.03333  | 1 | 2 | 0.5 |
| RG | CGCGGA | 0.01587  | 0 | 2 | 0   |
| RH | CGGCAC | 0.03106  | 0 | 0 | 0   |
| RH | CGACAT | 0.06832  | 0 | 0 | 0   |
| RH | CGGCAT | 0.03727  | 0 | 0 | 0   |
| RH | CGACAC | 0.01553  | 0 | 0 | 0   |
| RH | CGCCAT | 0.04969  | 0 | 0 | 0   |
| RH | CGTCAT | 0.1056   | 0 | 0 | 0   |
| RH | AGGCAT | 0.1335   | 0 | 0 | 0   |
| RH | CGCCAC | 0.01553  | 0 | 0 | 0   |
| RH | AGACAC | 0.1708   | 0 | 0 | 0   |
| RH | AGGCAC | 0.06832  | 0 | 0 | 0   |
| RH | AGACAT | 0.2702   | 0 | 0 | 0   |
| RH | CGTCAC | 0.03416  | 0 | 0 | 0   |
| RI | AGGATT | 0.0757   | 0 | 0 | 0   |
| RI | AGGATC | 0.04518  | 0 | 0 | 0   |
| RI | AGGATA | 0.07692  | 0 | 0 | 0   |
| RI | CGGATC | 0.003663 | 0 | 0 | 0   |
| RI | AGAATA | 0.1709   | 0 | 0 | 0   |
| RI | AGAATC | 0.1319   | 0 | 0 | 0   |
| RI | AGAATT | 0.2137   | 0 | 0 | 0   |
| RI | CGGATA | 0.01099  | 0 | 0 | 0   |
| RI | CGGATT | 0.01221  | 0 | 0 | 0   |
| RI | CGTATA | 0.03663  | 0 | 0 | 0   |
| RI | CGAATC | 0.01832  | 0 | 0 | 0   |
| RI | CGTATT | 0.0757   | 0 | 0 | 0   |
| RI | CGCATC | 0.009768 | 0 | 0 | 0   |
| RI | CGCATT | 0.01709  | 0 | 0 | 0   |
| RI | CGTATC | 0.0232   | 0 | 0 | 0   |
| RI | CGAATT | 0.02808  | 0 | 0 | 0   |
| RI | CGCATA | 0.01832  | 0 | 0 | 0   |

|    |        |          |   |   |   |
|----|--------|----------|---|---|---|
| RI | CGAATA | 0.03175  | 0 | 0 | 0 |
| RK | CGTAAA | 0.05545  | 0 | 0 | 0 |
| RK | CGTAAG | 0.04545  | 0 | 0 | 0 |
| RK | AGGAAA | 0.1673   | 0 | 0 | 0 |
| RK | AGAAAG | 0.2218   | 0 | 0 | 0 |
| RK | CGAAAA | 0.03818  | 0 | 0 | 0 |
| RK | AGAAAA | 0.2609   | 0 | 0 | 0 |
| RK | CGGAAG | 0.01091  | 0 | 0 | 0 |
| RK | AGGAAG | 0.09455  | 0 | 0 | 0 |
| RK | CGCAAA | 0.03273  | 0 | 0 | 0 |
| RK | CGCAAG | 0.02545  | 0 | 0 | 0 |
| RK | CGAAAG | 0.02     | 0 | 0 | 0 |
| RK | CGGAAA | 0.02727  | 0 | 0 | 0 |
| RL | CGACTT | 0.01194  | 0 | 1 | 0 |
| RL | AGACTA | 0.07006  | 0 | 1 | 0 |
| RL | CGACTA | 0.01433  | 0 | 1 | 0 |
| RL | CGTTTG | 0.03583  | 0 | 1 | 0 |
| RL | CGATTG | 0.01672  | 0 | 1 | 0 |
| RL | CGACTG | 0.009554 | 0 | 1 | 0 |
| RL | CGACTC | 0.01115  | 0 | 1 | 0 |
| RL | AGGTTA | 0.06688  | 0 | 1 | 0 |
| RL | CGCCTG | 0.004777 | 0 | 1 | 0 |
| RL | CGTCTT | 0.01911  | 0 | 1 | 0 |
| RL | CGTTTA | 0.04299  | 0 | 1 | 0 |
| RL | AGGTTG | 0.06131  | 0 | 1 | 0 |
| RL | CGATTA | 0.02787  | 0 | 1 | 0 |
| RL | CGGTTA | 0.009554 | 0 | 1 | 0 |
| RL | AGACTG | 0.04936  | 0 | 1 | 0 |
| RL | CGTCTG | 0.01115  | 0 | 1 | 0 |
| RL | CGGTTG | 0.01115  | 0 | 1 | 0 |
| RL | CGTCTC | 0.007962 | 0 | 1 | 0 |
| RL | AGACTC | 0.01513  | 0 | 1 | 0 |
| RL | AGATTA | 0.1393   | 0 | 1 | 0 |
| RL | CGCTTA | 0.01592  | 0 | 1 | 0 |
| RL | CGCTTG | 0.01354  | 0 | 1 | 0 |
| RL | CGGCTT | 0.001592 | 0 | 1 | 0 |
| RL | AGGCTA | 0.03503  | 0 | 1 | 0 |
| RL | AGGCTG | 0.02866  | 0 | 1 | 0 |
| RL | AGGCTC | 0.01911  | 0 | 1 | 0 |
| RL | AGATTG | 0.1146   | 0 | 1 | 0 |
| RL | CGCCTA | 0.007962 | 0 | 1 | 0 |
| RL | CGTCTA | 0.01911  | 0 | 1 | 0 |
| RL | CGGCTA | 0.01035  | 0 | 1 | 0 |
| RL | AGACTT | 0.03901  | 0 | 1 | 0 |
| RL | CGCCTT | 0.002389 | 0 | 1 | 0 |
| RL | CGGCTC | 0.004777 | 0 | 1 | 0 |
| RL | CGGCTG | 0.01513  | 0 | 1 | 0 |
| RL | CGCCTC | 0.004777 | 0 | 1 | 0 |
| RL | AGGCTT | 0.03185  | 1 | 1 | 1 |
| RM | CGTATG | 0.1369   | 0 | 0 | 0 |
| RM | AGGATG | 0.1867   | 0 | 0 | 0 |



|    |        |          |   |   |   |
|----|--------|----------|---|---|---|
| RM | CGGATG | 0.04564  | 0 | 0 | 0 |
| RM | CGCATG | 0.06224  | 0 | 0 | 0 |
| RM | AGAATG | 0.5021   | 0 | 0 | 0 |
| RM | CGAATG | 0.06639  | 0 | 0 | 0 |
| RN | AGAAAT | 0.3197   | 0 | 0 | 0 |
| RN | CGGAAT | 0.04092  | 0 | 0 | 0 |
| RN | CGCAAC | 0.0179   | 0 | 0 | 0 |
| RN | AGAAAC | 0.2136   | 0 | 0 | 0 |
| RN | CGTAAT | 0.06266  | 0 | 0 | 0 |
| RN | CGTAAC | 0.0422   | 0 | 0 | 0 |
| RN | CGCAAT | 0.04476  | 0 | 0 | 0 |
| RN | CGAAAT | 0.04476  | 0 | 0 | 0 |
| RN | AGGAAT | 0.09591  | 0 | 0 | 0 |
| RN | AGGAAC | 0.07928  | 0 | 0 | 0 |
| RN | CGGAAC | 0.01407  | 0 | 0 | 0 |
| RN | CGAAAC | 0.0243   | 0 | 0 | 0 |
| RP | CGACCC | 0.01207  | 0 | 0 | 0 |
| RP | CGACCG | 0.004024 | 0 | 0 | 0 |
| RP | AGGCCG | 0.03018  | 0 | 0 | 0 |
| RP | CGACCT | 0.02213  | 0 | 0 | 0 |
| RP | CGCCCT | 0.01207  | 0 | 0 | 0 |
| RP | CGCCCC | 0.01006  | 0 | 0 | 0 |
| RP | CGGCCG | 0.004024 | 0 | 0 | 0 |
| RP | CGCCCG | 0.006036 | 0 | 0 | 0 |
| RP | AGGCCC | 0.06439  | 0 | 0 | 0 |
| RP | CGCCCA | 0.01408  | 0 | 0 | 0 |
| RP | CGACCA | 0.01811  | 0 | 0 | 0 |
| RP | AGGCCT | 0.06841  | 0 | 0 | 0 |
| RP | AGGCCA | 0.1247   | 0 | 0 | 0 |
| RP | AGACCG | 0.06237  | 0 | 0 | 0 |
| RP | AGACCC | 0.0503   | 0 | 0 | 0 |
| RP | AGACCA | 0.2173   | 0 | 0 | 0 |
| RP | CGGCCT | 0.01006  | 0 | 0 | 0 |
| RP | CGTCCA | 0.04024  | 0 | 0 | 0 |
| RP | AGACCT | 0.1348   | 0 | 0 | 0 |
| RP | CGTCCC | 0.01207  | 0 | 0 | 0 |
| RP | CGTCCG | 0.01811  | 0 | 0 | 0 |
| RP | CGTCCT | 0.03622  | 0 | 0 | 0 |
| RP | CGGCCC | 0.006036 | 0 | 0 | 0 |
| RP | CGGCCA | 0.02213  | 0 | 0 | 0 |
| RQ | AGACAA | 0.2986   | 0 | 0 | 0 |
| RQ | CGGCAA | 0.01403  | 0 | 0 | 0 |
| RQ | CGGCAG | 0.03006  | 0 | 0 | 0 |
| RQ | AGACAG | 0.1623   | 0 | 0 | 0 |
| RQ | CGCCAG | 0.02405  | 0 | 0 | 0 |
| RQ | AGGCAA | 0.1283   | 0 | 0 | 0 |
| RQ | AGGCAG | 0.07415  | 0 | 0 | 0 |
| RQ | CGTCAA | 0.1242   | 0 | 0 | 0 |
| RQ | CGCCAA | 0.04208  | 0 | 0 | 0 |
| RQ | CGACAA | 0.03206  | 0 | 0 | 0 |
| RQ | CGTCAG | 0.04208  | 0 | 0 | 0 |

|    |        |          |   |   |   |
|----|--------|----------|---|---|---|
| RQ | CGACAG | 0.02806  | 0 | 0 | 0 |
| RR | CGAAGA | 0.02469  | 0 | 1 | 0 |
| RR | AGAAGA | 0.3173   | 1 | 1 | 1 |
| RR | CGTCGA | 0.008642 | 0 | 1 | 0 |
| RR | CGACGA | 0.003704 | 0 | 1 | 0 |
| RR | CGTAGG | 0.01358  | 0 | 1 | 0 |
| RR | CGAAGG | 0.01358  | 0 | 1 | 0 |
| RR | CGCAGA | 0.009877 | 0 | 1 | 0 |
| RR | AGACGT | 0.04321  | 0 | 1 | 0 |
| RR | CGCCGA | 0.007407 | 0 | 1 | 0 |
| RR | CGCCGT | 0.01728  | 0 | 1 | 0 |
| RR | CGCCGC | 0.001235 | 0 | 1 | 0 |
| RR | AGACGG | 0.01358  | 0 | 1 | 0 |
| RR | CGCAGG | 0.006173 | 0 | 1 | 0 |
| RR | AGACGA | 0.02346  | 0 | 1 | 0 |
| RR | CGCCGG | 0.001235 | 0 | 1 | 0 |
| RR | AGACGC | 0.01728  | 0 | 1 | 0 |
| RR | CGTAGA | 0.03951  | 0 | 1 | 0 |
| RR | CGTCGC | 0.01358  | 0 | 1 | 0 |
| RR | AGGCGG | 0.01358  | 0 | 1 | 0 |
| RR | CGGCGA | 0.002469 | 0 | 1 | 0 |
| RR | CGACGC | 0        | 0 | 1 | 0 |
| RR | CGGCGC | 0.002469 | 0 | 1 | 0 |
| RR | AGGCGC | 0.009877 | 0 | 1 | 0 |
| RR | AGGCGA | 0.01975  | 0 | 1 | 0 |
| RR | CGGAGG | 0.008642 | 0 | 1 | 0 |
| RR | AGGAGG | 0.04691  | 0 | 1 | 0 |
| RR | CGGAGA | 0.01235  | 0 | 1 | 0 |
| RR | CGGCGG | 0.001235 | 0 | 1 | 0 |
| RR | CGGCGT | 0.003704 | 0 | 1 | 0 |
| RR | CGTCGT | 0.03333  | 0 | 1 | 0 |
| RR | CGACGG | 0.002469 | 0 | 1 | 0 |
| RR | CGTCGG | 0.01235  | 0 | 1 | 0 |
| RR | CGACGT | 0.006173 | 0 | 1 | 0 |
| RR | AGGAGA | 0.1099   | 0 | 1 | 0 |
| RR | AGGCGT | 0.02222  | 0 | 1 | 0 |
| RR | AGAAGG | 0.1173   | 0 | 1 | 0 |
| RS | AGGAGC | 0.01644  | 0 | 0 | 0 |
| RS | CGGTCG | 0.009132 | 0 | 0 | 0 |
| RS | AGGTCT | 0.04292  | 0 | 0 | 0 |
| RS | AGGTCC | 0.02374  | 0 | 0 | 0 |
| RS | AGGTCA | 0.06393  | 0 | 0 | 0 |
| RS | AGGTCG | 0.02922  | 0 | 0 | 0 |
| RS | AGGAGT | 0.03379  | 0 | 0 | 0 |
| RS | CGTAGT | 0.01644  | 0 | 0 | 0 |
| RS | CGTTCG | 0.01279  | 0 | 0 | 0 |
| RS | CGTTCC | 0.02192  | 0 | 0 | 0 |
| RS | CGTTCA | 0.03014  | 0 | 0 | 0 |
| RS | CGATCT | 0.02283  | 0 | 0 | 0 |
| RS | CGTTCT | 0.04566  | 0 | 0 | 0 |
| RS | CGGAGT | 0.009132 | 0 | 0 | 0 |

