

# Supplementary Information: *Relative model selection of evolutionary substitution models is sensitive to multiple sequence alignment uncertainty*

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## Supplementary Figures

Figure S1

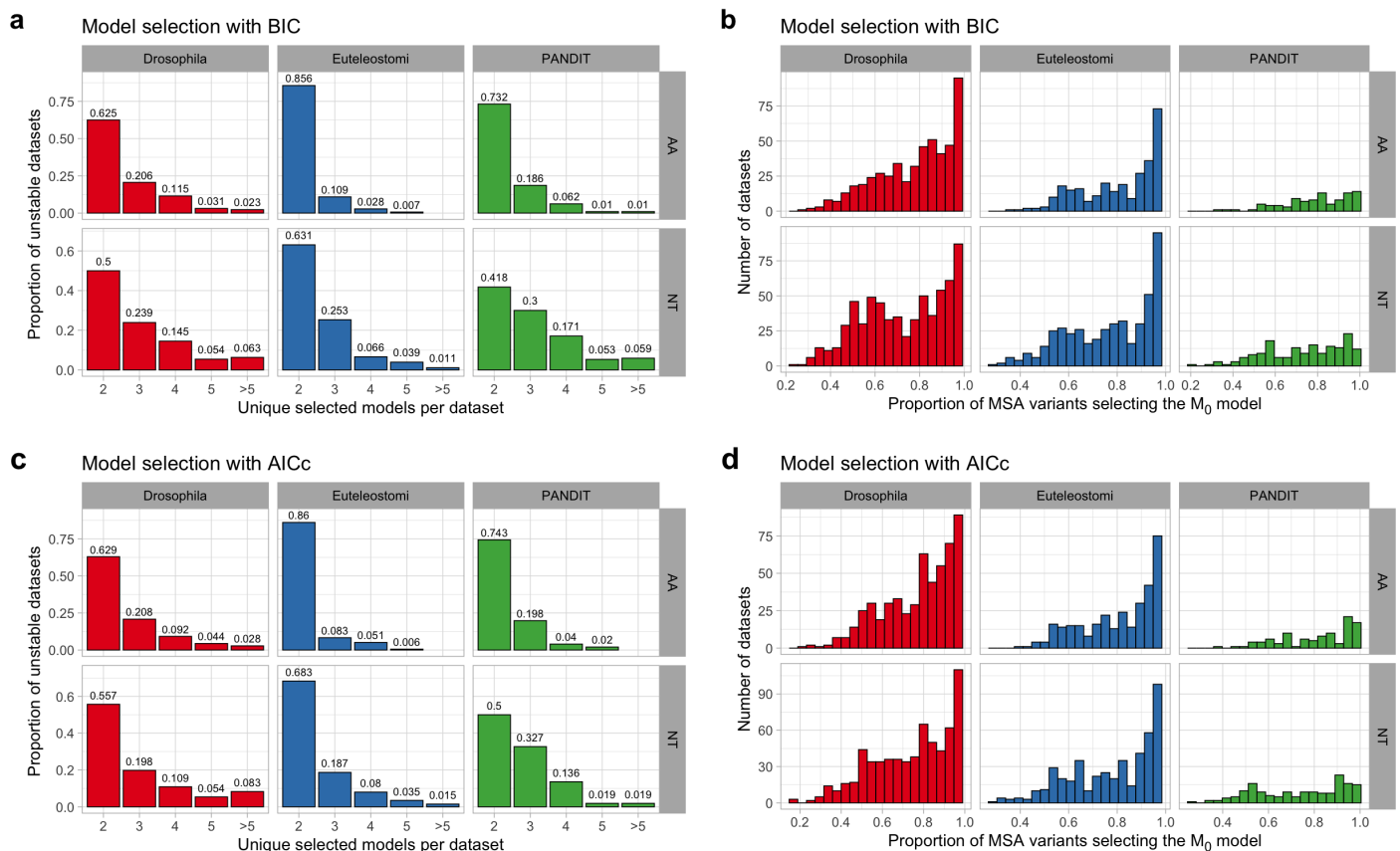


Figure S2

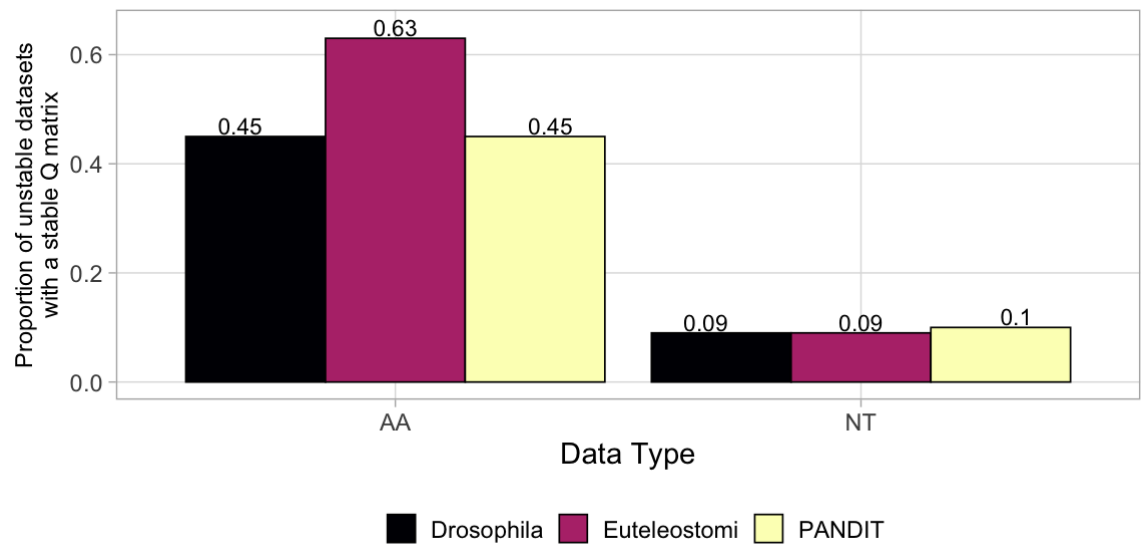
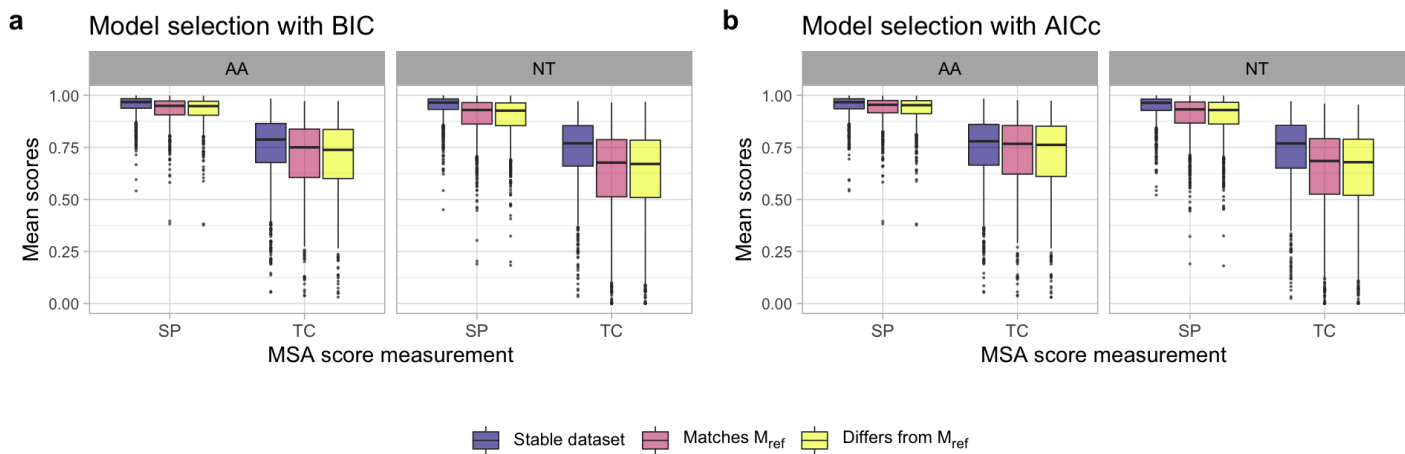


