Supplementary table 1: Log-likelihood/total tree length/total internal branch length scores of phylogenetic trees with respect to various substitution matrices and alignments of set1.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Alignment | BLOSUM 62 | Dayhoff | JTT | JTT  DCMut | LG | PMB | VT | WAG | DCMut | Minimum | Maximum | Average | Standard deviation |
| CLUSTAL- Omega | -11036.7  /12.939  /7.702 | -11139.7  /14.875  /8.937 | -11079.5  /14.131  /8.396 | -11082.2  /14.170  /8.419 | -11191.6  /14.795 /8.812 | -11015.6  /12.704  /7.547 | -11018.8  /12.893  /7.650 | -11029.9  /13.545  /8.024 | -11138.7  /14.845  / 8.915 | -11191.6  /12.704  /7.547 | -11015.6  /14.875  /8.937 | -11081.4  /13.877  /8.267 | 62.979 /0.884  /0.556 |
| MUSCLE | -11772.8  /16.581  /8.947 | -11845.0  /19.847  /10.902 | -11793.9  /18.822  /10.251 | -11792.2  /19.05  /10.526 | -11898.2  /20.227  /11.039 | -11756.3  /16.216  /8.833 | -11748.8  /16.738  /9.146 | -11756.3  /18.016  /9.984 | -11844.0  /19.796  /10.872 | -11898.2  /16.216  /8.833 | -11748.8  /20.227  /11.039 | -11800.8  /18.366  /10.056 | 51.083  /1.539  /0.877 |
| Kalign | -11378.2  /14.45  /8.876 | -11470.2  /16.831  /10.388 | -11414.7  /15.965  /9.782 | -11416.0  /16.001  /9.795 | -11494.4  /16.644  /10.374 | -11358.9  /14.158  /8.691 | -11360.7  /14.416  /8.8464 | -11365.2  /15.229  /9.388 | -11469.2  /16.790  /10.360 | -11494.4  /14.158  /8.691 | -11358.9  /16.831  /10.388 | -11414.2  /15.610  /9.611 | 52.681  /1.075  /0.692 |
| MAFFT | -11073.4  /12.143  /7.195 | -11120.5  /13.856  /8.388 | -11092.6  /13.322  /8.020 | -11092.5  /13.338  /8.031 | -11165.3  /13.763  /8.346 | -11065.5  /12.042  /7.134 | -11055.3  /12.191  /7.220 | -11046.0  /12.738  /7.589 | -11120.1  /13.831  /8.368 | -11165.3  /12.042  /7.134 | -11046.0  /13.856  /8.388 | -11092.3  /13.025  /7.810 | 37.888  /0.758  /0.531 |
| TCoffee1 | -11421.2  /12.976  /7.997 | -11512.2  /15.173  /9.561 | -11443.6  /14.181  /8.832 | -11444.2  /14.201  /8.839 | -11556.2  /14.688  /9.172 | -11397.8  /12.742  /7.827 | -11400.5  /13.032  /8.033 | -11415.9  /13.611  /8.411 | -11511.0  /15.143  /9.538 | -11556.2  /12.742  /7.827 | -11397.8  /15.173  /9.561 | -11455.8  /13.972  /8.690 | 56.801  /0.931  /0.660 |
| EXPRESSO TCoffee | -11508.4  /13.281  /8.203 | -11622.3  /15.568  /9.777 | -11545.0  /14.601  /9.046 | -11545.5  /14.625  /9.055 | -11661.8  /15.122  /9.275 | -11483.8  /13.029  /8.021 | -11491.1  /13.316  /8.212 | -11513.8  /14.052  /8.701 | -11620.7  /15.536  /9.753 | -11661.8  /13.029  /8.021 | -11483.8  /15.568  /9.777 | -11554.7  /14.348  /8.894 | 64.694  /0.979  /0.657 |
| MCoffee | -11421.2  /13.452  /8.117 | -11503.1  /15.703  /9.620 | -11439.6  /14.839  /9.046 | -11439.2  /14.861  /9.046 | -11561.3  /15.657  /9.658 | -11403.8  /13.208  /7.950 | -11395.7  /13.466  /8.116 | -11409.9  /14.271  /8.679 | -11501.9  /15.671  /9.602 | -11561.3  /13.208  /7.950 | -11395.7  /15.703  /9.658 | -11452.8  /14.570  /8.870 | 56.548  /1.0153  /0.689 |
