

Supplementary Material

Empirical substitution models of SARS-CoV-2 protein evolution for phylogenetic inference

The supplementary material includes Tables S1-S6 and the supplementary references.

Supplementary Tables

Table S1. Likelihood-based best-fitting standard empirical substitution model for each method dataset. The table lists the best-fitting empirical substitution model for each SARS-CoV-2 method dataset, as determined by *ModelFinder* based on the Bayesian information criterion (BIC). “+F” indicates that the amino acid frequencies of the model correspond to the observed amino acid frequencies in the multiple sequence alignment (i.e., method dataset).

SARS-CoV-2 protein	Mpro	PLpro	Spike	Proteome
Best-fitting standard substitution model	HIVw +F	HIVw	HIVw +F	cpREV +F

Table S2. Parameters used for the simulation of protein sequences under the birth-death population model and substitution models of protein evolution. The table indicates the parameters used in *ProteinEvolver2* to simulate multiple sequence alignments under each studied substitution model for the SARS-CoV-2 proteins Mpro and PLpro. The PDB files used correspond to the reference SARS-CoV-2 Wuhan strain, the structural parameters follow the default settings specified by the developers, the birth and death rates follow previous works [1] and the substitution rate was chosen to simulate sequences with identity close to that observed in the real data.

Model	Parameter	Mpro		PLpro
Birth-death model and structurally constrained substitution model	Pdb file	7N8C		6XA9
	Chain of the pdb file	A		A
	Temperature	1.0	0.5	1.0 0.5
	Configurational entropy per residue (unfolded)	0.13 0.065	0.13 0.065	
	Configurational entropy per residue (misfolded)	0.065	0.065	
	Configurational entropy offset (misfolded)	0	0	
	Third cumulant in REM calculation	0	0	
	Neutral landscape	Yes	Yes	
	Population size	10	10	
	Birth rate	0.4	0.4	
	Death rate	0.1	0.1	
	Substitution rate	7.5×10^{-4}	7.5×10^{-4}	
	Alignment length	306	316	
Standard empirical best-fitting substitution model and empirical SARS-CoV-2 protein models	Birth rate	0.4	0.4	
	Death rate	0.1	0.1	
	Substitution rate	9×10^{-5}	9×10^{-5}	
	Alignment length	306	316	

Table S3. Ranking of likelihood-based best-fitting substitution models for each test dataset of SARS-CoV-2 Mpro. The ranking is based on the Bayesian information criterion (BIC) and was obtained with *ModelFinder* for each test dataset. The SARS-CoV-2 models are highlighted in grey.

Test dataset	Model	LogL	AIC	w-AIC	AICc	w-AICc	BIC	w-BIC
TD1	SC2-Mpro	1268.042	2762.085	0.000335	2896.272	0.967	3182.85	0.967
	Q.bird	1271.651	2769.302	9.06E+06	2903.489	0.0262	3190.067	0.0262
	JTTDCMut	1273.705	2773.411	1.16E+06	2907.598	0.00336	3194.176	0.00336
	JTT	1274.051	2774.102	8.22E+07	2908.29	0.00238	3194.868	0.00238
	Q.mammal	1274.947	2775.894	3.36E+07	2910.082	0.00097	3196.659	0.00097
	FLAVI	1278.301	2782.602	1.17E+08	2916.789	3.39E+05	3203.367	3.39E+05
	FLU	1278.737	2783.475	7.58E+09	2917.662	2.19E+05	3204.24	2.19E+05
	HIVb	1280.218	2786.436	1.72E+09	2920.623	4.99E+06	3207.201	4.99E+06
	Q.plant	1282.709	2791.419	1.43E+10	2925.606	4.13E+07	3212.184	4.13E+07
	HIVw	1284.187	2794.374	3.26E+11	2928.562	9.42E+08	3215.139	9.42E+08
	WAG	1286.75	2799.5	2.51E+12	2933.687	7.26E+09	3220.265	7.26E+09
	VT	1287.452	2800.903	1.24E+12	2935.091	3.60E+09	3221.669	3.60E+09
	PMB	1290.572	2807.143	5.50E+14	2941.331	1.59E+10	3227.908	1.59E+10
	Blosum62	1291.365	2808.73	2.49E+14	2942.917	7.19E+11	3229.495	7.19E+11
	Q.insect	1294.276	2814.553	1.35E+15	2948.74	3.91E+12	3235.318	3.91E+12
	LG	1294.576	2815.151	1.00E+15	2949.339	2.90E+12	3235.917	2.90E+12
	Q.pfam	1294.706	2815.412	8.80E+16	2949.6	2.54E+12	3236.177	2.54E+12
	cpREV	1294.949	2815.898	6.90E+16	2950.086	2.00E+12	3236.663	2.00E+12
	SC2-Mpro+F	1241.092	2746.183	0.949	2949.143	3.20E+12	3237.696	1.19E+12
	Dayhoff	1296.784	2819.567	1.10E+16	2953.755	3.19E+13	3240.332	3.19E+13
	DCMut	1296.853	2819.706	1.03E+16	2953.894	2.97E+13	3240.471	2.97E+13

HIVw+F	1244.065	2752.131	0.0485	2955.09	1.63E+13	3243.644	6.08E+14
FLAVI+F	1247.968	2759.936	0.000979	2962.896	3.30E+15	3251.449	1.23E+15
Q.bird+F	1248.503	2761.007	0.000573	2963.966	1.93E+15	3252.52	7.19E+16
Q.mammal+F	1249.723	2763.445	0.000169	2966.405	5.71E+16	3254.958	2.12E+16
HIVb+F	1249.936	2763.872	0.000137	2966.831	4.61E+16	3255.385	1.72E+16
Q.yeast	1304.886	2835.771	3.34E+20	2969.959	9.65E+17	3256.536	9.65E+17
SC2-Proteome+F	1254.949	2773.897	9.11E+07	2976.857	3.07E+18	3265.411	1.14E+18
FLU+F	1255.28	2774.559	6.54E+07	2977.519	2.20E+18	3266.073	8.20E+19
JTTDCMut+F	1255.973	2775.946	3.27E+07	2978.906	1.10E+18	3267.459	4.10E+19
JTT+F	1256.043	2776.085	3.05E+07	2979.045	1.03E+18	3267.599	3.82E+19
Q.plant+F	1256.734	2777.468	1.53E+07	2980.427	5.14E+19	3268.981	1.92E+19
rtREV	1311.37	2848.74	5.10E+23	2982.928	1.47E+19	3269.505	1.47E+19
mtMet	1312.768	2851.536	1.26E+23	2985.724	3.64E+20	3272.301	3.64E+20
mtVer+F	1259.458	2782.916	1.00E+08	2985.875	3.38E+20	3274.429	1.26E+20
mtMet+F	1261.305	2786.61	1.58E+09	2989.569	5.32E+21	3278.123	1.98E+21
mtMAM+F	1261.749	2787.499	1.01E+09	2990.458	3.41E+21	3279.012	1.27E+21
mtMAM	1316.25	2858.501	3.87E+25	2992.688	1.12E+21	3279.266	1.12E+21
mtREV	1318.478	2862.957	4.17E+26	2997.144	1.21E+22	3283.722	1.21E+22
mtVer	1318.739	2863.479	3.21E+26	2997.666	9.29E+23	3284.244	9.29E+23
Q.insect+F	1264.653	2793.306	5.56E+11	2996.266	1.87E+22	3284.82	6.97E+23
mtZOA	1319.225	2864.45	1.98E+26	2998.638	5.71E+23	3285.216	5.71E+23
mtREV+F	1265.819	2795.638	1.73E+11	2998.598	5.83E+23	3287.151	2.17E+23
mtInv+F	1266.852	2797.703	6.17E+12	3000.663	2.08E+23	3289.216	7.73E+24
VT+F	1267.396	2798.791	3.58E+12	3001.751	1.21E+23	3290.304	4.49E+24

	WAG+F	1267.943	2799.885	2.07E+12	3002.845	6.97E+24	3291.399	2.60E+24
	Q.yeast+F	1269.384	2802.768	4.90E+13	3005.728	1.65E+24	3294.282	6.14E+25
	Q.pfam+F	1269.611	2803.222	3.90E+13	3006.181	1.32E+24	3294.735	4.90E+25
	LG+F	1270.005	2804.009	2.63E+13	3006.969	8.87E+25	3295.522	3.30E+25
	cpREV+F	1270.438	2804.875	1.71E+13	3007.835	5.75E+25	3296.389	2.14E+25
	Dayhoff+F	1275.857	2815.714	7.57E+16	3018.673	2.55E+27	3307.227	9.49E+28
	DCMut+F	1275.925	2815.85	7.07E+16	3018.81	2.38E+27	3307.364	8.86E+28
	rtREV+F	1276.197	2816.394	5.39E+16	3019.354	1.81E+27	3307.907	6.75E+28
	PMB+F	1277.503	2819.005	1.46E+16	3021.965	4.92E+28	3310.518	1.83E+28
	Blosum62+F	1277.645	2819.291	1.27E+16	3022.25	4.26E+28	3310.804	1.59E+28
	mtInv	1332.272	2890.544	4.26E+32	3024.732	1.23E+28	3311.309	1.23E+28
	mtZOA+F	1278.337	2820.674	6.34E+17	3023.634	2.13E+28	3312.187	7.95E+29
	mtART	1333.632	2893.264	1.09E+32	3027.451	3.16E+29	3314.029	3.16E+29
	mtART+F	1286.38	2836.76	2.04E+20	3039.72	6.86E+32	3328.274	2.55E+32
	SC2-Proteome	1346.091	2918.181	4.25E+38	3052.369	1.23E+34	3338.946	1.23E+34
TD2	SC2-Mpro	1315.044	2892.088	0.00195	3090.847	0.999	3379.878	0.999
	FLAVI	1322.245	2906.491	1.45E+06	3105.25	0.000745	3394.281	0.000745
	FLU	1326.335	2914.671	2.43E+08	3113.429	1.25E+05	3402.46	1.25E+05
	Q.bird	1327.241	2916.483	9.82E+09	3115.242	5.04E+06	3404.273	5.04E+06
	JTTDCMut	1328.751	2919.503	2.17E+09	3118.261	1.11E+06	3407.292	1.11E+06
	JTT	1329.229	2920.457	1.35E+09	3119.216	6.91E+07	3408.247	6.91E+07
	HIVb	1330.51	2923.019	3.74E+10	3121.778	1.92E+07	3410.809	1.92E+07
	Q.mammal	1331.186	2924.372	1.90E+10	3123.13	9.76E+08	3412.161	9.76E+08
	HIVw	1331.281	2924.562	1.73E+10	3123.321	8.87E+08	3412.352	8.87E+08

Q.plant	1337.057	2936.114	5.36E+13	3134.873	2.75E+10	3423.904	2.75E+10
SC2-Mpro+F	1289.816	2879.631	0.987	3171.889	2.52E+18	3438.169	2.20E+13
WAG	1344.408	2950.817	3.44E+16	3149.576	1.77E+13	3438.607	1.77E+13
VT	1345.323	2952.646	1.38E+16	3151.405	7.07E+14	3440.436	7.07E+14
cpREV	1348.418	2958.836	6.24E+18	3157.595	3.20E+15	3446.626	3.20E+15
PMB	1349.059	2960.118	3.29E+18	3158.877	1.69E+15	3447.908	1.69E+15
FLAVI+F	1294.732	2889.463	0.00723	3181.721	1.85E+20	3448.001	1.61E+15
HIVw+F	1295.316	2890.631	0.00403	3182.889	1.03E+20	3449.169	8.98E+16
Blosum62	1350.604	2963.208	7.01E+19	3161.967	3.60E+16	3450.998	3.60E+16
LG	1351.969	2965.937	1.79E+19	3164.696	9.20E+17	3453.727	9.20E+17
Dayhoff	1352.085	2966.169	1.59E+19	3164.928	8.19E+17	3453.959	8.19E+17
DCMut	1352.189	2966.378	1.44E+19	3165.137	7.37E+17	3454.168	7.37E+17
Q.insect	1352.382	2966.764	1.18E+19	3165.523	6.08E+17	3454.554	6.08E+17
Q.pfam	1353.287	2968.575	4.79E+20	3167.334	2.46E+17	3456.365	2.46E+17
HIVb+F	1302.705	2905.411	2.49E+06	3197.669	6.36E+24	3463.948	5.55E+19
FLU+F	1304.577	2909.155	3.83E+07	3201.413	9.79E+25	3467.692	8.53E+20
Q.bird+F	1305.586	2911.173	1.40E+07	3203.431	3.57E+25	3469.711	3.11E+20
Q.mammal+F	1307.592	2915.185	1.88E+08	3207.443	4.80E+26	3473.722	4.18E+21
Q.yeast	1362.464	2986.929	4.95E+24	3185.687	2.54E+21	3474.718	2.54E+21
JTTDCMut+F	1312.097	2924.193	2.08E+10	3216.451	5.31E+28	3482.731	4.63E+23
JTTF	1312.412	2924.825	1.52E+10	3217.083	3.87E+28	3483.362	3.38E+23
Q.plant+F	1313.017	2926.034	8.28E+11	3218.292	2.11E+28	3484.572	1.84E+23
SC2-Proteome+F	1315.046	2930.091	1.09E+11	3222.349	2.78E+29	3488.629	2.42E+24
rtREV	1371.065	3004.13	9.11E+28	3202.889	4.68E+25	3491.92	4.68E+25

mtMet	1378.392	3018.783	5.99E+31	3217.542	3.08E+28	3506.573	3.08E+28
mtMet+F	1325.122	2950.245	4.58E+16	3242.503	1.17E+33	3508.782	1.02E+28
Q.insect+F	1325.62	2951.24	2.78E+16	3243.498	7.11E+34	3509.778	6.20E+29
WAG+F	1325.717	2951.434	2.53E+16	3243.692	6.45E+34	3509.972	5.63E+29
cpREV+F	1325.764	2951.529	2.41E+16	3243.787	6.15E+34	3510.066	5.37E+29
mtVer+F	1325.773	2951.546	2.39E+16	3243.804	6.10E+34	3510.084	5.32E+29
VT+F	1326.917	2953.834	7.61E+17	3246.092	1.94E+34	3512.372	1.69E+29
mtMAM+F	1329.238	2958.476	7.47E+18	3250.734	1.91E+35	3517.013	1.66E+30
LG+F	1329.515	2959.03	5.66E+18	3251.288	1.45E+35	3517.568	1.26E+30
mtZOA	1383.921	3029.842	2.38E+33	3228.6	1.22E+30	3517.631	1.22E+30
mtInv+F	1329.756	2959.512	4.45E+18	3251.77	1.14E+35	3518.049	9.91E+31
Dayhoff+F	1329.994	2959.987	3.51E+18	3252.245	8.96E+36	3518.525	7.81E+31
DCMut+F	1330.097	2960.195	3.16E+18	3252.453	8.08E+36	3518.732	7.04E+31
Q.yeast+F	1330.195	2960.391	2.87E+18	3252.649	7.32E+36	3518.929	6.39E+31
Q.pfam+F	1330.409	2960.819	2.31E+18	3253.077	5.91E+36	3519.357	5.16E+31
mtREV+F	1330.92	2961.84	1.39E+18	3254.098	3.55E+36	3520.378	3.09E+31
mtREV	1385.391	3032.782	5.47E+34	3231.54	2.81E+31	3520.571	2.81E+31
mtMAM	1385.908	3033.817	3.26E+34	3232.575	1.67E+31	3521.606	1.67E+31
mtVer	1386.616	3035.231	1.61E+34	3233.99	8.25E+32	3523.021	8.25E+32
PMB+F	1336.519	2973.038	5.14E+21	3265.296	1.31E+38	3531.576	1.15E+33
rtREV+F	1337.313	2974.626	2.32E+21	3266.884	5.94E+39	3533.164	5.18E+34
Blosum62+F	1338.479	2976.959	7.24E+22	3269.217	1.85E+39	3535.496	1.61E+34
mtZOA+F	1340.523	2981.046	9.38E+23	3273.304	2.40E+40	3539.584	2.09E+35
mtInv	1397.279	3056.557	3.76E+39	3255.316	1.93E+36	3544.347	1.93E+36

	mtART	1403.796	3069.592	5.56E+42	3268.35	2.85E+39	3557.381	2.85E+39
	SC2-Proteome	1404.655	3071.31	2.35E+42	3270.069	1.21E+39	3559.1	1.21E+39
	mtART+F	1353.577	3007.154	2.01E+28	3299.412	5.13E+46	3565.691	4.47E+41
TD3	SC2-Mpro	1226.175	2662.349	0.0417	2773.649	1	3053.326	1
	Q.bird	1243.045	2696.09	1.97E+09	2807.39	4.71E+08	3087.066	4.71E+08
	FLU	1243.251	2696.502	1.60E+09	2807.802	3.84E+08	3087.478	3.84E+08
	JTTDCMut	1245.547	2701.094	1.61E+10	2812.394	3.86E+09	3092.071	3.86E+09
	FLAVI	1245.575	2701.151	1.57E+10	2812.451	3.75E+09	3092.127	3.75E+09
	JTT	1245.609	2701.219	1.51E+10	2812.519	3.63E+09	3092.195	3.63E+09
	Q.mammal	1246.788	2703.576	4.65E+11	2814.876	1.12E+09	3094.552	1.12E+09
	HIVw	1249.485	2708.97	3.14E+12	2820.27	7.52E+11	3099.947	7.52E+11
	Q.plant	1252.247	2714.495	1.98E+13	2825.795	4.75E+12	3105.471	4.75E+12
	HIVb	1252.513	2715.026	1.52E+13	2826.326	3.64E+12	3106.003	3.64E+12
	WAG	1256.622	2723.244	2.50E+15	2834.544	5.98E+14	3114.22	5.98E+14
	VT	1257.66	2725.32	8.84E+16	2836.62	2.12E+14	3116.296	2.12E+14
	SC2-Mpro+F	1204.04	2656.08	0.958	2827.351	2.18E+12	3117.805	9.97E+15
	Dayhoff	1259.351	2728.703	1.63E+16	2840.003	3.90E+15	3119.679	3.90E+15
	DCMut	1259.373	2728.746	1.59E+16	2840.046	3.82E+15	3119.723	3.82E+15
	PMB	1259.48	2728.961	1.43E+16	2840.261	3.43E+15	3119.937	3.43E+15
	Blosum62	1261.179	2732.358	2.62E+17	2843.658	6.28E+16	3123.334	6.28E+16
	cpREV	1263.257	2736.515	3.28E+18	2847.815	7.85E+17	3127.491	7.85E+17
	LG	1263.453	2736.905	2.70E+18	2848.205	6.46E+17	3127.882	6.46E+17
	Q.pfam	1264.366	2738.733	1.08E+18	2850.033	2.59E+17	3129.709	2.59E+17
	Q.insect	1265.523	2741.047	3.40E+19	2852.347	8.15E+18	3132.023	8.15E+18

HIVw+F	1215.985	2679.969	6.22E+06	2851.24	1.42E+17	3141.694	6.47E+20
FLAVI+F	1218.142	2684.285	7.19E+07	2855.555	1.64E+18	3146.009	7.48E+21
Q.yeast	1274.492	2758.984	4.33E+23	2870.284	1.04E+21	3149.961	1.04E+21
rtREV	1277.588	2765.177	1.96E+24	2876.477	4.69E+23	3156.153	4.69E+23
Q.bird+F	1223.26	2694.519	4.31E+09	2865.79	9.81E+21	3156.244	4.48E+23
FLU+F	1223.931	2695.862	2.20E+09	2867.133	5.02E+21	3157.586	2.29E+23
Q.mammal+F	1225.449	2698.898	4.83E+10	2870.169	1.10E+21	3160.623	5.02E+24
HIVb+F	1225.48	2698.96	4.68E+10	2870.231	1.07E+21	3160.685	4.87E+24
Q.plant+F	1227.992	2703.985	3.79E+11	2875.256	8.64E+23	3165.71	3.95E+25
JTT+F	1230.06	2708.121	4.80E+12	2879.392	1.09E+23	3169.845	4.99E+26
JTTDCMut+F	1230.236	2708.472	4.02E+12	2879.743	9.16E+24	3170.197	4.19E+26
SC2-Proteome+F	1232.2	2712.401	5.64E+13	2883.671	1.29E+24	3174.125	5.87E+27
mtMet+F	1235.603	2719.206	1.88E+14	2890.476	4.28E+26	3180.93	1.95E+28
mtVer+F	1237.578	2723.157	2.61E+15	2894.427	5.93E+27	3184.881	2.71E+29
mtMet	1292.104	2794.209	9.71E+31	2905.509	2.33E+29	3185.185	2.33E+29
mtZOA	1292.129	2794.258	9.48E+31	2905.558	2.27E+29	3185.234	2.27E+29
Q.insect+F	1238.082	2724.165	1.57E+15	2895.435	3.59E+27	3185.889	1.64E+29
mtInv+F	1238.563	2725.126	9.73E+16	2896.397	2.22E+27	3186.851	1.01E+29
VT+F	1239.522	2727.044	3.73E+16	2898.315	8.50E+28	3188.768	3.88E+30
WAG+F	1239.825	2727.649	2.76E+16	2898.92	6.28E+28	3189.374	2.87E+30
Q.yeast+F	1240.018	2728.037	2.27E+16	2899.308	5.17E+28	3189.761	2.36E+30
LG+F	1240.785	2729.57	1.06E+16	2900.841	2.40E+28	3191.295	1.10E+30
cpREV+F	1241.015	2730.031	8.38E+17	2901.301	1.91E+28	3191.755	8.72E+31
Q.pfam+F	1241.11	2730.22	7.63E+17	2901.49	1.74E+28	3191.944	7.93E+31

	Dayhoff+F	1241.494	2730.988	5.19E+17	2902.259	1.18E+28	3192.713	5.40E+31
	DCMut+F	1241.515	2731.03	5.09E+17	2902.301	1.16E+28	3192.755	5.29E+31
	mtMAM+F	1243.532	2735.064	6.77E+18	2906.335	1.54E+29	3196.789	7.04E+32
	rtREV+F	1244.309	2736.618	3.11E+18	2907.889	7.08E+30	3198.343	3.24E+32
	mtREV+F	1244.898	2737.795	1.73E+18	2909.066	3.93E+30	3199.52	1.80E+32
	mtVer	1299.998	2809.996	3.62E+34	2921.296	8.69E+33	3200.973	8.69E+33
	mtREV	1300.55	2811.1	2.09E+34	2922.4	5.00E+33	3202.076	5.00E+33
	mtMAM	1301.029	2812.057	1.29E+34	2923.357	3.10E+33	3203.034	3.10E+33
	mtZOA+F	1248.146	2744.292	6.71E+20	2915.563	1.53E+31	3206.016	6.98E+34
	PMB+F	1249.186	2746.372	2.37E+20	2917.643	5.40E+32	3208.097	2.47E+34
	Blosum62+F	1249.686	2747.372	1.44E+20	2918.643	3.27E+32	3209.097	1.50E+34
	mtInv	1310.486	2830.973	1.01E+38	2942.273	2.42E+37	3221.949	2.42E+37
	mtART	1314.651	2839.302	1.57E+40	2950.602	3.76E+39	3230.279	3.76E+39
	mtART+F	1263.725	2775.45	1.15E+26	2946.72	2.62E+38	3237.174	1.20E+40
	SC2-Proteome	1322.198	2854.397	8.27E+44	2965.697	1.98E+42	3245.373	1.98E+42
TD4	SC2-Mpro	1275.915	2773.831	0.000518	2901.996	1	3187.149	1
	FLAVI	1284.454	2790.908	1.01E+07	2919.073	0.000196	3204.226	0.000196
	FLU	1289.315	2800.63	7.85E+10	2928.795	1.52E+06	3213.948	1.52E+06
	Q.bird	1289.405	2800.81	7.17E+10	2928.975	1.38E+06	3214.128	1.38E+06
	JTTDCMut	1290.776	2803.551	1.82E+10	2931.716	3.52E+07	3216.869	3.52E+07
	JTT	1291.339	2804.678	1.04E+10	2932.843	2.00E+07	3217.996	2.00E+07
	Q.mammal	1293.22	2808.441	1.58E+11	2936.606	3.05E+08	3221.759	3.05E+08
	HIVw	1293.371	2808.743	1.36E+11	2936.908	2.62E+08	3222.061	2.62E+08
	HIVb	1295.604	2813.209	1.46E+12	2941.374	2.81E+09	3226.527	2.81E+09

Q.plant	1298.325	2818.65	9.59E+14	2946.815	1.85E+10	3231.968	1.85E+10
SC2-Mpro+F	1249.351	2758.703	0.998	2953.331	7.12E+12	3242.769	8.36E+13
WAG	1305.229	2832.459	9.62E+17	2960.624	1.86E+13	3245.777	1.86E+13
VT	1306.376	2834.752	3.06E+17	2962.917	5.90E+14	3248.07	5.90E+14
cpREV	1308.545	2839.089	3.49E+18	2967.254	6.75E+15	3252.407	6.75E+15
PMB	1309.271	2840.542	1.69E+18	2968.707	3.26E+15	3253.86	3.26E+15
Blosum62	1310.116	2842.231	7.26E+19	2970.396	1.40E+15	3255.549	1.40E+15
FLAVI+F	1256.093	2772.186	0.00118	2966.814	8.41E+15	3256.252	9.87E+16
Dayhoff	1310.995	2843.991	3.01E+19	2972.155	5.82E+16	3257.308	5.82E+16
DCMut	1311.069	2844.139	2.80E+19	2972.304	5.40E+16	3257.457	5.40E+16
LG	1312.355	2846.71	7.74E+20	2974.875	1.49E+16	3260.028	1.49E+16
HIVw+F	1258.112	2776.224	0.000157	2970.852	1.12E+15	3260.29	1.31E+16
Q.insect	1312.859	2847.718	4.67E+20	2975.883	9.02E+17	3261.036	9.02E+17
Q.pfam	1313.491	2848.982	2.48E+20	2977.147	4.80E+17	3262.3	4.80E+17
Q.bird+F	1265.811	2791.622	7.09E+08	2986.25	5.06E+19	3275.688	5.94E+20
HIVb+F	1267.56	2795.12	1.23E+08	2989.749	8.80E+20	3279.186	1.03E+20
Q.mammal+F	1267.642	2795.283	1.14E+08	2989.912	8.11E+20	3279.349	9.52E+21
Q.yeast	1322.602	2867.204	2.74E+24	2995.369	5.30E+21	3280.522	5.30E+21
FLU+F	1268.241	2796.483	6.24E+09	2991.111	4.45E+20	3280.549	5.23E+21
SC2-Proteome+F	1271.929	2803.857	1.56E+10	2998.486	1.12E+21	3287.923	1.31E+22
Q.plant+F	1272.301	2804.603	1.08E+10	2999.231	7.68E+22	3288.669	9.02E+23
JTTDCMut+F	1272.928	2805.857	5.75E+11	3000.485	4.10E+22	3289.923	4.82E+23
JTT+F	1273.275	2806.55	4.07E+11	3001.178	2.90E+22	3290.616	3.41E+23
rtREV	1328.98	2879.959	4.66E+27	3008.124	9.00E+24	3293.277	9.00E+24

mtVer+F	1278.305	2816.61	2.66E+13	3011.238	1.90E+24	3300.676	2.23E+25
mtMet	1333.089	2888.179	7.65E+29	3016.344	1.48E+25	3301.497	1.48E+25
mtMet+F	1278.965	2817.93	1.37E+13	3012.559	9.80E+25	3301.996	1.15E+25
mtMAM+F	1280.637	2821.273	2.58E+14	3015.902	1.84E+25	3305.339	2.16E+26
mtZOA	1336.215	2894.429	3.36E+30	3022.594	6.49E+27	3307.747	6.49E+27
mtInv+F	1283.35	2826.7	1.71E+15	3021.329	1.22E+26	3310.766	1.43E+27
mtMAM	1338.546	2899.092	3.27E+31	3027.256	6.31E+28	3312.409	6.31E+28
cpREV+F	1284.297	2828.595	6.64E+16	3023.224	4.74E+27	3312.661	5.56E+28
mtVer	1338.68	2899.359	2.86E+31	3027.524	5.52E+28	3312.677	5.52E+28
Q.insect+F	1284.368	2828.737	6.19E+16	3023.365	4.41E+27	3312.803	5.18E+28
mtREV+F	1285.581	2831.162	1.84E+16	3025.791	1.31E+27	3315.228	1.54E+28
WAG+F	1285.876	2831.751	1.37E+16	3026.38	9.78E+28	3315.817	1.15E+28
VT+F	1286.526	2833.053	7.15E+17	3027.681	5.10E+28	3317.119	5.99E+29
mtREV	1341.605	2905.211	1.53E+32	3033.376	2.96E+29	3318.529	2.96E+29
Q.yeast+F	1287.324	2834.649	3.22E+17	3029.277	2.30E+28	3318.715	2.70E+29
Q.pfam+F	1288.087	2836.174	1.50E+17	3030.803	1.07E+28	3320.24	1.26E+29
LG+F	1288.132	2836.264	1.44E+17	3030.893	1.02E+28	3320.33	1.20E+29
Dayhoff+F	1288.882	2837.764	6.78E+18	3032.393	4.84E+29	3321.83	5.68E+30
DCMut+F	1288.956	2837.911	6.30E+18	3032.54	4.49E+29	3321.977	5.28E+30
mtZOA+F	1292.142	2844.284	2.60E+19	3038.912	1.86E+30	3328.35	2.18E+31
rtREV+F	1294.769	2849.538	1.88E+20	3044.166	1.34E+31	3333.604	1.58E+32
PMB+F	1296.115	2852.23	4.90E+21	3046.858	3.49E+32	3336.296	4.10E+33
mtInv	1351.378	2924.756	8.73E+37	3052.921	1.69E+33	3338.074	1.69E+33
Blosum62+F	1297.152	2854.304	1.74E+21	3048.933	1.24E+32	3338.37	1.45E+33

