Table S3 Nucleotide composition of the mitogenomes of *L. pariaformis*, *L. clavicornis*, *L. yaniae.*

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Feature** | **Species** | **T%** | **C%** | **A%** | **G%** | **A + T%** | **AT-skew** | **GC-skew** |
| Whole genome | *L. pariaformis* | 37.01  | 11.64  | 43.84  | 7.51  | 80.85  | 0.084  | -0.216  |
|  | *L. clavicornis* | 37.38 | 11.30 | 43.88 | 7.44 | 81.26 | 0.080 | -0.206 |
|  | *L. yaniae* | 38.25 | 10.65 | 43.43 | 7.67 | 81.68 | 0.063 | -0.163 |
| Protein-coding genes | *L. pariaformis* | 43.92 | 10.39 | 35.51 | 10.19 | 79.43 | -0.106 | -0.01 |
|  | *L. clavicornis* | 44.13 | 10.27 | 35.65 | 9.95 | 79.78 | -0.106 | -0.015 |
|  | *L. yaniae* | 45.10 | 9.75 | 35.18 | 9.97 | 80.28 | -0.124 | 0.0110 |
| First codon position | *L. pariaformis* | 37.39 | 9.50 | 38.28 | 14.83 | 75.67 | 0.012 | 0.219 |
|  | *L. clavicornis* | 36.53 | 10.14 | 38.77 | 14.56 | 75.30 | 0.030 | 0.179 |
|  | *L. yaniae* | 38.31 | 9.19 | 37.74 | 14.76 | 76.05 | -0.007 | 0.233 |
| Second codon position | *L. pariaformis* | 49.60 | 16.49 | 21.28 | 12.63 | 70.88 | -0.400 | -0.132 |
|  | *L. clavicornis* | 49.93 | 16.22 | 21.38 | 12.47 | 71.31 | -0.400 | -0.131 |
|  | *L. yaniae* | 49.45 | 16.61 | 21.40 | 12.54 | 70.85 | -0.396 | -0.140 |
| Third codon position | *L. pariaformis* | 44.75 | 5.17 | 46.98 | 3.10 | 91.73 | 0.024 | -0.249 |
|  | *L. clavicornis* | 45.92 | 4.44 | 46.8 | 2.84 | 92.72 | 0.010 | -0.221 |
|  | *L. yaniae* | 47.55 | 3.46 | 46.40 | 2.60 | 93.95 | -0.012 | -0.142 |
| Protein-coding genes-J | *L. pariaformis* | 39.48 | 12.78 | 38.60 | 9.14 | 78.08 | -0.011 | -0.166 |
|  | *L. clavicornis* | 39.98 | 12.43 | 38.62 | 8.96 | 78.61 | -0.017 | -0.162 |
|  | *L. yaniae* | 41.48 | 11.5 | 37.73 | 9.29 | 79.2 | -0.047 | -0.106 |
| First codon position | *L. pariaformis* | 32.93 | 11.63 | 41.08 | 14.36 | 74.01 | 0.110 | 0.105 |
|  | *L. clavicornis* | 32.00 | 12.45 | 41.50 | 14.05 | 73.50 | 0.129 | 0.061 |
|  | *L. yaniae* | 33.94 | 11.04 | 40.62 | 14.4 | 74.56 | 0.09 | 0.132 |
| Second codon position | *L. pariaformis* | 46.55 | 18.79 | 22.65 | 12.02 | 69.20 | -0.345 | -0.220 |
|  | *L. clavicornis* | 47.14 | 18.26 | 22.77 | 11.84 | 69.90 | -0.349 | -0.213 |
|  | *L. yaniae* | 46.29 | 18.76 | 22.95 | 12.00 | 69.24 | -0.337 | -0.220 |
| Third codon position | *L. pariaformis* | 38.96 | 7.94 | 52.06 | 1.04 | 91.02 | 0.144 | -0.768 |
|  | *L. clavicornis* | 40.81 | 6.59 | 51.60 | 1.00 | 92.41 | 0.117 | -0.737 |
|  | *L. yaniae* | 44.2 | 4.71 | 49.61 | 1.48 | 93.80 | 0.058 | -0.521 |
| Protein-coding genes-N | *L. pariaformis* | 51.06 | 6.52 | 30.54 | 11.88 | 81.60 | -0.251 | 0.291 |
|  | *L. clavicornis* | 50.80 | 6.78 | 30.86 | 11.55 | 81.67 | -0.244 | 0.260 |
|  | *L. yaniae* | 50.78 | 6.96 | 31.19 | 11.06 | 81.97 | -0.239 | 0.227 |
| First codon position | *L. pariaformis* | 44.58 | 6.08 | 33.75 | 15.58 | 78.34 | -0.138 | 0.439 |
|  | *L. clavicornis* | 43.82 | 6.43 | 34.38 | 15.37 | 78.20 | -0.121 | 0.410 |
|  | *L. yaniae* | 45.00 | 6.29 | 33.26 | 15.44 | 78.27 | -0.150 | 0.421 |
| Second codon position | *L. pariaformis* | 54.51 | 12.79 | 19.08 | 13.63 | 73.58 | -0.481 | 0.032 |
|  | *L. clavicornis* | 54.44 | 12.93 | 19.15 | 13.49 | 73.58 | -0.480 | 0.021 |
|  | *L. yaniae* | 54.30 | 13.21 | 19.08 | 13.42 | 73.38 | -0.480 | 0.008 |
| Third codon position | *L. pariaformis* | 54.09 | 0.70 | 38.78 | 6.43 | 92.87 | -0.165 | 0.804 |
|  | *L. clavicornis* | 54.16 | 0.98 | 39.06 | 5.80 | 93.22 | -0.162 | 0.711 |
|  | *L. yaniae* | 53.04 | 1.40 | 41.23 | 4.33 | 94.27 | -0.125 | 0.512 |
| tRNA genes | *L. pariaformis* | 41.25 | 6.71 | 42.72 | 9.32 | 83.97 | 0.018 | 0.163 |
|  | *L. clavicornis* | 41.02 | 6.99 | 42.37 | 9.62 | 83.39 | 0.016 | 0.158 |
|  | *L. yaniae* | 40.80 | 6.50 | 43.90 | 8.80 | 84.70 | 0.037 | 0.150 |
| rRNA genes | *L. pariaformis* | 45.38 | 5.29 | 38.70 | 10.63 | 84.08 | -0.079 | 0.335 |
|  | *L. clavicornis* | 45.69 | 5.10 | 39.06 | 10.15 | 84.75 | -0.078 | 0.331 |
|  | *L. yaniae* | 45.28 | 5.28 | 39.17 | 10.28 | 84.44 | -0.072 | 0.321 |