|    |        |          |   |   |   |
|----|--------|----------|---|---|---|
| RS | CGCTCG | 0.007306 | 0 | 0 | 0 |
| RS | CGCTCT | 0.02009  | 0 | 0 | 0 |
| RS | CGGAGC | 0.006393 | 0 | 0 | 0 |
| RS | CGATCG | 0.008219 | 0 | 0 | 0 |
| RS | CGATCC | 0.006393 | 0 | 0 | 0 |
| RS | CGCAGC | 0.01553  | 0 | 0 | 0 |
| RS | CGCAGT | 0.006393 | 0 | 0 | 0 |
| RS | CGCTCC | 0.009132 | 0 | 0 | 0 |
| RS | CGGTCA | 0.009132 | 0 | 0 | 0 |
| RS | CGCTCA | 0.01553  | 0 | 0 | 0 |
| RS | CGTAGC | 0.001826 | 0 | 0 | 0 |
| RS | CGATCA | 0.01553  | 0 | 0 | 0 |
| RS | CGAAGT | 0.02192  | 0 | 0 | 0 |
| RS | CGAAGC | 0.008219 | 0 | 0 | 0 |
| RS | CGGTCC | 0.003653 | 0 | 0 | 0 |
| RS | CGGTCT | 0.01553  | 0 | 0 | 0 |
| RS | AGATCT | 0.1041   | 0 | 0 | 0 |
| RS | AGATCG | 0.0411   | 0 | 0 | 0 |
| RS | AGATCC | 0.05662  | 0 | 0 | 0 |
| RS | AGATCA | 0.1114   | 0 | 0 | 0 |
| RS | AGAAGC | 0.05114  | 0 | 0 | 0 |
| RS | AGAAGT | 0.08676  | 0 | 0 | 0 |
| RT | CGAACT | 0.01556  | 0 | 0 | 0 |
| RT | CGAACG | 0.01132  | 0 | 0 | 0 |
| RT | AGAACG | 0.06082  | 0 | 0 | 0 |
| RT | CGGACC | 0.004243 | 0 | 0 | 0 |
| RT | CGCACG | 0.007072 | 0 | 0 | 0 |
| RT | AGAACA | 0.1556   | 0 | 0 | 0 |
| RT | CGAACC | 0.02122  | 0 | 0 | 0 |
| RT | CGTACT | 0.04809  | 0 | 0 | 0 |
| RT | CGTACC | 0.03112  | 0 | 0 | 0 |
| RT | CGTACA | 0.0297   | 0 | 0 | 0 |
| RT | AGAACT | 0.1711   | 0 | 0 | 0 |
| RT | CGTACG | 0.02122  | 0 | 0 | 0 |
| RT | CGAACA | 0.02546  | 0 | 0 | 0 |
| RT | CGCACT | 0.01414  | 0 | 0 | 0 |
| RT | CGGACA | 0.01273  | 0 | 0 | 0 |
| RT | AGAACC | 0.1061   | 0 | 0 | 0 |
| RT | AGGACA | 0.06931  | 0 | 0 | 0 |
| RT | CGCACC | 0.01414  | 0 | 0 | 0 |
| RT | CGGACT | 0.004243 | 0 | 0 | 0 |
| RT | AGGACC | 0.03253  | 0 | 0 | 0 |
| RT | AGGACG | 0.03819  | 0 | 0 | 0 |
| RT | CGCACA | 0.0198   | 0 | 0 | 0 |
| RT | AGGACT | 0.07921  | 0 | 0 | 0 |
| RT | CGGACG | 0.007072 | 0 | 0 | 0 |
| RV | CGCGTT | 0.02336  | 0 | 0 | 0 |
| RV | CGGGTG | 0.0109   | 0 | 0 | 0 |
| RV | CGCGTC | 0.01713  | 0 | 0 | 0 |
| RV | CGGGTT | 0.01246  | 0 | 0 | 0 |
| RV | CGAGTT | 0.02181  | 0 | 0 | 0 |

|    |        |          |   |   |   |
|----|--------|----------|---|---|---|
| RV | CGGGTC | 0.004673 | 0 | 0 | 0 |
| RV | CGGGTA | 0.01402  | 0 | 0 | 0 |
| RV | CGAGTA | 0.01558  | 0 | 0 | 0 |
| RV | AGAGTG | 0.06854  | 0 | 0 | 0 |
| RV | AGAGTT | 0.176    | 0 | 0 | 0 |
| RV | CGCGTA | 0.004673 | 0 | 0 | 0 |
| RV | CGTGTA | 0.03427  | 0 | 0 | 0 |
| RV | CGTGTG | 0.03894  | 0 | 0 | 0 |
| RV | AGAGTC | 0.09657  | 0 | 0 | 0 |
| RV | CGAGTC | 0.01402  | 0 | 0 | 0 |
| RV | CGTGTC | 0.0405   | 0 | 0 | 0 |
| RV | CGTGTT | 0.08411  | 0 | 0 | 0 |
| RV | AGAGTA | 0.1184   | 0 | 0 | 0 |
| RV | CGAGTG | 0.01713  | 0 | 0 | 0 |
| RV | CGCGTG | 0.007788 | 0 | 0 | 0 |
| RV | AGGGTA | 0.05452  | 0 | 0 | 0 |
| RV | AGGGTC | 0.02336  | 0 | 0 | 0 |
| RV | AGGGTT | 0.06386  | 0 | 0 | 0 |
| RV | AGGGTG | 0.03738  | 0 | 0 | 0 |
| RW | AGATGG | 0.5185   | 0 | 0 | 0 |
| RW | AGGTGG | 0.1259   | 0 | 0 | 0 |
| RW | CGCTGG | 0.07407  | 0 | 0 | 0 |
| RW | CGATGG | 0.06667  | 0 | 0 | 0 |
| RW | CGTTGG | 0.2      | 0 | 0 | 0 |
| RW | CGGTGG | 0.01481  | 0 | 0 | 0 |
| RY | CGGTAC | 0.02484  | 0 | 0 | 0 |
| RY | CGGTAT | 0.02692  | 0 | 0 | 0 |
| RY | AGGTAT | 0.08075  | 0 | 0 | 0 |
| RY | AGGTAC | 0.08489  | 0 | 0 | 0 |
| RY | CGCTAT | 0.04762  | 0 | 0 | 0 |
| RY | CGATAT | 0.04969  | 0 | 0 | 0 |
| RY | CGTTAT | 0.1139   | 0 | 0 | 0 |
| RY | CGATAC | 0.04762  | 0 | 0 | 0 |
| RY | CGTTAC | 0.07246  | 0 | 0 | 0 |
| RY | AGATAT | 0.234    | 0 | 0 | 0 |
| RY | CGCTAC | 0.06004  | 0 | 0 | 0 |
| RY | AGATAC | 0.1573   | 0 | 0 | 0 |
| S* | AGTTGA | 0.05128  | 0 | 0 | 0 |
| S* | TCATAA | 0.2051   | 0 | 0 | 0 |
| S* | AGTTAG | 0.07692  | 0 | 0 | 0 |
| S* | AGTTAA | 0.1026   | 0 | 0 | 0 |
| S* | TCGTAG | 0        | 0 | 0 | 0 |
| S* | TCGTAA | 0.1026   | 0 | 0 | 0 |
| S* | TCATGA | 0.02564  | 0 | 0 | 0 |
| S* | TCCTAA | 0        | 0 | 0 | 0 |
| S* | AGCTAG | 0        | 0 | 0 | 0 |
| S* | AGCTAA | 0.05128  | 0 | 0 | 0 |
| S* | TCCTGA | 0.05128  | 0 | 0 | 0 |
| S* | TCCTAG | 0        | 0 | 0 | 0 |
| S* | TCATAG | 0.02564  | 0 | 0 | 0 |
| S* | TCGTGA | 0        | 0 | 0 | 0 |

|    |        |         |   |   |   |
|----|--------|---------|---|---|---|
| S* | AGCTGA | 0.02564 | 0 | 0 | 0 |
| S* | TCTTAG | 0.05128 | 0 | 0 | 0 |
| S* | TCTTGA | 0.05128 | 0 | 0 | 0 |
| S* | TCTTAA | 0.1795  | 0 | 0 | 0 |
| SA | TCTGCT | 0.1228  | 0 | 0 | 0 |
| SA | TCGGCA | 0.02312 | 0 | 0 | 0 |
| SA | TCTGCG | 0.03685 | 0 | 0 | 0 |
| SA | TCCGCG | 0.01084 | 0 | 0 | 0 |
| SA | AGCGCA | 0.02673 | 0 | 0 | 0 |
| SA | AGTGCG | 0.02601 | 0 | 0 | 0 |
| SA | AGCGCG | 0.01012 | 0 | 0 | 0 |
| SA | TCCGCA | 0.02601 | 0 | 0 | 0 |
| SA | AGCGCC | 0.03685 | 0 | 0 | 0 |
| SA | TCGGCC | 0.01662 | 0 | 0 | 0 |
| SA | TCCGCC | 0.03324 | 0 | 0 | 0 |
| SA | TCAGCT | 0.06647 | 0 | 0 | 0 |
| SA | AGTGCA | 0.05853 | 0 | 0 | 0 |
| SA | TCGGCT | 0.0224  | 0 | 0 | 0 |
| SA | AGTGCC | 0.04118 | 0 | 0 | 0 |
| SA | TCTGCC | 0.06936 | 0 | 0 | 0 |
| SA | AGTGCT | 0.07587 | 0 | 0 | 0 |
| SA | AGCGCT | 0.03902 | 0 | 0 | 0 |
| SA | TCTGCA | 0.09032 | 0 | 0 | 0 |
| SA | TCGGCG | 0.01012 | 0 | 0 | 0 |
| SA | TCCGCT | 0.03613 | 0 | 0 | 0 |
| SA | TCAGCC | 0.03179 | 0 | 0 | 0 |
| SA | TCAGCA | 0.06431 | 0 | 0 | 0 |
| SA | TCAGCG | 0.02529 | 0 | 0 | 0 |
| SC | TCATGT | 0.131   | 0 | 0 | 0 |
| SC | TCATGC | 0.1111  | 0 | 0 | 0 |
| SC | TCTTGT | 0.1746  | 0 | 0 | 0 |
| SC | TCGTGC | 0.01587 | 0 | 0 | 0 |
| SC | AGCTGC | 0.05159 | 0 | 0 | 0 |
| SC | TCCTGT | 0.09524 | 0 | 0 | 0 |
| SC | AGTTGC | 0.06349 | 0 | 0 | 0 |
| SC | TCTTGC | 0.06746 | 0 | 0 | 0 |
| SC | AGCTGT | 0.06349 | 0 | 0 | 0 |
| SC | TCGTGT | 0.05159 | 0 | 0 | 0 |
| SC | TCCTGC | 0.04762 | 0 | 0 | 0 |
| SC | AGTTGT | 0.127   | 0 | 0 | 0 |
| SD | TCTGAT | 0.1772  | 0 | 0 | 0 |
| SD | AGCGAC | 0.03132 | 0 | 0 | 0 |
| SD | TCAGAC | 0.07487 | 0 | 0 | 0 |
| SD | TCTGAC | 0.09778 | 0 | 0 | 0 |
| SD | TCGGAC | 0.02521 | 0 | 0 | 0 |
| SD | TCCGAC | 0.02827 | 0 | 0 | 0 |
| SD | TCGGAT | 0.05118 | 0 | 0 | 0 |
| SD | AGTGAC | 0.0741  | 0 | 0 | 0 |
| SD | TCCGAT | 0.07487 | 0 | 0 | 0 |
| SD | AGTGAT | 0.1566  | 0 | 0 | 0 |
| SD | TCAGAT | 0.1314  | 0 | 0 | 0 |