TD5	mtART	1351.652	2925.304	6.64E+37	3053.469	1.28E+33	3338.622	1.28E+33
	mtART+F	1300.453	2860.906	6.40E+23	3055.534	4.56E+34	3344.972	5.36E+35
	SC2-Proteome	1362.982	2947.964	7.97E+42	3076.129	1.54E+38	3361.282	1.54E+38
	FLAVI	1334.76	2923.519	0.0125	3106.171	0.605	3396.415	0.605
	SC2-Mpro	1335.402	2924.804	0.00655	3107.456	0.318	3397.7	0.318
	FLU	1337.04	2928.08	0.00127	3110.731	0.0619	3400.975	0.0619
	Q.bird	1338.598	2931.195	0.000268	3113.847	0.013	3404.09	0.013
	JTTDCMut	1341.982	2937.965	9.09E+06	3120.617	0.000442	3410.86	0.000442
	HIVb	1342.047	2938.094	8.52E+06	3120.746	0.000414	3410.99	0.000414
	JTT	1342.13	2938.26	7.84E+06	3120.912	0.000381	3411.155	0.000381
	Q.mammal	1342.582	2939.163	4.99E+06	3121.815	0.000243	3412.058	0.000243
	HIVw	1345.462	2944.925	2.80E+07	3127.576	1.36E+05	3417.82	1.36E+05
	Q.plant	1347.691	2949.383	3.01E+08	3132.034	1.46E+06	3422.278	1.46E+06
	WAG	1357.891	2969.782	1.12E+12	3152.434	5.45E+11	3442.678	5.45E+11
	VT	1357.964	2969.928	1.04E+12	3152.58	5.06E+11	3442.823	5.06E+11
	cpREV	1360.691	2975.382	6.82E+14	3158.033	3.31E+12	3448.277	3.31E+12
	Q.insect	1362.436	2978.871	1.19E+14	3161.523	5.79E+13	3451.767	5.79E+13
	PMB	1362.678	2979.356	9.35E+15	3162.008	4.54E+13	3452.251	4.54E+13
	LG	1363.233	2980.465	5.37E+15	3163.117	2.61E+13	3453.361	2.61E+13
	Blosum62	1363.757	2981.514	3.18E+15	3164.166	1.54E+13	3454.41	1.54E+13
	Dayhoff	1364.039	2982.078	2.40E+15	3164.73	1.16E+13	3454.973	1.16E+13
	DCMut	1364.148	2982.296	2.15E+15	3164.948	1.04E+13	3455.191	1.04E+13
	Q.pfam	1364.881	2983.763	1.03E+15	3166.414	5.01E+14	3456.658	5.01E+14
	FLAVI+F	1311.434	2914.868	0.942	3184.83	5.03E+18	3458.512	1.98E+14

SC2-Mpro+F	1314.864	2921.729	0.0305	3191.691	1.63E+19	3465.372	6.43E+16
HIVw+F	1316.38	2924.76	0.0067	3194.722	3.57E+20	3468.404	1.41E+16
Q.yeast	1371.872	2997.745	9.50E+19	3180.397	4.61E+17	3470.64	4.61E+17
HIVb+F	1319.618	2931.236	0.000263	3201.198	1.40E+21	3474.88	5.54E+18
FLU+F	1321.434	2934.867	4.28E+05	3204.83	2.28E+22	3478.511	9.01E+19
Q.bird+F	1321.663	2935.326	3.40E+05	3205.288	1.81E+22	3478.97	7.17E+19
Q.mammal+F	1323.739	2939.477	4.27E+06	3209.439	2.28E+23	3483.12	8.99E+20
rtREV	1380.596	3015.192	1.54E+22	3197.844	7.51E+21	3488.087	7.51E+21
Q.plant+F	1327.644	2947.288	8.59E+08	3217.25	4.59E+25	3490.931	1.81E+21
JTTDCMut+F	1329.14	2950.28	1.93E+08	3220.242	1.03E+25	3493.923	4.06E+22
JTT+F	1329.186	2950.373	1.84E+08	3220.335	9.81E+26	3494.016	3.87E+22
mtMet	1388.188	3030.375	7.80E+26	3213.027	3.79E+24	3503.271	3.79E+24
SC2-Proteome+F	1334.293	2960.586	1.11E+10	3230.549	5.94E+28	3504.23	2.35E+24
mtZOA	1393.454	3040.908	4.03E+28	3223.56	1.96E+26	3513.803	1.96E+26
mtMet+F	1339.539	2971.077	5.87E+13	3241.039	3.13E+30	3514.721	1.24E+26
Q.insect+F	1339.97	2971.939	3.81E+13	3241.902	2.03E+30	3515.583	8.03E+27
mtREV	1394.785	3043.571	1.06E+28	3226.222	5.17E+27	3516.466	5.17E+27
mtVer+F	1341.778	2975.557	6.25E+14	3245.519	3.33E+31	3519.2	1.32E+27
mtInv+F	1342.356	2976.713	3.50E+14	3246.675	1.87E+31	3520.356	7.39E+28
mtMAM	1396.8	3047.601	1.42E+29	3230.252	6.89E+28	3520.496	6.89E+28
WAG+F	1342.447	2976.894	3.20E+14	3246.856	1.71E+31	3520.537	6.75E+28
cpREV+F	1342.717	2977.434	2.44E+14	3247.396	1.30E+31	3521.077	5.15E+28
mtVer	1397.561	3049.123	6.62E+30	3231.775	3.22E+28	3522.018	3.22E+28
VT+F	1343.355	2978.71	1.29E+14	3248.673	6.89E+32	3522.354	2.72E+28

	Q.yeast+F	1343.536	2979.071	1.08E+14	3249.034	5.75E+32	3522.715	2.27E+28
	mtMAM+F	1344.139	2980.278	5.89E+15	3250.241	3.14E+32	3523.922	1.24E+28
	mtREV+F	1344.273	2980.546	5.15E+15	3250.509	2.75E+32	3524.19	1.09E+28
	LG+F	1344.568	2981.137	3.84E+15	3251.099	2.05E+32	3524.78	8.08E+29
	Q.pfam+F	1344.886	2981.772	2.79E+15	3251.734	1.49E+32	3525.415	5.89E+29
	Dayhoff+F	1345.522	2983.044	1.48E+15	3253.006	7.89E+33	3526.687	3.12E+29
	DCMut+F	1345.63	2983.26	1.33E+15	3253.222	7.08E+33	3526.903	2.80E+29
	mtInv	1405.127	3064.255	3.43E+33	3246.906	1.67E+31	3537.15	1.67E+31
	rtREV+F	1352.917	2997.833	9.08E+19	3267.796	4.85E+36	3541.477	1.91E+32
	mtZOA+F	1353.84	2999.681	3.61E+19	3269.643	1.92E+36	3543.324	7.60E+33
	PMB+F	1354.206	3000.412	2.50E+19	3270.375	1.34E+36	3544.056	5.27E+33
	Blosum62+F	1354.949	3001.898	1.19E+19	3271.86	6.35E+37	3545.541	2.51E+33
	mtART	1412.576	3079.152	2.00E+36	3261.803	9.70E+35	3552.047	9.70E+35
	SC2-Proteome	1419.072	3092.143	3.01E+39	3274.795	1.46E+37	3565.039	1.46E+37
	mtART+F	1366.675	3025.35	9.62E+25	3295.313	5.13E+42	3568.994	2.03E+38
TD6	SC2-Mpro	1304.85	2855.699	0.0292	3023.304	1	3313.7	1
	FLU	1320.815	2887.63	3.41E+09	3055.234	1.17E+07	3345.631	1.17E+07
	FLAVI	1321.102	2888.204	2.56E+09	3055.808	8.75E+08	3346.205	8.75E+08
	Q.bird	1326.14	2898.28	1.66E+11	3065.884	5.67E+10	3356.281	5.67E+10
	HIVb	1327.242	2900.484	5.51E+12	3068.088	1.88E+10	3358.485	1.88E+10
	JTTDCMut	1327.755	2901.511	3.30E+12	3069.115	1.13E+10	3359.512	1.13E+10
	JTT	1328.118	2902.237	2.29E+12	3069.841	7.84E+11	3360.238	7.84E+11
	Q.mammal	1330.08	2906.16	3.23E+13	3073.764	1.10E+11	3364.161	1.10E+11
	HIVw	1330.324	2906.648	2.53E+13	3074.253	8.64E+12	3364.649	8.64E+12

Q.plant	1334.536	2915.073	3.74E+15	3082.677	1.28E+13	3373.074	1.28E+13
SC2-Mpro+F	1282.347	2848.694	0.971	3097.848	6.50E+17	3377.443	1.44E+14
VT	1343.686	2933.373	3.98E+19	3100.977	1.36E+17	3391.374	1.36E+17
WAG	1343.739	2933.477	3.77E+19	3101.082	1.29E+17	3391.478	1.29E+17
cpREV	1343.912	2933.823	3.17E+19	3101.428	1.09E+17	3391.824	1.09E+17
Blosum62	1346.808	2939.616	1.75E+20	3107.221	5.99E+19	3397.617	5.99E+19
PMB	1347.289	2940.577	1.08E+20	3108.182	3.71E+19	3398.578	3.71E+19
Q.insect	1349.179	2944.358	1.64E+21	3111.963	5.60E+20	3402.359	5.60E+20
LG	1349.364	2944.728	1.36E+21	3112.333	4.65E+20	3402.729	4.65E+20
Q.pfam	1350.631	2947.262	3.83E+22	3114.866	1.31E+20	3405.263	1.31E+20
FLAVI+F	1296.258	2876.515	8.83E+07	3125.669	5.91E+23	3405.264	1.31E+20
Dayhoff	1351.131	2948.263	2.32E+22	3115.867	7.95E+21	3406.264	7.95E+21
DCMut	1351.187	2948.373	2.20E+22	3115.978	7.52E+21	3406.374	7.52E+21
HIVb+F	1301.437	2886.874	4.97E+09	3136.027	3.33E+25	3415.623	7.38E+23
HIVw+F	1302.402	2888.804	1.89E+09	3137.957	1.27E+25	3417.553	2.81E+23
FLU+F	1302.838	2889.675	1.23E+09	3138.828	8.21E+26	3418.424	1.82E+23
mtMet	1357.569	2961.139	3.72E+25	3128.743	1.27E+23	3419.14	1.27E+23
Q.bird+F	1303.358	2890.716	7.28E+10	3139.869	4.88E+26	3419.465	1.08E+23
Q.yeast	1357.796	2961.592	2.96E+25	3129.196	1.01E+23	3419.593	1.01E+23
Q.mammal+F	1304.857	2893.714	1.63E+10	3142.867	1.09E+26	3422.463	2.41E+24
mtMAM	1360.186	2966.373	2.71E+26	3133.977	9.28E+25	3424.374	9.28E+25
mtREV	1361.759	2969.518	5.63E+27	3137.123	1.93E+25	3427.519	1.93E+25
mtVer	1363.281	2972.563	1.23E+27	3140.167	4.20E+26	3430.564	4.20E+26
Q.plant+F	1309.723	2903.446	1.25E+12	3152.6	8.39E+29	3432.195	1.86E+26

JTTDCMut+F	1311.356	2906.712	2.45E+13	3155.865	1.64E+29	3435.461	3.63E+27
mtZOA	1365.991	2977.981	8.18E+29	3145.586	2.80E+27	3435.982	2.80E+27
JTT+F	1311.665	2907.329	1.80E+13	3156.483	1.20E+29	3436.079	2.67E+27
rtREV	1366.198	2978.397	6.65E+29	3146.001	2.27E+27	3436.398	2.27E+27
mtVer+F	1314.693	2913.387	8.70E+15	3162.54	5.82E+31	3442.136	1.29E+28
mtMAM+F	1314.822	2913.644	7.65E+15	3162.798	5.12E+31	3442.393	1.13E+28
mtMet+F	1315.167	2914.335	5.41E+15	3163.488	3.63E+31	3443.084	8.03E+29
SC2-Proteome+F	1318.076	2920.152	2.95E+16	3169.305	1.98E+32	3448.901	4.38E+30
mtREV+F	1318.115	2920.23	2.84E+16	3169.383	1.90E+32	3448.979	4.21E+30
mtInv+F	1322.125	2928.25	5.15E+18	3177.403	3.45E+34	3456.999	7.64E+32
Q.insect+F	1322.931	2929.863	2.30E+18	3179.016	1.54E+34	3458.612	3.41E+32
WAG+F	1324.526	2933.052	4.67E+19	3182.205	3.13E+35	3461.801	6.92E+33
cpREV+F	1324.584	2933.169	4.40E+19	3182.322	2.95E+35	3461.918	6.53E+33
mtInv	1378.996	3003.992	1.84E+34	3171.597	6.29E+33	3461.993	6.29E+33
VT+F	1325.76	2935.52	1.36E+19	3184.674	9.10E+36	3464.269	2.02E+33
Q.yeast+F	1326.36	2936.721	7.45E+20	3185.874	4.99E+36	3465.47	1.11E+33
LG+F	1326.968	2937.935	4.06E+20	3187.088	2.72E+36	3466.684	6.03E+34
Q.pfam+F	1327.062	2938.124	3.70E+20	3187.277	2.48E+36	3466.873	5.48E+34
Dayhoff+F	1327.694	2939.387	1.96E+20	3188.541	1.32E+36	3468.136	2.92E+34
DCMut+F	1327.748	2939.496	1.86E+20	3188.65	1.25E+36	3468.245	2.76E+34
mtART	1382.129	3010.258	8.02E+36	3177.862	2.74E+34	3468.259	2.74E+34
mtZOA+F	1330.879	2945.759	8.13E+22	3194.912	5.44E+38	3474.508	1.21E+35
rtREV+F	1334.55	2953.1	2.07E+23	3202.253	1.39E+39	3481.849	3.07E+37
Blosum62+F	1335.856	2955.713	5.60E+24	3204.866	3.75E+40	3484.462	8.31E+38

	PMB+F	1335.965	2955.931	5.02E+24	3205.084	3.36E+40	3484.68	7.45E+38
	mtART+F	1341.757	2967.515	1.53E+26	3216.668	1.03E+42	3496.264	2.27E+40
	SC2-Proteome	1403.472	3052.943	4.32E+45	3220.547	1.48E+43	3510.944	1.48E+43
	SC2-Mpro	1285.174	2804.349	0.0848	2951.221	1	3240.008	1
	Q.bird	1308.248	2850.497	8.08E+12	2997.369	9.53E+11	3286.156	9.53E+11
	FLAVI	1308.757	2851.513	4.86E+12	2998.385	5.73E+11	3287.172	5.73E+11
	JTTDCMut	1310.888	2855.777	5.77E+13	3002.649	6.80E+12	3291.436	6.80E+12
	JTT	1311.129	2856.257	4.54E+13	3003.129	5.35E+12	3291.916	5.35E+12
	FLU	1311.281	2856.561	3.90E+13	3003.434	4.59E+12	3292.221	4.59E+12
	Q.mammal	1312.463	2858.926	1.19E+13	3005.799	1.41E+12	3294.586	1.41E+12
	HIVw	1314.493	2862.985	1.57E+14	3009.857	1.85E+13	3298.645	1.85E+13
	HIVb	1316.848	2867.696	1.49E+15	3014.568	1.76E+14	3303.355	1.76E+14
	SC2-Mpro+F	1263.796	2799.591	0.915	3020.088	1.11E+15	3305.999	4.68E+15
TD7	Q.plant	1318.597	2871.193	2.59E+16	3018.066	3.05E+15	3306.853	3.05E+15
	VT	1324.414	2882.829	7.70E+19	3029.701	9.08E+18	3318.488	9.08E+18
	WAG	1325.762	2885.524	2.00E+19	3032.397	2.36E+18	3321.184	2.36E+18
	PMB	1327.46	2888.921	3.66E+20	3035.793	4.32E+19	3324.58	4.32E+19
	Blosum62	1329.233	2892.466	6.22E+21	3039.339	7.34E+20	3328.126	7.34E+20
	cpREV	1332.048	2898.096	3.73E+22	3044.968	4.40E+21	3333.755	4.40E+21
	LG	1332.725	2899.451	1.89E+22	3046.323	2.23E+21	3335.11	2.23E+21
	HIVw+F	1278.835	2829.67	2.69E+07	3050.167	3.27E+22	3336.078	1.38E+21
	Q.insect	1333.711	2901.422	7.07E+23	3048.294	8.33E+22	3337.081	8.33E+22
	Q.pfam	1333.878	2901.756	5.98E+23	3048.628	7.05E+22	3337.416	7.05E+22
	DCMut	1335.189	2904.378	1.61E+23	3051.25	1.90E+22	3340.037	1.90E+22

Dayhoff	1335.203	2904.406	1.59E+23	3051.279	1.87E+22	3340.066	1.87E+22
FLAVI+F	1281.224	2834.448	2.47E+08	3054.945	3.00E+23	3340.856	1.26E+22
Q.bird+F	1288.249	2848.497	2.20E+11	3068.994	2.67E+26	3354.905	1.12E+25
Q.yeast	1342.904	2919.808	7.19E+27	3066.68	8.48E+26	3355.467	8.48E+26
FLU+F	1289.625	2851.249	5.55E+12	3071.746	6.73E+27	3357.657	2.84E+26
HIVb+F	1289.846	2851.692	4.45E+12	3072.189	5.40E+27	3358.1	2.27E+26
Q.mammal+F	1290.462	2852.925	2.40E+12	3073.422	2.91E+27	3359.332	1.23E+26
rtREV	1349.16	2932.321	1.38E+29	3079.193	1.63E+28	3367.98	1.63E+28
SC2-Proteome+F	1294.823	2861.647	3.06E+14	3082.144	3.72E+29	3368.054	1.57E+28
Q.plant+F	1295.057	2862.114	2.43E+14	3082.611	2.94E+29	3368.522	1.24E+28
JTTDCMut+F	1295.139	2862.278	2.23E+14	3082.775	2.71E+29	3368.685	1.14E+28
JTT+F	1295.207	2862.414	2.09E+14	3082.912	2.53E+29	3368.822	1.07E+28
mtMet	1354.435	2942.871	7.06E+32	3089.743	8.32E+31	3378.53	8.32E+31
mtMet+F	1305.742	2883.485	5.55E+19	3103.982	6.74E+34	3389.892	2.84E+33
mtVer+F	1306.232	2884.463	3.40E+19	3104.96	4.13E+34	3390.871	1.74E+33
VT+F	1306.616	2885.232	2.32E+19	3105.729	2.81E+34	3391.64	1.18E+33
Q.insect+F	1306.93	2885.86	1.69E+19	3106.357	2.05E+34	3392.268	8.65E+34
WAG+F	1307.603	2887.206	8.63E+20	3107.703	1.05E+34	3393.613	4.42E+34
mtZOA	1362.532	2959.064	2.15E+35	3105.937	2.53E+34	3394.724	2.53E+34
mtVer	1362.674	2959.348	1.87E+35	3106.22	2.20E+34	3395.007	2.20E+34
mtMAM	1363.752	2961.504	6.35E+36	3108.376	7.49E+35	3397.163	7.49E+35
mtREV	1364.543	2963.087	2.88E+36	3109.959	3.39E+35	3398.746	3.39E+35
mtInv+F	1310.261	2892.522	6.05E+21	3113.019	7.35E+36	3398.93	3.09E+35
Q.yeast+F	1310.497	2892.994	4.78E+21	3113.491	5.80E+36	3399.401	2.44E+35

	LG+F	1310.834	2893.669	3.41E+21	3114.166	4.14E+36	3400.076	1.74E+35
	Q.pfam+F	1310.943	2893.886	3.06E+21	3114.384	3.71E+36	3400.294	1.56E+35
	cpREV+F	1311.004	2894.007	2.88E+21	3114.504	3.50E+36	3400.415	1.47E+35
	mtMAM+F	1312.055	2896.11	1.01E+21	3116.608	1.22E+36	3402.518	5.15E+36
	mtREV+F	1314.896	2901.792	5.87E+23	3122.289	7.13E+38	3408.2	3.00E+37
	DCMut+F	1315.057	2902.114	5.00E+23	3122.611	6.07E+38	3408.522	2.56E+37
	Dayhoff+F	1315.07	2902.139	4.94E+23	3122.636	5.99E+38	3408.547	2.53E+37
	PMB+F	1316.411	2904.822	1.29E+23	3125.319	1.57E+38	3411.23	6.60E+38
	rtREV+F	1317.524	2907.047	4.24E+24	3127.545	5.15E+39	3413.455	2.17E+38
	Blosum62+F	1317.925	2907.85	2.84E+24	3128.347	3.45E+39	3414.258	1.45E+38
	mtInv	1373.359	2980.718	4.27E+40	3127.591	5.03E+39	3416.378	5.03E+39
	mtZOA+F	1324.128	2920.255	5.75E+27	3140.752	6.98E+42	3426.663	2.94E+41
	SC2-Proteome	1381.774	2997.547	9.46E+44	3144.419	1.12E+42	3433.207	1.12E+42
	mtART	1387.74	3009.481	2.42E+46	3156.353	2.86E+45	3445.14	2.86E+45
	mtART+F	1342.98	2957.959	3.74E+35	3178.456	4.53E+50	3464.367	1.91E+49
TD8	SC2-Mpro	1248.864	2711.727	0.012	2828.455	1	3110.151	1
	Q.bird	1262.358	2738.715	1.66E+08	2855.443	1.38E+06	3137.139	1.38E+06
	FLU	1262.362	2738.725	1.65E+08	2855.452	1.37E+06	3137.148	1.37E+06
	FLAVI	1264.074	2742.147	2.98E+09	2858.875	2.48E+07	3140.571	2.48E+07
	JTTDCMut	1264.745	2743.49	1.52E+09	2860.218	1.27E+07	3141.914	1.27E+07
	JTT	1265.02	2744.039	1.16E+09	2860.767	9.63E+08	3142.463	9.63E+08
	HIVw	1266.844	2747.687	1.87E+10	2864.414	1.55E+08	3146.111	1.55E+08
	Q.mammal	1266.891	2747.782	1.78E+10	2864.509	1.48E+08	3146.205	1.48E+08
	Q.plant	1272.364	2758.727	7.48E+13	2875.454	6.23E+11	3157.151	6.23E+11

HIVb	1272.784	2759.569	4.91E+13	2876.296	4.09E+11	3157.992	4.09E+11
WAG	1278.514	2771.028	1.60E+15	2887.755	1.33E+13	3169.452	1.33E+13
VT	1278.607	2771.215	1.45E+15	2887.942	1.21E+13	3169.638	1.21E+13
PMB	1279.276	2772.552	7.45E+16	2889.28	6.19E+14	3170.976	6.19E+14
SC2-Mpro+F	1225.455	2702.91	0.988	2881.703	2.74E+12	3172.081	3.56E+14
cpREV	1279.999	2773.999	3.61E+16	2890.726	3.01E+14	3172.422	3.01E+14
Blosum62	1281.008	2776.016	1.32E+16	2892.744	1.10E+14	3174.44	1.10E+14
Dayhoff	1283.396	2780.793	1.21E+17	2897.52	1.01E+15	3179.217	1.01E+15
DCMut	1283.413	2780.827	1.19E+17	2897.554	9.89E+16	3179.25	9.89E+16
LG	1285.181	2784.362	2.03E+18	2901.089	1.69E+16	3182.785	1.69E+16
Q.insect	1285.358	2784.717	1.70E+18	2901.444	1.41E+16	3183.14	1.41E+16
Q.pfam	1285.484	2784.968	1.50E+18	2901.695	1.25E+16	3183.392	1.25E+16
HIVw+F	1235.407	2722.814	4.71E+05	2901.607	1.30E+16	3191.985	1.70E+18
FLAVI+F	1236.371	2724.742	1.79E+05	2903.536	4.97E+17	3193.914	6.47E+19
Q.bird+F	1239.06	2730.12	1.22E+06	2908.914	3.38E+18	3199.292	4.40E+20
Q.yeast	1294.183	2802.366	2.50E+22	2919.093	2.08E+20	3200.79	2.08E+20
Q.mammal+F	1241.151	2734.303	1.51E+07	2913.096	4.17E+19	3203.475	5.43E+21
FLU+F	1242.327	2736.653	4.65E+08	2915.446	1.29E+19	3205.825	1.68E+21
HIVb+F	1244.187	2740.374	7.23E+09	2919.167	2.00E+20	3209.546	2.61E+22
rtREV	1298.955	2811.91	2.12E+24	2928.637	1.76E+22	3210.333	1.76E+22
Q.plant+F	1245.591	2743.182	1.78E+09	2921.975	4.92E+21	3212.354	6.41E+23
JTT+F	1247.411	2746.822	2.88E+10	2925.615	7.98E+22	3215.993	1.04E+23
JTTDCMut+F	1247.431	2746.863	2.82E+10	2925.656	7.82E+22	3216.034	1.02E+23
SC2-Proteome+F	1250.061	2752.122	2.03E+11	2930.916	5.63E+23	3221.294	7.34E+25

mtMet	1305.92	2825.84	2.00E+27	2942.567	1.66E+25	3224.263	1.66E+25
mtVer+F	1253.352	2758.705	7.57E+13	2937.498	2.10E+24	3227.877	2.73E+26
mtMet+F	1254.73	2761.461	1.91E+13	2940.254	5.29E+25	3230.632	6.88E+27
Q.insec+tF	1255.214	2762.427	1.18E+13	2941.221	3.26E+25	3231.599	4.25E+27
cpREV+F	1256.012	2764.023	5.30E+14	2942.816	1.47E+25	3233.195	1.91E+27
Q.yeast+F	1257.67	2767.34	1.01E+14	2946.134	2.79E+26	3236.512	3.64E+28
mtZOA	1312.221	2838.442	3.67E+30	2955.169	3.05E+28	3236.866	3.05E+28
mtInv+F	1258.096	2768.193	6.59E+15	2946.986	1.82E+26	3237.364	2.38E+28
VT+F	1258.279	2768.558	5.49E+15	2947.351	1.52E+26	3237.729	1.98E+28
mtMAM+F	1258.961	2769.921	2.78E+15	2948.714	7.69E+27	3239.093	1.00E+28
Q.pfam+F	1259.006	2770.012	2.65E+15	2948.805	7.35E+27	3239.184	9.57E+29
WAG+F	1259.505	2771.01	1.61E+15	2949.803	4.46E+27	3240.182	5.81E+29
mtVer	1314.123	2842.246	5.47E+31	2958.973	4.55E+29	3240.669	4.55E+29
LG+F	1259.844	2771.689	1.15E+15	2950.482	3.18E+27	3240.86	4.14E+29
mtMAM	1315.453	2844.906	1.45E+31	2961.633	1.20E+29	3243.33	1.20E+29
Dayhoff+F	1262.523	2777.046	7.87E+17	2955.839	2.18E+28	3246.218	2.84E+30
DCMut+F	1262.539	2777.078	7.75E+17	2955.872	2.15E+28	3246.25	2.80E+30
mtREV+F	1262.884	2777.769	5.49E+17	2956.562	1.52E+28	3246.941	1.98E+30
mtREV	1317.812	2849.624	1.37E+32	2966.352	1.14E+30	3248.048	1.14E+30
rtREV+F	1263.577	2779.154	2.74E+17	2957.948	7.60E+29	3248.326	9.90E+31
PMB+F	1266.905	2785.81	9.84E+19	2964.603	2.73E+30	3254.982	3.55E+32
mtInv	1321.78	2857.561	2.59E+34	2974.288	2.15E+32	3255.984	2.15E+32
Blosum62+F	1268.575	2789.15	1.85E+19	2967.944	5.13E+31	3258.322	6.68E+33
mtZOA+F	1269.944	2791.888	4.71E+20	2970.681	1.31E+31	3261.06	1.70E+33