| PSI TCoffee | -11507.4  /13.460  /8.447 | -11592.7  /15.686  /10.333 | -11532.6  /14.648  /9.218 | -11534.6  /14.674  /9.221 | -11651.2  /15.250  /9.666 | -11481.5  /13.205  /8.320 | -11489.4  /13.491  /8.462 | -11506.7  /14.371  /9.349 | -11591.6  /15.653  /10.306 | -11651.2  /13.205  /8.320 | -11506.7  /15.686  /10.333 | -8986.0  /14.493  /9.258 | 7685.013  /0.945  /0.758 |
| MUSCLE1 | -11425.2  /13.933  /8.93 | -11467.9  /15.989  /10.298 | -11426.8  /15.151  /9.693 | -11427.9  /15.170  /9.687 | -11525.3  /15.951  /10.3 | -11406.7  /13.657  /8.639 | -11399.9  /13.842  /8.796 | -11399.5  /14.672  /9.391 | -11466.8  /15.951  /10.274 | -11525.3  /13.657  /8.639 | -11399.5  /15.989  /10.300 | -11438.4  /14.924  /9.556 | 41.291  /0.947  /0.660 |
| CLUSTAL1 | -11036.7  /12.939  /7.702 | -11139.7  /14.876  /8.938 | -11079.5  /14.131  /8.396 | -11082.2  /14.17  /8.42 | -11191.6  /14.795  /8.812 | -11015.6  /12.704  /7.547 | -11018.8  /12.893  /7.65 | -11029.9  /13.545  /8.025 | -11138.7  /14.846  /8.916 | -11191.6 /12.704 /7.547 | -11015.653  /14.876  /8.938 | -11081.4  /13.878  /8.267 | 62.979  /0.884  /0.557 |
| MAFFT1 | -11015.7  /11.863  /7.020 | -11062.2  /13.175  /8.027 | -11003.5  /12.593  /7.559 | -11004.4  /12.579  /7.571 | -11092.1  /13.334  /8.007 | -11002.1  /11.682  /6.900 | -10988.0  /11.658  /6.942 | -10976.2  /12.13  /7.27 | -11061.9  /13.153  /8.01 | -11092.1 /11.658 /6.9 | -10976.256  /13.334  /8.027 | -11022.9  /12.463  /7.479 | 39.449  /0.661  /0.468 |
| Kalign1 | -10046.5  /9.578  /5.361 | -10048.5  /10.571  /6.079 | -10055.8  /10.223  /5.822 | -10053.5  /10.228  /5.82 | -10013.0  /10.429  /5.927 | -10053.7  /9.453  /5.289 | -10030.1  /9.6  /5.402 | -9982.5  /9.950  /5.636 | -10048.5  /10.556  /6.068 | -10055.8 /9.453 /5.289 | -9982.5  /10.571  /6.079 | -10036.9  /10.066  /5.712 | 24.639  /0.435  /0.303 |
| PROMALS3D | -11036.7  /12.939  /7.702 | -11832.6  /18.28  /12.423 | -11775.2  /17.192  /11.432 | -11775.4  /17.222  /11.448 | -11888.4  /18.053  /12.237 | -11732.1  /15.138  /10.093 | -11732.4  /15.366  /10.140 | -11747.9  /16.398  /10.946 | -11831.4  /18.23  /12.38 | -11888.4 /12.939 /7.702 | -11036.7  /18.28  /12.423 | -11705.8  /16.535  /10.978 | 256.342  /1.781  /1.51 |
| Minimum | -11772.8  /9.578  /5.361 | -11845.0  /10.571  /6.079 | -11793.9  /10.223  /5.82 | -11792.2  /10.228  /5.822 | -11898.2  /10.429  /5.927 | -11756.3  /9.453  /5.289 | -11748.8  /9.6  /5.402 | -11756.3  /9.95  /5.636 | -11844.0  /10.556  /6.068 |  |  |  |  |
| Maximum | -10046.5  /16.581  /8.947 | -10048.5  /19.847  /12.423 | -10055.8  /18.822  /11.432 | -10053.5  /19.05  /11.448 | -10013.0  /20.227  /12.237 | -10053.7  /16.216  /10.093 | -10030.1  /16.738  /10.14 | 11506.7  /18.016  /10.946 | -10048.5  /19.796  /12.38 |  |  |  |  |
| Average | -11206.2  /13.118  /7.861 | -11335.1  /15.418  /9.513 | -11283.2  /14.6  /8.884 | -11283.8  /14.638  /8.914 | -11376.2  /15.285  /9.356 | -11244.1  /13.072  /7.907 | -11240.7  /13.3  /8.047 | -9474.3  /14.041  /8.569 | -11334.2  /15.385  /9.489 |  |  |  |  |
| Standard deviation | 424.059/  1.57/  0.973 | 465.843  /2.271  /1.54 | 449.615  /2.085  /1.364 | 449.917  /2.127  /1.389 | 487.047  /2.328  /1.54 | 439.223  /1.637  /1.143 | 444.995  /1.725  /1.162 | 6320.371  /1.958  /1.338 | 465.484  /2.261  /1.53 |  |  |  |  |