|    |        |          |   |   |   |
|----|--------|----------|---|---|---|
| SD | AGCGAT | 0.07716  | 0 | 0 | 0 |
| SE | TCTGAG | 0.06772  | 0 | 0 | 0 |
| SE | TCGGAG | 0.02935  | 0 | 0 | 0 |
| SE | TCGGAA | 0.05568  | 0 | 0 | 0 |
| SE | TCTGAA | 0.2002   | 0 | 0 | 0 |
| SE | TCCGAA | 0.06998  | 0 | 0 | 0 |
| SE | AGTGAG | 0.06922  | 0 | 0 | 0 |
| SE | TCAGAG | 0.06095  | 0 | 0 | 0 |
| SE | TCCGAG | 0.02935  | 0 | 0 | 0 |
| SE | AGCGAG | 0.04289  | 0 | 0 | 0 |
| SE | AGCGAA | 0.09105  | 0 | 0 | 0 |
| SE | AGTGAA | 0.1505   | 0 | 0 | 0 |
| SE | TCAGAA | 0.1332   | 0 | 0 | 0 |
| SF | AGTTTC | 0.06403  | 0 | 0 | 0 |
| SF | AGTTTT | 0.1149   | 0 | 0 | 0 |
| SF | TCATTT | 0.1478   | 0 | 0 | 0 |
| SF | AGCTTT | 0.07156  | 0 | 0 | 0 |
| SF | TCTTTT | 0.1347   | 0 | 0 | 0 |
| SF | TCCTTC | 0.06591  | 0 | 0 | 0 |
| SF | TCCTTT | 0.09605  | 0 | 0 | 0 |
| SF | TCATTC | 0.07815  | 0 | 0 | 0 |
| SF | TCGTTT | 0.06403  | 0 | 0 | 0 |
| SF | TCGTTC | 0.03955  | 0 | 0 | 0 |
| SF | TCTTTC | 0.09134  | 0 | 0 | 0 |
| SF | AGCTTC | 0.03202  | 0 | 0 | 0 |
| SG | TCAGGT | 0.08436  | 0 | 0 | 0 |
| SG | TCCGGA | 0.02621  | 0 | 0 | 0 |
| SG | TCCGGG | 0.01229  | 0 | 0 | 0 |
| SG | TCCGGT | 0.05405  | 0 | 0 | 0 |
| SG | TCAGGG | 0.01556  | 0 | 0 | 0 |
| SG | TCCGGC | 0.02375  | 0 | 0 | 0 |
| SG | AGCGGT | 0.04095  | 0 | 0 | 0 |
| SG | AGCGGA | 0.03767  | 0 | 0 | 0 |
| SG | TCGGGA | 0.01392  | 0 | 0 | 0 |
| SG | AGTGGC | 0.03276  | 0 | 0 | 0 |
| SG | AGTGGG | 0.02948  | 0 | 0 | 0 |
| SG | AGTGGA | 0.06061  | 0 | 0 | 0 |
| SG | TCTGGG | 0.0303   | 0 | 0 | 0 |
| SG | TCTGGT | 0.1548   | 0 | 0 | 0 |
| SG | AGTGGT | 0.09091  | 0 | 0 | 0 |
| SG | TCGGGT | 0.02867  | 0 | 0 | 0 |
| SG | TCAGGA | 0.05569  | 0 | 0 | 0 |
| SG | AGCGGC | 0.02867  | 0 | 0 | 0 |
| SG | TCGGGC | 0.01147  | 0 | 0 | 0 |
| SG | TCGGGG | 0.007371 | 0 | 0 | 0 |
| SG | TCAGGC | 0.03522  | 0 | 0 | 0 |
| SG | AGCGGG | 0.01802  | 0 | 0 | 0 |
| SG | TCTGGC | 0.04668  | 0 | 0 | 0 |
| SG | TCTGGA | 0.06061  | 0 | 0 | 0 |
| SH | TCACAT | 0.1507   | 0 | 1 | 0 |
| SH | AGTCAT | 0.07537  | 0 | 1 | 0 |

|    |        |          |   |   |        |
|----|--------|----------|---|---|--------|
| SH | TCACAC | 0.05882  | 0 | 1 | 0      |
| SH | TCTCAT | 0.1599   | 0 | 1 | 0      |
| SH | AGCCAT | 0.07353  | 0 | 1 | 0      |
| SH | TCCCAC | 0.05515  | 0 | 1 | 0      |
| SH | TCCCAT | 0.09743  | 0 | 1 | 0      |
| SH | TCTCAC | 0.1029   | 0 | 1 | 0      |
| SH | AGTCAC | 0.05882  | 1 | 1 | 1      |
| SH | AGCCAC | 0.02941  | 0 | 1 | 0      |
| SH | TCGCAC | 0.06801  | 0 | 1 | 0      |
| SH | TCGCAT | 0.06985  | 0 | 1 | 0      |
| SI | TCCATA | 0.05714  | 0 | 1 | 0      |
| SI | AGCATT | 0.05079  | 1 | 1 | 1      |
| SI | TCAATT | 0.08571  | 0 | 1 | 0      |
| SI | AGCATA | 0.0419   | 0 | 1 | 0      |
| SI | TCTATC | 0.06159  | 0 | 1 | 0      |
| SI | AGCATC | 0.02794  | 0 | 1 | 0      |
| SI | TCTATA | 0.06413  | 0 | 1 | 0      |
| SI | AGTATC | 0.03556  | 0 | 1 | 0      |
| SI | TCCATT | 0.09714  | 0 | 1 | 0      |
| SI | TCAATA | 0.06159  | 0 | 1 | 0      |
| SI | AGTATT | 0.06603  | 0 | 1 | 0      |
| SI | TCTATT | 0.1029   | 0 | 1 | 0      |
| SI | AGTATA | 0.0546   | 0 | 1 | 0      |
| SI | TCGATT | 0.03746  | 0 | 1 | 0      |
| SI | TCAATC | 0.04889  | 0 | 1 | 0      |
| SI | TCCATC | 0.06349  | 0 | 1 | 0      |
| SI | TCGATA | 0.02603  | 0 | 1 | 0      |
| SI | TCGATC | 0.01714  | 0 | 1 | 0      |
| SK | TCAAAG | 0.08836  | 0 | 0 | 0      |
| SK | TCCAAG | 0.07831  | 0 | 0 | 0      |
| SK | TCGAAA | 0.07037  | 0 | 0 | 0      |
| SK | TCCAAA | 0.1217   | 0 | 0 | 0      |
| SK | AGTAAA | 0.1079   | 0 | 0 | 0      |
| SK | TCTAAG | 0.07566  | 0 | 0 | 0      |
| SK | TCAAAA | 0.1254   | 0 | 0 | 0      |
| SK | AGCAAA | 0.08095  | 0 | 0 | 0      |
| SK | AGTAAG | 0.04339  | 0 | 0 | 0      |
| SK | AGCAAG | 0.04127  | 0 | 0 | 0      |
| SK | TCGAAG | 0.04868  | 0 | 0 | 0      |
| SK | TCTAAA | 0.118    | 0 | 0 | 0      |
| SL | TCACTG | 0.02916  | 0 | 3 | 0      |
| SL | AGTCTA | 0.009863 | 0 | 3 | 0      |
| SL | TCTCTT | 0.03259  | 0 | 3 | 0      |
| SL | TCTCTC | 0.01329  | 0 | 3 | 0      |
| SL | AGCCTA | 0.01072  | 0 | 3 | 0      |
| SL | TCTTTA | 0.08491  | 1 | 3 | 0.3333 |
| SL | TCGTTG | 0.03173  | 0 | 3 | 0      |
| SL | AGTCTT | 0.02316  | 0 | 3 | 0      |
| SL | TCTTTG | 0.09134  | 0 | 3 | 0      |
| SL | TCTCTA | 0.03516  | 0 | 3 | 0      |
| SL | TCTCTG | 0.02959  | 0 | 3 | 0      |

|    |        |          |   |   |        |
|----|--------|----------|---|---|--------|
| SL | AGTCTG | 0.01201  | 0 | 3 | 0      |
| SL | TCACTT | 0.03645  | 0 | 3 | 0      |
| SL | AGTCTC | 0.006432 | 0 | 3 | 0      |
| SL | TCCCTG | 0.01587  | 0 | 3 | 0      |
| SL | AGCCTG | 0.01072  | 0 | 3 | 0      |
| SL | AGCCTC | 0.004717 | 0 | 3 | 0      |
| SL | AGCTTA | 0.02101  | 0 | 3 | 0      |
| SL | AGTTTG | 0.04331  | 0 | 3 | 0      |
| SL | TCCTTA | 0.03774  | 0 | 3 | 0      |
| SL | AGCCTT | 0.01286  | 0 | 3 | 0      |
| SL | TCGCTT | 0.01372  | 0 | 3 | 0      |
| SL | TCGCTA | 0.02058  | 0 | 3 | 0      |
| SL | AGCTTG | 0.02015  | 0 | 3 | 0      |
| SL | TCGCTC | 0.005575 | 0 | 3 | 0      |
| SL | TCGCTG | 0.01458  | 0 | 3 | 0      |
| SL | TCGTTA | 0.03473  | 0 | 3 | 0      |
| SL | AGTTTA | 0.04545  | 0 | 3 | 0      |
| SL | TCCTTG | 0.03431  | 0 | 3 | 0      |
| SL | TCATTA | 0.06861  | 0 | 3 | 0      |
| SL | TCACTA | 0.02702  | 0 | 3 | 0      |
| SL | TCCCTA | 0.02058  | 0 | 3 | 0      |
| SL | TCATTG | 0.06346  | 1 | 3 | 0.3333 |
| SL | TCACTC | 0.01715  | 0 | 3 | 0      |
| SL | TCCCTT | 0.01544  | 1 | 3 | 0.3333 |
| SL | TCCCTC | 0.006003 | 0 | 3 | 0      |
| SM | TCGATG | 0.1201   | 0 | 0 | 0      |
| SM | AGTATG | 0.1339   | 0 | 0 | 0      |
| SM | TCAATG | 0.2697   | 0 | 0 | 0      |
| SM | AGCATG | 0.08268  | 0 | 0 | 0      |
| SM | TCTATG | 0.2205   | 0 | 0 | 0      |
| SM | TCCATG | 0.1732   | 0 | 0 | 0      |
| SN | TCCAAC | 0.0741   | 0 | 0 | 0      |
| SN | TCAAAT | 0.1278   | 0 | 0 | 0      |
| SN | TCAAAC | 0.07585  | 0 | 0 | 0      |
| SN | TCGAAC | 0.03092  | 0 | 0 | 0      |
| SN | TCCAAT | 0.1068   | 0 | 0 | 0      |
| SN | TCTAAC | 0.07818  | 0 | 0 | 0      |
| SN | TCGAAT | 0.06418  | 0 | 0 | 0      |
| SN | TCTAAT | 0.1319   | 0 | 0 | 0      |
| SN | AGTAAT | 0.1039   | 0 | 0 | 0      |
| SN | AGTAAC | 0.06359  | 0 | 0 | 0      |
| SN | AGCAAC | 0.06184  | 0 | 0 | 0      |
| SN | AGCAAT | 0.0811   | 0 | 0 | 0      |
| SP | TCGCCG | 0.0178   | 0 | 0 | 0      |
| SP | TCGCCC | 0.01695  | 0 | 0 | 0      |
| SP | TCGCCA | 0.04492  | 0 | 0 | 0      |
| SP | TCGCCT | 0.04746  | 0 | 0 | 0      |
| SP | TCACCC | 0.03814  | 0 | 0 | 0      |
| SP | TCACCT | 0.08136  | 0 | 0 | 0      |
| SP | TCACCG | 0.02542  | 0 | 0 | 0      |
| SP | AGTCCA | 0.03559  | 0 | 0 | 0      |