	mtART	1329.202	2872.403	1.55E+37	2989.131	1.29E+35	3270.827	1.29E+35
	mtART+F	1281.373	2814.746	5.13E+25	2993.539	1.42E+36	3283.917	1.85E+38
	SC2-Proteome	1337.781	2889.563	2.91E+41	3006.29	2.42E+39	3287.986	2.42E+39
	SC2-Mpro	1267.375	2760.751	0.000426	2894.938	1	3181.516	1
	Q.bird	1281.891	2789.783	2.11E+10	2923.97	4.96E+07	3210.548	4.96E+07
	JTTDCMut	1285.742	2797.484	4.49E+12	2931.672	1.06E+08	3218.249	1.06E+08
	JTT	1286.077	2798.154	3.21E+12	2932.342	7.55E+09	3218.919	7.55E+09
	Q.mammal	1286.722	2799.444	1.69E+12	2933.631	3.96E+09	3220.209	3.96E+09
	FLU	1288.572	2803.145	2.65E+13	2937.332	6.23E+10	3223.91	6.23E+10
	FLAVI	1289.346	2804.691	1.22E+13	2938.879	2.87E+10	3225.457	2.87E+10
	HIVw	1291.329	2808.657	1.68E+14	2942.845	3.96E+11	3229.422	3.96E+11
	Q.plant	1293.828	2813.656	1.38E+15	2947.843	3.25E+12	3234.421	3.25E+12
	HIVb	1294.075	2814.15	1.08E+15	2948.337	2.54E+12	3234.915	2.54E+12
TD9	SC2-Mpro+F	1240.614	2745.228	1	2948.188	2.73E+12	3236.742	1.02E+12
	WAG	1297.439	2820.879	3.74E+17	2955.066	8.78E+14	3241.644	8.78E+14
	VT	1298.621	2823.242	1.15E+17	2957.43	2.69E+14	3244.007	2.69E+14
	Dayhoff	1300.717	2827.435	1.41E+18	2961.622	3.31E+15	3248.2	3.31E+15
	DCMut	1300.77	2827.539	1.34E+18	2961.727	3.14E+15	3248.304	3.14E+15
	Blosum62	1301.813	2829.626	4.71E+19	2963.814	1.11E+15	3250.392	1.11E+15
	PMB	1301.842	2829.685	4.58E+19	2963.872	1.07E+15	3250.45	1.07E+15
	Q.pfam	1306.373	2838.745	4.93E+21	2972.933	1.16E+17	3259.51	1.16E+17
	LG	1306.464	2838.928	4.50E+21	2973.115	1.06E+17	3259.693	1.06E+17
	HIVw+F	1253.535	2771.07	2.45E+06	2974.03	6.69E+18	3262.583	2.49E+18
	Q.insect	1309.575	2845.149	2.01E+22	2979.337	4.71E+19	3265.914	4.71E+19

cpREV	1310.457	2846.913	8.30E+23	2981.101	1.95E+19	3267.678	1.95E+19
Q.bird+F	1257.65	2779.299	3.99E+08	2982.259	1.09E+19	3270.812	4.07E+20
Q.mammal+F	1260.362	2784.724	2.65E+09	2987.683	7.25E+21	3276.237	2.70E+21
FLAVI+F	1260.391	2784.782	2.58E+09	2987.741	7.05E+21	3276.295	2.62E+21
Q.yeast	1317.875	2861.751	4.98E+26	2995.938	1.17E+22	3282.516	1.17E+22
HIVb+F	1264.14	2792.279	6.07E+11	2995.239	1.66E+22	3283.792	6.18E+23
FLU+F	1264.439	2792.879	4.49E+11	2995.838	1.23E+22	3284.392	4.58E+23
Q.plant+F	1267.044	2798.088	3.32E+12	3001.047	9.09E+24	3289.601	3.39E+24
rtREV	1321.521	2869.041	1.30E+27	3003.229	3.05E+24	3289.806	3.05E+24
SC2-Proteome+F	1267.509	2799.018	2.09E+12	3001.977	5.71E+24	3290.531	2.13E+24
JTTDCMut+F	1268.096	2800.193	1.16E+12	3003.152	3.17E+24	3291.706	1.18E+24
JTT+F	1268.1	2800.2	1.16E+12	3003.159	3.16E+24	3291.713	1.18E+24
mtVer+F	1268.969	2801.937	4.85E+13	3004.897	1.33E+24	3293.451	4.94E+25
mtMet+F	1270.037	2804.075	1.67E+13	3007.034	4.56E+25	3295.588	1.70E+25
mtMet	1326.264	2878.527	1.13E+29	3012.715	2.66E+26	3299.292	2.66E+26
mtInv+F	1275.546	2815.091	6.75E+16	3018.051	1.85E+27	3306.605	6.88E+28
mtVer	1330.524	2887.049	1.60E+31	3021.236	3.76E+28	3307.814	3.76E+28
mtZOA	1330.877	2887.754	1.12E+31	3021.942	2.64E+28	3308.519	2.64E+28
VT+F	1278.363	2820.727	4.03E+17	3023.686	1.10E+28	3312.24	4.11E+29
Q.insect+F	1278.484	2820.967	3.58E+17	3023.927	9.78E+29	3312.481	3.64E+29
WAG+F	1278.835	2821.671	2.52E+17	3024.63	6.88E+29	3313.184	2.56E+29
Dayhoff+F	1279.775	2823.551	9.82E+18	3026.511	2.69E+29	3315.064	1.00E+29
DCMut+F	1279.827	2823.654	9.33E+18	3026.614	2.55E+29	3315.167	9.50E+30
Q.yeast+F	1280.048	2824.096	7.48E+18	3027.056	2.05E+29	3315.609	7.62E+30

	mtMAM+F	1280.241	2824.482	6.17E+18	3027.442	1.69E+29	3315.995	6.28E+30
	Q.pfam+F	1280.284	2824.569	5.91E+18	3027.528	1.62E+29	3316.082	6.02E+30
	mtREV+F	1281.605	2827.21	1.58E+18	3030.17	4.31E+30	3318.723	1.61E+30
	LG+F	1282.33	2828.66	7.64E+19	3031.619	2.09E+30	3320.173	7.78E+31
	mtREV	1338.405	2902.809	6.05E+35	3036.997	1.42E+31	3323.575	1.42E+31
	mtMAM	1339.483	2904.967	2.06E+35	3039.154	4.83E+32	3325.732	4.83E+32
	cpREV+F	1285.449	2834.899	3.37E+20	3037.858	9.23E+32	3326.412	3.44E+32
	mtZOA+F	1286.388	2836.776	1.32E+20	3039.735	3.61E+32	3328.289	1.34E+32
	PMB+F	1287.905	2839.81	2.90E+21	3042.77	7.92E+33	3331.323	2.95E+33
	Blosum62+F	1288.077	2840.155	2.44E+21	3043.114	6.67E+33	3331.668	2.48E+33
	rtREV+F	1288.357	2840.714	1.84E+21	3043.674	5.04E+33	3332.228	1.88E+33
	mtInv	1347.004	2920.008	1.11E+38	3054.195	2.62E+35	3340.773	2.62E+35
	mtART	1360.02	2946.04	2.48E+44	3080.228	5.82E+41	3366.805	5.82E+41
	mtART+F	1307.548	2879.097	8.52E+30	3082.056	2.33E+41	3370.61	8.68E+42
	SC2-Proteome	1362.547	2951.095	1.98E+45	3085.282	4.65E+42	3371.86	4.65E+42
TD10	SC2-Mpro	1284.755	2795.51	0.000154	2929.698	1	3216.275	1
	Q.bird	1293.643	2813.286	2.12E+08	2947.473	0.000138	3234.051	0.000138
	Q.mammal	1297.176	2820.353	6.19E+10	2954.54	4.03E+06	3241.118	4.03E+06
	JTTDCMut	1297.377	2820.755	5.06E+10	2954.942	3.30E+06	3241.52	3.30E+06
	JTT	1297.787	2821.573	3.36E+10	2955.761	2.19E+06	3242.338	2.19E+06
	FLU	1300.532	2827.064	2.16E+11	2961.252	1.41E+07	3247.829	1.41E+07
	HIVw	1301.934	2829.868	5.31E+12	2964.056	3.46E+08	3250.634	3.46E+08
	HIVb	1303.648	2833.296	9.58E+13	2967.483	6.24E+09	3254.061	6.24E+09
	FLAVI	1305.024	2836.048	2.42E+13	2970.236	1.57E+09	3256.813	1.57E+09

Q.plant	1307.662	2841.323	1.73E+14	2975.511	1.13E+10	3262.088	1.13E+10
WAG	1310.772	2847.544	7.71E+16	2981.731	5.02E+12	3268.309	5.02E+12
SC2-Mpro+F	1256.974	2777.948	1	2980.907	7.58E+12	3269.461	2.82E+12
VT	1311.561	2849.122	3.50E+16	2983.31	2.28E+12	3269.888	2.28E+12
PMB	1313.503	2853.006	5.02E+17	2987.194	3.27E+13	3273.771	3.27E+13
Blosum62	1314.385	2854.77	2.08E+17	2988.958	1.35E+13	3275.535	1.35E+13
Q.insect	1319.049	2864.098	1.96E+19	2998.285	1.28E+15	3284.863	1.28E+15
Dayhoff	1319.586	2865.171	1.15E+19	2999.359	7.47E+16	3285.936	7.47E+16
DCMut	1319.637	2865.274	1.09E+19	2999.462	7.09E+16	3286.04	7.09E+16
Q.pfam	1320.096	2866.192	6.88E+20	3000.38	4.48E+16	3286.957	4.48E+16
LG	1320.187	2866.375	6.28E+20	3000.562	4.09E+16	3287.14	4.09E+16
cpREV	1320.249	2866.498	5.91E+20	3000.685	3.85E+16	3287.263	3.85E+16
HIVw+F	1266.026	2796.053	0.000117	2999.012	8.88E+16	3287.566	3.31E+16
Q.bird+F	1269.624	2803.249	3.20E+06	3006.208	2.43E+17	3294.762	9.05E+18
Q.mammal+F	1271.132	2806.263	7.10E+07	3009.223	5.39E+18	3297.776	2.01E+18
HIVb+F	1275.272	2814.543	1.13E+08	3017.503	8.58E+20	3306.056	3.19E+20
FLAVI+F	1276.068	2816.136	5.10E+09	3019.096	3.87E+20	3307.65	1.44E+20
Q.yeast	1330.489	2886.978	2.11E+24	3021.165	1.37E+20	3307.743	1.37E+20
FLU+F	1277.994	2819.989	7.43E+10	3022.948	5.63E+21	3311.502	2.10E+21
rtREV	1333.158	2892.315	1.46E+25	3026.503	9.53E+22	3313.08	9.53E+22
JTTDCMut+F	1279.076	2822.153	2.52E+10	3025.112	1.91E+21	3313.666	7.11E+22
JTT+F	1279.238	2822.476	2.14E+10	3025.436	1.62E+21	3313.989	6.05E+22
Q.plant+F	1279.353	2822.705	1.91E+10	3025.665	1.45E+21	3314.218	5.39E+22
SC2-Proteome+F	1280.372	2824.744	6.89E+11	3027.704	5.23E+22	3316.257	1.95E+22

mtVer+F	1282.693	2829.385	6.77E+12	3032.345	5.13E+23	3320.898	1.91E+23
mtMet+F	1284.659	2833.318	9.47E+13	3036.277	7.19E+24	3324.831	2.68E+24
mtMAM+F	1284.766	2833.532	8.51E+13	3036.491	6.46E+24	3325.045	2.40E+24
mtMet	1339.255	2904.511	3.29E+28	3038.698	2.14E+24	3325.276	2.14E+24
mtMAM	1339.375	2904.75	2.92E+28	3038.938	1.90E+24	3325.516	1.90E+24
mtVer	1341.088	2908.176	5.26E+29	3042.364	3.43E+25	3328.942	3.43E+25
mtREV	1342.265	2910.531	1.62E+29	3044.718	1.06E+25	3331.296	1.06E+25
Q.insect+F	1288.683	2841.366	1.69E+14	3044.326	1.28E+25	3332.879	4.78E+26
mtREV+F	1289.45	2842.9	7.86E+15	3045.859	5.97E+26	3334.413	2.22E+26
VT+F	1290.416	2844.833	2.99E+15	3047.792	2.27E+26	3336.346	8.45E+27
WAG+F	1291.112	2846.223	1.49E+15	3049.183	1.13E+26	3337.736	4.22E+27
mtInv+F	1291.485	2846.969	1.03E+15	3049.929	7.80E+27	3338.482	2.90E+27
Q.yeast+F	1292.665	2849.329	3.16E+16	3052.289	2.40E+27	3340.842	8.92E+28
Q.pfam+F	1293.131	2850.263	1.98E+16	3053.222	1.50E+27	3341.776	5.59E+28
mtZOA	1347.981	2921.962	5.34E+32	3056.15	3.48E+28	3342.727	3.48E+28
LG+F	1294.856	2853.711	3.53E+17	3056.671	2.68E+28	3345.224	9.98E+29
cpREV+F	1295.462	2854.924	1.93E+17	3057.884	1.46E+28	3346.437	5.44E+29
Dayhoff+F	1298.458	2860.917	9.62E+19	3063.876	7.30E+30	3352.43	2.72E+30
DCMut+F	1298.509	2861.018	9.15E+19	3063.977	6.94E+30	3352.531	2.58E+30
rtREV+F	1300.186	2864.372	1.71E+19	3067.332	1.30E+30	3355.885	4.83E+31
PMB+F	1300.91	2865.82	8.29E+20	3068.78	6.29E+31	3357.334	2.34E+31
Blosum62+F	1301.111	2866.223	6.78E+20	3069.182	5.14E+31	3357.736	1.91E+31
mtZOA+F	1305.124	2874.248	1.23E+21	3077.207	9.30E+33	3365.761	3.46E+33
mtInv	1362.603	2951.206	2.38E+38	3085.393	1.55E+34	3371.971	1.55E+34

SC2-Proteome	1370.32	2966.639	1.06E+41	3100.827	6.91E+38	3387.404	6.91E+38
mtART	1371.869	2969.739	2.25E+42	3103.926	1.47E+38	3390.504	1.47E+38
mtART+F	1321.624	2907.247	8.37E+29	3110.207	6.35E+40	3398.76	2.36E+40

Table S4. Ranking of likelihood-based best-fitting substitution models for each test dataset of SARS-CoV-2 PLpro. The ranking is based on the Bayesian information criterion (BIC) and was obtained with *ModelFinder* for each test dataset. The SARS-CoV-2 models are highlighted in grey.

Test dataset	Model	LogL	AIC	w-AIC	AICc	w-AICc	BIC	w-BIC
TD1	SC2-PLpro	-1601.429	3604.857	1	4317.173	1	4359.761	1
	FLAVI	-1641.614	3685.228	3.53E-18	4397.544	3.53E-18	4440.133	3.53E-18
	Q.bird	-1644.4	3690.799	2.18E-19	4403.115	2.18E-19	4445.703	2.18E-19
	HIVw	-1647.692	3697.385	8.09E-21	4409.7	8.09E-21	4452.289	8.09E-21
	FLU	-1648.796	3699.592	2.68E-21	4411.908	2.68E-21	4454.496	2.68E-21
	JTTDCMut	-1649.998	3701.995	8.07E-22	4414.311	8.07E-22	4456.899	8.07E-22
	JTT	-1650.438	3702.876	5.19E-22	4415.192	5.19E-22	4457.78	5.19E-22
	Q.mammal	-1650.901	3703.802	3.27E-22	4416.118	3.27E-22	4458.706	3.27E-22
	SC2-PLpro+F	-1596.504	3633.008	7.71E-07	4656.587	1.98E-74	4459.271	2.46E-22
	HIVb	-1651.881	3705.763	1.23E-22	4418.079	1.23E-22	4460.667	1.23E-22
	Q.plant	-1658.548	3719.095	1.56E-25	4431.411	1.56E-25	4473.999	1.56E-25
	FLAVI+F	-1614.512	3669.023	1.17E-14	4692.602	3.00E-82	4495.287	3.72E-30
	SC2-Proteome+F	-1618.284	3676.567	2.68E-16	4700.146	6.89E-84	4502.83	8.57E-32
	WAG	-1673.628	3749.255	4.41E-32	4461.571	4.41E-32	4504.16	4.41E-32
	HIVw+F	-1620.537	3681.073	2.82E-17	4704.652	7.24E-85	4507.336	9.00E-33
	cpREV	-1675.844	3753.687	4.81E-33	4466.003	4.81E-33	4508.592	4.81E-33
	VT	-1677.113	3756.225	1.35E-33	4468.541	1.35E-33	4511.129	1.35E-33
	Q.insect	-1678.51	3759.02	3.34E-34	4471.336	3.34E-34	4513.924	3.34E-34
	SC2-Proteome	-1684.381	3770.762	9.43E-37	4483.078	9.43E-37	4525.666	9.43E-37
	Q.bird+F	-1630.009	3700.019	2.17E-21	4723.598	5.57E-89	4526.282	6.93E-37
	Dayhoff	-1686.47	3774.94	1.17E-37	4487.256	1.17E-37	4529.844	1.17E-37

DCMut	-1686.496	3774.991	1.14E-37	4487.307	1.14E-37	4529.895	1.14E-37
Q.mammal+F	-1633.817	3707.635	4.81E-23	4731.214	1.24E-90	4533.898	1.54E-38
HIVb+F	-1635.172	3710.344	1.24E-23	4733.923	3.19E-91	4536.607	3.97E-39
FLU+F	-1636.489	3712.978	3.33E-24	4736.557	8.55E-92	4539.241	1.06E-39
Q.yeast	-1691.606	3785.211	6.86E-40	4497.527	6.86E-40	4540.115	6.86E-40
LG	-1691.914	3785.829	5.04E-40	4498.144	5.04E-40	4540.733	5.04E-40
PMB	-1693.132	3788.265	1.49E-40	4500.581	1.49E-40	4543.169	1.49E-40
Q.pfam	-1694.094	3790.189	5.70E-41	4502.505	5.70E-41	4545.093	5.70E-41
JTTDCMut+F	-1640.221	3720.442	7.96E-26	4744.021	2.05E-93	4546.705	2.55E-41
JTT+F	-1640.624	3721.248	5.32E-26	4744.827	1.37E-93	4547.511	1.70E-41
Blosum62	-1697.154	3796.308	2.67E-42	4508.624	2.67E-42	4551.212	2.67E-42
Q.plant+F	-1644.298	3728.596	1.35E-27	4752.175	3.47E-95	4554.859	4.32E-43
mtVer+F	-1649.274	3738.547	9.32E-30	4762.126	2.40E-97	4564.81	2.98E-45
mtMet	-1705.689	3813.378	5.25E-46	4525.693	5.25E-46	4568.282	5.25E-46
mtMet+F	-1651.395	3742.79	1.12E-30	4766.369	2.87E-98	4569.053	3.57E-46
mtVer	-1707.378	3816.757	9.70E-47	4529.073	9.70E-47	4571.661	9.70E-47
mtInv+F	-1657.48	3754.961	2.54E-33	4778.54	6.54E-101	4581.224	-8.13E-49
rtREV	-1712.648	3827.297	4.99E-49	4539.613	4.99E-49	4582.201	4.99E-49
mtREV	-1714.262	3830.525	9.93E-50	4542.841	9.93E-50	4585.429	9.93E-50
mtREV+F	-1660.339	3760.679	1.46E-34	4784.258	3.75E-102	4586.942	-4.66E-50
cpREV+F	-1660.708	3761.416	1.01E-34	4784.995	2.59E-102	4587.679	-3.22E-50
WAG+F	-1664.457	3768.913	2.38E-36	4792.492	6.11E-104	4595.176	-7.59E-52
VT+F	-1668.393	3776.787	4.63E-38	4800.365	1.19E-105	4603.05	-1.48E-53
Dayhoff+F	-1670.512	3781.025	5.57E-39	4804.603	1.43E-106	4607.288	-1.78E-54
DCMut+F	-1670.538	3781.077	5.43E-39	4804.655	1.39E-106	4607.34	-1.73E-54

	Q.insect+F	-1670.541	3781.081	5.41E-39	4804.66	1.39E-106	4607.345	-1.73E-54
	mtMAM+F	-1672.65	3785.3	6.57E-40	4808.879	1.69E-107	4611.563	-2.10E-55
	mtMAM	-1731.319	3864.638	3.88E-57	4576.954	3.88E-57	4619.542	3.88E-57
	mtInv	-1731.394	3864.787	3.60E-57	4577.103	3.60E-57	4619.692	3.60E-57
	Q.yeast+F	-1678.83	3797.661	1.36E-42	4821.24	3.49E-110	4623.924	-4.34E-58
	mtZOA+F	-1679.508	3799.017	6.90E-43	4822.596	1.77E-110	4625.28	-2.20E-58
	Q.pfam+F	-1680.404	3800.807	2.82E-43	4824.386	7.25E-111	4627.07	-9.01E-59
	LG+F	-1681.604	3803.209	8.48E-44	4826.788	2.18E-111	4629.472	-2.71E-59
	mtZOA	-1736.41	3874.819	2.39E-59	4587.135	2.39E-59	4629.723	2.39E-59
	PMB+F	-1687.169	3814.338	3.25E-46	4837.917	8.36E-114	4640.601	-1.04E-61
	Blosum62+F	-1690.665	3821.33	9.85E-48	4844.908	2.53E-115	4647.593	-3.15E-63
	rtREV+F	-1699.948	3839.896	9.16E-52	4863.475	2.36E-119	4666.159	-2.93E-67
	mtART+F	-1705.988	3851.977	2.18E-54	4875.556	5.61E-122	4678.24	-6.97E-70
	mtART	-1769.948	3941.897	6.50E-74	4654.213	6.50E-74	4696.801	6.50E-74
TD2	SC2-PLpro	-1497.421	3344.843	0.999	3784.843	1	4002.098	1
	Q.bird	-1531.377	3412.755	1.79E-15	3852.755	1.79E-15	4070.01	1.79E-15
	FLAVI	-1536.067	3422.135	1.64E-17	3862.135	1.65E-17	4079.39	1.65E-17
	Q.mammal	-1539.037	3428.074	8.44E-19	3868.074	8.44E-19	4085.329	8.44E-19
	JTTDCMut	-1539.087	3428.175	8.02E-19	3868.175	8.03E-19	4085.429	8.03E-19
	JTT	-1539.505	3429.01	5.28E-19	3869.01	5.29E-19	4086.265	5.29E-19
	SC2-PLpro+F	-1485.241	3358.482	0.00109	3983.771	6.36E-44	4087.096	3.49E-19
	HIVw	-1540.256	3430.513	2.49E-19	3870.513	2.49E-19	4087.768	2.49E-19
	FLU	-1540.652	3431.304	1.68E-19	3871.304	1.68E-19	4088.559	1.68E-19
	HIVb	-1544.641	3439.281	3.11E-21	3879.281	3.11E-21	4096.536	3.11E-21
	Q.plant	-1546.879	3443.759	3.31E-22	3883.759	3.32E-22	4101.014	3.32E-22

FLAVI+F	-1504.614	3397.228	4.21E-12	4022.517	2.45E-52	4125.842	1.35E-27
WAG	-1561.842	3473.684	1.05E-28	3913.684	1.05E-28	4130.939	1.05E-28
Q.insect	-1564.567	3479.135	6.89E-30	3919.135	6.90E-30	4136.39	6.90E-30
VT	-1564.603	3479.206	6.65E-30	3919.206	6.66E-30	4136.461	6.66E-30
SC2-Proteome+F	-1510.004	3408.009	1.92E-14	4033.298	1.12E-54	4136.623	6.14E-30
HIVw+F	-1510.473	3408.945	1.20E-14	4034.234	7.00E-55	4137.559	3.85E-30
Q.bird+F	-1511.446	3410.892	4.54E-15	4036.181	2.65E-55	4139.506	1.45E-30
Dayhoff	-1567.402	3484.803	4.05E-31	3924.803	4.05E-31	4142.058	4.05E-31
DCMut	-1567.476	3484.953	3.76E-31	3924.953	3.76E-31	4142.208	3.76E-31
cpREV	-1569.092	3488.184	7.47E-32	3928.184	7.48E-32	4145.439	7.48E-32
Q.mammal+F	-1516.486	3420.972	2.94E-17	4046.261	1.71E-57	4149.586	9.40E-33
LG	-1575.618	3501.237	1.09E-34	3941.237	1.10E-34	4158.492	1.10E-34
HIVb+F	-1521.674	3431.348	1.64E-19	4056.637	9.56E-60	4159.962	5.25E-35
Q.yeast	-1576.677	3503.353	3.80E-35	3943.353	3.80E-35	4160.608	3.80E-35
Q.pfam	-1577.785	3505.57	1.25E-35	3945.57	1.25E-35	4162.825	1.25E-35
FLU+F	-1523.949	3435.898	1.69E-20	4061.187	9.83E-61	4164.512	5.40E-36
SC2-Proteome	-1579.117	3508.234	3.31E-36	3948.234	3.31E-36	4165.489	3.31E-36
JTTDCMut+F	-1524.63	3437.261	8.53E-21	4062.55	4.97E-61	4165.875	2.73E-36
JTT+F	-1524.904	3437.808	6.49E-21	4063.097	3.78E-61	4166.422	2.08E-36
PMB	-1579.604	3509.208	2.03E-36	3949.208	2.03E-36	4166.463	2.03E-36
Q.plant+F	-1525.171	3438.343	4.97E-21	4063.632	2.90E-61	4166.957	1.59E-36
mtVer+F	-1527.971	3443.941	3.02E-22	4069.231	1.76E-62	4172.555	9.67E-38
mtVer	-1583.459	3516.918	4.30E-38	3956.918	4.31E-38	4174.173	4.31E-38
Blosum62	-1583.736	3517.472	3.26E-38	3957.472	3.27E-38	4174.727	3.27E-38
mtMet	-1586.195	3522.39	2.79E-39	3962.39	2.79E-39	4179.645	2.79E-39

	mtMet+F	-1532.916	3453.833	2.15E-24	4079.122	1.25E-64	4182.447	6.88E-40
	mtMAM+F	-1533.711	3455.421	9.72E-25	4080.711	5.66E-65	4184.035	3.11E-40
	mtMAM	-1590.855	3531.711	2.64E-41	3971.711	2.64E-41	4188.965	2.64E-41
	mtREV	-1590.958	3531.915	2.38E-41	3971.915	2.39E-41	4189.17	2.39E-41
	mtREV+F	-1537.346	3462.691	2.56E-26	4087.98	1.49E-66	4191.305	8.21E-42
	rtREV	-1593.057	3536.114	2.92E-42	3976.114	2.92E-42	4193.369	2.92E-42
	mtInv+F	-1540.211	3468.421	1.46E-27	4093.711	8.52E-68	4197.035	4.68E-43
	cpREV+F	-1546.683	3481.366	2.26E-30	4106.655	1.32E-70	4209.98	7.23E-46
	WAG+F	-1547.905	3483.811	6.65E-31	4109.1	3.88E-71	4212.425	2.13E-46
	Dayhoff+F	-1548.532	3485.063	3.56E-31	4110.352	2.07E-71	4213.677	1.14E-46
	DCMut+F	-1548.606	3485.212	3.30E-31	4110.501	1.92E-71	4213.826	1.06E-46
	Q.insect+F	-1549.331	3486.663	1.60E-31	4111.952	9.31E-72	4215.277	5.11E-47
	VT+F	-1550.406	3488.813	5.46E-32	4114.102	3.18E-72	4217.427	1.75E-47
	Q.yeast+F	-1556.954	3501.908	7.82E-35	4127.198	4.56E-75	4230.522	2.50E-50
	mtZOA+F	-1557.034	3502.067	7.22E-35	4127.357	4.21E-75	4230.681	2.31E-50
	Q.pfam+F	-1557.482	3502.963	4.61E-35	4128.253	2.69E-75	4231.577	1.48E-50
	LG+F	-1558.726	3505.451	1.33E-35	4130.741	7.75E-76	4234.065	4.25E-51
	mtInv	-1613.455	3576.911	4.04E-51	4016.911	4.05E-51	4234.166	4.05E-51
	mtZOA	-1615.705	3581.41	4.26E-52	4021.41	4.27E-52	4238.665	4.27E-52
	PMB+F	-1567.536	3523.072	1.98E-39	4148.362	1.16E-79	4251.686	6.35E-55
	Blosum62+F	-1571.545	3531.091	3.60E-41	4156.38	2.10E-81	4259.704	1.15E-56
	mtART+F	-1572.451	3532.902	1.46E-41	4158.192	8.48E-82	4261.516	4.66E-57
	rtREV+F	-1575.081	3538.161	1.05E-42	4163.451	6.11E-83	4266.775	3.36E-58
	mtART	-1637.198	3624.396	1.97E-61	4064.396	1.98E-61	4281.651	1.98E-61
TD3	SC2-PLpro	-1417.578	3153.157	0.998	3479.311	1	3750.32	1

