

Supplementary Materials

Juan J. García Mesa

Accuracy at inferring simulated alignments (d_{seq})

One-tailed Wilcoxon rank test between COATi and alternative aligners.

```
# one-side wilcoxon rank test
wilcox.test(coati, clustalomega)
```

```
##
## Wilcoxon rank sum test with continuity correction
##
## data: coati and clustalomega
## W = 18461686, p-value < 2.2e-16
## alternative hypothesis: true location shift is not equal to 0
wilcox.test(coati, macse)
```

```
##
## Wilcoxon rank sum test with continuity correction
##
## data: coati and macse
## W = 24427919, p-value < 2.2e-16
## alternative hypothesis: true location shift is not equal to 0
wilcox.test(coati, mafft)
```

```
##
## Wilcoxon rank sum test with continuity correction
##
## data: coati and mafft
## W = 28045629, p-value = 6.297e-08
## alternative hypothesis: true location shift is not equal to 0
wilcox.test(coati, prank)
```

```
##
## Wilcoxon rank sum test with continuity correction
##
## data: coati and prank
## W = 28243354, p-value = 4.045e-06
## alternative hypothesis: true location shift is not equal to 0
```

Summary statistics

	coati	prank	mafft	clustalo	macse
d_{seq}	0.002136	0.020016	0.013904	0.026805	0.013505
Perfect alignments	4123.000000	4259.000000	4325.000000	2449.000000	3450.000000
Best alignments	5120.000000	4747.000000	4803.000000	2583.000000	3733.000000
Imperfect alignments	2064.000000	1928.000000	1862.000000	3738.000000	2737.000000
F1-score pos selection	0.982307	0.884286	0.861901	0.712676	0.813375
F1-score neg selection	0.998204	0.988375	0.985678	0.970681	0.982918

Additional information

	coati	prank	mafft	clustalo	macse
Number of gap patterns in true data set	1533	1609	1544	1509	1473

COATi used the tri-mg model.

Supplementary Materials

Juan J. García Mesa

Accuracy at inferring simulated alignments (d_{seq})

One-tailed Wilcoxon rank test between COATi and alternative aligners.

```
# one-side wilcoxon rank test
wilcox.test(coati, clustalomega)
```

```
##
## Wilcoxon rank sum test with continuity correction
##
## data: coati and clustalomega
## W = 19131262, p-value < 2.2e-16
## alternative hypothesis: true location shift is not equal to 0
wilcox.test(coati, macse)
```

```
##
## Wilcoxon rank sum test with continuity correction
##
## data: coati and macse
## W = 24880694, p-value < 2.2e-16
## alternative hypothesis: true location shift is not equal to 0
wilcox.test(coati, mafft)
```

```
##
## Wilcoxon rank sum test with continuity correction
##
## data: coati and mafft
## W = 28106753, p-value = 2.8e-05
## alternative hypothesis: true location shift is not equal to 0
wilcox.test(coati, prank)
```

```
##
## Wilcoxon rank sum test with continuity correction
##
## data: coati and prank
## W = 28418524, p-value = 0.00332
## alternative hypothesis: true location shift is not equal to 0
```

Summary statistics

	coati	prank	mafft	clustalo	macse
d_{seq}	0.002428	0.020512	0.014642	0.028253	0.013672
Perfect alignments	3996.000000	4192.000000	4251.000000	2487.000000	3423.000000
Best alignments	4931.000000	4763.000000	4707.000000	2642.000000	3713.000000
Imperfect alignments	2109.000000	1913.000000	1854.000000	3618.000000	2682.000000
F1-score pos selection	0.971922	0.877193	0.849123	0.713267	0.801925
F1-score neg selection	0.997191	0.987917	0.984473	0.971017	0.982389

Additional information

	coati	prank	mafft	clustalo	macse
Number of gap patterns in true data set	1523	1600	1538	1501	1474

COATi used the tri-ecm model.