|    |        |          |   |   |   |
|----|--------|----------|---|---|---|
| SP | AGTCCC | 0.01864  | 0 | 0 | 0 |
| SP | TCCCCG | 0.01271  | 0 | 0 | 0 |
| SP | AGCCCG | 0.008475 | 0 | 0 | 0 |
| SP | AGCCCC | 0.01525  | 0 | 0 | 0 |
| SP | AGCCCA | 0.0339   | 0 | 0 | 0 |
| SP | AGCCCT | 0.02034  | 0 | 0 | 0 |
| SP | AGTCCT | 0.03305  | 0 | 0 | 0 |
| SP | TCCCCC | 0.02119  | 0 | 0 | 0 |
| SP | TCCCCT | 0.02797  | 0 | 0 | 0 |
| SP | AGTCCG | 0.01525  | 0 | 0 | 0 |
| SP | TCCCCA | 0.0322   | 0 | 0 | 0 |
| SP | TCACCA | 0.08983  | 0 | 0 | 0 |
| SP | TCTCCA | 0.161    | 0 | 0 | 0 |
| SP | TCTCCC | 0.06271  | 0 | 0 | 0 |
| SP | TCTCCG | 0.04237  | 0 | 0 | 0 |
| SP | TCTCCT | 0.09746  | 0 | 0 | 0 |
| SQ | AGTCAG | 0.02422  | 0 | 0 | 0 |
| SQ | TCACAA | 0.1604   | 0 | 0 | 0 |
| SQ | TCACAG | 0.07064  | 0 | 0 | 0 |
| SQ | AGTCAA | 0.08375  | 0 | 0 | 0 |
| SQ | TCGCAG | 0.04743  | 0 | 0 | 0 |
| SQ | TCGCAA | 0.07972  | 0 | 0 | 0 |
| SQ | TCTCAG | 0.09082  | 0 | 0 | 0 |
| SQ | TCTCAA | 0.2462   | 0 | 0 | 0 |
| SQ | AGCCAG | 0.01615  | 0 | 0 | 0 |
| SQ | TCCCAA | 0.09384  | 0 | 0 | 0 |
| SQ | TCCCAG | 0.03935  | 0 | 0 | 0 |
| SQ | AGCCAA | 0.04743  | 0 | 0 | 0 |
| SR | AGCCGG | 0.005952 | 0 | 0 | 0 |
| SR | TCTCGA | 0.02806  | 0 | 0 | 0 |
| SR | AGCCGC | 0.008503 | 0 | 0 | 0 |
| SR | TCGCGA | 0.008503 | 0 | 0 | 0 |
| SR | TCGCGC | 0.006803 | 0 | 0 | 0 |
| SR | TCGCGT | 0.006803 | 0 | 0 | 0 |
| SR | AGTCGT | 0.01786  | 0 | 0 | 0 |
| SR | TCTCGC | 0.02466  | 0 | 0 | 0 |
| SR | TCCCGT | 0.02296  | 0 | 0 | 0 |
| SR | TCCCGG | 0.005102 | 0 | 0 | 0 |
| SR | TCCCGC | 0.0119   | 0 | 0 | 0 |
| SR | AGCCGA | 0.005952 | 0 | 0 | 0 |
| SR | TCAAGA | 0.1131   | 0 | 0 | 0 |
| SR | AGCAGA | 0.04422  | 0 | 0 | 0 |
| SR | AGCAGG | 0.03231  | 0 | 0 | 0 |
| SR | TCAAGG | 0.05102  | 0 | 0 | 0 |
| SR | TCTCGT | 0.05357  | 0 | 0 | 0 |
| SR | AGTCGA | 0.008503 | 0 | 0 | 0 |
| SR | TCTCGG | 0.0102   | 0 | 0 | 0 |
| SR | AGCCGT | 0.0119   | 0 | 0 | 0 |
| SR | TCGAGA | 0.05867  | 0 | 0 | 0 |
| SR | AGTAGG | 0.03316  | 0 | 0 | 0 |
| SR | TCCCGA | 0.009354 | 0 | 0 | 0 |

|    |         |          |   |   |   |
|----|---------|----------|---|---|---|
| SR | AGTCGC  | 0.0119   | 0 | 0 | 0 |
| SR | AGTCGG  | 0.008503 | 0 | 0 | 0 |
| SR | TCGAGG  | 0.03146  | 0 | 0 | 0 |
| SR | TCGCGG  | 0.002551 | 0 | 0 | 0 |
| SR | TCTAGA  | 0.08418  | 0 | 0 | 0 |
| SR | TCCAGA  | 0.07823  | 0 | 0 | 0 |
| SR | TCTAGG  | 0.04252  | 0 | 0 | 0 |
| SR | AGTAGA  | 0.06378  | 0 | 0 | 0 |
| SR | TCACGC  | 0.007653 | 0 | 0 | 0 |
| SR | TCCAGG  | 0.02806  | 0 | 0 | 0 |
| SR | TCACGT  | 0.01701  | 0 | 0 | 0 |
| SR | TCACGG  | 0.007653 | 0 | 0 | 0 |
| SR | TCACGA  | 0.03741  | 0 | 0 | 0 |
| SS | TCAAGC  | 0.02052  | 0 | 0 | 0 |
| SS | AGTTCT  | 0.03431  | 0 | 0 | 0 |
| SS | AGCTCT  | 0.0222   | 0 | 0 | 0 |
| SS | TCCAGT  | 0.02388  | 0 | 0 | 0 |
| SS | TCATCT  | 0.05382  | 0 | 0 | 0 |
| SS | TCATCG  | 0.02422  | 0 | 0 | 0 |
| SS | TCCTCG  | 0.01413  | 0 | 0 | 0 |
| SS | TCCTCC  | 0.02388  | 0 | 0 | 0 |
| SS | TCCTCA  | 0.02893  | 0 | 0 | 0 |
| SS | TCTTCA  | 0.05752  | 0 | 0 | 0 |
| SS | TCCTCT  | 0.04205  | 0 | 0 | 0 |
| SS | TCTTCC  | 0.05012  | 0 | 0 | 0 |
| SS | TCGTCT  | 0.01884  | 0 | 0 | 0 |
| SS | TCATCC  | 0.03565  | 0 | 0 | 0 |
| SS | TCATCA  | 0.05886  | 0 | 0 | 0 |
| SS | AGTAGT  | 0.02725  | 0 | 0 | 0 |
| SS | TCGTCTG | 0.007736 | 0 | 0 | 0 |
| SS | AGTAGC  | 0.02052  | 0 | 0 | 0 |
| SS | TCCAGC  | 0.0222   | 0 | 0 | 0 |
| SS | TCTTCG  | 0.02825  | 0 | 0 | 0 |
| SS | TCAAGT  | 0.03364  | 0 | 0 | 0 |
| SS | AGCAGC  | 0.01715  | 0 | 0 | 0 |
| SS | TCTTCT  | 0.08241  | 0 | 0 | 0 |
| SS | AGTTCA  | 0.037    | 0 | 0 | 0 |
| SS | AGTTCC  | 0.01884  | 0 | 0 | 0 |
| SS | TCTAGT  | 0.0333   | 0 | 0 | 0 |
| SS | TCGAGC  | 0.009418 | 0 | 0 | 0 |
| SS | AGCAGT  | 0.02321  | 0 | 0 | 0 |
| SS | TCGTCA  | 0.01951  | 0 | 0 | 0 |
| SS | TCGTCC  | 0.01312  | 0 | 0 | 0 |
| SS | TCGAGT  | 0.01379  | 0 | 0 | 0 |
| SS | AGCTCG  | 0.01211  | 0 | 0 | 0 |
| SS | AGTTTCG | 0.01043  | 0 | 0 | 0 |
| SS | AGCTCA  | 0.02455  | 0 | 0 | 0 |
| SS | TCTAGC  | 0.02153  | 0 | 0 | 0 |
| SS | AGCTCC  | 0.01514  | 0 | 0 | 0 |
| ST | TCAACT  | 0.07628  | 0 | 0 | 0 |
| ST | AGTACT  | 0.04431  | 0 | 0 | 0 |

|    |        |          |   |   |   |
|----|--------|----------|---|---|---|
| ST | TCAACA | 0.04936  | 0 | 0 | 0 |
| ST | TCCACT | 0.07403  | 0 | 0 | 0 |
| ST | TCAACC | 0.02019  | 0 | 0 | 0 |
| ST | TCAACG | 0.02524  | 0 | 0 | 0 |
| ST | AGCACT | 0.04319  | 0 | 0 | 0 |
| ST | TCCACG | 0.0286   | 0 | 0 | 0 |
| ST | TCCACC | 0.04655  | 0 | 0 | 0 |
| ST | AGTACC | 0.03926  | 0 | 0 | 0 |
| ST | AGTACA | 0.05216  | 0 | 0 | 0 |
| ST | TCCACA | 0.06282  | 0 | 0 | 0 |
| ST | AGTACG | 0.02075  | 0 | 0 | 0 |
| ST | TCGACC | 0.0101   | 0 | 0 | 0 |
| ST | TCTACC | 0.05384  | 0 | 0 | 0 |
| ST | TCGACT | 0.02468  | 0 | 0 | 0 |
| ST | TCTACA | 0.06842  | 0 | 0 | 0 |
| ST | TCGACA | 0.02468  | 0 | 0 | 0 |
| ST | TCGACG | 0.007291 | 0 | 0 | 0 |
| ST | TCTACT | 0.0903   | 0 | 0 | 0 |
| ST | TCTACG | 0.03814  | 0 | 0 | 0 |
| ST | AGCACG | 0.02748  | 0 | 0 | 0 |
| ST | AGCACA | 0.03982  | 0 | 0 | 0 |
| ST | AGCACC | 0.03253  | 0 | 0 | 0 |
| SV | AGCGTT | 0.03926  | 0 | 0 | 0 |
| SV | TCGGTT | 0.02848  | 0 | 0 | 0 |
| SV | TCGGTG | 0.01386  | 0 | 0 | 0 |
| SV | AGCGTG | 0.01694  | 0 | 0 | 0 |
| SV | AGCGTC | 0.01232  | 0 | 0 | 0 |
| SV | TCGGTC | 0.008468 | 0 | 0 | 0 |
| SV | TCAGTG | 0.04157  | 0 | 0 | 0 |
| SV | TCTGTG | 0.05235  | 0 | 0 | 0 |
| SV | TCTGTC | 0.05851  | 0 | 0 | 0 |
| SV | TCTGTT | 0.1209   | 0 | 0 | 0 |
| SV | TCAGTT | 0.06005  | 0 | 0 | 0 |
| SV | TCAGTC | 0.02386  | 0 | 0 | 0 |
| SV | AGCGTA | 0.02617  | 0 | 0 | 0 |
| SV | TCAGTA | 0.04927  | 0 | 0 | 0 |
| SV | TCGGTA | 0.02925  | 0 | 0 | 0 |
| SV | AGTGTT | 0.07698  | 0 | 0 | 0 |
| SV | TCCGTT | 0.05928  | 0 | 0 | 0 |
| SV | TCTGTA | 0.05851  | 0 | 0 | 0 |
| SV | AGTGTA | 0.04927  | 0 | 0 | 0 |
| SV | TCCGTG | 0.02617  | 0 | 0 | 0 |
| SV | AGTGTG | 0.03772  | 0 | 0 | 0 |
| SV | TCCGTA | 0.0331   | 0 | 0 | 0 |
| SV | TCCGTC | 0.03002  | 0 | 0 | 0 |
| SV | AGTGTC | 0.04773  | 0 | 0 | 0 |
| SW | TCGTGG | 0.1222   | 0 | 0 | 0 |
| SW | TCCTGG | 0.1403   | 0 | 0 | 0 |
| SW | AGTTGG | 0.1448   | 0 | 0 | 0 |
| SW | TCTTGG | 0.2443   | 0 | 0 | 0 |
| SW | AGCTGG | 0.1086   | 0 | 0 | 0 |

|    |        |         |   |   |   |
|----|--------|---------|---|---|---|
| SW | TCATGG | 0.2398  | 0 | 0 | 0 |
| SY | TCATAC | 0.1005  | 0 | 0 | 0 |
| SY | TCCTAC | 0.05094 | 0 | 0 | 0 |
| SY | TCGTAT | 0.07507 | 0 | 0 | 0 |
| SY | TCTTAT | 0.1582  | 0 | 0 | 0 |
| SY | TCTTAC | 0.08981 | 0 | 0 | 0 |
| SY | AGTTAC | 0.07105 | 0 | 0 | 0 |
| SY | AGTTAT | 0.1005  | 0 | 0 | 0 |
| SY | TCCTAT | 0.07641 | 0 | 0 | 0 |
| SY | TCATAT | 0.1247  | 0 | 0 | 0 |
| SY | AGCTAC | 0.04424 | 0 | 0 | 0 |
| SY | AGCTAT | 0.06032 | 0 | 0 | 0 |
| SY | TCGTAC | 0.04826 | 0 | 0 | 0 |
| T* | ACCTAG | 0       | 0 | 0 | 0 |
| T* | ACCTGA | 0       | 0 | 0 | 0 |
| T* | ACCTAA | 0.04167 | 0 | 0 | 0 |
| T* | ACTTAA | 0.1667  | 0 | 0 | 0 |
| T* | ACTTAG | 0.08333 | 0 | 0 | 0 |
| T* | ACATGA | 0.08333 | 0 | 0 | 0 |
| T* | ACTTGA | 0.2083  | 0 | 0 | 0 |
| T* | ACGTAA | 0.125   | 0 | 0 | 0 |
| T* | ACATAA | 0.125   | 0 | 0 | 0 |
| T* | ACATAG | 0.08333 | 0 | 0 | 0 |
| T* | ACGTGA | 0.04167 | 0 | 0 | 0 |
| T* | ACGTAG | 0.04167 | 0 | 0 | 0 |
| TA | ACTGCT | 0.143   | 0 | 0 | 0 |
| TA | ACCGCT | 0.06848 | 0 | 0 | 0 |
| TA | ACCGCG | 0.02115 | 0 | 0 | 0 |
| TA | ACGGCA | 0.03726 | 0 | 0 | 0 |
| TA | ACGGCC | 0.01913 | 0 | 0 | 0 |
| TA | ACGGCT | 0.04935 | 0 | 0 | 0 |
| TA | ACGGCG | 0.01913 | 0 | 0 | 0 |
| TA | ACCGCC | 0.03625 | 0 | 0 | 0 |
| TA | ACCGCA | 0.05337 | 0 | 0 | 0 |
| TA | ACTGCA | 0.1168  | 0 | 0 | 0 |
| TA | ACTGCC | 0.09466 | 0 | 0 | 0 |
| TA | ACAGCA | 0.1178  | 0 | 0 | 0 |
| TA | ACAGCC | 0.05035 | 0 | 0 | 0 |
| TA | ACAGCT | 0.08661 | 0 | 0 | 0 |
| TA | ACAGCG | 0.0433  | 0 | 0 | 0 |
| TA | ACTGCG | 0.0433  | 0 | 0 | 0 |
| TC | ACTTGT | 0.1837  | 0 | 0 | 0 |
| TC | ACCTGT | 0.1378  | 0 | 0 | 0 |
| TC | ACCTGC | 0.08163 | 0 | 0 | 0 |
| TC | ACTTGC | 0.1071  | 0 | 0 | 0 |
| TC | ACATGT | 0.2041  | 0 | 0 | 0 |
| TC | ACGTGT | 0.08163 | 0 | 0 | 0 |
| TC | ACGTGC | 0.06122 | 0 | 0 | 0 |
| TC | ACATGC | 0.1429  | 0 | 0 | 0 |
| TD | ACCGAT | 0.1088  | 0 | 0 | 0 |
| TD | ACGGAC | 0.05669 | 0 | 0 | 0 |