FLAVI	-1442.955	3203.911	9.50E-12	3530.065	9.52E-12	3801.074	9.52E-12
Q.bird	-1443.548	3205.095	5.26E-12	3531.249	5.27E-12	3802.258	5.27E-12
HIVb	-1446.792	3211.583	2.05E-13	3537.737	2.06E-13	3808.746	2.06E-13
FLU	-1447.498	3212.997	1.01E-13	3539.15	1.01E-13	3810.16	1.01E-13
HIVw	-1448.331	3214.662	4.40E-14	3540.816	4.41E-14	3811.825	4.41E-14
Q.mammal	-1450.719	3219.438	4.04E-15	3545.592	4.05E-15	3816.601	4.05E-15
JTTDCMut	-1450.84	3219.681	3.58E-15	3545.834	3.59E-15	3816.844	3.59E-15
JTT	-1451.19	3220.381	2.52E-15	3546.534	2.53E-15	3817.544	2.53E-15
SC2-PLpro+F	-1404.674	3165.348	0.00225	3630.486	1.49E-33	3833.87	7.20E-19
Q.plant	-1459.411	3236.822	6.78E-19	3562.976	6.80E-19	3833.985	6.80E-19
FLAVI+F	-1415.428	3186.855	4.80E-08	3651.994	3.18E-38	3855.377	1.54E-23
WAG	-1473.032	3264.065	8.23E-25	3590.219	8.25E-25	3861.228	8.25E-25
Q.insect	-1475.504	3269.008	6.95E-26	3595.162	6.97E-26	3866.171	6.97E-26
VT	-1475.646	3269.293	6.03E-26	3595.447	6.04E-26	3866.456	6.04E-26
cpREV	-1475.724	3269.448	5.58E-26	3595.601	5.59E-26	3866.611	5.59E-26
Dayhoff	-1476.217	3270.433	3.41E-26	3596.587	3.42E-26	3867.596	3.42E-26
DCMut	-1476.357	3270.714	2.96E-26	3596.868	2.97E-26	3867.877	2.97E-26
HIVw+F	-1422.241	3200.482	5.28E-11	3665.621	3.49E-41	3869.004	1.69E-26
Q.bird+F	-1424.119	3204.238	8.07E-12	3669.377	5.34E-42	3872.76	2.58E-27
HIVb+F	-1427.574	3211.148	2.55E-13	3676.287	1.69E-43	3879.671	8.16E-29
Q.mammal+F	-1428.445	3212.89	1.07E-13	3678.029	7.06E-44	3881.412	3.42E-29
LG	-1485.037	3288.073	5.04E-30	3614.227	5.05E-30	3885.236	5.05E-30
SC2-Proteome+F	-1430.449	3216.898	1.44E-14	3682.036	9.52E-45	3885.42	4.61E-30
FLU+F	-1432.352	3220.703	2.15E-15	3685.842	1.42E-45	3889.225	6.87E-31
Q.yeast	-1487.376	3292.751	4.86E-31	3618.905	4.87E-31	3889.914	4.87E-31

mtVer	-1488.178	3294.356	2.18E-31	3620.51	2.18E-31	3891.519	2.18E-31
Q.pfam	-1488.222	3294.444	2.08E-31	3620.598	2.09E-31	3891.607	2.09E-31
PMB	-1488.782	3295.563	1.19E-31	3621.717	1.19E-31	3892.726	1.19E-31
mtVer+F	-1435.183	3226.366	1.26E-16	3691.504	8.37E-47	3894.888	4.05E-32
mtMet	-1491.575	3301.151	7.29E-33	3627.305	7.30E-33	3898.314	7.30E-33
mtMAM	-1491.836	3301.671	5.62E-33	3627.825	5.63E-33	3898.834	5.63E-33
mtMAM+F	-1437.32	3230.64	1.49E-17	3695.779	9.87E-48	3899.162	4.78E-33
Blosum62	-1492.027	3302.054	4.64E-33	3628.208	4.65E-33	3899.217	4.65E-33
JTTDCMut+F	-1437.55	3231.1	1.19E-17	3696.239	7.84E-48	3899.622	3.80E-33
JTT+F	-1437.819	3231.638	9.06E-18	3696.777	5.99E-48	3900.16	2.90E-33
mtREV	-1492.564	3303.127	2.71E-33	3629.281	2.72E-33	3900.29	2.72E-33
Q.plant+F	-1439.139	3234.277	2.42E-18	3699.416	1.60E-48	3902.8	7.75E-34
mtMet+F	-1439.681	3235.362	1.41E-18	3700.5	9.32E-49	3903.884	4.51E-34
SC2-Proteome	-1495.275	3308.55	1.80E-34	3634.704	1.81E-34	3905.713	1.81E-34
mtREV+F	-1441.215	3238.43	3.04E-19	3703.569	2.01E-49	3906.952	9.72E-35
rtREV	-1498.313	3314.625	8.64E-36	3640.779	8.66E-36	3911.788	8.66E-36
mtInv+F	-1450.165	3256.329	3.94E-23	3721.468	2.61E-53	3924.851	1.26E-38
cpREV+F	-1456.262	3268.525	8.85E-26	3733.664	5.86E-56	3937.047	2.84E-41
Dayhoff+F	-1457.059	3270.117	3.99E-26	3735.256	2.64E-56	3938.64	1.28E-41
DCMut+F	-1457.199	3270.398	3.47E-26	3735.537	2.30E-56	3938.92	1.11E-41
WAG+F	-1459.427	3274.854	3.74E-27	3739.993	2.48E-57	3943.376	1.20E-42
mtZOA+F	-1462.041	3280.081	2.74E-28	3745.22	1.81E-58	3948.603	8.78E-44
Q.insect+F	-1462.168	3280.335	2.41E-28	3745.474	1.60E-58	3948.857	7.73E-44
VT+F	-1462.869	3281.738	1.20E-28	3746.877	7.92E-59	3950.26	3.83E-44
mtZOA	-1519.493	3356.986	5.47E-45	3683.14	5.48E-45	3954.149	5.48E-45

	mtInv	-1521.672	3361.344	6.19E-46	3687.498	6.20E-46	3958.507	6.20E-46
	Q.yeast+F	-1469.25	3294.501	2.03E-31	3759.639	1.34E-61	3963.023	6.49E-47
	Q.pfam+F	-1470.015	3296.03	9.43E-32	3761.168	6.24E-62	3964.552	3.02E-47
	LG+F	-1470.447	3296.893	6.12E-32	3762.032	4.05E-62	3965.415	1.96E-47
	mtART+F	-1470.589	3297.178	5.31E-32	3762.317	3.52E-62	3965.7	1.70E-47
	PMB+F	-1477.542	3311.085	5.07E-35	3776.224	3.36E-65	3979.607	1.63E-50
	mtART	-1533.76	3385.521	3.48E-51	3711.675	3.49E-51	3982.684	3.49E-51
	Blosum62+F	-1481.08	3318.16	1.48E-36	3783.299	9.77E-67	3986.683	4.73E-52
	rtREV+F	-1482.692	3321.385	2.94E-37	3786.523	1.95E-67	3989.907	9.43E-53
TD4	SC2-PLpro	-1402.537	3099.074	0.972	3358.074	1	3651.168	1
	Q.bird	-1427.425	3148.85	1.51E-11	3407.85	1.55E-11	3700.944	1.55E-11
	Q.mammal	-1434.368	3162.736	1.46E-14	3421.736	1.50E-14	3714.83	1.50E-14
	FLAVI	-1434.532	3163.065	1.24E-14	3422.065	1.27E-14	3715.159	1.27E-14
	JTTDCMut	-1436.717	3167.434	1.39E-15	3426.434	1.43E-15	3719.528	1.43E-15
	JTT	-1436.822	3167.643	1.25E-15	3426.643	1.29E-15	3719.737	1.29E-15
	HIVw	-1438.551	3171.102	2.22E-16	3430.102	2.29E-16	3723.196	2.29E-16
	FLU	-1439.975	3173.95	5.35E-17	3432.95	5.51E-17	3726.044	5.51E-17
	SC2-PLpro+F	-1387.072	3106.145	0.0283	3478.252	8.01E-27	3729.598	9.31E-18
	HIVb	-1442.789	3179.578	3.21E-18	3438.578	3.30E-18	3731.672	3.30E-18
	Q.plant	-1446.09	3186.18	1.18E-19	3445.18	1.22E-19	3738.274	1.22E-19
	WAG	-1457.663	3209.326	1.11E-24	3468.326	1.15E-24	3761.42	1.15E-24
	VT	-1458.959	3211.919	3.04E-25	3470.919	3.13E-25	3764.013	3.13E-25
	HIVw+F	-1404.38	3140.76	8.62E-10	3512.867	2.44E-34	3764.213	2.84E-25
	Q.insect	-1462.103	3218.206	1.31E-26	3477.206	1.35E-26	3770.3	1.35E-26
	FLAVI+F	-1408.388	3148.776	1.57E-11	3520.884	4.43E-36	3772.23	5.15E-27

cpREV	-1463.413	3220.826	3.54E-27	3479.826	3.65E-27	3772.92	3.65E-27
Q.bird+F	-1410.879	3153.758	1.30E-12	3525.865	3.67E-37	3777.211	4.27E-28
SC2-Proteome+F	-1411.247	3154.494	8.98E-13	3526.602	2.54E-37	3777.948	2.95E-28
Dayhoff	-1466.011	3226.022	2.64E-28	3485.022	2.71E-28	3778.116	2.71E-28
DCMut	-1466.076	3226.151	2.47E-28	3485.151	2.54E-28	3778.246	2.54E-28
Q.mammal+F	-1415.478	3162.955	1.31E-14	3535.063	3.69E-39	3786.409	4.29E-30
PMB	-1470.238	3234.476	3.85E-30	3493.476	3.96E-30	3786.57	3.96E-30
LG	-1470.874	3235.749	2.04E-30	3494.749	2.10E-30	3787.843	2.10E-30
Q.pfam	-1471.404	3236.808	1.20E-30	3495.808	1.23E-30	3788.902	1.23E-30
Blosum62	-1474.486	3242.971	5.50E-32	3501.971	5.66E-32	3795.065	5.66E-32
Q.yeast	-1474.77	3243.539	4.14E-32	3502.539	4.26E-32	3795.633	4.26E-32
FLU+F	-1421.769	3175.537	2.42E-17	3547.644	6.84E-42	3798.99	7.96E-33
HIVb+F	-1423.122	3178.244	6.25E-18	3550.351	1.77E-42	3801.697	2.06E-33
JTT+F	-1424.878	3181.756	1.08E-18	3553.864	3.05E-43	3805.21	3.55E-34
JTTDCMut+F	-1424.927	3181.855	1.03E-18	3553.962	2.91E-43	3805.308	3.38E-34
SC2-Proteome	-1482.218	3258.437	2.41E-35	3517.437	2.48E-35	3810.531	2.48E-35
Q.plant+F	-1427.584	3187.167	7.22E-20	3559.274	2.04E-44	3810.62	2.37E-35
mtVer+F	-1429.467	3190.933	1.10E-20	3563.04	3.10E-45	3814.386	3.61E-36
rtREV	-1484.538	3263.075	2.37E-36	3522.075	2.44E-36	3815.169	2.44E-36
mtVer	-1487.167	3268.334	1.71E-37	3527.334	1.76E-37	3820.428	1.76E-37
mtMet+F	-1434.227	3200.454	9.40E-23	3572.562	2.66E-47	3823.908	3.09E-38
mtMet	-1491.224	3276.447	2.96E-39	3535.447	3.05E-39	3828.542	3.05E-39
mtMAM+F	-1439.746	3211.493	3.77E-25	3583.6	1.07E-49	3834.946	1.24E-40
mtREV	-1494.43	3282.86	1.20E-40	3541.86	1.23E-40	3834.954	1.23E-40
mtREV+F	-1440.352	3212.704	2.06E-25	3584.812	5.81E-50	3836.158	6.76E-41

	mtMAM	-1497.452	3288.903	5.84E-42	3547.903	6.01E-42	3840.997	6.01E-42
	mtInv+F	-1443.437	3218.874	9.40E-27	3590.982	2.66E-51	3842.328	3.09E-42
	cpREV+F	-1443.602	3219.203	7.98E-27	3591.31	2.26E-51	3842.656	2.62E-42
	WAG+F	-1446.177	3224.355	6.07E-28	3596.462	1.72E-52	3847.808	2.00E-43
	VT+F	-1446.705	3225.41	3.58E-28	3597.518	1.01E-52	3848.864	1.18E-43
	Q.insect+F	-1448.148	3228.296	8.46E-29	3600.403	2.39E-53	3851.749	2.78E-44
	Dayhoff+F	-1449.731	3231.461	1.74E-29	3603.569	4.91E-54	3854.915	5.71E-45
	DCMut+F	-1449.796	3231.591	1.63E-29	3603.698	4.61E-54	3855.044	5.36E-45
	Q.pfam+F	-1454.818	3241.636	1.07E-31	3613.743	3.03E-56	3865.089	3.53E-47
	Q.yeast+F	-1454.898	3241.796	9.90E-32	3613.904	2.80E-56	3865.25	3.26E-47
	LG+F	-1457.013	3246.026	1.19E-32	3618.133	3.38E-57	3869.479	3.93E-48
	mtZOA+F	-1459.468	3250.936	1.03E-33	3623.043	2.90E-58	3874.389	3.37E-49
	PMB+F	-1460.47	3252.94	3.77E-34	3625.048	1.07E-58	3876.393	1.24E-49
	mtZOA	-1517.301	3328.601	1.40E-50	3587.601	1.44E-50	3880.695	1.44E-50
	Blosum62+F	-1463.345	3258.69	2.13E-35	3630.797	6.01E-60	3882.143	6.99E-51
	mtInv	-1520.442	3334.883	6.05E-52	3593.883	6.23E-52	3886.978	6.23E-52
	rtREV+F	-1467.98	3267.96	2.06E-37	3640.068	5.83E-62	3891.414	6.78E-53
	mtART+F	-1475.8	3283.601	8.28E-41	3655.708	2.34E-65	3907.054	2.72E-56
	mtART	-1540.951	3375.902	7.50E-61	3634.902	7.72E-61	3927.996	7.72E-61
TD5	SC2-PLpro	-1414.374	3146.748	0.976	3472.901	1	3743.911	1
	Q.bird	-1442.077	3202.153	9.08E-13	3528.307	9.31E-13	3799.316	9.31E-13
	FLAVI	-1446.53	3211.061	1.06E-14	3537.215	1.08E-14	3808.224	1.08E-14
	HIVb	-1447.415	3212.831	4.36E-15	3538.985	4.47E-15	3809.994	4.47E-15
	Q.mammal	-1447.928	3213.855	2.61E-15	3540.009	2.68E-15	3811.018	2.68E-15
	JTTDCMut	-1448.102	3214.204	2.20E-15	3540.358	2.25E-15	3811.367	2.25E-15

JTT	-1448.843	3215.686	1.05E-15	3541.84	1.07E-15	3812.849	1.07E-15
HIVw	-1451.242	3220.484	9.50E-17	3546.638	9.74E-17	3817.647	9.74E-17
SC2-PLpro+F	-1399.076	3154.152	0.0241	3619.29	1.63E-32	3822.674	7.88E-18
FLU	-1454.322	3226.644	4.37E-18	3552.798	4.47E-18	3823.807	4.47E-18
Q.plant	-1455.033	3228.067	2.14E-18	3554.221	2.20E-18	3825.23	2.20E-18
FLAVI+F	-1408.175	3172.35	2.69E-06	3637.488	1.82E-36	3840.872	8.81E-22
Q.insect	-1469.112	3256.225	1.65E-24	3582.379	1.69E-24	3853.388	1.69E-24
WAG	-1469.64	3257.28	9.72E-25	3583.434	9.96E-25	3854.443	9.96E-25
HIVw+F	-1416.229	3188.458	8.55E-10	3653.596	5.79E-40	3856.98	2.80E-25
VT	-1471.763	3261.525	1.16E-25	3587.679	1.19E-25	3858.688	1.19E-25
Q.bird+F	-1418.667	3193.334	7.47E-11	3658.473	5.05E-41	3861.857	2.45E-26
cpREV	-1473.619	3265.237	1.82E-26	3591.391	1.86E-26	3862.4	1.86E-26
SC2-Proteome+F	-1419.073	3194.145	4.98E-11	3659.284	3.37E-41	3862.667	1.63E-26
HIVb+F	-1420.382	3196.764	1.34E-11	3661.903	9.10E-42	3865.286	4.40E-27
Q.mammal+F	-1421.401	3198.802	4.85E-12	3663.941	3.28E-42	3867.324	1.59E-27
Dayhoff	-1477.385	3272.77	4.21E-28	3598.923	4.31E-28	3869.933	4.31E-28
DCMut	-1477.482	3272.963	3.82E-28	3599.117	3.91E-28	3870.126	3.91E-28
LG	-1478.376	3274.752	1.56E-28	3600.906	1.60E-28	3871.915	1.60E-28
Q.yeast	-1480.425	3278.851	2.01E-29	3605.005	2.06E-29	3876.014	2.06E-29
Q.pfam	-1480.552	3279.105	1.77E-29	3605.259	1.82E-29	3876.268	1.82E-29
mtVer+F	-1427.941	3211.882	7.01E-15	3677.02	4.74E-45	3880.404	2.30E-30
Q.plant+F	-1429.02	3214.039	2.38E-15	3679.178	1.61E-45	3882.562	7.80E-31
PMB	-1484.302	3286.604	4.17E-31	3612.758	4.27E-31	3883.767	4.27E-31
JTTDCMut+F	-1430.336	3216.671	6.39E-16	3681.81	4.33E-46	3885.193	2.09E-31
JTT+F	-1430.781	3217.563	4.09E-16	3682.701	2.77E-46	3886.085	1.34E-31

SC2-Proteome	-1486.354	3290.708	5.36E-32	3616.862	5.49E-32	3887.871	5.49E-32
FLU+F	-1433.75	3223.499	2.10E-17	3688.638	1.42E-47	3892.021	6.89E-33
Blosum62	-1488.493	3294.985	6.31E-33	3621.139	6.46E-33	3892.148	6.46E-33
mtMAM+F	-1433.873	3223.747	1.86E-17	3688.885	1.26E-47	3892.269	6.09E-33
mtMet+F	-1436.227	3228.453	1.77E-18	3693.592	1.20E-48	3896.975	5.79E-34
mtVer	-1495.921	3309.841	3.75E-36	3635.995	3.84E-36	3907.004	3.84E-36
mtREV+F	-1441.41	3238.821	9.91E-21	3703.96	6.70E-51	3907.343	3.24E-36
mtMet	-1496.282	3310.563	2.61E-36	3636.717	2.68E-36	3907.726	2.68E-36
rtREV	-1497.381	3312.762	8.71E-37	3638.916	8.92E-37	3909.925	8.92E-37
mtInv+F	-1443.42	3242.84	1.33E-21	3707.979	8.99E-52	3911.363	4.35E-37
cpREV+F	-1445.935	3247.871	1.07E-22	3713.009	7.26E-53	3916.393	3.52E-38
mtMAM	-1500.906	3319.811	2.57E-38	3645.965	2.63E-38	3916.974	2.63E-38
Q.insect+F	-1449.487	3254.974	3.08E-24	3720.113	2.08E-54	3923.496	1.01E-39
mtREV	-1505.449	3328.898	2.73E-40	3655.052	2.80E-40	3926.061	2.80E-40
WAG+F	-1452.207	3260.413	2.03E-25	3725.552	1.37E-55	3928.935	6.64E-41
VT+F	-1453.305	3262.611	6.76E-26	3727.749	4.58E-56	3931.133	2.21E-41
Q.yeast+F	-1455.403	3266.806	8.30E-27	3731.945	5.62E-57	3935.328	2.72E-42
Dayhoff+F	-1456.017	3268.034	4.49E-27	3733.172	3.04E-57	3936.556	1.47E-42
DCMut+F	-1456.113	3268.227	4.08E-27	3733.366	2.76E-57	3936.749	1.34E-42
Q.pfam+F	-1456.551	3269.102	2.63E-27	3734.241	1.78E-57	3937.624	8.62E-43
LG+F	-1457.991	3271.983	6.24E-28	3737.121	4.22E-58	3940.505	2.04E-43
mtZOA+F	-1459.993	3275.987	8.42E-29	3741.126	5.70E-59	3944.509	2.76E-44
mtInv	-1520.899	3359.798	5.32E-47	3685.952	5.45E-47	3956.961	5.45E-47
PMB+F	-1469.231	3294.463	8.19E-33	3759.602	5.54E-63	3962.985	2.68E-48
mtZOA	-1525.719	3369.438	4.29E-49	3695.592	4.40E-49	3966.601	4.40E-49

	Blosum62+F	-1472.28	3300.56	3.89E-34	3765.699	2.63E-64	3969.082	1.27E-49
	mtART+F	-1473.538	3303.075	1.10E-34	3768.214	7.48E-65	3971.597	3.62E-50
	rtREV+F	-1473.569	3303.139	1.07E-34	3768.277	7.24E-65	3971.661	3.51E-50
	mtART	-1544.773	3407.546	2.28E-57	3733.7	2.33E-57	4004.709	2.33E-57
TD6	SC2-PLpro	-1392.42	3070.841	0.0475	3310.282	1	3607.912	1
	SC2-PLpro+F	-1370.423	3064.845	0.952	3410.021	2.20E-22	3673.275	6.40E-15
	Q.bird	-1427.073	3140.146	4.24E-17	3379.588	8.92E-16	3677.217	8.92E-16
	JTTDCMut	-1432.339	3150.678	2.19E-19	3390.12	4.61E-18	3687.749	4.61E-18
	Q.mammal	-1432.418	3150.837	2.02E-19	3390.279	4.26E-18	3687.908	4.26E-18
	JTT	-1432.714	3151.429	1.50E-19	3390.871	3.17E-18	3688.5	3.17E-18
	FLAVI	-1436.802	3159.603	2.53E-21	3399.045	5.31E-20	3696.674	5.31E-20
	HIVb	-1437.637	3161.274	1.10E-21	3400.716	2.30E-20	3698.345	2.30E-20
	Q.plant	-1441.451	3168.901	2.42E-23	3408.343	5.09E-22	3705.973	5.09E-22
	FLU	-1443.346	3172.692	3.63E-24	3412.134	7.64E-23	3709.764	7.64E-23
	HIVw	-1445.616	3177.232	3.75E-25	3416.674	7.90E-24	3714.303	7.90E-24
	SC2-Proteome+F	-1395.746	3115.491	9.58E-12	3460.668	2.21E-33	3723.921	6.44E-26
	FLAVI+F	-1397.288	3118.575	2.05E-12	3463.752	4.73E-34	3727.006	1.38E-26
	WAG	-1453.71	3193.421	1.15E-28	3432.863	2.41E-27	3730.492	2.41E-27
	VT	-1455.939	3197.878	1.23E-29	3437.32	2.60E-28	3734.949	2.60E-28
	Q.insect	-1456.043	3198.087	1.11E-29	3437.529	2.34E-28	3735.158	2.34E-28
	Q.bird+F	-1402.083	3128.166	1.69E-14	3473.342	3.91E-36	3736.596	1.14E-28
	cpREV	-1458.84	3203.679	6.78E-31	3443.121	1.43E-29	3740.75	1.43E-29
	Q.mammal+F	-1405.086	3134.171	8.41E-16	3479.348	1.94E-37	3742.601	5.66E-30
	HIVw+F	-1405.972	3135.944	3.47E-16	3481.12	8.00E-38	3744.374	2.33E-30
	HIVb+F	-1407.033	3138.065	1.20E-16	3483.242	2.77E-38	3746.496	8.07E-31

mtVer+F	-1407.44	3138.88	7.99E-17	3484.057	1.84E-38	3747.31	5.37E-31
Dayhoff	-1464.155	3214.309	3.34E-33	3453.751	7.02E-32	3751.38	7.02E-32
DCMut	-1464.262	3214.525	2.99E-33	3453.967	6.30E-32	3751.596	6.30E-32
Q.plant+F	-1412.083	3148.166	7.69E-19	3493.343	1.77E-40	3756.596	5.17E-33
JTTDCMut+F	-1412.101	3148.201	7.56E-19	3493.378	1.74E-40	3756.631	5.08E-33
JTT+F	-1412.104	3148.207	7.53E-19	3493.384	1.74E-40	3756.637	5.07E-33
Q.yeast	-1466.971	3219.943	1.99E-34	3459.385	4.20E-33	3757.014	4.20E-33
LG	-1467.211	3220.423	1.57E-34	3459.865	3.30E-33	3757.494	3.30E-33
Q.pfam	-1468.012	3222.024	7.04E-35	3461.466	1.48E-33	3759.095	1.48E-33
mtMet+F	-1415.935	3155.871	1.63E-20	3501.047	3.77E-42	3764.301	1.10E-34
PMB	-1470.739	3227.478	4.61E-36	3466.92	9.70E-35	3764.549	9.70E-35
SC2-Proteome	-1471.744	3229.489	1.69E-36	3468.931	3.55E-35	3766.56	3.55E-35
FLU+F	-1418.846	3161.691	8.89E-22	3506.868	2.05E-43	3770.122	5.98E-36
Blosum62	-1475.996	3237.991	2.40E-38	3477.433	5.05E-37	3775.062	5.05E-37
mtREV+F	-1421.608	3167.217	5.61E-23	3512.393	1.29E-44	3775.647	3.77E-37
mtVer	-1477.06	3240.12	8.29E-39	3479.562	1.74E-37	3777.191	1.74E-37
mtInv+F	-1425.089	3174.179	1.73E-24	3519.355	3.98E-46	3782.609	1.16E-38
cpREV+F	-1425.673	3175.347	9.63E-25	3520.523	2.22E-46	3783.777	6.48E-39
rtREV	-1482.471	3250.942	3.70E-41	3490.384	7.79E-40	3788.013	7.79E-40
mtMet	-1483.223	3252.445	1.75E-41	3491.887	3.67E-40	3789.516	3.67E-40
mtMAM+F	-1430.257	3184.514	9.84E-27	3529.69	2.27E-48	3792.944	6.62E-41
Q.insect+F	-1432.854	3189.709	7.33E-28	3534.885	1.69E-49	3798.139	4.93E-42
mtREV	-1488.437	3262.873	9.50E-44	3502.315	2.00E-42	3799.944	2.00E-42
VT+F	-1434.576	3193.153	1.31E-28	3538.329	3.02E-50	3801.583	8.81E-43
WAG+F	-1434.915	3193.829	9.34E-29	3539.006	2.15E-50	3802.26	6.28E-43