Figure S3



# Supplementary Tables

Table S1

| SP and TC scores comparisons among groups |            |                       |                             |                  |
|---|------------|-----------------------|-----------------------------|------------------|
| Model selection with BIC                  |            |                       |                             |                  |
| Datatype                                  | Score type | Comparison            | Effect size (99% CI)        | Adjusted P-value |
| AA  | SP         | differs-matches       | -0.002 (-0.011, 0.008)      | 0.867            |
| <b>AA</b>                                 | <b>SP</b>  | <b>stable-matches</b> | <b>0.023 (0.015, 0.032)</b> | <b>0.000</b>     |
| <b>AA</b>                                 | <b>SP</b>  | <b>stable-differs</b> | <b>0.025 (0.017, 0.033)</b> | <b>0.000</b>     |
| AA  | TC         | differs-matches       | -0.006 (-0.034, 0.021)      | 0.769            |
| <b>AA</b>                                 | <b>TC</b>  | <b>stable-matches</b> | <b>0.049 (0.026, 0.073)</b> | <b>0.000</b>     |
| <b>AA</b>                                 | <b>TC</b>  | <b>stable-differs</b> | <b>0.056 (0.032, 0.079)</b> | <b>0.000</b>     |
| NT  | SP         | differs-matches       | -0.003 (-0.015, 0.009)      | 0.739            |
| <b>NT</b>                                 | <b>SP</b>  | <b>stable-matches</b> | <b>0.05 (0.038, 0.062)</b>  | <b>0.000</b>     |
| <b>NT</b>                                 | <b>SP</b>  | <b>stable-differs</b> | <b>0.053 (0.041, 0.065)</b> | <b>0.000</b>     |
| NT  | TC         | differs-matches       | -0.007 (-0.033, 0.019)      | 0.699            |
| <b>NT</b>                                 | <b>TC</b>  | <b>stable-matches</b> | <b>0.105 (0.079, 0.132)</b> | <b>0.000</b>     |
| <b>NT</b>                                 | <b>TC</b>  | <b>stable-differs</b> | <b>0.112 (0.086, 0.139)</b> | <b>0.000</b>     |

Table S2

| SP and TC scores comparisons among groups |            |                       |                             |                  |
|---|------------|-----------------------|-----------------------------|------------------|
| Model selection with AICc                 |            |                       |                             |                  |
| Datatype                                  | Score type | Comparison            | Effect size (99% CI)        | Adjusted P-value |
| AA  | SP         | differs-matches       | -0.002 (-0.012, 0.007)      | 0.762            |
| <b>AA</b>                                 | <b>SP</b>  | <b>stable-matches</b> | <b>0.016 (0.008, 0.025)</b> | <b>0.000</b>     |
| <b>AA</b>                                 | <b>SP</b>  | <b>stable-differs</b> | <b>0.019 (0.01, 0.027)</b>  | <b>0.000</b>     |
| AA  | TC         | differs-matches       | -0.008 (-0.034, 0.018)      | 0.653            |
| <b>AA</b>                                 | <b>TC</b>  | <b>stable-matches</b> | <b>0.025 (0.001, 0.048)</b> | <b>0.006</b>     |
| <b>AA</b>                                 | <b>TC</b>  | <b>stable-differs</b> | <b>0.033 (0.009, 0.056)</b> | <b>0.000</b>     |
| NT  | SP         | differs-matches       | -0.002 (-0.014, 0.01)       | 0.831            |
| <b>NT</b>                                 | <b>SP</b>  | <b>stable-matches</b> | <b>0.044 (0.032, 0.056)</b> | <b>0.000</b>     |
| <b>NT</b>                                 | <b>SP</b>  | <b>stable-differs</b> | <b>0.046 (0.034, 0.058)</b> | <b>0.000</b>     |
| NT  | TC         | differs-matches       | -0.006 (-0.032, 0.02)       | 0.788            |
| <b>NT</b>                                 | <b>TC</b>  | <b>stable-matches</b> | <b>0.095 (0.068, 0.121)</b> | <b>0.000</b>     |
| <b>NT</b>                                 | <b>TC</b>  | <b>stable-differs</b> | <b>0.101 (0.074, 0.127)</b> | <b>0.000</b>     |