|    |        |         |   |   |   |
|----|--------|---------|---|---|---|
| TD | ACGGAT | 0.09637 | 0 | 0 | 0 |
| TD | ACCGAC | 0.06463 | 0 | 0 | 0 |
| TD | ACAGAC | 0.09524 | 0 | 0 | 0 |
| TD | ACTGAC | 0.11    | 0 | 0 | 0 |
| TD | ACAGAT | 0.2222  | 0 | 0 | 0 |
| TD | ACTGAT | 0.246   | 0 | 0 | 0 |
| TE | ACAGAA | 0.2061  | 0 | 0 | 0 |
| TE | ACGGAG | 0.04123 | 0 | 0 | 0 |
| TE | ACGGAA | 0.1004  | 0 | 0 | 0 |
| TE | ACCGAA | 0.1205  | 0 | 0 | 0 |
| TE | ACAGAG | 0.08879 | 0 | 0 | 0 |
| TE | ACCGAG | 0.05708 | 0 | 0 | 0 |
| TE | ACTGAA | 0.2928  | 0 | 0 | 0 |
| TE | ACTGAG | 0.09302 | 0 | 0 | 0 |
| TF | ACCTTC | 0.08022 | 0 | 0 | 0 |
| TF | ACCTTT | 0.0899  | 0 | 0 | 0 |
| TF | ACATTC | 0.08437 | 0 | 0 | 0 |
| TF | ACGTTT | 0.08852 | 0 | 0 | 0 |
| TF | ACGTTC | 0.05256 | 0 | 0 | 0 |
| TF | ACATTT | 0.2199  | 0 | 0 | 0 |
| TF | ACTTTC | 0.1701  | 0 | 0 | 0 |
| TF | ACTTTT | 0.2144  | 0 | 0 | 0 |
| TG | ACAGGG | 0.04242 | 0 | 0 | 0 |
| TG | ACTGGA | 0.08606 | 0 | 0 | 0 |
| TG | ACGGGA | 0.03879 | 0 | 0 | 0 |
| TG | ACCGGC | 0.03636 | 0 | 0 | 0 |
| TG | ACGGGG | 0.02061 | 0 | 0 | 0 |
| TG | ACCGGA | 0.04121 | 0 | 0 | 0 |
| TG | ACTGGC | 0.06061 | 0 | 0 | 0 |
| TG | ACCGGG | 0.01818 | 0 | 0 | 0 |
| TG | ACAGGT | 0.143   | 0 | 0 | 0 |
| TG | ACGGGT | 0.04485 | 0 | 0 | 0 |
| TG | ACAGGA | 0.06788 | 0 | 0 | 0 |
| TG | ACTGGG | 0.05697 | 0 | 0 | 0 |
| TG | ACAGGC | 0.0703  | 0 | 0 | 0 |
| TG | ACTGGT | 0.1782  | 0 | 0 | 0 |
| TG | ACGGGC | 0.01939 | 0 | 0 | 0 |
| TG | ACCGGT | 0.07515 | 0 | 0 | 0 |
| TH | ACCCAT | 0.113   | 0 | 0 | 0 |
| TH | ACTCAC | 0.09635 | 0 | 0 | 0 |
| TH | ACCCAC | 0.05648 | 0 | 0 | 0 |
| TH | ACACAC | 0.0897  | 0 | 0 | 0 |
| TH | ACTCAT | 0.1894  | 0 | 0 | 0 |
| TH | ACGCAT | 0.1528  | 0 | 0 | 0 |
| TH | ACACAT | 0.2658  | 0 | 0 | 0 |
| TH | ACGCAC | 0.03654 | 0 | 0 | 0 |
| TI | ACAATA | 0.09109 | 0 | 0 | 0 |
| TI | ACAATC | 0.06202 | 0 | 0 | 0 |
| TI | ACTATA | 0.07849 | 0 | 0 | 0 |
| TI | ACGATT | 0.04554 | 0 | 0 | 0 |
| TI | ACGATA | 0.05233 | 0 | 0 | 0 |

|    |        |          |   |   |   |
|----|--------|----------|---|---|---|
| TI | ACGATC | 0.01453  | 0 | 0 | 0 |
| TI | ACAATT | 0.1395   | 0 | 0 | 0 |
| TI | ACTATC | 0.1017   | 0 | 0 | 0 |
| TI | ACCATA | 0.08043  | 0 | 0 | 0 |
| TI | ACCATC | 0.07171  | 0 | 0 | 0 |
| TI | ACCATT | 0.1027   | 0 | 0 | 0 |
| TI | ACTATT | 0.1599   | 0 | 0 | 0 |
| TK | ACTAAA | 0.1438   | 0 | 0 | 0 |
| TK | ACTAAG | 0.09069  | 0 | 0 | 0 |
| TK | ACAAAA | 0.1855   | 0 | 0 | 0 |
| TK | ACCAAG | 0.125    | 0 | 0 | 0 |
| TK | ACAAAG | 0.143    | 0 | 0 | 0 |
| TK | ACGAAA | 0.09804  | 0 | 0 | 0 |
| TK | ACCAAA | 0.152    | 0 | 0 | 0 |
| TK | ACGAAG | 0.06209  | 0 | 0 | 0 |
| TL | ACCTTG | 0.05143  | 0 | 0 | 0 |
| TL | ACATTA | 0.07682  | 0 | 0 | 0 |
| TL | ACATTG | 0.07943  | 0 | 0 | 0 |
| TL | ACCCTC | 0.005208 | 0 | 0 | 0 |
| TL | ACCCTA | 0.02018  | 0 | 0 | 0 |
| TL | ACCTTA | 0.05013  | 0 | 0 | 0 |
| TL | ACACTG | 0.0319   | 0 | 0 | 0 |
| TL | ACGCTC | 0.00651  | 0 | 0 | 0 |
| TL | ACGCTA | 0.02539  | 0 | 0 | 0 |
| TL | ACGCTT | 0.02344  | 0 | 0 | 0 |
| TL | ACGCTG | 0.02344  | 0 | 0 | 0 |
| TL | ACTTTA | 0.1322   | 0 | 0 | 0 |
| TL | ACGTTG | 0.04297  | 0 | 0 | 0 |
| TL | ACCCTT | 0.02214  | 0 | 0 | 0 |
| TL | ACTCTA | 0.04297  | 0 | 0 | 0 |
| TL | ACTCTC | 0.02474  | 0 | 0 | 0 |
| TL | ACACTC | 0.01758  | 0 | 0 | 0 |
| TL | ACTTTG | 0.1211   | 0 | 0 | 0 |
| TL | ACACTT | 0.04036  | 0 | 0 | 0 |
| TL | ACACTA | 0.04232  | 0 | 0 | 0 |
| TL | ACGTTA | 0.04036  | 0 | 0 | 0 |
| TL | ACTCTG | 0.02409  | 0 | 0 | 0 |
| TL | ACCCTG | 0.02279  | 0 | 0 | 0 |
| TL | ACTCTT | 0.03255  | 0 | 0 | 0 |
| TM | ACCATG | 0.2528   | 0 | 0 | 0 |
| TM | ACAATG | 0.3309   | 0 | 0 | 0 |
| TM | ACTATG | 0.2714   | 0 | 0 | 0 |
| TM | ACGATG | 0.145    | 0 | 0 | 0 |
| TN | ACTAAC | 0.09962  | 0 | 0 | 0 |
| TN | ACAAAC | 0.1357   | 0 | 0 | 0 |
| TN | ACTAAT | 0.167    | 0 | 0 | 0 |
| TN | ACCAAT | 0.1414   | 0 | 0 | 0 |
| TN | ACGAAC | 0.05693  | 0 | 0 | 0 |
| TN | ACCAAC | 0.1034   | 0 | 0 | 0 |
| TN | ACGAAT | 0.08918  | 0 | 0 | 0 |
| TN | ACAAAT | 0.2068   | 0 | 0 | 0 |

|    |        |          |   |   |   |
|----|--------|----------|---|---|---|
| TP | ACACCT | 0.1306   | 0 | 1 | 0 |
| TP | ACGCCG | 0.02567  | 0 | 1 | 0 |
| TP | ACCCCC | 0.0279   | 0 | 1 | 0 |
| TP | ACGCCT | 0.06362  | 0 | 1 | 0 |
| TP | ACGCCC | 0.0279   | 0 | 1 | 0 |
| TP | ACACCG | 0.0346   | 0 | 1 | 0 |
| TP | ACCCCA | 0.05692  | 0 | 1 | 0 |
| TP | ACTCCA | 0.1808   | 1 | 1 | 1 |
| TP | ACGCCA | 0.04911  | 0 | 1 | 0 |
| TP | ACCCCG | 0.01116  | 0 | 1 | 0 |
| TP | ACTCCC | 0.04129  | 0 | 1 | 0 |
| TP | ACTCCG | 0.03348  | 0 | 1 | 0 |
| TP | ACCCCT | 0.04018  | 0 | 1 | 0 |
| TP | ACACCC | 0.03795  | 0 | 1 | 0 |
| TP | ACACCA | 0.1462   | 0 | 1 | 0 |
| TP | ACTCCT | 0.09263  | 0 | 1 | 0 |
| TQ | ACGCAG | 0.06198  | 0 | 0 | 0 |
| TQ | ACCCAG | 0.05695  | 0 | 0 | 0 |
| TQ | ACACAG | 0.09715  | 0 | 0 | 0 |
| TQ | ACGCAA | 0.1005   | 0 | 0 | 0 |
| TQ | ACCCAA | 0.1625   | 0 | 0 | 0 |
| TQ | ACTCAG | 0.0871   | 0 | 0 | 0 |
| TQ | ACTCAA | 0.2546   | 0 | 0 | 0 |
| TQ | ACACAA | 0.1792   | 0 | 0 | 0 |
| TR | ACCCGC | 0.007289 | 0 | 1 | 0 |
| TR | ACCCGT | 0.02041  | 0 | 1 | 0 |
| TR | ACCCGG | 0.004373 | 0 | 1 | 0 |
| TR | ACCCGA | 0.007289 | 0 | 1 | 0 |
| TR | ACGCGA | 0.007289 | 0 | 1 | 0 |
| TR | ACACGG | 0.01458  | 0 | 1 | 0 |
| TR | ACACGC | 0.02041  | 0 | 1 | 0 |
| TR | ACACGT | 0.0379   | 0 | 1 | 0 |
| TR | ACGCGT | 0.01603  | 0 | 1 | 0 |
| TR | ACACGA | 0.01166  | 0 | 1 | 0 |
| TR | ACTAGA | 0.1312   | 0 | 1 | 0 |
| TR | ACTAGG | 0.04956  | 0 | 1 | 0 |
| TR | ACTCGT | 0.04082  | 0 | 1 | 0 |
| TR | ACTCGG | 0.01603  | 0 | 1 | 0 |
| TR | ACTCGC | 0.01749  | 0 | 1 | 0 |
| TR | ACTCGA | 0.01895  | 0 | 1 | 0 |
| TR | ACGCGC | 0.002915 | 0 | 1 | 0 |
| TR | ACGCGG | 0.01166  | 0 | 1 | 0 |
| TR | ACCAGG | 0.04519  | 0 | 1 | 0 |
| TR | ACAAGA | 0.2201   | 1 | 1 | 1 |
| TR | ACGAGA | 0.0656   | 0 | 1 | 0 |
| TR | ACGAGG | 0.04227  | 0 | 1 | 0 |
| TR | ACCAGA | 0.09913  | 0 | 1 | 0 |
| TR | ACAAGG | 0.09184  | 0 | 1 | 0 |
| TS | ACGTCA | 0.03595  | 0 | 1 | 0 |
| TS | ACGTCT | 0.0281   | 0 | 1 | 0 |
| TS | ACGTCC | 0.01176  | 0 | 1 | 0 |