	Q.yeast+F	-1438.893	3201.786	1.75E-30	3546.962	4.03E-52	3810.216	1.18E-44
	mtZOA+F	-1440.678	3205.356	2.93E-31	3550.532	6.77E-53	3813.786	1.97E-45
	Q.pfam+F	-1441.632	3207.264	1.13E-31	3552.44	2.61E-53	3815.694	7.60E-46
	Dayhoff+F	-1441.964	3207.928	8.10E-32	3553.105	1.87E-53	3816.358	5.45E-46
	DCMut+F	-1442.073	3208.146	7.27E-32	3553.323	1.68E-53	3816.576	4.89E-46
	LG+F	-1443.354	3210.708	2.02E-32	3555.884	4.66E-54	3819.138	1.36E-46
	mtMAM	-1499.678	3285.356	1.25E-48	3524.798	2.62E-47	3822.428	2.62E-47
	PMB+F	-1451.947	3227.894	3.74E-36	3573.07	8.64E-58	3836.324	2.52E-50
	mtART+F	-1455.351	3234.703	1.24E-37	3579.879	2.87E-59	3843.133	8.36E-52
	Blosum62+F	-1455.361	3234.722	1.23E-37	3579.899	2.84E-59	3843.152	8.28E-52
	rtREV+F	-1456.569	3237.139	3.68E-38	3582.315	8.49E-60	3845.569	2.47E-52
	mtZOA	-1512.348	3310.697	3.92E-54	3550.139	8.24E-53	3847.768	8.24E-53
	mtInv	-1513	3312.001	2.04E-54	3551.443	4.29E-53	3849.072	4.29E-53
	mtART	-1534.033	3354.066	1.50E-63	3593.508	3.15E-62	3891.137	3.15E-62
TD7	SC2-PLpro	-1583.629	3577.258	1	4345.076	1	4347.185	1
	Q.bird	-1623.175	3656.35	6.69E-18	4424.168	6.69E-18	4426.277	6.69E-18
	FLAVI	-1627.592	3665.183	8.08E-20	4433.001	8.08E-20	4435.11	8.08E-20
	SC2-PLpro+F	-1574.281	3596.561	6.43E-05	4704.254	1.01E-78	4437.848	2.06E-20
	Q.mammal	-1630.952	3671.904	2.80E-21	4439.722	2.80E-21	4441.831	2.80E-21
	HIVb	-1633.627	3677.254	1.93E-22	4445.073	1.93E-22	4447.182	1.93E-22
	HIVw	-1633.7	3677.4	1.80E-22	4445.218	1.80E-22	4447.327	1.80E-22
	JTTDCMut	-1633.82	3677.641	1.59E-22	4445.459	1.59E-22	4447.568	1.59E-22
	JTT	-1634.409	3678.817	8.84E-23	4446.635	8.84E-23	4448.744	8.84E-23
	Q.plant	-1642.171	3694.342	3.76E-26	4462.16	3.76E-26	4464.269	3.76E-26
	FLU	-1644.373	3698.746	4.16E-27	4466.565	4.16E-27	4468.674	4.16E-27

FLAVI+F	-1594.398	3636.795	1.18E-13	4744.488	1.86E-87	4478.082	3.77E-29
HIVw+F	-1598.433	3644.866	2.08E-15	4752.559	3.28E-89	4486.153	6.66E-31
SC2-Proteome+F	-1603.088	3654.175	1.98E-17	4761.867	3.13E-91	4495.461	6.34E-33
Q.bird+F	-1603.697	3655.394	1.08E-17	4763.086	1.70E-91	4496.68	3.45E-33
Q.mammal+F	-1608.508	3665.016	8.78E-20	4772.709	1.38E-93	4506.303	2.81E-35
WAG	-1665.682	3741.364	2.32E-36	4509.183	2.32E-36	4511.292	2.32E-36
VT	-1665.8	3741.6	2.06E-36	4509.418	2.06E-36	4511.527	2.06E-36
Q.insect	-1665.962	3741.924	1.75E-36	4509.743	1.75E-36	4511.852	1.75E-36
cpREV	-1666.498	3742.995	1.02E-36	4510.813	1.02E-36	4512.922	1.02E-36
HIVb+F	-1613.008	3674.016	9.75E-22	4781.709	1.54E-95	4515.303	3.12E-37
SC2-Proteome	-1673.497	3756.994	9.35E-40	4524.813	9.35E-40	4526.922	9.35E-40
JTTDCMut+F	-1619.803	3687.605	1.09E-24	4795.298	1.72E-98	4528.892	3.49E-40
JTT+F	-1620.259	3688.519	6.92E-25	4796.211	1.09E-98	4529.805	2.21E-40
Q.plant+F	-1620.73	3689.46	4.32E-25	4797.152	6.81E-99	4530.746	1.38E-40
FLU+F	-1624.067	3696.133	1.54E-26	4803.825	2.42E-100	4537.419	4.91E-42
Dayhoff	-1679.379	3768.759	2.61E-42	4536.577	2.61E-42	4538.686	2.61E-42
DCMut	-1679.431	3768.862	2.48E-42	4536.68	2.48E-42	4538.789	2.48E-42
mtVer+F	-1624.91	3697.82	6.61E-27	4805.513	1.04E-100	4539.107	2.11E-42
LG	-1680.282	3770.564	1.06E-42	4538.382	1.06E-42	4540.491	1.06E-42
Q.pfam	-1681.213	3772.425	4.17E-43	4540.243	4.17E-43	4542.352	4.17E-43
Q.yeast	-1681.566	3773.132	2.93E-43	4540.95	2.93E-43	4543.059	2.93E-43
mtVer	-1685.188	3780.375	7.83E-45	4548.193	7.83E-45	4550.302	7.83E-45
PMB	-1685.984	3781.969	3.53E-45	4549.787	3.53E-45	4551.896	3.53E-45
mtMAM+F	-1634.306	3716.612	5.49E-31	4824.305	8.65E-105	4557.899	1.75E-46
mtMet+F	-1634.453	3716.906	4.74E-31	4824.599	7.46E-105	4558.193	1.51E-46

	Blosum62	-1690.301	3790.601	4.71E-47	4558.419	4.71E-47	4560.528	4.71E-47
	mtMet	-1693.022	3796.044	3.10E-48	4563.863	3.10E-48	4565.972	3.10E-48
	mtMAM	-1694.583	3799.167	6.50E-49	4566.985	6.50E-49	4569.094	6.50E-49
	mtREV+F	-1640.678	3729.356	9.38E-34	4837.048	1.48E-107	4570.642	3.00E-49
	mtREV	-1696.75	3803.501	7.45E-50	4571.319	7.45E-50	4573.428	7.45E-50
	rtREV	-1698.997	3807.994	7.87E-51	4575.812	7.88E-51	4577.921	7.88E-51
	cpREV+F	-1645.246	3738.493	9.73E-36	4846.185	1.53E-109	4579.779	3.11E-51
	mtInv+F	-1647.856	3743.712	7.16E-37	4851.405	1.13E-110	4584.999	2.29E-52
	Q.insect+F	-1651.369	3750.738	2.13E-38	4858.43	3.36E-112	4592.024	6.82E-54
	WAG+F	-1651.949	3751.898	1.19E-38	4859.591	1.88E-112	4593.185	3.82E-54
	VT+F	-1652.288	3752.577	8.51E-39	4860.269	1.34E-112	4593.863	2.72E-54
	Dayhoff+F	-1661.271	3770.542	1.07E-42	4878.234	1.68E-116	4611.828	3.42E-58
	Q.yeast+F	-1661.287	3770.574	1.05E-42	4878.266	1.66E-116	4611.86	3.36E-58
	DCMut+F	-1661.322	3770.643	1.02E-42	4878.336	1.60E-116	4611.929	3.25E-58
	Q.pfam+F	-1662.859	3773.718	2.18E-43	4881.41	3.44E-117	4615.004	6.98E-59
	LG+F	-1665.385	3778.771	1.75E-44	4886.463	2.75E-118	4620.057	5.58E-60
	mtZOA+F	-1671.731	3791.461	3.06E-47	4899.153	4.83E-121	4632.747	9.79E-63
	mtInv	-1727.968	3865.937	2.06E-63	4633.755	2.06E-63	4635.864	2.06E-63
	PMB+F	-1675.832	3799.663	5.07E-49	4907.356	7.99E-123	4640.95	1.62E-64
	mtZOA	-1732.469	3874.938	2.29E-65	4642.756	2.29E-65	4644.865	2.29E-65
	Blosum62+F	-1680.179	3808.357	6.57E-51	4916.049	1.03E-124	4649.643	2.10E-66
	rtREV+F	-1682.218	3812.437	8.54E-52	4920.129	1.35E-125	4653.723	2.73E-67
	mtART+F	-1694.34	3836.681	4.65E-57	4944.373	7.32E-131	4677.967	1.48E-72
	mtART	-1763.293	3936.586	9.40E-79	4704.404	9.40E-79	4706.513	9.40E-79
TD8	SC2-PLpro	-1512.243	3382.487	1	3856.31	1	4054.764	1

FLAVI	-1545.985	3449.969	2.22E-15	3923.793	2.22E-15	4122.247	2.22E-15
Q.bird	-1545.986	3449.972	2.22E-15	3923.795	2.22E-15	4122.25	2.22E-15
Q.mammal	-1552.141	3462.282	4.71E-18	3936.106	4.71E-18	4134.56	4.71E-18
JTTDCMut	-1554.222	3466.444	5.87E-19	3940.267	5.87E-19	4138.721	5.87E-19
JTT	-1554.656	3467.312	3.81E-19	3941.135	3.81E-19	4139.59	3.81E-19
HIVb	-1555.388	3468.776	1.83E-19	3942.6	1.83E-19	4141.054	1.83E-19
FLU	-1556.689	3471.377	4.98E-20	3945.201	4.98E-20	4143.655	4.98E-20
SC2-PLpro+F	-1505.186	3406.371	6.51E-06	4079.91	2.79E-49	4150.008	2.08E-21
HIVw	-1560.613	3479.227	9.84E-22	3953.05	9.84E-22	4151.505	9.84E-22
Q.plant	-1562.643	3483.286	1.29E-22	3957.11	1.29E-22	4155.564	1.29E-22
FLAVI+F	-1520.872	3437.744	1.00E-12	4111.283	4.30E-56	4181.381	3.20E-28
WAG	-1578.675	3515.349	1.41E-29	3989.173	1.41E-29	4187.627	1.41E-29
cpREV	-1579.879	3517.758	4.23E-30	3991.581	4.23E-30	4190.036	4.23E-30
VT	-1580.163	3518.326	3.18E-30	3992.15	3.18E-30	4190.604	3.18E-30
Q.insect	-1580.981	3519.962	1.40E-30	3993.786	1.40E-30	4192.24	1.40E-30
SC2-Proteome+F	-1530.452	3456.905	6.92E-17	4130.443	2.97E-60	4200.542	2.21E-32
HIVw+F	-1531.1	3458.201	3.62E-17	4131.739	1.55E-60	4201.838	1.16E-32
Dayhoff	-1585.932	3529.865	9.94E-33	4003.688	9.94E-33	4202.142	9.94E-33
Q.bird+F	-1531.305	3458.611	2.95E-17	4132.149	1.27E-60	4202.248	9.43E-33
DCMut	-1585.999	3529.999	9.29E-33	4003.822	9.29E-33	4202.276	9.29E-33
Q.mammal+F	-1535.063	3466.125	6.89E-19	4139.664	2.96E-62	4209.762	2.20E-34
LG	-1591.385	3540.77	4.26E-35	4014.593	4.26E-35	4213.048	4.26E-35
HIVb+F	-1537.421	3470.841	6.52E-20	4144.38	2.80E-63	4214.478	2.08E-35
Q.pfam	-1593.566	3545.131	4.81E-36	4018.955	4.81E-36	4217.409	4.81E-36
PMB	-1593.569	3545.139	4.79E-36	4018.962	4.79E-36	4217.416	4.79E-36

Q.yeast	-1593.668	3545.337	4.34E-36	4019.16	4.34E-36	4217.615	4.34E-36
FLU+F	-1540.804	3477.608	2.21E-21	4151.147	9.48E-65	4221.245	7.07E-37
SC2-Proteome	-1596.177	3550.353	3.53E-37	4024.177	3.53E-37	4222.631	3.53E-37
Blosum62	-1598.504	3555.008	3.45E-38	4028.831	3.45E-38	4227.286	3.45E-38
JTTDCMut+F	-1544.083	3484.167	8.33E-23	4157.705	3.57E-66	4227.804	2.66E-38
JTT+F	-1544.479	3484.959	5.60E-23	4158.497	2.40E-66	4228.596	1.79E-38
Q.plant+F	-1546.603	3489.206	6.70E-24	4162.745	2.87E-67	4232.843	2.14E-39
mtVer	-1603.97	3565.94	1.46E-40	4039.763	1.46E-40	4238.218	1.46E-40
mtMet	-1606.275	3570.549	1.45E-41	4044.373	1.45E-41	4242.827	1.45E-41
rtREV	-1608.412	3574.823	1.72E-42	4048.647	1.72E-42	4247.101	1.72E-42
mtVer+F	-1554.542	3505.083	2.39E-27	4178.622	1.03E-70	4248.72	7.64E-43
mtREV	-1612.575	3583.151	2.67E-44	4056.974	2.67E-44	4255.429	2.67E-44
mtMet+F	-1557.94	3511.879	7.99E-29	4185.418	3.43E-72	4255.516	2.55E-44
cpREV+F	-1564.096	3524.192	1.69E-31	4197.73	7.27E-75	4267.829	5.42E-47
mtREV+F	-1566.27	3528.539	1.93E-32	4202.078	8.27E-76	4272.176	6.16E-48
mtInv+F	-1567.166	3530.332	7.87E-33	4203.87	3.38E-76	4273.969	2.51E-48
WAG+F	-1568.301	3532.602	2.53E-33	4206.141	1.08E-76	4276.239	8.08E-49
Dayhoff+F	-1570.444	3536.889	2.96E-34	4210.427	1.27E-77	4280.526	9.48E-50
DCMut+F	-1570.511	3537.022	2.77E-34	4210.561	1.19E-77	4280.659	8.86E-50
VT+F	-1570.619	3537.237	2.49E-34	4210.776	1.07E-77	4280.874	7.96E-50
Q.insect+F	-1571.271	3538.542	1.30E-34	4212.08	5.56E-78	4282.179	4.15E-50
mtMAM	-1629.287	3616.575	1.47E-51	4090.398	1.47E-51	4288.853	1.47E-51
Q.yeast+F	-1579.047	3554.095	5.44E-38	4227.633	2.33E-81	4297.732	1.74E-53
mtMAM+F	-1579.259	3554.517	4.41E-38	4228.056	1.89E-81	4298.154	1.41E-53
Q.pfam+F	-1579.488	3554.975	3.50E-38	4228.514	1.50E-81	4298.612	1.12E-53

	mtZOA	-1634.262	3626.524	1.02E-53	4100.348	1.02E-53	4298.802	1.02E-53
	LG+F	-1580.006	3556.012	2.09E-38	4229.551	8.95E-82	4299.649	6.67E-54
	mtInv	-1636.143	3630.286	1.55E-54	4104.109	1.55E-54	4302.564	1.55E-54
	mtZOA+F	-1582.905	3561.811	1.15E-39	4235.349	4.93E-83	4305.447	3.67E-55
	PMB+F	-1586.772	3569.544	2.40E-41	4243.082	1.03E-84	4313.181	7.69E-57
	Blosum62+F	-1590.999	3577.997	3.51E-43	4251.536	1.51E-86	4321.634	1.12E-58
	rtREV+F	-1593.835	3583.669	2.06E-44	4257.208	8.84E-88	4327.306	6.58E-60
	mtART+F	-1606.56	3609.12	6.13E-50	4282.659	2.63E-93	4352.757	1.96E-65
	mtART	-1665.305	3688.61	3.36E-67	4162.433	3.36E-67	4360.887	3.36E-67
TD9	SC2-PLpro	-1467.217	3280.434	0.991	3704.406	1	3930.177	1
	FLAVI	-1493.597	3333.194	3.46E-12	3757.165	3.49E-12	3982.937	3.49E-12
	Q.bird	-1497.552	3341.105	6.63E-14	3765.077	6.69E-14	3990.848	6.69E-14
	HIVb	-1498.329	3342.658	3.05E-14	3766.63	3.08E-14	3992.401	3.08E-14
	HIVw	-1501.693	3349.385	1.06E-15	3773.357	1.07E-15	3999.129	1.07E-15
	FLU	-1503.005	3352.011	2.84E-16	3775.983	2.87E-16	4001.754	2.87E-16
	JTTDCMut	-1503.8	3353.601	1.28E-16	3777.573	1.29E-16	4003.344	1.29E-16
	JTT	-1504.181	3354.362	8.76E-17	3778.334	8.84E-17	4004.105	8.84E-17
	Q.mammal	-1504.865	3355.729	4.42E-17	3779.701	4.47E-17	4005.473	4.47E-17
	SC2-PLpro+F	-1452.897	3289.794	0.00919	3892.33	1.56E-41	4010.896	2.97E-18
	Q.plant	-1512.243	3370.486	2.76E-20	3794.458	2.79E-20	4020.23	2.79E-20
	FLAVI+F	-1467.03	3318.059	6.69E-09	3920.596	1.13E-47	4039.162	2.16E-24
	WAG	-1524.286	3394.572	1.63E-25	3818.544	1.64E-25	4044.316	1.64E-25
	cpREV	-1525.95	3397.9	3.08E-26	3821.872	3.11E-26	4047.644	3.11E-26
	VT	-1526.155	3398.31	2.51E-26	3822.282	2.53E-26	4048.053	2.53E-26
	HIVw+F	-1473.967	3331.934	6.50E-12	3934.471	1.10E-50	4053.037	2.10E-27

Q.insect	-1529.427	3404.854	9.52E-28	3828.826	9.61E-28	4054.597	9.61E-28
SC2-Proteome+F	-1476.019	3336.038	8.35E-13	3938.574	1.42E-51	4057.14	2.69E-28
Q.bird+F	-1480.436	3344.871	1.01E-14	3947.408	1.71E-53	4065.974	3.25E-30
LG	-1536.109	3418.219	1.19E-30	3842.191	1.20E-30	4067.962	1.20E-30
HIVb+F	-1481.502	3347.004	3.47E-15	3949.541	5.88E-54	4068.106	1.12E-30
PMB	-1538.774	3423.548	8.30E-32	3847.52	8.38E-32	4073.292	8.38E-32
Q.mammal+F	-1484.45	3352.9	1.82E-16	3955.437	3.09E-55	4074.003	5.87E-32
Q.pfam	-1539.705	3425.411	3.27E-32	3849.383	3.30E-32	4075.154	3.30E-32
Q.yeast	-1539.735	3425.47	3.17E-32	3849.442	3.20E-32	4075.214	3.20E-32
FLU+F	-1485.64	3355.28	5.54E-17	3957.817	9.39E-56	4076.383	1.79E-32
SC2-Proteome	-1540.583	3427.166	1.36E-32	3851.137	1.37E-32	4076.909	1.37E-32
Blosum62	-1540.7	3427.401	1.21E-32	3851.372	1.22E-32	4077.144	1.22E-32
Dayhoff	-1545.984	3437.968	6.13E-35	3861.94	6.19E-35	4087.712	6.19E-35
DCMut	-1546.076	3438.152	5.60E-35	3862.124	5.65E-35	4087.896	5.65E-35
JTTDCMut+F	-1492.63	3369.259	5.10E-20	3971.796	8.65E-59	4090.362	1.65E-35
JTT+F	-1492.916	3369.832	3.83E-20	3972.369	6.50E-59	4090.934	1.24E-35
mtVer+F	-1495.153	3374.307	4.09E-21	3976.844	6.93E-60	4095.409	1.32E-36
Q.plant+F	-1495.606	3375.212	2.60E-21	3977.748	4.41E-60	4096.314	8.39E-37
mtVer	-1550.584	3447.168	6.17E-37	3871.14	6.22E-37	4096.912	6.22E-37
mtMet	-1552.661	3451.322	7.73E-38	3875.294	7.80E-38	4101.065	7.80E-38
rtREV	-1553.764	3453.528	2.56E-38	3877.5	2.59E-38	4103.271	2.59E-38
mtMet+F	-1499.861	3383.722	3.69E-23	3986.258	6.26E-62	4104.824	1.19E-38
mtREV	-1555.571	3457.142	4.21E-39	3881.113	4.25E-39	4106.885	4.25E-39
mtREV+F	-1503.068	3390.136	1.49E-24	3992.673	2.53E-63	4111.239	4.82E-40
mtInv+F	-1507.648	3399.296	1.53E-26	4001.833	2.60E-65	4120.399	4.94E-42

	mtMAM+F	-1507.875	3399.75	1.22E-26	4002.287	2.07E-65	4120.852	3.94E-42
	cpREV+F	-1509.391	3402.781	2.68E-27	4005.318	4.55E-66	4123.884	8.65E-43
	mtMAM	-1564.246	3474.491	7.19E-43	3898.463	7.26E-43	4124.235	7.26E-43
	WAG+F	-1512.73	3409.46	9.52E-29	4011.996	1.61E-67	4130.562	3.07E-44
	VT+F	-1515.803	3415.606	4.40E-30	4018.142	7.46E-69	4136.708	1.42E-45
	Q.insect+F	-1518.972	3421.943	1.85E-31	4024.48	3.14E-70	4143.046	5.97E-47
	mtZOA+F	-1522.8	3429.599	4.03E-33	4032.136	6.83E-72	4150.702	1.30E-48
	Q.yeast+F	-1524.252	3432.504	9.43E-34	4035.04	1.60E-72	4153.606	3.04E-49
	mtZOA	-1578.967	3503.935	2.91E-49	3927.906	2.93E-49	4153.678	2.93E-49
	Q.pfam+F	-1524.426	3432.852	7.92E-34	4035.389	1.34E-72	4153.955	2.55E-49
	mtInv	-1579.323	3504.646	2.04E-49	3928.618	2.06E-49	4154.39	2.06E-49
	LG+F	-1525.251	3434.501	3.47E-34	4037.038	5.89E-73	4155.604	1.12E-49
	Dayhoff+F	-1527.034	3438.068	5.84E-35	4040.605	9.89E-74	4159.171	1.88E-50
	DCMut+F	-1527.128	3438.256	5.31E-35	4040.792	9.01E-74	4159.358	1.71E-50
	PMB+F	-1529.813	3443.627	3.62E-36	4046.163	6.14E-75	4164.729	1.17E-51
	Blosum62+F	-1532.48	3448.959	2.52E-37	4051.496	4.27E-76	4170.062	8.12E-53
	rtREV+F	-1541.274	3466.547	3.82E-41	4069.084	6.47E-80	4187.65	1.23E-56
	mtART+F	-1543.861	3471.722	2.87E-42	4074.259	4.87E-81	4192.825	9.26E-58
	mtART	-1606.858	3559.716	2.24E-61	3983.688	2.26E-61	4209.459	2.26E-61
TD10	SC2-PLpro	-1475.867	3289.733	1	3683.295	1	3924.454	1
	Q.bird	-1506.036	3350.073	7.90E-14	3743.634	7.90E-14	3984.793	7.90E-14
	FLAVI	-1507.263	3352.525	2.32E-14	3746.087	2.32E-14	3987.246	2.32E-14
	HIVb	-1512.958	3363.917	7.79E-17	3757.478	7.79E-17	3998.637	7.79E-17
	Q.mammal	-1513.143	3364.286	6.47E-17	3757.848	6.47E-17	3999.006	6.47E-17
	HIVw	-1513.645	3365.289	3.92E-17	3758.851	3.92E-17	4000.01	3.92E-17

JTTDCMut	-1514.776	3367.552	1.26E-17	3761.113	1.26E-17	4002.272	1.26E-17
JTT	-1515.335	3368.67	7.23E-18	3762.231	7.23E-18	4003.39	7.23E-18
FLU	-1515.956	3369.913	3.88E-18	3763.474	3.88E-18	4004.633	3.88E-18
SC2-PLpro+F	-1468.047	3312.093	1.40E-05	3871.652	1.26E-41	4018.173	4.46E-21
Q.plant	-1524.273	3386.546	9.49E-22	3780.108	9.49E-22	4021.267	9.49E-22
FLAVI+F	-1481.254	3338.507	2.56E-11	3898.066	2.31E-47	4044.587	8.19E-27
WAG	-1540.929	3419.859	5.54E-29	3813.42	5.54E-29	4054.579	5.54E-29
HIVw+F	-1486.771	3349.542	1.03E-13	3909.101	9.26E-50	4055.622	3.29E-29
Q.insect	-1541.584	3421.169	2.88E-29	3814.73	2.88E-29	4055.889	2.88E-29
cpREV	-1541.839	3421.679	2.23E-29	3815.241	2.23E-29	4056.399	2.23E-29
VT	-1542.361	3422.723	1.32E-29	3816.284	1.32E-29	4057.443	1.32E-29
Q.bird+F	-1488.589	3353.177	1.67E-14	3912.736	1.50E-50	4059.257	5.35E-30
Dayhoff	-1546.566	3431.133	1.97E-31	3824.695	1.97E-31	4065.853	1.97E-31
DCMut	-1546.71	3431.42	1.71E-31	3824.981	1.71E-31	4066.14	1.71E-31
Q.mammal+F	-1492.7	3361.399	2.74E-16	3920.958	2.47E-52	4067.479	8.76E-32
SC2-Proteome+F	-1494.631	3365.262	3.97E-17	3924.821	3.58E-53	4071.342	1.27E-32
HIVb+F	-1496.137	3368.274	8.81E-18	3927.833	7.93E-54	4074.353	2.82E-33
LG	-1553.448	3444.895	2.03E-34	3838.457	2.03E-34	4079.616	2.03E-34
PMB	-1554.966	3447.931	4.44E-35	3841.493	4.44E-35	4082.652	4.44E-35
mtVer	-1555.152	3448.303	3.69E-35	3841.865	3.69E-35	4083.023	3.69E-35
FLU+F	-1500.653	3377.307	9.63E-20	3936.866	8.67E-56	4083.386	3.08E-35
Q.yeast	-1555.54	3449.08	2.50E-35	3842.642	2.50E-35	4083.8	2.50E-35
Q.pfam	-1556.213	3450.426	1.28E-35	3843.988	1.28E-35	4085.147	1.28E-35
Blosum62	-1558.239	3454.478	1.68E-36	3848.039	1.68E-36	4089.198	1.68E-36
JTTDCMut+F	-1503.669	3383.338	4.72E-21	3942.897	4.25E-57	4089.417	1.51E-36

mtVer+F	-1503.754	3383.508	4.34E-21	3943.067	3.90E-57	4089.588	1.39E-36
mtMAM	-1558.548	3455.096	1.24E-36	3848.658	1.24E-36	4089.816	1.24E-36
JTT+F	-1504.178	3384.355	2.84E-21	3943.914	2.55E-57	4090.435	9.07E-37
SC2-Proteome	-1559.09	3456.179	7.19E-37	3849.741	7.19E-37	4090.9	7.19E-37
mtMet	-1559.249	3456.498	6.13E-37	3850.059	6.13E-37	4091.218	6.13E-37
mtREV	-1559.961	3457.923	3.01E-37	3851.484	3.01E-37	4092.643	3.01E-37
mtMAM+F	-1506.209	3388.419	3.72E-22	3947.978	3.35E-58	4094.498	1.19E-37
Q.plant+F	-1506.766	3389.531	2.13E-22	3949.09	1.92E-58	4095.611	6.82E-38
mtMet+F	-1508.719	3393.437	3.03E-23	3952.997	2.72E-59	4099.517	9.67E-39
mtREV+F	-1511.159	3398.319	2.64E-24	3957.878	2.37E-60	4104.398	8.42E-40
rtREV	-1566.785	3471.57	3.27E-40	3865.132	3.27E-40	4106.29	3.27E-40
mtInv+F	-1519.757	3415.515	4.86E-28	3975.074	4.38E-64	4121.595	1.55E-43
cpREV+F	-1525.56	3427.12	1.47E-30	3986.679	1.32E-66	4133.199	4.69E-46
Dayhoff+F	-1529.774	3435.548	2.17E-32	3995.107	1.95E-68	4141.627	6.94E-48
DCMut+F	-1529.917	3435.834	1.88E-32	3995.394	1.69E-68	4141.914	6.01E-48
WAG+F	-1529.94	3435.88	1.84E-32	3995.439	1.66E-68	4141.959	5.88E-48
Q.insect+F	-1530.512	3437.025	1.04E-32	3996.584	9.34E-69	4143.104	3.32E-48
VT+F	-1532.062	3440.125	2.20E-33	3999.684	1.98E-69	4146.204	7.04E-49
mtZOA	-1589.603	3517.207	4.02E-50	3910.768	4.03E-50	4151.927	4.03E-50
mtInv	-1590.276	3518.551	2.06E-50	3912.113	2.06E-50	4153.272	2.06E-50
mtZOA+F	-1536.044	3448.089	4.11E-35	4007.648	3.70E-71	4154.168	1.31E-50
Q.yeast+F	-1539.618	3455.235	1.15E-36	4014.794	1.04E-72	4161.315	3.68E-52
Q.pfam+F	-1540.719	3457.438	3.83E-37	4016.997	3.45E-73	4163.518	1.22E-52
LG+F	-1541.56	3459.12	1.65E-37	4018.679	1.49E-73	4165.2	5.28E-53
PMB+F	-1547.208	3470.416	5.83E-40	4029.975	5.24E-76	4176.495	1.86E-55

mtART+F	-1550.103	3476.207	3.22E-41	4035.766	2.90E-77	4182.286	1.03E-56
Blosum62+F	-1551.136	3478.272	1.15E-41	4037.831	1.03E-77	4184.351	3.66E-57
rtREV+F	-1553.856	3483.712	7.55E-43	4043.271	6.79E-79	4189.792	2.41E-58
mtART	-1610.712	3559.423	2.74E-59	3952.985	2.74E-59	4194.144	2.74E-59

Table S5. Ranking of likelihood-based best-fitting substitution models for each test dataset of SARS-CoV-2 Spike. The ranking is based on the Bayesian information criterion (BIC) and was obtained with *ModelFinder* for each test dataset. The SARS-CoV-2 models are highlighted in grey.