Supplementary Materials

Juan J. García Mesa

Accuracy at inferring simulated alignments (d_{seq})

One-tailed Wilcoxon rank test between COATi and alternative aligners.

```
# one-side wilcoxon rank test
wilcox.test(coati, clustalomega)
```

```
##
## Wilcoxon rank sum test with continuity correction
##
## data: coati and clustalomega
## W = 18794914, p-value < 2.2e-16
## alternative hypothesis: true location shift is not equal to 0
wilcox.test(coati, macse)
```

```
##
## Wilcoxon rank sum test with continuity correction
##
## data: coati and macse
## W = 24915662, p-value < 2.2e-16
## alternative hypothesis: true location shift is not equal to 0
wilcox.test(coati, mafft)
```

```
##
## Wilcoxon rank sum test with continuity correction
##
## data: coati and mafft
## W = 28520433, p-value = 0.08244
## alternative hypothesis: true location shift is not equal to 0
wilcox.test(coati, prank)
```

```
##
## Wilcoxon rank sum test with continuity correction
##
## data: coati and prank
## W = 29298926, p-value = 0.1714
## alternative hypothesis: true location shift is not equal to 0
```

Summary statistics

	coati	prank	mafft	clustalo	macse
d_{seq}	0.001996	0.018133	0.013696	0.026246	0.013095
Perfect alignments	3701.000000	4283.000000	4267.000000	2432.000000	3400.000000
Best alignments	4700.000000	4816.000000	4780.000000	2592.000000	3746.000000
Imperfect alignments	2378.000000	1796.000000	1812.000000	3647.000000	2679.000000
F1-score pos selection	0.964260	0.891636	0.859574	0.724965	0.820269
F1-score neg selection	0.996462	0.989238	0.985663	0.971743	0.983736

Additional information

	coati	prank	mafft	clustalo	macse
Number of gap patterns in true data set	1514	1589	1540	1496	1471

COATi used the mar-mg model.

Supplementary Materials

Juan J. García Mesa

Accuracy at inferring simulated alignments (d_{seq})

One-tailed Wilcoxon rank test between COATi and alternative aligners.

```
# one-side wilcoxon rank test
wilcox.test(coati, clustalomega)
```

```
##
## Wilcoxon rank sum test with continuity correction
##
## data: coati and clustalomega
## W = 19072335, p-value < 2.2e-16
## alternative hypothesis: true location shift is not equal to 0
wilcox.test(coati, macse)
```

```
##
## Wilcoxon rank sum test with continuity correction
##
## data: coati and macse
## W = 25685608, p-value < 2.2e-16
## alternative hypothesis: true location shift is not equal to 0
wilcox.test(coati, mafft)
```

```
##
## Wilcoxon rank sum test with continuity correction
##
## data: coati and mafft
## W = 29006822, p-value = 0.0867
## alternative hypothesis: true location shift is not equal to 0
wilcox.test(coati, prank)
```

```
##
## Wilcoxon rank sum test with continuity correction
##
## data: coati and prank
## W = 29952730, p-value = 0.04707
## alternative hypothesis: true location shift is not equal to 0
```

Summary statistics

	coati	prank	mafft	clustalo	macse
d_{seq}	0.002086	0.020885	0.014399	0.028088	0.013850
Perfect alignments	3589.000000	4235.000000	4203.000000	2333.000000	3410.000000
Best alignments	4567.000000	4771.000000	4749.000000	2512.000000	3738.000000
Imperfect alignments	2510.000000	1864.000000	1896.000000	3766.000000	2689.000000
F1-score pos selection	0.969867	0.884151	0.853793	0.714086	0.794049
F1-score neg selection	0.996911	0.988308	0.984746	0.970533	0.981309

Additional information

	coati	prank	mafft	clustalo	macse
Number of gap patterns in true data set	1528	1607	1547	1511	1481

COATi used the mar-ecm model.