|    |        |         |   |   |   |
|----|--------|---------|---|---|---|
| TS | ACGTCC | 0.01503 | 0 | 1 | 0 |
| TS | ACCTCG | 0.01373 | 0 | 1 | 0 |
| TS | ACAAGC | 0.0281  | 0 | 1 | 0 |
| TS | ACAAGT | 0.06209 | 0 | 1 | 0 |
| TS | ACCTCT | 0.05882 | 0 | 1 | 0 |
| TS | ACCTCC | 0.0268  | 0 | 1 | 0 |
| TS | ACCTCA | 0.05098 | 0 | 1 | 0 |
| TS | ACGAGT | 0.02222 | 0 | 1 | 0 |
| TS | ACCAGT | 0.03007 | 0 | 1 | 0 |
| TS | ACATCA | 0.07908 | 0 | 1 | 0 |
| TS | ACATCC | 0.04183 | 0 | 1 | 0 |
| TS | ACATCT | 0.07059 | 0 | 1 | 0 |
| TS | ACATCG | 0.02353 | 0 | 1 | 0 |
| TS | ACCAGC | 0.01765 | 1 | 1 | 1 |
| TS | ACTAGC | 0.02745 | 0 | 1 | 0 |
| TS | ACTTCG | 0.02484 | 0 | 1 | 0 |
| TS | ACTTCT | 0.1216  | 0 | 1 | 0 |
| TS | ACTTCC | 0.05882 | 0 | 1 | 0 |
| TS | ACTTCA | 0.0817  | 0 | 1 | 0 |
| TS | ACTAGT | 0.05163 | 0 | 1 | 0 |
| TS | ACGAGC | 0.01765 | 0 | 1 | 0 |
| TT | ACGACG | 0.01921 | 0 | 0 | 0 |
| TT | ACGACT | 0.0259  | 0 | 0 | 0 |
| TT | ACGACC | 0.01754 | 0 | 0 | 0 |
| TT | ACGACA | 0.04094 | 0 | 0 | 0 |
| TT | ACAACC | 0.0543  | 0 | 0 | 0 |
| TT | ACTACG | 0.04177 | 0 | 0 | 0 |
| TT | ACTACT | 0.1145  | 0 | 0 | 0 |
| TT | ACTACC | 0.08688 | 0 | 0 | 0 |
| TT | ACTACA | 0.1028  | 0 | 0 | 0 |
| TT | ACCACA | 0.07686 | 0 | 0 | 0 |
| TT | ACAACA | 0.1145  | 0 | 0 | 0 |
| TT | ACAACT | 0.07602 | 0 | 0 | 0 |
| TT | ACAACG | 0.04511 | 0 | 0 | 0 |
| TT | ACCACT | 0.08772 | 0 | 0 | 0 |
| TT | ACCACG | 0.04344 | 0 | 0 | 0 |
| TT | ACCACC | 0.05263 | 0 | 0 | 0 |
| TV | ACTGTC | 0.07871 | 0 | 0 | 0 |
| TV | ACTGTG | 0.07568 | 0 | 0 | 0 |
| TV | ACAGTG | 0.06458 | 0 | 0 | 0 |
| TV | ACTGTA | 0.07568 | 0 | 0 | 0 |
| TV | ACTGTT | 0.1584  | 0 | 0 | 0 |
| TV | ACAGTC | 0.04945 | 0 | 0 | 0 |
| TV | ACAGTA | 0.09788 | 0 | 0 | 0 |
| TV | ACGGTG | 0.02926 | 0 | 0 | 0 |
| TV | ACCGTC | 0.03229 | 0 | 0 | 0 |
| TV | ACCGTG | 0.03532 | 0 | 0 | 0 |
| TV | ACGGTA | 0.03128 | 0 | 0 | 0 |
| TV | ACGGTC | 0.02321 | 0 | 0 | 0 |
| TV | ACAGTT | 0.08981 | 0 | 0 | 0 |
| TV | ACGGTT | 0.03532 | 0 | 0 | 0 |



|    |        |         |   |   |   |
|----|--------|---------|---|---|---|
| TV | ACCGTA | 0.03633 | 0 | 0 | 0 |
| TV | ACCGTT | 0.08678 | 0 | 0 | 0 |
| TW | ACCTGG | 0.1989  | 0 | 0 | 0 |
| TW | ACATGG | 0.328   | 0 | 0 | 0 |
| TW | ACGTGG | 0.1398  | 0 | 0 | 0 |
| TW | ACTTGG | 0.3333  | 0 | 0 | 0 |
| TY | ACTTAC | 0.1471  | 0 | 0 | 0 |
| TY | ACATAT | 0.2157  | 0 | 0 | 0 |
| TY | ACCTAT | 0.09608 | 0 | 0 | 0 |
| TY | ACTTAT | 0.1863  | 0 | 0 | 0 |
| TY | ACGTAC | 0.0549  | 0 | 0 | 0 |
| TY | ACATAC | 0.1353  | 0 | 0 | 0 |
| TY | ACGTAT | 0.07647 | 0 | 0 | 0 |
| TY | ACCTAC | 0.08824 | 0 | 0 | 0 |
| V* | GTGTAG | 0.03448 | 0 | 0 | 0 |
| V* | GTATAA | 0.1379  | 0 | 0 | 0 |
| V* | GTATAG | 0.03448 | 0 | 0 | 0 |
| V* | GTGTAA | 0.1034  | 0 | 0 | 0 |
| V* | GTGTGA | 0       | 0 | 0 | 0 |
| V* | GTCTAA | 0.1034  | 0 | 0 | 0 |
| V* | GTATGA | 0.1034  | 0 | 0 | 0 |
| V* | GTCTAG | 0       | 0 | 0 | 0 |
| V* | GTCTGA | 0.03448 | 0 | 0 | 0 |
| V* | GTTTAG | 0.06897 | 0 | 0 | 0 |
| V* | GTTTGA | 0.2759  | 0 | 0 | 0 |
| V* | GTTTAA | 0.1034  | 0 | 0 | 0 |
| VA | GTGGCG | 0.02096 | 0 | 0 | 0 |
| VA | GTGGCT | 0.06986 | 0 | 0 | 0 |
| VA | GTAGCC | 0.03393 | 0 | 0 | 0 |
| VA | GTCGCC | 0.03293 | 0 | 0 | 0 |
| VA | GTAGCG | 0.02794 | 0 | 0 | 0 |
| VA | GTAGCA | 0.07585 | 0 | 0 | 0 |
| VA | GTCGCA | 0.06687 | 0 | 0 | 0 |
| VA | GTCGCG | 0.01397 | 0 | 0 | 0 |
| VA | GTTGCA | 0.1098  | 0 | 0 | 0 |
| VA | GTGGCA | 0.06387 | 0 | 0 | 0 |
| VA | GTTGCC | 0.07884 | 0 | 0 | 0 |
| VA | GTAGCT | 0.06387 | 0 | 0 | 0 |
| VA | GTTGCT | 0.1677  | 0 | 0 | 0 |
| VA | GTTGCG | 0.04391 | 0 | 0 | 0 |
| VA | GTCGCT | 0.07784 | 0 | 0 | 0 |
| VA | GTGGCC | 0.0519  | 0 | 0 | 0 |
| VC | GTTTGC | 0.1694  | 0 | 1 | 0 |
| VC | GTGTGC | 0.09917 | 0 | 1 | 0 |
| VC | GTGTGT | 0.08264 | 0 | 1 | 0 |
| VC | GTTTGT | 0.2727  | 1 | 1 | 1 |
| VC | GTATGT | 0.1033  | 0 | 1 | 0 |
| VC | GTATGC | 0.07025 | 0 | 1 | 0 |
| VC | GTCTGC | 0.05372 | 0 | 1 | 0 |
| VC | GTCTGT | 0.1488  | 0 | 1 | 0 |
| VD | GTTGAT | 0.2568  | 0 | 0 | 0 |

|    |         |         |   |   |        |
|----|---------|---------|---|---|--------|
| VD | GTCGAC  | 0.06394 | 0 | 0 | 0      |
| VD | GTAGAT  | 0.1635  | 0 | 0 | 0      |
| VD | GTTGAC  | 0.1289  | 0 | 0 | 0      |
| VD | GTAGAC  | 0.08071 | 0 | 0 | 0      |
| VD | GTGGAC  | 0.05975 | 0 | 0 | 0      |
| VD | GTCGAT  | 0.09539 | 0 | 0 | 0      |
| VD | GTGGAT  | 0.1509  | 0 | 0 | 0      |
| VE | GTAGAA  | 0.145   | 0 | 3 | 0      |
| VE | GTTGAA  | 0.2752  | 1 | 3 | 0.3333 |
| VE | GTCGAA  | 0.1224  | 0 | 3 | 0      |
| VE | GTGGAA  | 0.1743  | 0 | 3 | 0      |
| VE | GTTGAG  | 0.08619 | 0 | 3 | 0      |
| VE | GTAGAG  | 0.08815 | 1 | 3 | 0.3333 |
| VE | GTCGAG  | 0.03134 | 0 | 3 | 0      |
| VE | GTGGAG  | 0.07738 | 1 | 3 | 0.3333 |
| VF | GTCTTC  | 0.07068 | 0 | 0 | 0      |
| VF | GTCTTT  | 0.09173 | 0 | 0 | 0      |
| VF | GTATTT  | 0.1684  | 0 | 0 | 0      |
| VF | GTTTTTC | 0.215   | 0 | 0 | 0      |
| VF | GTGTTC  | 0.06165 | 0 | 0 | 0      |
| VF | GTGTTT  | 0.1008  | 0 | 0 | 0      |
| VF | GTTTTT  | 0.2376  | 0 | 0 | 0      |
| VF | GTATTC  | 0.05414 | 0 | 0 | 0      |
| VG | GTCGGC  | 0.04333 | 0 | 1 | 0      |
| VG | GTCGGT  | 0.09464 | 0 | 1 | 0      |
| VG | GTCGGA  | 0.04219 | 0 | 1 | 0      |
| VG | GTCGGG  | 0.02281 | 0 | 1 | 0      |
| VG | GTGGGC  | 0.04105 | 0 | 1 | 0      |
| VG | GTAGGG  | 0.03193 | 0 | 1 | 0      |
| VG | GTAGGC  | 0.03535 | 0 | 1 | 0      |
| VG | GTAGGA  | 0.04903 | 0 | 1 | 0      |
| VG | GTGGGT  | 0.05245 | 0 | 1 | 0      |
| VG | GTAGGT  | 0.06157 | 0 | 1 | 0      |
| VG | GTTGGA  | 0.1243  | 0 | 1 | 0      |
| VG | GTTGGT  | 0.1995  | 0 | 1 | 0      |
| VG | GTTGGG  | 0.04675 | 0 | 1 | 0      |
| VG | GTTGGC  | 0.06842 | 1 | 1 | 1      |
| VG | GTGGGG  | 0.03193 | 0 | 1 | 0      |
| VG | GTGGGA  | 0.05473 | 0 | 1 | 0      |
| VH | GTTCAT  | 0.2627  | 0 | 0 | 0      |
| VH | GTGCAC  | 0.05898 | 0 | 0 | 0      |
| VH | GTCCAT  | 0.1153  | 0 | 0 | 0      |
| VH | GTCCAC  | 0.08311 | 0 | 0 | 0      |
| VH | GTTCAC  | 0.1421  | 0 | 0 | 0      |
| VH | GTGCAT  | 0.1233  | 0 | 0 | 0      |
| VH | GTACAC  | 0.05362 | 0 | 0 | 0      |
| VH | GTACAT  | 0.1609  | 0 | 0 | 0      |
| VI | GTGATA  | 0.06035 | 0 | 0 | 0      |
| VI | GTTATC  | 0.09469 | 0 | 0 | 0      |
| VI | GTGATC  | 0.03122 | 0 | 0 | 0      |
| VI | GTCATA  | 0.05931 | 0 | 0 | 0      |