Test dataset	Model	LogL	AIC	w-AIC	AICc	w-AICc	BIC	w-BIC
TD1	SC2-Spike+F	-16792.686	35585.372	1	42945.666	2.43E-94	40734.504	1
	SC2-Spike	-16965.826	35893.651	1.14E-67	42514.558	1	40944.949	2.01E-46
	SC2-Proteome+F	-16951.703	35903.406	8.71E-70	43263.7	2.12E-163	41052.538	8.71E-70
	HIVw+F	-17066.149	36132.297	1.72E-119	43492.592	4.20E-213	41281.429	1.72E-119
	Q.bird+F	-17097.285	36194.57	5.18E-133	43554.865	1.26E-226	41343.702	5.18E-133
	Q.mammal+F	-17124.063	36248.126	1.22E-144	4.36E+04	2.96E-238	41397.258	1.22E-144
	FLAVI+F	-17127.874	36255.748	2.69E-146	4.36E+04	6.55E-240	41404.879	2.69E-146
	JTT+F	-17145.638	36291.277	5.18E-154	4.37E+04	1.26E-247	41440.408	5.18E-154
	JTTDCMut+F	-17147.455	36294.91	8.43E-155	4.37E+04	2.05E-248	41444.041	8.43E-155
	HIVb+F	-17161.551	36323.101	6.37E-161	4.37E+04	1.55E-254	41472.233	6.37E-161
	FLU+F	-17190.53	36381.059	1.65E-173	4.37E+04	4.03E-267	41530.191	1.65E-173
	Q.plant+F	-17194.915	36389.83	2.06E-175	4.38E+04	5.02E-269	41538.961	2.06E-175
	Q.bird	-17295.016	36552.033	1.24E-210	4.32E+04	1.08E-143	41603.331	2.17E-189
	JTTDCMut	-17301.175	36564.349	2.62E-213	4.32E+04	2.29E-146	41615.647	4.59E-192
	JTT	-17302.207	36566.413	9.32E-214	4.32E+04	8.16E-147	41617.711	1.64E-192
	VT+F	-17261.857	36523.714	1.74E-204	4.39E+04	4.24E-298	41672.846	1.74E-204
	WAG+F	-17265.676	36531.352	3.83E-206	4.39E+04	9.31E-300	41680.484	3.83E-206
	cpREV+F	-17270.871	36541.742	2.12E-208	4.39E+04	5.16E-302	41690.874	2.12E-208

Q.mammal	-17341.656	36645.313	6.87E-231	4.33E+04	6.01E-164	41696.611	1.21E-209
FLU	-17358.042	36678.084	5.25E-238	4.33E+04	4.60E-171	41729.382	9.22E-217
HIVw	-17366.453	36694.905	1.17E-241	4.33E+04	1.02E-174	41746.203	2.05E-220
mtVer+F	-17300.563	36601.126	2.70E-221	4.40E+04	6.57e-315	41750.258	2.70E-221
mtMet+F	-17312.559	36625.119	1.67E-226	4.40E+04	4.06e-320	41774.25	1.67E-226
mtInv+F	-17319.051	36638.102	2.53E-229	4.40E+04	5.93e-323	41787.233	2.53E-229
Q.plant	-17396.836	36755.673	7.45E-255	4.34E+04	6.52E-188	41806.971	1.31E-233
VT	-17414.782	36791.564	1.20E-262	4.34E+04	1.05E-195	41842.862	2.10E-241
PMB+F	-17350.879	36701.757	3.80E-243	4.41E+04	0.00E+00	41850.889	3.80E-243
HIVb	-17433.238	36828.476	1.16E-270	4.34E+04	1.01E-203	41879.774	2.03E-249
WAG	-17437.838	36837.676	1.16E-272	4.35E+04	1.02E-205	41888.974	2.04E-251
Q.insect+F	-17373.042	36746.083	9.01E-253	4.41E+04	0.00E+00	41895.215	9.01E-253
Q.pfam+F	-17383.377	36766.754	2.93E-257	4.41E+04	0.00E+00	41915.885	2.93E-257
Blosum62+F	-17385.788	36771.576	2.63E-258	4.41E+04	0.00E+00	41920.707	2.63E-258
cpREV	-17456.824	36875.648	6.61E-281	4.35E+04	5.78E-214	41926.946	1.16E-259
LG+F	-17398.314	36796.627	9.53E-264	4.42E+04	0.00E+00	41945.759	9.53E-264
Q.yeast+F	-17404.691	36809.382	1.62E-266	4.42E+04	0.00E+00	41958.514	1.62E-266
FLAVI	-17475.783	36913.566	3.86E-289	4.35E+04	3.38E-222	41964.864	6.77E-268
PMB	-17485.311	36932.622	2.81E-293	4.36E+04	2.46E-226	41983.92	4.93E-272
mtREV+F	-17439.822	36879.644	8.96E-282	4.42E+04	0.00E+00	42028.775	8.96E-282
DCMut+F	-17457.972	36915.943	1.18E-289	4.43E+04	0.00E+00	42065.075	1.18E-289
Blosum62	-17526.889	37015.778	2.46e-311	4.36E+04	2.15E-244	42067.076	4.32E-290
Dayhoff+F	-17459.191	36918.381	3.47E-290	4.43E+04	0.00E+00	42067.513	3.47E-290
Q.insect	-17573.071	37108.143	0	4.37E+04	1.89E-264	42159.441	3.79e-310
Q.pfam	-17588.782	37139.564	0	4.38E+04	2.84E-271	42190.862	5.7e-317

	LG	-17596.75	37155.5	0	4.38E+04	9.84E-275	42206.798	1.97e-320
	Q.yeast	-17623.707	37209.413	0	4.38E+04	1.93E-286	42260.711	0
	rtREV+F	-17569.476	37138.951	0	4.45E+04	0.00E+00	42288.083	0
	mtZOA+F	-17571.367	37142.734	0	4.45E+04	0.00E+00	42291.866	0
	DCMut	-17667.655	37297.31	0	4.39E+04	1.58E-305	42348.608	0
	Dayhoff	-17668.999	37299.997	0	4.39E+04	4.13E-306	42351.295	0
	mtMAM+F	-17679.81	37359.621	0	4.47E+04	0.00E+00	42508.752	0
	SC2-Proteome	-17830.912	37623.823	0	4.42E+04	0.00E+00	42675.121	0
	rtREV	-17862.524	37687.048	0	4.43E+04	0.00E+00	42738.346	0
	mtMet	-17876.325	37714.649	0	4.43E+04	0.00E+00	42765.947	0
	mtART+F	-17869.087	37738.173	0	4.51E+04	0.00E+00	42887.305	0
	mtVer	-17986.277	37934.554	0	4.46E+04	0.00E+00	42985.852	0
	mtInv	-18033.236	38028.471	0	4.46E+04	0.00E+00	43079.769	0
	mtREV	-18090.042	38142.083	0	4.48E+04	0.00E+00	43193.381	0
	mtZOA	-18129.478	38220.957	0	4.48E+04	0.00E+00	43272.255	0
	mtMAM	-18361.574	38685.148	0	4.53E+04	0.00E+00	43736.446	0
	mtART	-18501.823	38965.645	0	4.56E+04	0.00E+00	44016.944	0
TD2	SC2-Spike+F	-20337.985	42723.969	1	51188.485	4.15E-103	47996.68	1
	SC2-Proteome+F	-20441.126	42930.253	1.61E-45	51394.769	6.67E-148	48202.964	1.61E-45
	SC2-Spike	-20566.87	43143.739	7.05E-92	5.07E+04	1.00E+00	48318.617	1.24E-70
	Q.bird+F	-20674.099	43396.198	1.06E-146	5.19E+04	4.42E-249	48668.909	1.06E-146
	HIVw+F	-20682.744	43413.488	1.87E-150	5.19E+04	7.77E-253	48686.199	1.87E-150
	Q.mammal+F	-20691.129	43430.257	4.28E-154	5.19E+04	1.78E-256	48702.968	4.28E-154
	JTT+F	-20697.891	43443.783	4.95E-157	5.19E+04	2.05E-259	48716.494	4.95E-157

JTTDCMut+F	-20699.531	43447.062	9.60E-158	5.19E+04	3.98E-260	48719.772	9.60E-158
FLAVI+F	-20737.521	43523.042	3.05E-174	5.20E+04	1.26E-276	48795.752	3.05E-174
HIVb+F	-20751.229	43550.458	3.39E-180	5.20E+04	1.41E-282	48823.169	3.39E-180
Q.plant+F	-20779.546	43607.091	1.71E-192	5.21E+04	7.08E-295	48879.802	1.71E-192
VT+F	-20782.82	43613.641	6.46E-194	5.21E+04	2.68E-296	48886.351	6.46E-194
FLU+F	-20808.684	43665.368	3.78E-205	5.21E+04	1.57E-307	48938.078	3.78E-205
cpREV+F	-20819.424	43686.848	8.19E-210	5.22E+04	3.4e-312	48959.559	8.19E-210
WAG+F	-20825.147	43698.294	2.68E-212	5.22E+04	1.11e-314	48971.005	2.68E-212
JTTDCMut	-20896.188	43802.375	6.72E-235	5.14E+04	9.53E-144	48977.252	1.18E-213
JTT	-20898.154	43806.309	9.40E-236	5.14E+04	1.33E-144	48981.186	1.65E-214
Q.bird	-20921.235	43852.47	8.90E-246	5.14E+04	1.26E-154	49027.347	1.56E-224
PMB+F	-20861.401	43770.803	4.82E-228	5.22E+04	0.00E+00	49043.514	4.82E-228
mtMet+F	-20891.901	43831.802	2.74E-241	5.23E+04	0.00E+00	49104.512	2.74E-241
mtInv+F	-20892.359	43832.718	1.73E-241	5.23E+04	0.00E+00	49105.429	1.73E-241
Q.mammal	-20961.898	43933.796	1.95E-263	5.15E+04	2.76E-172	49108.673	3.42E-242
mtVer+F	-20894.761	43837.521	1.57E-242	5.23E+04	0.00E+00	49110.232	1.57E-242
Blosum62+F	-20905.246	43858.492	4.38E-247	5.23E+04	0.00E+00	49131.202	4.38E-247
VT	-20975.766	43961.533	1.85E-269	5.15E+04	2.62E-178	49136.41	3.24E-248
FLU	-21011.21	44032.42	7.47E-285	5.16E+04	1.06E-193	49207.297	1.31E-263
Q.insect+F	-20951.11	43950.22	5.28E-267	5.24E+04	0.00E+00	49222.931	5.28E-267
PMB	-21027.219	44064.437	8.34E-292	5.16E+04	1.18E-200	49239.314	1.46E-270
WAG	-21043.764	44097.528	5.44E-299	5.17E+04	7.72E-208	49272.406	9.54E-278
Q.pfam+F	-20977.583	44003.165	1.68E-278	5.25E+04	0.00E+00	49275.876	1.68E-278
HIVw	-21055.466	44120.933	4.50E-304	5.17E+04	6.39E-213	49295.81	7.90E-283
Q.plant	-21055.974	44121.947	2.71E-304	5.17E+04	3.84E-213	49296.824	4.76E-283

LG+F	-21002.622	44053.244	2.25E-289	5.25E+04	0.00E+00	49325.955	2.25E-289
cpREV	-21070.766	44151.531	1.02e-310	5.17E+04	1.45E-219	49326.409	1.79E-289
Q.yeast+F	-21002.954	44053.909	1.61E-289	5.25E+04	0.00E+00	49326.62	1.61E-289
mtREV+F	-21010.283	44068.567	1.06E-292	5.25E+04	0.00E+00	49341.277	1.06E-292
Blosum62	-21081.085	44172.171	3.36e-315	5.17E+04	4.77E-224	49347.048	5.91E-294
DCMut+F	-21018.873	44085.746	1.97E-296	5.26E+04	0.00E+00	49358.456	1.97E-296
HIVb	-21088.359	44186.719	2.33e-318	5.18E+04	3.31E-227	49361.596	4.09E-297
Dayhoff+F	-21020.472	44088.944	3.98E-297	5.26E+04	0.00E+00	49361.655	3.98E-297
FLAVI	-21190.257	44390.515	0	5.20E+04	1.85E-271	49565.392	0
Q.insect	-21206.345	44422.691	0	5.20E+04	1.90E-278	49597.568	0
rtREV+F	-21157.864	44363.729	0	5.28E+04	0.00E+00	49636.44	0
mtZOA+F	-21166.716	44381.433	0	5.28E+04	0.00E+00	49654.144	0
Q.pfam	-21241.254	44492.507	0	5.21E+04	1.31E-293	49667.385	0
LG	-21258.247	44526.494	0	5.21E+04	5.48E-301	49701.372	0
DCMut	-21290.162	44590.323	0	5.22E+04	7.56e-315	49765.2	0
Dayhoff	-21291.922	44593.843	0	5.22E+04	1.3e-315	49768.721	0
Q.yeast	-21298.753	44607.506	0	5.22E+04	1.4e-318	49782.383	0
mtMAM+F	-21312.695	44673.389	0	5.31E+04	0.00E+00	49946.1	0
rtREV	-21519.41	45048.821	0	5.26E+04	0.00E+00	50223.698	0
SC2-Proteome	-21520.558	45051.115	0	5.26E+04	0.00E+00	50225.993	0
mtART+F	-21512.202	45072.404	0	5.35E+04	0.00E+00	50345.115	0
mtMet	-21603.073	45216.145	0	5.28E+04	0.00E+00	50391.023	0
mtVer	-21739.856	45489.711	0	5.31E+04	0.00E+00	50664.589	0
mtInv	-21796.906	45603.811	0	5.32E+04	0.00E+00	50778.688	0
mtREV	-21825.504	45661.008	0	5.32E+04	0.00E+00	50835.885	0

	mtZOA	-21889.325	45788.651	0	5.34E+04	0.00E+00	50963.528	0
	mtMAM	-22166.11	46342.219	0	5.39E+04	0.00E+00	51517.097	0
	mtART	-22329.218	46668.437	0	5.42E+04	0.00E+00	51843.314	0
TD3	SC2-Spike+F	-20866.346	43808.691	1	53026.486	9.55E-122	49153.49	1
	SC2-Proteome+F	-20965.563	44007.126	8.13E-44	5.32E+04	7.77E-165	49351.925	8.13E-44
	SC2-Spike	-21107.363	44252.726	3.79E-97	5.25E+04	1.00E+00	49499.691	6.66E-76
	Q.bird+F	-21177.697	44431.395	6.05E-136	5.36E+04	5.78E-257	49776.193	6.05E-136
	Q.mammal+F	-21187.509	44451.018	3.31E-140	5.37E+04	3.17E-261	49795.817	3.31E-140
	JTT+F	-21198.2	44472.399	7.54E-145	5.37E+04	7.20E-266	49817.198	7.54E-145
	JTTDCMut+F	-21199.737	44475.473	1.62E-145	5.37E+04	1.55E-266	49820.272	1.62E-145
	HIVw+F	-21204.525	44485.05	1.35E-147	5.37E+04	1.29E-268	49829.848	1.35E-147
	FLAVI+F	-21253.012	44582.023	1.18E-168	5.38E+04	1.13E-289	49926.822	1.18E-168
	HIVb+F	-21269.507	44615.014	8.11E-176	5.38E+04	7.75E-297	49959.813	8.11E-176
	Q.plant+F	-21286.301	44648.603	4.13E-183	5.39E+04	3.94E-304	49993.402	4.13E-183
	VT+F	-21292.39	44660.781	9.36E-186	5.39E+04	8.93E-307	50005.579	9.36E-186
	FLU+F	-21313.974	44703.948	3.96E-195	5.39E+04	3.78E-316	50048.747	3.96E-195
	WAG+F	-21324.186	44724.371	1.45E-199	5.39E+04	1.39E-320	50069.17	1.45E-199
	cpREV+F	-21333.958	44743.917	8.29E-204	5.40E+04	0.00E+00	50088.715	8.29E-204
	JTTDCMut	-21406.019	44850.037	7.49E-227	5.31E+04	1.97E-130	50097.002	1.31E-205
	JTT	-21407.255	44852.511	2.17E-227	5.31E+04	5.73E-131	50099.476	3.82E-206
	mtInv+F	-21368.587	44813.174	7.57E-219	5.40E+04	0.00E+00	50157.973	7.57E-219
	PMB+F	-21370.813	44817.627	8.17E-220	5.40E+04	0.00E+00	50162.425	8.17E-220
	mtMet+F	-21375.269	44826.537	9.49E-222	5.40E+04	0.00E+00	50171.336	9.49E-222
	Q.bird	-21447.207	44932.415	9.69E-245	5.31E+04	2.55E-148	50179.38	1.70E-223

mtVer+F	-21390.278	44856.557	2.88E-228	5.41E+04	0.00E+00	50201.356	2.88E-228
Q.mammal	-21481.669	45001.338	1.05E-259	5.32E+04	2.76E-163	50248.304	1.84E-238
Blosum62+F	-21415.218	44906.436	4.24E-239	5.41E+04	0.00E+00	50251.234	4.24E-239
VT	-21495.911	45029.822	6.84E-266	5.32E+04	1.80E-169	50276.787	1.20E-244
FLU	-21519.576	45077.152	3.61E-276	5.33E+04	9.51E-180	50324.117	6.33E-255
Q.insect+F	-21452.432	44980.864	2.92E-255	5.42E+04	0.00E+00	50325.663	2.92E-255
Q.pfam+F	-21479.874	45035.748	3.53E-267	5.43E+04	0.00E+00	50380.546	3.53E-267
WAG	-21550.169	45138.338	1.87E-289	5.34E+04	4.92E-193	50385.303	3.27E-268
PMB	-21552.53	45143.06	1.76E-290	5.34E+04	4.64E-194	50390.025	3.09E-269
LG+F	-21500.444	45076.887	4.12E-276	5.43E+04	0.00E+00	50421.686	4.12E-276
mtREV+F	-21500.664	45077.328	3.30E-276	5.43E+04	0.00E+00	50422.127	3.30E-276
Q.yeast+F	-21501.653	45079.305	1.23E-276	5.43E+04	0.00E+00	50424.104	1.23E-276
Q.plant	-21574.181	45186.362	6.96E-300	5.34E+04	1.83E-203	50433.327	1.22E-278
HIVw	-21583.902	45205.804	4.18E-304	5.34E+04	1.10E-207	50452.769	7.33E-283
cpREV	-21595.375	45228.749	0.00E+00	5.34E+04	1.15E-212	50475.714	7.63E-288
Blosum62	-21605.666	45249.333	1.47e-313	5.35E+04	3.89E-217	50496.298	2.59E-292
HIVb	-21615.325	45268.65	9.42e-318	5.35E+04	2.48E-221	50515.615	1.65E-296
DCMut+F	-21599.884	45275.768	2.68e-319	5.45E+04	0.00E+00	50620.567	2.68e-319
Dayhoff+F	-21600.046	45276.092	2.28e-319	5.45E+04	0.00E+00	50620.891	2.28e-319
FLAVI	-21711.319	45460.638	0	5.37E+04	5.07E-263	50707.603	0
Q.insect	-21721.417	45480.834	0	5.37E+04	2.09E-267	50727.799	0
mtZOA+F	-21655.405	45386.811	0	5.46E+04	0.00E+00	50731.609	0
Q.pfam	-21759.146	45556.293	0	5.38E+04	8.59E-284	50803.258	0
rtREV+F	-21691.828	45459.657	0	5.47E+04	0.00E+00	50804.455	0
LG	-21770.56	45579.121	0	5.38E+04	9.48E-289	50826.086	0

	Q.yeast	-21805.233	45648.466	0	5.39E+04	8.29E-304	50895.431	0
	DCMut	-21885.087	45808.174	0	5.40E+04	0.00E+00	51055.139	0
	Dayhoff	-21885.222	45808.444	0	5.40E+04	0.00E+00	51055.409	0
	mtMAM+F	-21866.779	45809.558	0	5.50E+04	0.00E+00	51154.357	0
	rtREV	-22071.902	46181.804	0	5.44E+04	0.00E+00	51428.77	0
	mtART+F	-22005.931	46087.862	0	5.53E+04	0.00E+00	51432.661	0
	SC2-Proteome	-22082.193	46202.386	0	5.44E+04	0.00E+00	51449.351	0
	mtMet	-22099.85	46237.7	0	5.45E+04	0.00E+00	51484.665	0
	mtVer	-22247.208	46532.416	0	5.47E+04	0.00E+00	51779.381	0
	mtInv	-22286.999	46611.998	0	5.48E+04	0.00E+00	51858.963	0
	mtREV	-22325.269	46688.537	0	5.49E+04	0.00E+00	51935.502	0
	mtZOA	-22387.504	46813.007	0	5.50E+04	0.00E+00	52059.972	0
	mtMAM	-22730.531	47499.061	0	5.57E+04	0.00E+00	52746.026	0
	mtART	-22826.732	47691.463	0	5.59E+04	0.00E+00	52938.429	0
TD4	SC2-Spike+F	-16765.22	35506.44	1	42387.651	6.38E-88	40593.782	1
	SC2-Spike	-16921.972	35781.944	1.50E-60	41986.103	1	40771.453	2.63E-39
	SC2-Proteome+F	-16935.166	35846.332	1.56E-74	4.27E+04	9.96E-162	40933.674	1.56E-74
	HIVw+F	-17044.398	36064.797	5.68E-122	4.29E+04	3.62E-209	41152.139	5.68E-122
	Q.bird+F	-17105.594	36187.188	1.51E-148	4.31E+04	9.60E-236	41274.53	1.51E-148
	FLAVI+F	-17132.753	36241.506	2.41E-160	4.31E+04	1.54E-247	41328.848	2.41E-160
	Q.mammal+F	-17133.005	36242.01	1.88E-160	4.31E+04	1.20E-247	41329.352	1.88E-160
	JTTDCMut+F	-17147.025	36270.051	1.53E-166	4.32E+04	9.75E-254	41357.393	1.53E-166
	JTT+F	-17147.135	36270.27	1.37E-166	4.32E+04	8.74E-254	41357.612	1.37E-166
	HIVb+F	-17174.697	36325.394	1.47E-178	4.32E+04	9.36E-266	41412.736	1.47E-178

FLU+F	-17185.036	36346.072	4.75E-183	4.32E+04	3.03E-270	41433.414	4.75E-183
Q.plant+F	-17207.39	36390.78	9.29E-193	4.33E+04	5.93E-280	41478.122	9.29E-193
JTTDCMut	-17299.285	36536.57	2.04E-224	4.27E+04	1.36E-164	41526.079	3.58E-203
Q.bird	-17300.977	36539.954	3.76E-225	4.27E+04	2.51E-165	41529.463	6.60E-204
JTT	-17301.866	36541.732	1.55E-225	4.27E+04	1.03E-165	41531.241	2.71E-204
WAG+F	-17265.801	36507.602	3.99E-218	4.34E+04	2.54E-305	41594.944	3.99E-218
VT+F	-17267.092	36510.184	1.10E-218	4.34E+04	6.99E-306	41597.526	1.10E-218
cpREV+F	-17274.136	36524.272	9.56E-222	4.34E+04	0.00E+00	41611.614	9.56E-222
Q.mammal	-17348.433	36634.866	9.23E-246	4.28E+04	6.17E-186	41624.375	1.62E-224
HIVw	-17349.457	36636.914	3.32E-246	4.28E+04	2.22E-186	41626.422	5.82E-225
FLU	-17351.622	36641.243	3.81E-247	4.28E+04	2.54E-187	41630.752	6.68E-226
mtVer+F	-17307.148	36590.297	4.40E-236	4.35E+04	2.96e-323	41677.639	4.40E-236
mtMet+F	-17322.221	36620.442	1.25E-242	4.35E+04	0.00E+00	41707.784	1.25E-242
mtInv+F	-17333.514	36643.028	1.56E-247	4.35E+04	0.00E+00	41730.37	1.56E-247
Q.plant	-17407.642	36753.285	1.78E-271	4.30E+04	1.19E-211	41742.793	3.13E-250
VT	-17416.37	36770.739	2.89E-275	4.30E+04	1.93E-215	41760.248	5.07E-254
PMB+F	-17360.38	36696.761	3.35E-259	4.36E+04	0.00E+00	41784.103	3.35E-259
WAG	-17436.954	36811.908	3.32E-284	4.30E+04	2.22E-224	41801.416	5.83E-263
HIVb	-17440.941	36819.882	6.16E-286	4.30E+04	4.12E-226	41809.391	1.08E-264
cpREV	-17456.918	36851.837	7.09E-293	4.31E+04	4.74E-233	41841.345	1.24E-271
Blosum62+F	-17392.297	36760.595	4.61E-273	4.36E+04	0.00E+00	41847.937	4.61E-273
Q.insect+F	-17393.199	36762.398	1.87E-273	4.36E+04	0.00E+00	41849.74	1.87E-273
Q.pfam+F	-17411.363	36798.727	2.42E-281	4.37E+04	0.00E+00	41886.069	2.42E-281
FLAVI	-17486.042	36910.084	1.59E-305	4.31E+04	1.07E-245	41899.593	2.80E-284
LG+F	-17420.13	36816.26	3.77E-285	4.37E+04	0.00E+00	41903.602	3.77E-285

PMB	-17492.082	36922.164	3.80E-308	4.31E+04	2.54E-248	41911.672	6.67E-287
mtREV+F	-17425.189	36826.377	2.39E-287	4.37E+04	0.00E+00	41913.719	2.39E-287
Q.yeast+F	-17432.402	36840.803	1.77E-290	4.37E+04	0.00E+00	41928.145	1.77E-290
Blosum62	-17532.109	37002.219	0	4.32E+04	1.05E-265	41991.727	2.75E-304
DCMut+F	-17471.78	36919.56	1.40E-307	4.38E+04	0.00E+00	42006.902	1.40E-307
Dayhoff+F	-17473.069	36922.138	3.85E-308	4.38E+04	0.00E+00	42009.48	3.85E-308
Q.insect	-17585.549	37109.097	0	4.33E+04	6.49E-289	42098.606	0
Q.pfam	-17613.371	37164.742	0	4.34E+04	5.36E-301	42154.25	0
LG	-17613.916	37165.832	0	4.34E+04	3.11E-301	42155.341	0
Q.yeast	-17640.943	37219.886	0	4.34E+04	5.69E-313	42209.395	0
rtREV+F	-17589.164	37154.328	0	4.40E+04	0.00E+00	42241.67	0
mtZOA+F	-17600.468	37176.937	0	4.41E+04	0.00E+00	42264.279	0
DCMut	-17682.675	37303.35	0	4.35E+04	0.00E+00	42292.859	0
Dayhoff	-17684.19	37306.38	0	4.35E+04	0.00E+00	42295.888	0
mtMAM+F	-17714.811	37405.623	0	4.43E+04	0.00E+00	42492.965	0
SC2-Proteome	-17799.57	37537.14	0	4.37E+04	0.00E+00	42526.649	0
mtMet	-17863.205	37664.41	0	4.39E+04	0.00E+00	42653.919	0
rtREV	-17869.355	37676.711	0	4.39E+04	0.00E+00	42666.219	0
mtVer	-17964.286	37866.571	0	4.41E+04	0.00E+00	42856.08	0
mtART+F	-17938.453	37852.906	0	4.47E+04	0.00E+00	42940.248	0
mtInv	-18029.134	37996.269	0	4.42E+04	0.00E+00	42985.777	0
mtREV	-18047.307	38032.614	0	4.42E+04	0.00E+00	43022.122	0
mtZOA	-18140.13	38218.26	0	4.44E+04	0.00E+00	43207.769	0
mtMAM	-18371.334	38680.668	0	4.49E+04	0.00E+00	43670.176	0

	mtART	-18551.182	39040.365	0	4.52E+04	0.00E+00	44029.873	0
	SC2-Spike+F	-20506.779	43029.558	1	50734.649	8.82E-84	48219.883	1
	SC2-Proteome+F	-20584.57	43185.14	1.64E-34	50890.231	1.45E-117	48375.465	1.64E-34
	SC2-Spike	-20727.332	43432.664	2.93E-88	50352.17	1	48525.155	5.14E-67
	HIVw+F	-20809.499	43634.999	3.39E-132	51340.089	2.99E-215	48825.323	3.39E-132
	Q.bird+F	-20852.011	43720.023	1.17E-150	51425.114	1.03E-233	48910.347	1.17E-150
	Q.mammal+F	-20869.15	43754.301	4.21E-158	51459.392	3.71E-241	48944.626	4.21E-158
	JTT+F	-20873.019	43762.038	8.79E-160	51467.128	7.76E-243	48952.362	8.79E-160
	JTTDCMut+F	-20874.764	43765.529	1.53E-160	51470.62	1.35E-243	48955.854	1.53E-160
	FLAVI+F	-20920.263	43856.525	2.67E-180	5.16E+04	2.36E-263	49046.85	2.67E-180
	HIVb+F	-20942.826	43901.653	4.24E-190	5.16E+04	3.74E-273	49091.977	4.24E-190
	VT+F	-20957.152	43930.305	2.54E-196	5.16E+04	2.24E-279	49120.629	2.54E-196
TD5	Q.plant+F	-20967.004	43950.009	1.34E-200	5.17E+04	1.18E-283	49140.333	1.34E-200
	FLU+F	-20972.236	43960.473	7.15E-203	5.17E+04	6.31E-286	49150.797	7.15E-203
	JTTDCMut	-21070.391	44118.783	3.01E-237	5.10E+04	1.03E-149	49211.274	5.27E-216
	WAG+F	-21003.75	44023.5	1.47E-216	5.17E+04	1.30E-299	49213.824	1.47E-216
	JTT	-21072.106	44122.213	5.41E-238	5.10E+04	1.85E-150	49214.704	9.49E-217
	cpREV+F	-21011.03	44038.06	1.02E-219	5.17E+04	8.96E-303	49228.384	1.02E-219
	Q.bird	-21099.49	44176.979	6.93E-250	5.11E+04	2.37E-162	49269.471	1.22E-228
	PMB+F	-21035.43	44086.859	2.57E-230	5.18E+04	2.27e-313	49277.184	2.57E-230
	mtMet+F	-21064.812	44145.623	4.46E-243	5.19E+04	0.00E+00	49335.948	4.46E-243
	mtVer+F	-21065.847	44147.694	1.58E-243	5.19E+04	0.00E+00	49338.019	1.58E-243
	Q.mammal	-21139.39	44256.78	3.25E-267	5.12E+04	1.11E-179	49349.271	5.71E-246
	mtInv+F	-21071.506	44159.012	5.52E-246	5.19E+04	0.00E+00	49349.337	5.52E-246

VT	-21147.14	44272.279	1.40E-270	5.12E+04	4.79E-183	49364.77	2.46E-249
Blosum62+F	-21080.152	44176.304	9.71E-250	5.19E+04	0.00E+00	49366.629	9.71E-250
FLU	-21175.207	44328.414	9.06E-283	5.12E+04	3.09E-195	49420.905	1.59E-261
HIVw	-21186.435	44350.871	1.20E-287	5.13E+04	4.11E-200	49443.362	2.11E-266
PMB	-21198.575	44375.15	6.43E-293	5.13E+04	2.20E-205	49467.641	1.13E-271
Q.insect+F	-21137.061	44290.122	1.87E-274	5.20E+04	0.00E+00	49480.447	1.87E-274
WAG	-21218.45	44414.899	1.50E-301	5.13E+04	5.13E-214	49507.39	2.64E-280
Q.pfam+F	-21160.262	44336.524	1.57E-284	5.20E+04	0.00E+00	49526.849	1.57E-284
Q.plant	-21233.304	44444.608	5.32E-308	5.14E+04	1.82E-220	49537.099	9.33E-287
LG+F	-21182.739	44381.479	2.72E-294	5.21E+04	0.00E+00	49571.803	2.72E-294
Blosum62	-21251.962	44481.924	4.19e-316	5.14E+04	1.43E-228	49574.415	7.36E-295
cpREV	-21252.359	44482.718	2.82e-316	5.14E+04	9.63E-229	49575.21	4.95E-295
Q.yeast+F	-21188.919	44393.839	5.63E-297	5.21E+04	0.00E+00	49584.163	5.63E-297
mtREV+F	-21212.42	44440.841	3.50E-307	5.21E+04	0.00E+00	49631.165	3.50E-307
HIVb	-21283.151	44544.303	0	5.15E+04	4.08E-242	49636.794	0.00E+00
DCMut+F	-21215.685	44447.37	0.00E+00	5.22E+04	0.00E+00	49637.694	0.00E+00
Dayhoff+F	-21217.3	44450.599	0.00E+00	5.22E+04	0.00E+00	49640.924	0.00E+00
FLAVI	-21361.434	44700.869	0	5.16E+04	4.10E-276	49793.36	0
Q.insect	-21389.354	44756.707	0	5.17E+04	3.07E-288	49849.198	0
rtREV+F	-21335.28	44686.56	0	5.24E+04	0.00E+00	49876.885	0
Q.pfam	-21418.545	44815.09	0	5.17E+04	6.46E-301	49907.581	0
mtZOA+F	-21357.377	44730.754	0	5.24E+04	0.00E+00	49921.078	0
LG	-21435.046	44848.093	0	5.18E+04	4.40E-308	49940.584	0
Q.yeast	-21476.444	44930.888	0	5.19E+04	0.00E+00	50023.379	0
DCMut	-21488.224	44954.448	0	5.19E+04	0.00E+00	50046.939	0

	Dayhoff	-21488.592	44955.185	0	5.19E+04	0.00E+00	50047.676	0
	mtMAM+F	-21451.656	44919.312	0	5.26E+04	0.00E+00	50109.637	0
	SC2-Proteome	-21664.485	45306.97	0	5.22E+04	0.00E+00	50399.461	0
	rtREV	-21699.601	45377.202	0	5.23E+04	0.00E+00	50469.693	0
	mtMet	-21753.864	45485.727	0	5.24E+04	0.00E+00	50578.218	0
	mtART+F	-21698.164	45412.329	0	5.31E+04	0.00E+00	50602.654	0
	mtVer	-21897.105	45772.211	0	5.27E+04	0.00E+00	50864.702	0
	mtInv	-21948.732	45875.464	0	5.28E+04	0.00E+00	50967.955	0
	mtREV	-22012.766	46003.531	0	5.29E+04	0.00E+00	51096.022	0
	mtZOA	-22053.684	46085.367	0	5.30E+04	0.00E+00	51177.858	0
	mtMAM	-22288.839	46555.679	0	5.35E+04	0.00E+00	51648.17	0
	mtART	-22488.719	46955.439	0	5.39E+04	0.00E+00	52047.93	0
TD6	SC2-Spike+F	-21233.171	44622.342	1	56613.703	2.15E-231	50173.106	1
	SC2-Proteome+F	-21303.554	44763.108	2.71E-31	5.68E+04	5.84E-262	50313.871	2.71E-31
	SC2-Spike	-21446.581	45011.162	3.71E-85	5.56E+04	1.00E+00	50464.092	6.50E-64
	JTT+F	-21588.515	45333.03	4.74E-155	5.73E+04	0.00E+00	50883.794	4.74E-155
	JTTDCMut+F	-21588.77	45333.54	3.68E-155	5.73E+04	0.00E+00	50884.304	3.68E-155
	Q.bird+F	-21600.369	45356.738	3.37E-160	5.73E+04	0.00E+00	50907.502	3.37E-160
	Q.mammal+F	-21601.018	45358.036	1.76E-160	5.73E+04	0.00E+00	50908.8	1.76E-160
	HIVw+F	-21607.731	45371.461	2.14E-163	5.74E+04	0.00E+00	50922.225	2.14E-163
	VT+F	-21674.126	45504.252	3.13E-192	5.75E+04	0.00E+00	51055.016	3.13E-192
	FLAVI+F	-21675.948	45507.895	5.07E-193	5.75E+04	0.00E+00	51058.659	5.07E-193
	Q.plant+F	-21712.372	45580.743	7.69E-209	5.76E+04	0.00E+00	51131.507	7.69E-209
	JTTDCMut	-21780.378	45678.756	4.01E-230	5.62E+04	1.08E-145	51131.686	7.03E-209

HIVb+F	-21715.231	45586.463	4.40E-210	5.76E+04	0.00E+00	51137.227	4.40E-210
JTT	-21783.458	45684.916	1.84E-231	5.62E+04	4.97E-147	51137.847	3.23E-210
WAG+F	-21717.732	45591.464	3.61E-211	5.76E+04	0.00E+00	51142.227	3.61E-211
cpREV+F	-21735.551	45627.103	6.59E-219	5.76E+04	0.00E+00	51177.866	6.59E-219
FLU+F	-21735.84	45627.68	4.94E-219	5.76E+04	0.00E+00	51178.444	4.94E-219
PMB+F	-21759.24	45674.479	3.40E-229	5.77E+04	0.00E+00	51225.243	3.40E-229
Q.bird	-21838.748	45795.496	1.79E-255	5.63E+04	4.83E-171	51248.426	3.14E-234
VT	-21859.736	45837.473	1.37E-264	5.64E+04	3.71E-180	51290.403	2.41E-243
Q.mammal	-21862.15	45842.3	1.23E-265	5.64E+04	3.32E-181	51295.231	2.16E-244
Blosum62+F	-21797.949	45751.898	5.25E-246	5.77E+04	0.00E+00	51302.662	5.25E-246
mtInv+F	-21806.144	45768.287	1.45E-249	5.78E+04	0.00E+00	51319.051	1.45E-249
mtMet+F	-21817.662	45791.324	1.44E-254	5.78E+04	0.00E+00	51342.088	1.44E-254
mtVer+F	-21838.63	45833.259	1.13E-263	5.78E+04	0.00E+00	51384.023	1.13E-263
PMB	-21918.111	45954.223	6.11E-290	5.65E+04	1.65E-205	51407.153	1.07E-268
WAG	-21931.125	45980.249	1.36E-295	5.65E+04	3.68E-211	51433.179	2.39E-274
FLU	-21931.568	45981.136	8.75E-296	5.65E+04	2.36E-211	51434.066	1.53E-274
Q.insect+F	-21865.399	45886.797	2.67E-275	5.79E+04	0.00E+00	51437.561	2.67E-275
Q.pfam+F	-21899.969	45955.939	2.59E-290	5.79E+04	0.00E+00	51506.703	2.59E-290
Blosum62	-21970.542	46059.085	1.04e-312	5.66E+04	2.79E-228	51512.015	1.82E-291
cpREV	-21972.784	46063.568	1.1e-313	5.66E+04	2.97E-229	51516.498	1.93E-292
Q.plant	-21973.778	46065.556	4.07e-314	5.66E+04	1.10E-229	51518.487	7.15E-293
LG+F	-21923.335	46002.67	1.84E-300	5.80E+04	0.00E+00	51553.434	1.84E-300
HIVw	-21994.902	46107.804	2.96e-323	5.66E+04	7.36E-239	51560.735	4.79E-302
Q.yeast+F	-21931.163	46018.326	7.35E-304	5.80E+04	0.00E+00	51569.09	7.35E-304
mtREV+F	-21935.782	46027.563	7.25E-306	5.80E+04	0.00E+00	51578.327	7.25E-306

	HIVb	-22045.825	46209.649	0	5.67E+04	5.65E-261	51662.58	4.94e-324
	DCMut+F	-21989.445	46134.89	0	5.81E+04	0.00E+00	51685.654	0
	Dayhoff+F	-21989.677	46135.355	0	5.81E+04	0.00E+00	51686.119	0
	Q.insect	-22106.115	46330.231	0	5.69E+04	3.70E-287	51783.161	0
	FLAVI	-22130.208	46378.416	0	5.69E+04	1.27E-297	51831.347	0
	Q.pfam	-22151.647	46421.293	0	5.70E+04	6.22E-307	51874.224	0
	LG	-22169.33	46456.661	0	5.70E+04	1.3e-314	51909.591	0
	rtREV+F	-22103.396	46362.793	0	5.84E+04	0.00E+00	51913.557	0
	mtZOA+F	-22128.342	46412.685	0	5.84E+04	0.00E+00	51963.449	0
	Q.yeast	-22210.15	46538.299	0	5.71E+04	0.00E+00	51991.229	0
	DCMut	-22264.549	46647.098	0	5.72E+04	0.00E+00	52100.028	0
	Dayhoff	-22264.904	46647.808	0	5.72E+04	0.00E+00	52100.738	0
	mtMAM+F	-22282.805	46721.61	0	5.87E+04	0.00E+00	52272.374	0
	SC2-Proteome	-22400.94	46919.88	0	5.75E+04	0.00E+00	52372.811	0
	rtREV	-22457.468	47032.935	0	5.76E+04	0.00E+00	52485.865	0
	mtMet	-22532.28	47182.56	0	5.77E+04	0.00E+00	52635.49	0
	mtART+F	-22531.879	47219.759	0	5.92E+04	0.00E+00	52770.523	0
	mtVer	-22693.796	47505.592	0	5.80E+04	0.00E+00	52958.523	0
	mtInv	-22712.099	47542.198	0	5.81E+04	0.00E+00	52995.129	0
	mtREV	-22754.653	47627.307	0	5.82E+04	0.00E+00	53080.237	0
	mtZOA	-22845.331	47808.661	0	5.83E+04	0.00E+00	53261.591	0
	mtMAM	-23148.911	48415.821	0	5.90E+04	0.00E+00	53868.752	0
	mtART	-23346.936	48811.872	0	5.94E+04	0.00E+00	54264.802	0
TD7	SC2-Spike+F	-21014.187	44108.374	1	53441.477	3.83E-129	49463.471	1

SC2-Proteome+F	-21064.663	44209.326	1.20E-22	5.35E+04	4.59E-151	49564.423	1.20E-22
SC2-Spike	-21246.83	44535.66	1.64E-93	5.29E+04	1.00E+00	49792.923	2.89E-72
JTT+F	-21341.489	44762.979	7.15E-143	5.41E+04	2.74E-271	50118.076	7.15E-143
JTTDCMut+F	-21343.571	44767.142	8.92E-144	5.41E+04	3.42E-272	50122.239	8.92E-144
Q.mammal+F	-21346.551	44773.102	4.53E-145	5.41E+04	1.74E-273	50128.199	4.53E-145
HIVw+F	-21347.517	44775.035	1.72E-145	5.41E+04	6.61E-274	50130.131	1.72E-145
Q.bird+F	-21349.089	44778.177	3.58E-146	5.41E+04	1.37E-274	50133.274	3.58E-146
VT+F	-21407.717	44895.435	1.24E-171	5.42E+04	4.74E-300	50250.532	1.24E-171
FLAVI+F	-21438.835	44957.671	3.78E-185	5.43E+04	1.45e-313	50312.768	3.78E-185
HIVb+F	-21440.443	44960.886	7.57E-186	5.43E+04	2.9e-314	50315.983	7.57E-186
WAG+F	-21455.781	44991.563	1.65E-192	5.43E+04	6.33e-321	50346.66	1.65E-192
FLU+F	-21458.706	44997.412	8.87E-194	5.43E+04	3.41e-322	50352.509	8.87E-194
Q.plant+F	-21462.866	45005.731	1.38E-195	5.43E+04	4.94e-324	50360.828	1.38E-195
JTTDCMut	-21543.007	45128.014	3.87E-222	5.34E+04	2.35E-129	50385.277	6.80E-201
PMB+F	-21475.407	45030.814	4.95E-201	5.44E+04	0.00E+00	50385.911	4.95E-201
JTT	-21544.65	45131.301	7.49E-223	5.34E+04	4.55E-130	50388.564	1.31E-201
cpREV+F	-21478.469	45036.938	2.32E-202	5.44E+04	0.00E+00	50392.035	2.32E-202
Blosum62+F	-21528.239	45136.479	5.62E-224	5.45E+04	0.00E+00	50491.576	5.62E-224
Q.bird	-21599.234	45240.468	1.48E-246	5.36E+04	8.97E-154	50497.731	2.59E-225
VT	-21601.246	45244.492	1.97E-247	5.36E+04	1.20E-154	50501.755	3.46E-226
mtInv+F	-21547.41	45174.82	2.65E-232	5.45E+04	0.00E+00	50529.917	2.65E-232
Q.mammal	-21620.201	45282.402	1.16E-255	5.36E+04	7.03E-163	50539.666	2.03E-234
mtMet+F	-21565.924	45211.848	2.42E-240	5.45E+04	0.00E+00	50566.945	2.42E-240
PMB	-21645.921	45333.841	7.82E-267	5.36E+04	4.75E-174	50591.105	1.37E-245
FLU	-21662.965	45367.93	3.10E-274	5.37E+04	1.88E-181	50625.194	5.43E-253

mtVer+F	-21598.743	45277.486	1.35E-254	5.46E+04	0.00E+00	50632.583	1.35E-254
WAG	-21675.998	45393.996	6.77E-280	5.37E+04	4.12E-187	50651.26	1.19E-258
Q.insect+F	-21609.93	45299.86	1.87E-259	5.46E+04	0.00E+00	50654.957	1.87E-259
Q.pfam+F	-21631.415	45342.83	8.73E-269	5.47E+04	0.00E+00	50697.927	8.73E-269
Blosum62	-21707.48	45456.96	1.44E-293	5.38E+04	8.75E-201	50714.223	2.53E-272
DCMut+F	-21647.978	45375.956	5.60E-276	5.47E+04	0.00E+00	50731.053	5.60E-276
Dayhoff+F	-21649.972	45379.943	7.62E-277	5.47E+04	0.00E+00	50735.04	7.62E-277
cpREV	-21726.107	45494.214	1.17E-301	5.38E+04	7.12E-209	50751.477	2.06E-280
LG+F	-21658.338	45396.676	1.77E-280	5.47E+04	0.00E+00	50751.773	1.77E-280
HIVw	-21730.918	45503.836	9.53E-304	5.38E+04	5.80E-211	50761.1	1.67E-282
Q.plant	-21732.269	45506.537	2.47E-304	5.38E+04	1.50E-211	50763.801	4.33E-283
Q.yeast+F	-21671.35	45422.699	3.96E-286	5.48E+04	0.00E+00	50777.796	3.96E-286
mtREV+F	-21705.471	45490.941	6.02E-301	5.48E+04	0.00E+00	50846.038	6.02E-301
HIVb	-21786.34	45614.679	0	5.39E+04	4.94E-235	50871.943	1.43E-306
Q.insect	-21860.387	45762.773	0	5.41E+04	3.43E-267	51020.037	0
rtREV+F	-21815.259	45710.518	0	5.50E+04	0.00E+00	51065.614	0
FLAVI	-21891.428	45824.855	0	5.41E+04	1.13E-280	51082.119	0
Q.pfam	-21893.858	45829.717	0	5.41E+04	9.98E-282	51086.98	0
LG	-21913.546	45869.092	0	5.42E+04	2.81E-290	51126.356	0
DCMut	-21925.878	45893.757	0	5.42E+04	1.24E-295	51151.02	0
Dayhoff	-21928.043	45898.086	0	5.42E+04	1.42E-296	51155.35	0
mtZOA+F	-21860.624	45801.248	0	5.51E+04	0.00E+00	51156.345	0
Q.yeast	-21958.78	45959.56	0	5.43E+04	6.37E-310	51216.824	0
mtMAM+F	-22036.141	46152.282	0	5.55E+04	0.00E+00	51507.379	0
SC2-Proteome	-22164.228	46370.456	0	5.47E+04	0.00E+00	51627.719	0

	rtREV	-22181.295	46404.589	0	5.47E+04	0.00E+00	51661.852	0
	mtMet	-22275.136	46592.273	0	5.49E+04	0.00E+00	51849.536	0
	mtART+F	-22214.925	46509.851	0	5.58E+04	0.00E+00	51864.948	0
	mtInv	-22444.9	46931.8	0	5.52E+04	0.00E+00	52189.064	0
	mtVer	-22449.584	46941.168	0	5.53E+04	0.00E+00	52198.431	0
	mtREV	-22529.718	47101.436	0	5.54E+04	0.00E+00	52358.7	0
	mtZOA	-22584.047	47210.094	0	5.55E+04	0.00E+00	52467.357	0
	mtMAM	-22904.504	47851.008	0	5.62E+04	0.00E+00	53108.271	0
	mtART	-23034.96	48111.919	0	5.64E+04	0.00E+00	53369.183	0
TD8	SC2-Spike+F	-17453.779	37063.558	1	49054.918	4.12E-252	42614.322	1
	SC2-Spike	-17619.482	37356.964	1.94E-64	4.79E+04	1.00E+00	42809.895	3.40E-43
	SC2-Proteome+F	-17654.326	37464.653	8.00E-88	4.95E+04	0.00E+00	43015.417	8.00E-88
	HIVw+F	-17723.195	37602.39	9.86E-118	4.96E+04	0.00E+00	43153.154	9.86E-118
	Q.bird+F	-17782.965	37721.93	1.09E-143	4.97E+04	0.00E+00	43272.694	1.09E-143
	FLAVI+F	-17803.606	37763.213	1.18E-152	4.98E+04	0.00E+00	43313.977	1.18E-152
	Q.mammal+F	-17813.289	37782.577	7.36E-157	4.98E+04	0.00E+00	43333.341	7.36E-157
	JTT+F	-17832.325	37820.65	3.98E-165	4.98E+04	0.00E+00	43371.414	3.98E-165
	JTTDCMut+F	-17834.146	37824.292	6.44E-166	4.98E+04	0.00E+00	43375.056	6.44E-166
	HIVb+F	-17861.822	37879.645	6.15E-178	4.99E+04	0.00E+00	43430.408	6.15E-178
	FLU+F	-17870.328	37896.656	1.24E-181	4.99E+04	0.00E+00	43447.419	1.24E-181
	Q.plant+F	-17886.981	37929.963	7.29E-189	4.99E+04	0.00E+00	43480.726	7.29E-189
	Q.bird	-17978.028	38074.055	3.74E-220	4.86E+04	1.93E-156	43526.986	6.57E-199
	JTTDCMut	-17986.46	38090.919	8.15E-224	4.86E+04	4.21E-160	43543.849	1.43E-202
	JTT	-17987.449	38092.897	3.03E-224	4.86E+04	1.56E-160	43545.828	5.32E-203

HIVw	-18022.964	38163.928	1.14E-239	4.87E+04	5.89E-176	43616.858	2.00E-218
Q.mammal	-18029.147	38176.293	2.36E-242	4.87E+04	1.22E-178	43629.224	4.14E-221
cpREV+F	-17961.887	38079.773	2.15E-221	5.01E+04	0.00E+00	43630.537	2.15E-221
FLU	-18033.78	38185.56	2.29E-244	4.87E+04	1.18E-180	43638.49	4.02E-223
VT+F	-17967.429	38090.858	8.41E-224	5.01E+04	0.00E+00	43641.622	8.41E-224
WAG+F	-17968.157	38092.314	4.06E-224	5.01E+04	0.00E+00	43643.078	4.06E-224
mtVer+F	-17982.619	38121.238	2.13E-230	5.01E+04	0.00E+00	43672.002	2.13E-230
mtMet+F	-17998.215	38152.43	3.58E-237	5.01E+04	0.00E+00	43703.194	3.58E-237
mtInv+F	-18004.325	38164.65	7.96E-240	5.02E+04	0.00E+00	43715.414	7.96E-240
Q.plant	-18087.087	38292.174	1.62E-267	4.88E+04	8.35E-204	43745.105	2.84E-246
VT	-18118.386	38354.772	4.13E-281	4.89E+04	2.13E-217	43807.702	7.26E-260
HIVb	-18125.8	38369.601	2.49E-284	4.89E+04	1.28E-220	43822.531	4.37E-263
PMB+F	-18070.815	38297.63	1.06E-268	5.03E+04	0.00E+00	43848.393	1.06E-268
WAG	-18140.893	38399.786	6.95E-291	4.89E+04	3.58E-227	43852.716	1.22E-269
cpREV	-18144.246	38406.491	2.43E-292	4.89E+04	1.25E-228	43859.421	4.27E-271
Q.insect+F	-18084.024	38324.049	1.94E-274	5.03E+04	0.00E+00	43874.812	1.94E-274
FLAVI	-18161.364	38440.728	8.94E-300	4.90E+04	4.61E-236	43893.658	1.57E-278
Q.pfam+F	-18103.648	38363.296	5.83E-283	5.04E+04	0.00E+00	43914.059	5.83E-283
Blosum62+F	-18114.021	38384.042	1.82E-287	5.04E+04	0.00E+00	43934.806	1.82E-287
LG+F	-18114.908	38385.817	7.50E-288	5.04E+04	0.00E+00	43936.581	7.50E-288
Q.yeast+F	-18122.001	38400.001	6.24E-291	5.04E+04	0.00E+00	43950.765	6.24E-291
PMB	-18203.268	38524.537	5.65e-318	4.91E+04	2.92E-254	43977.467	9.92E-297
mtREV+F	-18136.893	38429.786	2.12E-297	5.04E+04	0.00E+00	43980.55	2.12E-297
Blosum62	-18253.421	38624.841	0	4.92E+04	4.83E-276	44077.772	1.64e-318
DCMut+F	-18190.586	38537.172	1.02e-320	5.05E+04	0.00E+00	44087.936	1.02e-320