|    |          |          |   |   |   |
|----|----------|----------|---|---|---|
| VI | GTCATC   | 0.08533  | 0 | 0 | 0 |
| VI | GTCATT   | 0.128    | 0 | 0 | 0 |
| VI | GTTATA   | 0.09365  | 0 | 0 | 0 |
| VI | GTAATA   | 0.0666   | 0 | 0 | 0 |
| VI | GTAATC   | 0.04266  | 0 | 0 | 0 |
| VI | GTTATT   | 0.1904   | 0 | 0 | 0 |
| VI | GTGATT   | 0.06972  | 0 | 0 | 0 |
| VI | GTAATT   | 0.07804  | 0 | 0 | 0 |
| VK | GTAAAG   | 0.09171  | 0 | 0 | 0 |
| VK | GTAAAA   | 0.1243   | 0 | 0 | 0 |
| VK | GTAAAA   | 0.1817   | 0 | 0 | 0 |
| VK | GTTAAG   | 0.1173   | 0 | 0 | 0 |
| VK | GTCAAA   | 0.1464   | 0 | 0 | 0 |
| VK | GTGAAA   | 0.09877  | 0 | 0 | 0 |
| VK | GTCAAG   | 0.1464   | 0 | 0 | 0 |
| VK | GTGAAG   | 0.09347  | 0 | 0 | 0 |
| VL | GTTCTA   | 0.03823  | 0 | 0 | 0 |
| VL | GTTCTC   | 0.02482  | 0 | 0 | 0 |
| VL | GTTCTG   | 0.03823  | 0 | 0 | 0 |
| VL | GTTCTT   | 0.06237  | 0 | 0 | 0 |
| VL | GTA CTT  | 0.03018  | 0 | 0 | 0 |
| VL | GTA C TC | 0.0114   | 0 | 0 | 0 |
| VL | GTA C TG | 0.03756  | 0 | 0 | 0 |
| VL | GTA C TA | 0.02817  | 0 | 0 | 0 |
| VL | GT C TTG | 0.05835  | 0 | 0 | 0 |
| VL | GT C TTA | 0.04091  | 0 | 0 | 0 |
| VL | GTATTA   | 0.05433  | 0 | 0 | 0 |
| VL | GTATTG   | 0.06103  | 0 | 0 | 0 |
| VL | GTGCTG   | 0.02616  | 0 | 0 | 0 |
| VL | GTGCTC   | 0.0114   | 0 | 0 | 0 |
| VL | GTGCTA   | 0.03219  | 0 | 0 | 0 |
| VL | GTTTTG   | 0.1375   | 0 | 0 | 0 |
| VL | GTGCTT   | 0.03219  | 0 | 0 | 0 |
| VL | GTTTTA   | 0.1247   | 0 | 0 | 0 |
| VL | GTCCTG   | 0.01677  | 0 | 0 | 0 |
| VL | GTGTTA   | 0.03488  | 0 | 0 | 0 |
| VL | GTGTTG   | 0.02951  | 0 | 0 | 0 |
| VL | GTCCTC   | 0.008719 | 0 | 0 | 0 |
| VL | GTCCTT   | 0.0389   | 0 | 0 | 0 |
| VL | GTCCTA   | 0.02146  | 0 | 0 | 0 |
| VM | GTTATG   | 0.3418   | 0 | 0 | 0 |
| VM | GTAATG   | 0.2327   | 0 | 0 | 0 |
| VM | GTCATG   | 0.2327   | 0 | 0 | 0 |
| VM | GTGATG   | 0.1927   | 0 | 0 | 0 |
| VN | GTAAAC   | 0.1189   | 0 | 1 | 0 |
| VN | GTTAAT   | 0.1978   | 0 | 1 | 0 |
| VN | GTAAAT   | 0.1529   | 0 | 1 | 0 |
| VN | GTCAAT   | 0.1323   | 0 | 1 | 0 |
| VN | GTGAAT   | 0.108    | 0 | 1 | 0 |
| VN | GTGAAC   | 0.0716   | 0 | 1 | 0 |
| VN | GTTAAC   | 0.1177   | 0 | 1 | 0 |

|    |        |          |   |   |   |
|----|--------|----------|---|---|---|
| VN | GTCAAC | 0.1007   | 1 | 1 | 1 |
| VP | GTCCCT | 0.02861  | 0 | 0 | 0 |
| VP | GTGCCT | 0.04172  | 0 | 0 | 0 |
| VP | GTTCCG | 0.05483  | 0 | 0 | 0 |
| VP | GTCCCG | 0.01073  | 0 | 0 | 0 |
| VP | GTACCC | 0.03695  | 0 | 0 | 0 |
| VP | GTCCCC | 0.02026  | 0 | 0 | 0 |
| VP | GTGCCG | 0.02145  | 0 | 0 | 0 |
| VP | GTGCCC | 0.03576  | 0 | 0 | 0 |
| VP | GTACCT | 0.07271  | 0 | 0 | 0 |
| VP | GTACCG | 0.03337  | 0 | 0 | 0 |
| VP | GTTCCA | 0.1943   | 0 | 0 | 0 |
| VP | GTTCCC | 0.05244  | 0 | 0 | 0 |
| VP | GTGCCA | 0.08224  | 0 | 0 | 0 |
| VP | GTACCA | 0.1037   | 0 | 0 | 0 |
| VP | GTTCCT | 0.1466   | 0 | 0 | 0 |
| VP | GTCCCA | 0.06436  | 0 | 0 | 0 |
| VQ | GTACAG | 0.06273  | 0 | 0 | 0 |
| VQ | GTCCAA | 0.1292   | 0 | 0 | 0 |
| VQ | GTGCAG | 0.0738   | 0 | 0 | 0 |
| VQ | GTGCAA | 0.1494   | 0 | 0 | 0 |
| VQ | GTTCAA | 0.2989   | 0 | 0 | 0 |
| VQ | GTTCAG | 0.09041  | 0 | 0 | 0 |
| VQ | GTCCAG | 0.04613  | 0 | 0 | 0 |
| VQ | GTACAA | 0.1494   | 0 | 0 | 0 |
| VR | GTTCGG | 0.01603  | 0 | 0 | 0 |
| VR | GTAAGA | 0.1108   | 0 | 0 | 0 |
| VR | GTGCGG | 0.01166  | 0 | 0 | 0 |
| VR | GTTAGG | 0.04665  | 0 | 0 | 0 |
| VR | GTGAGA | 0.1064   | 0 | 0 | 0 |
| VR | GTTAGA | 0.1676   | 0 | 0 | 0 |
| VR | GTTCGT | 0.08455  | 0 | 0 | 0 |
| VR | GTCCGA | 0.007289 | 0 | 0 | 0 |
| VR | GTGCGA | 0.007289 | 0 | 0 | 0 |
| VR | GTCCGC | 0.01312  | 0 | 0 | 0 |
| VR | GTGCGC | 0.01166  | 0 | 0 | 0 |
| VR | GTGCGT | 0.01749  | 0 | 0 | 0 |
| VR | GTGAGG | 0.03644  | 0 | 0 | 0 |
| VR | GTCCGT | 0.02187  | 0 | 0 | 0 |
| VR | GTACGT | 0.03936  | 0 | 0 | 0 |
| VR | GTACGG | 0.01458  | 0 | 0 | 0 |
| VR | GTACGC | 0.008746 | 0 | 0 | 0 |
| VR | GTCAGA | 0.09184  | 0 | 0 | 0 |
| VR | GTTCGA | 0.007289 | 0 | 0 | 0 |
| VR | GTAAGG | 0.04956  | 0 | 0 | 0 |
| VR | GTCAGG | 0.05685  | 0 | 0 | 0 |
| VR | GTACGA | 0.0379   | 0 | 0 | 0 |
| VR | GTCCGG | 0.01166  | 0 | 0 | 0 |
| VR | GTTCGC | 0.02332  | 0 | 0 | 0 |
| VS | GTTTCT | 0.1506   | 0 | 0 | 0 |
| VS | GTTTCG | 0.03255  | 0 | 0 | 0 |

|    |        |         |   |   |   |
|----|--------|---------|---|---|---|
| VS | GTTAGC | 0.04012 | 0 | 0 | 0 |
| VS | GTGAGC | 0.0212  | 0 | 0 | 0 |
| VS | GTTAGT | 0.04921 | 0 | 0 | 0 |
| VS | GTCTCC | 0.02195 | 0 | 0 | 0 |
| VS | GTGAGT | 0.03028 | 0 | 0 | 0 |
| VS | GTCAGT | 0.04012 | 0 | 0 | 0 |
| VS | GTCTCA | 0.03179 | 0 | 0 | 0 |
| VS | GTAAGC | 0.02347 | 0 | 0 | 0 |
| VS | GTATCG | 0.03028 | 0 | 0 | 0 |
| VS | GTATCC | 0.04164 | 0 | 0 | 0 |
| VS | GTATCA | 0.0545  | 0 | 0 | 0 |
| VS | GTCTCG | 0.01665 | 0 | 0 | 0 |
| VS | GTGTCT | 0.01665 | 0 | 0 | 0 |
| VS | GTCAGC | 0.01665 | 0 | 0 | 0 |
| VS | GTAAGT | 0.03407 | 0 | 0 | 0 |
| VS | GTGTCT | 0.03785 | 0 | 0 | 0 |
| VS | GTTTCC | 0.07343 | 0 | 0 | 0 |
| VS | GTATCT | 0.06056 | 0 | 0 | 0 |
| VS | GTGTCA | 0.02347 | 0 | 0 | 0 |
| VS | GTGTCC | 0.02877 | 0 | 0 | 0 |
| VS | GTCTCT | 0.04996 | 0 | 0 | 0 |
| VS | GTTTCA | 0.07419 | 0 | 0 | 0 |
| VT | GTCACC | 0.07267 | 0 | 0 | 0 |
| VT | GTCACA | 0.07158 | 0 | 0 | 0 |
| VT | GTCACG | 0.03579 | 0 | 0 | 0 |
| VT | GTTACC | 0.0987  | 0 | 0 | 0 |
| VT | GTTACT | 0.1356  | 0 | 0 | 0 |
| VT | GTAACG | 0.03145 | 0 | 0 | 0 |
| VT | GTCACT | 0.09219 | 0 | 0 | 0 |
| VT | GTGACA | 0.04555 | 0 | 0 | 0 |
| VT | GTGACT | 0.04664 | 0 | 0 | 0 |
| VT | GTAACC | 0.04013 | 0 | 0 | 0 |
| VT | GTTACA | 0.09111 | 0 | 0 | 0 |
| VT | GTGACG | 0.02928 | 0 | 0 | 0 |
| VT | GTGACC | 0.03579 | 0 | 0 | 0 |
| VT | GTAACA | 0.07484 | 0 | 0 | 0 |
| VT | GTTACG | 0.04013 | 0 | 0 | 0 |
| VT | GTAACT | 0.05857 | 0 | 0 | 0 |
| VV | GTAGTT | 0.06044 | 0 | 0 | 0 |
| VV | GTCGTA | 0.03077 | 0 | 0 | 0 |
| VV | GTGGTA | 0.06264 | 0 | 0 | 0 |
| VV | GTTGTT | 0.1945  | 0 | 0 | 0 |
| VV | GTTGTG | 0.05934 | 0 | 0 | 0 |
| VV | GTTGTA | 0.07582 | 0 | 0 | 0 |
| VV | GTTGTC | 0.08901 | 0 | 0 | 0 |
| VV | GTCGTG | 0.03516 | 0 | 0 | 0 |
| VV | GTCGTC | 0.04176 | 0 | 0 | 0 |
| VV | GTCGTT | 0.06923 | 0 | 0 | 0 |
| VV | GTGGTT | 0.07912 | 0 | 0 | 0 |
| VV | GTGGTG | 0.04615 | 0 | 0 | 0 |
| VV | GTGGTC | 0.04176 | 0 | 0 | 0 |

|    |        |         |   |   |   |
|----|--------|---------|---|---|---|
| VV | GTAGTG | 0.04176 | 0 | 0 | 0 |
| VV | GTAGTA | 0.04066 | 0 | 0 | 0 |
| VV | GTAGTC | 0.03187 | 0 | 0 | 0 |
| VW | GTATGG | 0.3291  | 0 | 0 | 0 |
| VW | GTGTGG | 0.1392  | 0 | 0 | 0 |
| VW | GTTTGG | 0.3544  | 0 | 0 | 0 |
| VW | GTCTGG | 0.1772  | 0 | 0 | 0 |
| VY | GTCTAC | 0.09946 | 0 | 0 | 0 |
| VY | GTGTAC | 0.05425 | 0 | 0 | 0 |
| VY | GTCTAT | 0.08861 | 0 | 0 | 0 |
| VY | GTTTAC | 0.1863  | 0 | 0 | 0 |
| VY | GTTTAT | 0.2405  | 0 | 0 | 0 |
| VY | GTATAT | 0.1338  | 0 | 0 | 0 |
| VY | GTATAC | 0.09222 | 0 | 0 | 0 |
| VY | GTGTAT | 0.1049  | 0 | 0 | 0 |
| W* | TGGTGA | 0.4545  | 0 | 0 | 0 |
| W* | TGGTAA | 0.3636  | 0 | 0 | 0 |
| W* | TGGTAG | 0.1818  | 0 | 0 | 0 |
| WA | TGGGCC | 0.1511  | 0 | 0 | 0 |
| WA | TGGGCA | 0.3453  | 0 | 0 | 0 |
| WA | TGGGCG | 0.1223  | 0 | 0 | 0 |
| WA | TGGGCT | 0.3813  | 0 | 0 | 0 |
| WC | TGGTGC | 0.3086  | 0 | 0 | 0 |
| WC | TGGTGT | 0.6914  | 0 | 0 | 0 |
| WD | TGGGAC | 0.3298  | 0 | 0 | 0 |
| WD | TGGGAT | 0.6702  | 0 | 0 | 0 |
| WE | TGGGAA | 0.7222  | 0 | 0 | 0 |
| WE | TGGGAG | 0.2778  | 0 | 0 | 0 |
| WF | TGGTTT | 0.6458  | 0 | 0 | 0 |
| WF | TGGTTC | 0.3542  | 0 | 0 | 0 |
| WG | TGGGGT | 0.4217  | 1 | 1 | 1 |
| WG | TGGGGG | 0.2048  | 0 | 1 | 0 |
| WG | TGGGGA | 0.1747  | 0 | 1 | 0 |
| WG | TGGGGC | 0.1988  | 0 | 1 | 0 |
| WH | TGGCAT | 0.6     | 0 | 0 | 0 |
| WH | TGGCAC | 0.4     | 0 | 0 | 0 |
| WI | TGGATT | 0.4845  | 0 | 0 | 0 |
| WI | TGGATC | 0.2629  | 0 | 0 | 0 |
| WI | TGGATA | 0.2526  | 0 | 0 | 0 |
| WK | TGGAAA | 0.6157  | 0 | 0 | 0 |
| WK | TGGAAG | 0.3843  | 0 | 0 | 0 |
| WL | TGGCTT | 0.1312  | 0 | 0 | 0 |
| WL | TGGCTG | 0.156   | 0 | 0 | 0 |
| WL | TGGCTC | 0.06028 | 0 | 0 | 0 |
| WL | TGGCTA | 0.1348  | 0 | 0 | 0 |
| WL | TGGTTG | 0.273   | 0 | 0 | 0 |
| WL | TGGTTA | 0.2447  | 0 | 0 | 0 |
| WM | TGGATG | 1       | 1 | 1 | 1 |
| WN | TGGAAT | 0.6243  | 0 | 0 | 0 |
| WN | TGGAAC | 0.3757  | 0 | 0 | 0 |
| WP | TGGCCA | 0.3976  | 0 | 0 | 0 |

|    |        |         |   |   |   |
|----|--------|---------|---|---|---|
| WP | TGGCCC | 0.2048  | 0 | 0 | 0 |
| WP | TGGCCT | 0.3012  | 0 | 0 | 0 |
| WP | TGGCCG | 0.09639 | 0 | 0 | 0 |
| WQ | TGGCAG | 0.3462  | 0 | 0 | 0 |
| WQ | TGGCAA | 0.6538  | 0 | 0 | 0 |
| WR | TGGAGG | 0.2015  | 0 | 0 | 0 |
| WR | TGGAGA | 0.6119  | 0 | 0 | 0 |
| WR | TGGCGT | 0.09701 | 0 | 0 | 0 |
| WR | TGGCGA | 0.04478 | 0 | 0 | 0 |
| WR | TGGCGC | 0.02985 | 0 | 0 | 0 |
| WR | TGGCGG | 0.01493 | 0 | 0 | 0 |
| WS | TGGAGT | 0.1608  | 0 | 0 | 0 |
| WS | TGGAGC | 0.07343 | 0 | 0 | 0 |
| WS | TGGTCA | 0.2168  | 0 | 0 | 0 |
| WS | TGGTCC | 0.1573  | 0 | 0 | 0 |
| WS | TGGTCT | 0.2937  | 0 | 0 | 0 |
| WS | TGGTCG | 0.0979  | 0 | 0 | 0 |
| WT | TGGACA | 0.3151  | 0 | 0 | 0 |
| WT | TGGACG | 0.1507  | 0 | 0 | 0 |
| WT | TGGACT | 0.3082  | 0 | 0 | 0 |
| WT | TGGACC | 0.226   | 0 | 0 | 0 |
| WV | TGGGTT | 0.4551  | 0 | 0 | 0 |
| WV | TGGGTC | 0.2079  | 0 | 0 | 0 |
| WV | TGGGTA | 0.2135  | 0 | 0 | 0 |
| WV | TGGGTG | 0.1236  | 0 | 0 | 0 |
| WW | TGGTGG | 1       | 0 | 0 | 0 |
| WY | TGGTAT | 0.5106  | 0 | 0 | 0 |
| WY | TGGTAC | 0.4894  | 0 | 0 | 0 |
| Y* | TATTAA | 0.2857  | 0 | 0 | 0 |
| Y* | TACTAA | 0.1429  | 0 | 0 | 0 |
| Y* | TACTAG | 0       | 0 | 0 | 0 |
| Y* | TATTAG | 0.09524 | 0 | 0 | 0 |
| Y* | TATTGA | 0.1429  | 0 | 0 | 0 |
| Y* | TACTGA | 0.3333  | 0 | 0 | 0 |
| YA | TACGCT | 0.14    | 0 | 0 | 0 |
| YA | TACGCA | 0.07505 | 0 | 0 | 0 |
| YA | TACGCG | 0.02637 | 0 | 0 | 0 |
| YA | TATGCA | 0.1968  | 0 | 0 | 0 |
| YA | TATGCT | 0.2231  | 0 | 0 | 0 |
| YA | TATGCG | 0.08722 | 0 | 0 | 0 |
| YA | TATGCC | 0.1724  | 0 | 0 | 0 |
| YA | TACGCC | 0.07911 | 0 | 0 | 0 |
| YC | TATTGT | 0.3457  | 1 | 1 | 1 |
| YC | TACTGC | 0.1173  | 0 | 1 | 0 |
| YC | TACTGT | 0.358   | 0 | 1 | 0 |
| YC | TATTGC | 0.179   | 0 | 1 | 0 |
| YD | TACGAT | 0.2575  | 0 | 0 | 0 |
| YD | TATGAT | 0.3829  | 0 | 0 | 0 |
| YD | TATGAC | 0.2174  | 0 | 0 | 0 |
| YD | TACGAC | 0.1421  | 0 | 0 | 0 |
| YE | TACGAA | 0.2557  | 0 | 0 | 0 |

|    |         |         |   |   |   |
|----|---------|---------|---|---|---|
| YE | TATGAG  | 0.1896  | 0 | 0 | 0 |
| YE | TATGAA  | 0.44    | 0 | 0 | 0 |
| YE | TACGAG  | 0.1148  | 0 | 0 | 0 |
| YF | TATTTT  | 0.3492  | 0 | 0 | 0 |
| YF | TACTTT  | 0.2358  | 0 | 0 | 0 |
| YF | TAT TTC | 0.2585  | 0 | 0 | 0 |
| YF | TACTTC  | 0.1565  | 0 | 0 | 0 |
| YG | TACGGA  | 0.07509 | 0 | 0 | 0 |
| YG | TATGGA  | 0.1575  | 0 | 0 | 0 |
| YG | TATGGC  | 0.1044  | 0 | 0 | 0 |
| YG | TATGGG  | 0.08242 | 0 | 0 | 0 |
| YG | TACGGC  | 0.07692 | 0 | 0 | 0 |
| YG | TATGGT  | 0.3077  | 0 | 0 | 0 |
| YG | TACGGT  | 0.1484  | 0 | 0 | 0 |
| YG | TACGGG  | 0.04762 | 0 | 0 | 0 |
| YH | TACCAC  | 0.218   | 0 | 0 | 0 |
| YH | TACCAT  | 0.2932  | 0 | 0 | 0 |
| YH | TATCAC  | 0.1729  | 0 | 0 | 0 |
| YH | TATCAT  | 0.3158  | 0 | 0 | 0 |
| YI | TACATA  | 0.09318 | 0 | 0 | 0 |
| YI | TATATT  | 0.2696  | 0 | 0 | 0 |
| YI | TATATA  | 0.1231  | 0 | 0 | 0 |
| YI | TATATC  | 0.1464  | 0 | 0 | 0 |
| YI | TACATT  | 0.2146  | 0 | 0 | 0 |
| YI | TACATC  | 0.1531  | 0 | 0 | 0 |
| YK | TATAAA  | 0.318   | 0 | 0 | 0 |
| YK | TACAAG  | 0.2078  | 0 | 0 | 0 |
| YK | TATAAG  | 0.1674  | 0 | 0 | 0 |
| YK | TACAAA  | 0.3068  | 0 | 0 | 0 |
| YL | TACTTA  | 0.09882 | 0 | 1 | 0 |
| YL | TACCTA  | 0.06337 | 0 | 1 | 0 |
| YL | TACTTG  | 0.1224  | 1 | 1 | 1 |
| YL | TACCTC  | 0.03115 | 0 | 1 | 0 |
| YL | TATTTA  | 0.1643  | 0 | 1 | 0 |
| YL | TATTTG  | 0.1837  | 0 | 1 | 0 |
| YL | TACCTT  | 0.04189 | 0 | 1 | 0 |
| YL | TATCTC  | 0.03545 | 0 | 1 | 0 |
| YL | TATCTT  | 0.07841 | 0 | 1 | 0 |
| YL | TATCTA  | 0.06337 | 0 | 1 | 0 |
| YL | TACCTG  | 0.05693 | 0 | 1 | 0 |
| YL | TATCTG  | 0.06015 | 0 | 1 | 0 |
| YM | TATATG  | 0.5327  | 0 | 0 | 0 |
| YM | TACATG  | 0.4673  | 0 | 0 | 0 |
| YN | TATAAT  | 0.3328  | 0 | 0 | 0 |
| YN | TACAAT  | 0.2662  | 0 | 0 | 0 |
| YN | TACAAC  | 0.2031  | 0 | 0 | 0 |
| YN | TATAAC  | 0.198   | 0 | 0 | 0 |
| YP | TATCCA  | 0.2481  | 0 | 0 | 0 |
| YP | TATCCT  | 0.2256  | 0 | 0 | 0 |
| YP | TATCCC  | 0.08271 | 0 | 0 | 0 |
| YP | TATCCG  | 0.08271 | 0 | 0 | 0 |



|    |        |         |   |   |   |
|----|--------|---------|---|---|---|
| YP | TACCCT | 0.09524 | 0 | 0 | 0 |
| YP | TACCCG | 0.0401  | 0 | 0 | 0 |
| YP | TACCCA | 0.1754  | 0 | 0 | 0 |
| YP | TACCCC | 0.05013 | 0 | 0 | 0 |
| YQ | TATCAG | 0.129   | 0 | 1 | 0 |
| YQ | TACCAG | 0.1095  | 0 | 1 | 0 |
| YQ | TACCAA | 0.3285  | 0 | 1 | 0 |
| YQ | TATCAA | 0.4331  | 1 | 1 | 1 |
| YR | TATCGC | 0.02457 | 0 | 0 | 0 |
| YR | TACAGA | 0.2088  | 0 | 0 | 0 |
| YR | TATCGT | 0.09091 | 0 | 0 | 0 |
| YR | TATCGG | 0.02457 | 0 | 0 | 0 |
| YR | TACAGG | 0.1081  | 0 | 0 | 0 |
| YR | TATCGA | 0.04177 | 0 | 0 | 0 |
| YR | TACCGG | 0.01474 | 0 | 0 | 0 |
| YR | TACCGC | 0.02211 | 0 | 0 | 0 |
| YR | TACCGT | 0.1007  | 0 | 0 | 0 |
| YR | TACCGA | 0.02948 | 0 | 0 | 0 |
| YR | TATAGA | 0.2064  | 0 | 0 | 0 |
| YR | TATAGG | 0.1278  | 0 | 0 | 0 |
| YS | TATTCT | 0.1642  | 0 | 0 | 0 |
| YS | TATTCA | 0.1455  | 0 | 0 | 0 |
| YS | TACAGC | 0.04229 | 0 | 0 | 0 |
| YS | TATTCC | 0.107   | 0 | 0 | 0 |
| YS | TATTCG | 0.07338 | 0 | 0 | 0 |
| YS | TATAGT | 0.07711 | 0 | 0 | 0 |
| YS | TATAGC | 0.05597 | 0 | 0 | 0 |
| YS | TACAGT | 0.06219 | 0 | 0 | 0 |
| YS | TACTCT | 0.1107  | 0 | 0 | 0 |
| YS | TACTCG | 0.03234 | 0 | 0 | 0 |
| YS | TACTCA | 0.07836 | 0 | 0 | 0 |
| YS | TACTCC | 0.051   | 0 | 0 | 0 |
| YT | TATACC | 0.1021  | 0 | 1 | 0 |
| YT | TATACA | 0.1758  | 0 | 1 | 0 |
| YT | TATACG | 0.0983  | 0 | 1 | 0 |
| YT | TACACC | 0.08318 | 0 | 1 | 0 |
| YT | TACACG | 0.06049 | 0 | 1 | 0 |
| YT | TACACT | 0.1569  | 1 | 1 | 1 |
| YT | TATACT | 0.1739  | 0 | 1 | 0 |
| YT | TACACA | 0.1493  | 0 | 1 | 0 |
| YV | TACGTT | 0.1691  | 0 | 0 | 0 |
| YV | TACGTG | 0.07807 | 0 | 0 | 0 |
| YV | TACGTC | 0.1022  | 0 | 0 | 0 |
| YV | TACGTA | 0.07435 | 0 | 0 | 0 |
| YV | TATGTC | 0.1152  | 0 | 0 | 0 |
| YV | TATGTA | 0.08736 | 0 | 0 | 0 |
| YV | TATGTG | 0.1264  | 0 | 0 | 0 |
| YV | TATGTT | 0.2472  | 0 | 0 | 0 |
| YW | TACTGG | 0.496   | 0 | 0 | 0 |
| YW | TATTGG | 0.504   | 0 | 0 | 0 |
| YY | TACTAT | 0.2764  | 0 | 0 | 0 |

|    |        |        |   |   |   |
|----|--------|--------|---|---|---|
| YY | TATTAT | 0.3467 | 0 | 0 | 0 |
| YY | TACTAC | 0.2211 | 0 | 0 | 0 |
| YY | TATTAC | 0.1558 | 0 | 0 | 0 |