	Dayhoff+F	-18191.576	38539.151	3.79e-321	5.05E+04	0.00E+00	44089.915	3.79e-321
	Q.insect	-18279.715	38677.43	0	4.92E+04	1.84E-287	44130.36	0
	Q.pfam	-18306.409	38730.818	0	4.93E+04	4.69E-299	44183.749	0
	LG	-18309.756	38737.513	0	4.93E+04	1.65E-300	44190.443	0
	Q.yeast	-18335.871	38789.742	0	4.93E+04	7.52e-312	44242.673	0
	mtZOA+F	-18274.588	38705.177	0	5.07E+04	0.00E+00	44255.941	0
	rtREV+F	-18307.894	38771.788	0	5.08E+04	0.00E+00	44322.552	0
	DCMut	-18399.362	38916.724	0	4.95E+04	0.00E+00	44369.654	0
	Dayhoff	-18400.516	38919.031	0	4.95E+04	0.00E+00	44371.962	0
	mtMAM+F	-18385.822	38927.643	0	5.09E+04	0.00E+00	44478.407	0
	SC2-Proteome	-18536.024	39190.047	0	4.97E+04	0.00E+00	44642.978	0
	mtMet	-18576.685	39271.37	0	4.98E+04	0.00E+00	44724.3	0
	rtREV	-18594.858	39307.717	0	4.98E+04	0.00E+00	44760.647	0
	mtVer	-18689.426	39496.852	0	5.00E+04	0.00E+00	44949.782	0
	mtART+F	-18625.228	39406.456	0	5.14E+04	0.00E+00	44957.22	0
	mtInv	-18734.896	39587.793	0	5.01E+04	0.00E+00	45040.723	0
	mtREV	-18805.321	39728.643	0	5.03E+04	0.00E+00	45181.573	0
	mtZOA	-18850.03	39818.061	0	5.04E+04	0.00E+00	45270.991	0
	mtMAM	-19091.86	40301.719	0	5.08E+04	0.00E+00	45754.649	0
	mtART	-19275.316	40668.632	0	5.12E+04	0.00E+00	46121.563	0
TD9	SC2-Spike+F	-16902.295	35792.59	1	42907.914	8.97E-87	40910.827	1
	SC2-Proteome+F	-17005.868	35999.736	1.04E-45	4.31E+04	9.36E-132	41117.972	1.04E-45
	SC2-Spike	-17076.785	36103.57	2.96E-68	4.25E+04	1.00E+00	41123.973	5.20E-47
	HIVw+F	-17138.526	36265.052	2.55E-103	4.34E+04	2.28E-189	41383.289	2.55E-103

Q.bird+F	-17162.339	36312.679	1.16E-113	4.34E+04	1.04E-199	41430.916	1.16E-113
Q.mammal+F	-17169.611	36327.223	8.05E-117	4.34E+04	7.22E-203	41445.46	8.05E-117
JTT+F	-17172.801	36333.603	3.32E-118	4.34E+04	2.97E-204	41451.839	3.32E-118
JTTDCMut+F	-17175.477	36338.953	2.28E-119	4.35E+04	2.05E-205	41457.19	2.28E-119
FLAVI+F	-17214.072	36416.144	3.95E-136	4.35E+04	3.54E-222	41534.381	3.95E-136
HIVb+F	-17237.603	36463.206	2.39E-146	4.36E+04	2.14E-232	41581.443	2.39E-146
FLU+F	-17237.739	36463.478	2.08E-146	4.36E+04	1.87E-232	41581.715	2.08E-146
Q.plant+F	-17249.542	36487.084	1.56E-151	4.36E+04	1.40E-237	41605.321	1.56E-151
VT+F	-17260.827	36509.654	1.96E-156	4.36E+04	1.75E-242	41627.891	1.96E-156
JTTDCMut	-17330.768	36611.536	1.47E-178	4.30E+04	4.97E-111	41631.94	2.58E-157
JTT	-17331.075	36612.149	1.08E-178	4.30E+04	3.66E-111	41632.552	1.90E-157
WAG+F	-17281.627	36551.254	1.81E-165	4.37E+04	1.62E-251	41669.491	1.81E-165
cpREV+F	-17286.376	36560.752	1.57E-167	4.37E+04	1.41E-253	41678.989	1.57E-167
Q.bird	-17357.033	36664.066	5.77E-190	4.31E+04	1.95E-122	41684.469	1.01E-168
Q.mammal	-17382.581	36715.162	4.63E-201	4.31E+04	1.56E-133	41735.566	8.13E-180
mtInv+F	-17329.05	36646.1	4.60E-186	4.38E+04	4.12E-272	41764.337	4.60E-186
FLU	-17397.342	36744.685	1.80E-207	4.32E+04	6.08E-140	41765.088	3.16E-186
mtMet+F	-17333.174	36654.347	7.44E-188	4.38E+04	6.67E-274	41772.584	7.44E-188
mtVer+F	-17337.351	36662.702	1.14E-189	4.38E+04	1.02E-275	41780.939	1.14E-189
PMB+F	-17340.705	36669.41	3.99E-191	4.38E+04	3.58E-277	41787.647	3.99E-191
VT	-17416.29	36782.581	1.06E-215	4.32E+04	3.59E-148	41802.984	1.86E-194
HIVw	-17442.574	36835.149	4.09E-227	4.32E+04	1.38E-159	41855.552	7.17E-206
Blosum62+F	-17378.121	36744.241	2.25E-207	4.39E+04	2.01E-293	41862.478	2.25E-207
WAG	-17454.888	36859.777	1.83E-232	4.33E+04	6.19E-165	41880.18	3.22E-211
Q.plant	-17455.926	36861.853	6.49E-233	4.33E+04	2.19E-165	41882.256	1.14E-211

Q.insect+F	-17390.159	36768.318	1.33E-212	4.39E+04	1.19E-298	41886.555	1.33E-212
Q.pfam+F	-17405.319	36798.637	3.46E-219	4.39E+04	3.11E-305	41916.874	3.46E-219
PMB	-17476.888	36903.777	5.12E-242	4.33E+04	1.73E-174	41924.18	8.98E-221
cpREV	-17479.785	36909.57	2.82E-243	4.33E+04	9.54E-176	41929.973	4.96E-222
LG+F	-17422.867	36833.734	8.29E-227	4.39E+04	7.43e-313	41951.971	8.29E-227
Q.yeast+F	-17427.879	36843.758	5.52E-229	4.40E+04	4.95e-315	41961.995	5.52E-229
mtREV+F	-17443.547	36875.095	8.65E-236	4.40E+04	7.76e-322	41993.332	8.65E-236
HIVb	-17512.953	36975.906	1.11E-257	4.34E+04	3.76E-190	41996.309	1.95E-236
Blosum62	-17524.263	36998.527	1.36E-262	4.34E+04	4.60E-195	42018.93	2.39E-241
DCMut+F	-17466.479	36920.958	9.51E-246	4.40E+04	0.00E+00	42039.195	9.51E-246
Dayhoff+F	-17468.177	36924.354	1.74E-246	4.40E+04	0.00E+00	42042.591	1.74E-246
FLAVI	-17567.666	37085.332	1.93E-281	4.35E+04	6.50E-214	42105.735	3.38E-260
Q.insect	-17591.501	37133.002	8.58E-292	4.35E+04	2.90E-224	42153.405	1.51E-270
Q.pfam	-17614.107	37178.214	1.30E-301	4.36E+04	4.41E-234	42198.617	2.29E-280
LG	-17626.502	37203.005	5.40E-307	4.36E+04	1.82E-239	42223.408	9.48E-286
rtREV+F	-17572.317	37132.635	1.03E-291	4.42E+04	0.00E+00	42250.872	1.03E-291
mtZOA+F	-17577.618	37143.236	5.14E-294	4.43E+04	0.00E+00	42261.472	5.14E-294
Q.yeast	-17650.146	37250.293	2.91e-317	4.37E+04	9.82E-250	42270.696	5.11E-296
DCMut	-17674.342	37298.684	0	4.37E+04	3.05E-260	42319.087	1.59E-306
Dayhoff	-17676.166	37302.332	0	4.37E+04	4.92E-261	42322.735	2.56E-307
mtMAM+F	-17700.247	37388.493	0	4.45E+04	0.00E+00	42506.73	0
rtREV	-17869.545	37689.09	0	4.41E+04	0.00E+00	42709.493	0
SC2-Proteome	-17890.912	37731.823	0	4.41E+04	0.00E+00	42752.226	0
mtMet	-17893.724	37737.448	0	4.41E+04	0.00E+00	42757.851	0
mtART+F	-17890.209	37768.419	0	4.49E+04	0.00E+00	42886.655	0

	mtVer	-18018.883	37987.765	0	4.44E+04	0.00E+00	43008.168	0
	mtInv	-18039.394	38028.789	0	4.44E+04	0.00E+00	43049.192	0
	mtREV	-18094.14	38138.28	0	4.45E+04	0.00E+00	43158.684	0
	mtZOA	-18137.29	38224.58	0	4.46E+04	0.00E+00	43244.983	0
	mtMAM	-18385.802	38721.604	0	4.51E+04	0.00E+00	43742.008	0
	mtART	-18525.258	39000.516	0	4.54E+04	0.00E+00	44020.919	0
TD10	SC2-Spike+F	-16846.236	35736.473	1	44100.521	3.75E-126	40998.885	1
	SC2-Spike	-17014.917	36035.834	9.87E-66	43522.912	1	41200.413	1.73E-44
	SC2-Proteome+F	-17005.932	36055.864	4.41E-70	4.44E+04	1.66E-195	41318.277	4.41E-70
	HIVw+F	-17111.887	36267.773	4.26E-116	4.46E+04	1.60E-241	41530.186	4.26E-116
	Q.bird+F	-17157.335	36358.67	7.79E-136	4.47E+04	2.92E-261	41621.083	7.79E-136
	Q.mammal+F	-17183.135	36410.27	4.86E-147	4.48E+04	1.82E-272	41672.682	4.86E-147
	FLAVI+F	-17192.897	36429.794	2.80E-151	4.48E+04	1.05E-276	41692.206	2.80E-151
	JTT+F	-17195.541	36435.082	1.99E-152	4.48E+04	7.46E-278	41697.495	1.99E-152
	JTTDCMut+F	-17197.385	36438.771	3.15E-153	4.48E+04	1.18E-278	41701.183	3.15E-153
	HIVb+F	-17235.299	36514.598	1.08E-169	4.49E+04	4.04E-295	41777.011	1.08E-169
	FLU+F	-17242.564	36529.127	7.54E-173	4.49E+04	2.83E-298	41791.54	7.54E-173
	Q.plant+F	-17256.29	36556.58	8.24E-179	4.49E+04	3.09E-304	41818.992	8.24E-179
	JTTDCMut	-17356.566	36719.132	4.15E-214	4.42E+04	4.20E-149	41883.711	7.29E-193
	Q.bird	-17357.353	36720.705	1.89E-214	4.42E+04	1.91E-149	41885.284	3.32E-193
	JTT	-17357.614	36721.228	1.46E-214	4.42E+04	1.47E-149	41885.807	2.56E-193
	VT+F	-17313.563	36671.126	1.10E-203	4.50E+04	0.00E+00	41933.539	1.10E-203
	WAG+F	-17314.982	36673.964	2.67E-204	4.50E+04	0.00E+00	41936.377	2.67E-204
	cpREV+F	-17318.644	36681.288	6.85E-206	4.50E+04	0.00E+00	41943.701	6.85E-206

mtVer+F	-17325.68	36695.361	6.03E-209	4.51E+04	0.00E+00	41957.773	6.03E-209
Q.mammal	-17403.17	36812.34	2.39E-234	4.43E+04	2.42E-169	41976.919	4.19E-213
mtMet+F	-17341.253	36726.507	1.04E-215	4.51E+04	0.00E+00	41988.919	1.04E-215
FLU	-17417.36	36840.72	1.64E-240	4.43E+04	1.66E-175	42005.299	2.88E-219
HIVw	-17421.011	36848.022	4.27E-242	4.43E+04	4.32E-177	42012.601	7.49E-221
mtInv+F	-17356.602	36757.204	2.24E-222	4.51E+04	0.00E+00	42019.616	2.24E-222
Q.plant	-17460.971	36927.941	1.89E-259	4.44E+04	1.91E-194	42092.52	3.31E-238
VT	-17470.294	36946.587	1.69E-263	4.44E+04	1.71E-198	42111.166	2.96E-242
PMB+F	-17404.612	36853.224	3.17E-243	4.52E+04	0.00E+00	42115.636	3.17E-243
WAG	-17492.298	36990.596	4.68E-273	4.45E+04	4.74E-208	42155.175	8.22E-252
Q.insect+F	-17434.617	36913.233	2.95E-256	4.53E+04	0.00E+00	42175.646	2.95E-256
Blosum62+F	-17436.824	36917.649	3.24E-257	4.53E+04	0.00E+00	42180.061	3.24E-257
HIVb	-17513.906	37033.811	1.93E-282	4.45E+04	1.96E-217	42198.39	3.39E-261
cpREV	-17516.057	37038.115	2.25E-283	4.45E+04	2.28E-218	42202.694	3.95E-262
Q.pfam+F	-17450.015	36944.03	6.06E-263	4.53E+04	0.00E+00	42206.443	6.06E-263
LG+F	-17460.163	36964.325	2.37E-267	4.53E+04	0.00E+00	42226.738	2.37E-267
mtREV+F	-17471.198	36986.396	3.83E-272	4.54E+04	0.00E+00	42248.808	3.83E-272
Q.yeast+F	-17473.744	36991.488	3.00E-273	4.54E+04	0.00E+00	42253.901	3.00E-273
PMB	-17545.73	37097.461	2.92E-296	4.46E+04	2.96E-231	42262.04	5.12E-275
FLAVI	-17559.317	37124.635	3.67E-302	4.46E+04	3.71E-237	42289.214	6.44E-281
Blosum62	-17583.693	37173.386	9.51e-313	4.47E+04	9.63E-248	42337.965	1.67E-291
DCMut+F	-17516.714	37077.428	6.54E-292	4.54E+04	0.00E+00	42339.84	6.54E-292
Dayhoff+F	-17518.038	37080.076	1.74E-292	4.54E+04	0.00E+00	42342.489	1.74E-292
Q.insect	-17629.242	37264.484	0	4.48E+04	1.59E-267	42429.063	2.76e-311
Q.pfam	-17658.021	37322.041	0	4.48E+04	5.05E-280	42486.62	9.88e-324

LG	-17660.512	37327.024	0	4.48E+04	4.18E-281	42491.603	0
mtZOA+F	-17599.474	37242.948	0	4.56E+04	0.00E+00	42505.36	0
Q.yeast	-17685.664	37377.328	0	4.49E+04	4.99E-292	42541.907	0
rtREV+F	-17630.29	37304.58	0	4.57E+04	0.00E+00	42566.993	0
DCMut	-17727.712	37461.424	0	4.49E+04	2.74e-310	42626.003	0
Dayhoff	-17729.175	37464.351	0	4.50E+04	6.33e-311	42628.93	0
mtMAM+F	-17722.064	37488.128	0	4.59E+04	0.00E+00	42750.541	0
SC2-Proteome	-17860.274	37726.548	0	4.52E+04	0.00E+00	42891.127	0
mtMet	-17913.148	37832.296	0	4.53E+04	0.00E+00	42996.875	0
rtREV	-17926.966	37859.932	0	4.53E+04	0.00E+00	43024.511	0
mtART+F	-17918.036	37880.071	0	4.62E+04	0.00E+00	43142.484	0
mtVer	-18027.586	38061.172	0	4.55E+04	0.00E+00	43225.751	0
mtInv	-18076.873	38159.745	0	4.56E+04	0.00E+00	43324.324	0
mtREV	-18138.876	38283.752	0	4.58E+04	0.00E+00	43448.331	0
mtZOA	-18179.498	38364.997	0	4.59E+04	0.00E+00	43529.576	0
mtMAM	-18423.006	38852.011	0	4.63E+04	0.00E+00	44016.59	0
mtART	-18569.401	39144.802	0	4.66E+04	0.00E+00	44309.381	0

Table S6. Ranking of substitution models evaluated for each test dataset of SARS-CoV-2 Proteome. The ranking is based on the Bayesian information criterion (BIC) and was obtained with *ModelFinder* for each test dataset. The SARS-CoV-2 models are highlighted in grey.

Test dataset	Model	LogL	AIC	w-AIC	AICc	w-AICc	BIC	w-BIC
TD1	SC2-Proteome+F	-82156.212	164744.425	1	164751.784	1	166357.797	1
	VT+F	-82567.381	165566.761	2.70E-179	165574.12	2.70E-179	167180.133	2.70E-179
	PMB+F	-82618.908	165669.816	1.13E-201	165677.175	1.13E-201	167283.188	1.13E-201
	Blosum62+F	-82665.629	165763.259	5.80E-222	165770.617	5.80E-222	167376.63	5.80E-222
	WAG+F	-82881.787	166195.574	7.71e-316	166202.932	7.71e-316	167808.945	7.71e-316
	cpREV+F	-83002.79	166437.581	0	166444.94	0	168050.953	0
	PMB	-83438.941	167271.881	0	167277.996	0	168743.336	0
	JTT+F	-83357.397	167146.794	0	167154.153	0	168760.166	0
	JTTDCMut+F	-83395.565	167223.131	0	167230.489	0	168836.502	0
	Blosum62	-83489.592	167373.183	0	167379.298	0	168844.638	0
	VT	-83655.285	167704.57	0	167710.684	0	169176.025	0
	SC2-Proteome	-83740.701	167875.403	0	167881.518	0	169346.858	0
	Q.pfam+F	-83744.821	167921.642	0	167929.001	0	169535.014	0
	LG+F	-83819.33	168070.659	0	168078.018	0	169684.031	0
	Q.insect+F	-83898.05	168228.099	0	168235.458	0	169841.471	0
	rtREV+F	-83926.31	168284.62	0	168291.978	0	169897.992	0
	WAG	-84104.33	168602.66	0	168608.775	0	170074.115	0
	Q.yeast+F	-84108.337	168648.674	0	168656.033	0	170262.046	0
	mtInv+F	-84176.949	168785.899	0	168793.258	0	170399.271	0
	Q.mammal+F	-84188.255	168808.511	0	168815.87	0	170421.883	0
	Q.insect	-84319.041	169032.081	0	169038.196	0	170503.536	0

JTT	-84433.79	169261.58	0	169267.695	0	170733.035	0
cpREV	-84453.645	169301.29	0	169307.405	0	170772.745	0
JTTDCMut	-84457.716	169309.432	0	169315.547	0	170780.887	0
DCMut+F	-84440.006	169312.011	0	169319.37	0	170925.383	0
Dayhoff+F	-84454.884	169341.767	0	169349.126	0	170955.139	0
mtMet+F	-84610.025	169652.051	0	169659.41	0	171265.423	0
mtREV+F	-84664.092	169760.185	0	169767.544	0	171373.557	0
LG	-84832.04	170058.08	0	170064.195	0	171529.535	0
FLU+F	-84758.05	169948.099	0	169955.458	0	171561.471	0
Q.pfam	-84963.825	170321.65	0	170327.765	0	171793.105	0
Q.yeast	-84964.238	170322.477	0	170328.591	0	171793.932	0
rtREV	-84968.456	170330.913	0	170337.027	0	171802.367	0
Q.plant+F	-84959.949	170351.898	0	170359.257	0	171965.27	0
Q.mammal	-85078.028	170550.056	0	170556.171	0	172021.511	0
Q.bird+F	-85000.507	170433.013	0	170440.372	0	172046.385	0
HIVb+F	-85258.277	170948.554	0	170955.913	0	172561.926	0
DCMut	-85557.503	171509.006	0	171515.121	0	172980.461	0
Dayhoff	-85573.111	171540.223	0	171546.337	0	173011.678	0
mtZOA+F	-85517.548	171467.097	0	171474.455	0	173080.468	0
Q.bird	-85795.6	171985.199	0	171991.314	0	173456.654	0
mtVer+F	-85759.204	171950.407	0	171957.766	0	173563.779	0
Q.plant	-85952.181	172298.363	0	172304.478	0	173769.818	0
FLU	-85972.794	172339.588	0	172345.703	0	173811.043	0
HIVw+F	-86269.787	172971.574	0	172978.933	0	174584.946	0
HIVb	-86468.085	173330.169	0	173336.284	0	174801.624	0

	FLAVI+F	-86667.824	173767.649	0	173775.008	0	175381.021	0
	mtART+F	-86987.858	174407.715	0	174415.074	0	176021.087	0
	mtMet	-87212.732	174819.465	0	174825.58	0	176290.92	0
	mtInv	-87388.24	175170.481	0	175176.596	0	176641.936	0
	FLAVI	-88016.997	176427.994	0	176434.109	0	177899.449	0
	mtMAM+F	-88059.502	176551.004	0	176558.363	0	178164.376	0
	mtREV	-88173.973	176741.946	0	176748.06	0	178213.4	0
	HIVw	-88563.024	177520.049	0	177526.163	0	178991.504	0
	mtZOA	-89066.926	178527.851	0	178533.966	0	179999.306	0
	mtVer	-89200.261	178794.523	0	178800.637	0	180265.978	0
	mtART	-90729.133	181852.265	0	181858.38	0	183323.72	0
	mtMAM	-91828.23	184050.459	0	184056.574	0	185521.914	0
TD2	SC2-Proteome+F	-97657.055	195746.11	1	195753.605	1	197355.579	1
	PMB+F	-98061.903	196555.806	1.50E-176	196563.301	1.50E-176	198165.275	1.50E-176
	Blosum62+F	-98134.318	196700.637	5.33E-208	196708.132	5.33E-208	198310.106	5.33E-208
	VT+F	-98198.483	196828.965	7.26E-236	196836.461	7.26E-236	198438.434	7.26E-236
	PMB	-98514.58	197423.159	0	197429.387	0	198891.055	0
	Blosum62	-98620.037	197634.073	0	197640.301	0	199101.968	0
	WAG+F	-98883.436	198198.872	0	198206.368	0	199808.341	0
	VT	-98993.581	198381.163	0	198387.391	0	199849.058	0
	SC2-Proteome	-99029.705	198453.409	0	198459.637	0	199921.304	0
	cpREV+F	-99041.547	198515.095	0	198522.59	0	200124.564	0
	WAG	-99630.169	199654.339	0	199660.567	0	201122.234	0
	JTT+F	-99936.944	200305.887	0	200313.382	0	201915.356	0

JTTDCMut+F	-99986.369	200404.739	0	200412.234	0	202014.207	0
cpREV	-100313.88	201021.765	0	201027.993	0	202489.661	0
Q.pfam+F	-100248.49	200928.984	0	200936.479	0	202538.453	0
LG+F	-100375.88	201183.754	0	201191.25	0	202793.223	0
rtREV+F	-100427.01	201286.011	0	201293.506	0	202895.48	0
JTT	-100659.72	201713.447	0	201719.675	0	203181.343	0
JTTDCMut	-100673.39	201740.774	0	201747.002	0	203208.669	0
Q.insect+F	-100602.61	201637.215	0	201644.711	0	203246.684	0
Q.insect	-100772.96	201939.919	0	201946.147	0	203407.815	0
Q.yeast+F	-100860.38	202152.752	0	202160.248	0	203762.221	0
LG	-101050.46	202494.913	0	202501.141	0	203962.808	0
Q.pfam	-101087.73	202569.468	0	202575.696	0	204037.363	0
rtREV	-101108.43	202610.855	0	202617.083	0	204078.75	0
mtInv+F	-101086.43	202604.86	0	202612.356	0	204214.329	0
Q.yeast	-101449.01	203292.009	0	203298.237	0	204759.905	0
Q.mammal+F	-101522.7	203477.394	0	203484.89	0	205086.863	0
DCMut+F	-101560.04	203552.076	0	203559.571	0	205161.545	0
Dayhoff+F	-101584.79	203601.572	0	203609.068	0	205211.041	0
mtREV+F	-101935.83	204303.657	0	204311.153	0	205913.126	0
Q.mammal	-102077.49	204548.975	0	204555.203	0	206016.87	0
DCMut	-102090.23	204574.449	0	204580.677	0	206042.345	0
Dayhoff	-102116.26	204626.517	0	204632.745	0	206094.412	0
mtMet+F	-102035.16	204502.312	0	204509.808	0	206111.781	0
FLU+F	-102405.34	205242.674	0	205250.17	0	206852.143	0
Q.plant+F	-102913.54	206259.069	0	206266.565	0	207868.538	0

	FLU	-103120.62	206635.237	0	206641.465	0	208103.132	0
	Q.bird+F	-103065.55	206563.105	0	206570.601	0	208172.574	0
	mtZOA+F	-103300.1	207032.19	0	207039.686	0	208641.659	0
	Q.bird	-103482.87	207359.737	0	207365.965	0	208827.632	0
	Q.plant	-103584.97	207563.933	0	207570.161	0	209031.829	0
	HIVb+F	-103749.92	207931.848	0	207939.344	0	209541.317	0
	mtVer+F	-104299.9	209031.8	0	209039.296	0	210641.269	0
	HIVb	-104630.07	209654.149	0	209660.377	0	211122.044	0
	mtInv	-104997.59	210389.178	0	210395.406	0	211857.073	0
	mtMet	-105330.77	211055.544	0	211061.772	0	212523.439	0
	HIVw+F	-105272.24	210976.474	0	210983.97	0	212585.943	0
	mtART+F	-105366.1	211164.199	0	211171.694	0	212773.668	0
	FLAVI+F	-106196.36	212824.711	0	212832.206	0	214434.18	0
	mtREV	-106360.3	213114.605	0	213120.833	0	214582.501	0
	HIVw	-107083.56	214561.127	0	214567.355	0	216029.022	0
	FLAVI	-107391.75	215177.505	0	215183.733	0	216645.401	0
	mtZOA	-107666.41	215726.814	0	215733.042	0	217194.71	0
	mtMAM+F	-107886.28	216204.562	0	216212.058	0	217814.031	0
	mtVer	-108750.44	217894.877	0	217901.105	0	219362.773	0
	mtART	-109986.07	220366.132	0	220372.36	0	221834.027	0
	mtMAM	-112725.12	225844.234	0	225850.462	0	227312.129	0
TD3	SC2-Proteome+F	-69464.742	139361.483	1	139370.067	1	140942.196	1
	VT+F	-70103.902	140639.805	2.61E-278	140648.389	2.61E-278	142220.518	2.61E-278
	PMB+F	-70122.915	140677.83	1.44E-286	140686.414	1.44E-286	142258.543	1.44E-286

Blosum62+F	-70219.168	140870.335	0	140878.919	0	142451.049	0
PMB	-70580.599	141555.197	0	141562.328	0	142996.866	0
WAG+F	-70561.105	141554.209	0	141562.793	0	143134.923	0
Blosum62	-70656.996	141707.993	0	141715.124	0	143149.662	0
cpREV+F	-70623.524	141679.049	0	141687.633	0	143259.762	0
VT	-70725.469	141844.939	0	141852.069	0	143286.608	0
SC2-Proteome	-70860.129	142114.258	0	142121.389	0	143555.927	0
JTT+F	-71058.144	142548.289	0	142556.873	0	144129.002	0
JTTDCMut+F	-71089.987	142611.974	0	142620.558	0	144192.687	0
WAG	-71260.285	142914.57	0	142921.701	0	144356.239	0
Q.pfam+F	-71404.884	143241.768	0	143250.352	0	144822.482	0
cpREV	-71535.419	143464.837	0	143471.968	0	144906.506	0
LG+F	-71526.564	143485.128	0	143493.712	0	145065.842	0
Q.insect+F	-71546.781	143525.563	0	143534.147	0	145106.276	0
JTT	-71680.234	143754.468	0	143761.599	0	145196.138	0
JTTDCMut	-71699.229	143792.459	0	143799.589	0	145234.128	0
Q.insect	-71741.979	143877.958	0	143885.088	0	145319.627	0
rtREV+F	-71666.744	143765.489	0	143774.072	0	145346.202	0
Q.yeast+F	-71761.652	143955.304	0	143963.887	0	145536.017	0
mtInv+F	-71965.421	144362.843	0	144371.427	0	145943.556	0
Q.mammal+F	-71974.484	144380.967	0	144389.551	0	145961.681	0
LG	-72070.988	144535.975	0	144543.106	0	145977.645	0
Q.pfam	-72076.683	144547.366	0	144554.496	0	145989.035	0
Q.yeast	-72200.361	144794.722	0	144801.853	0	146236.391	0
rtREV	-72287.154	144968.308	0	144975.439	0	146409.977	0

mtREV+F	-72390.073	145212.146	0	145220.73	0	146792.86	0
Q.mammal	-72486.25	145366.5	0	145373.63	0	146808.169	0
DCMut+F	-72427.653	145287.305	0	145295.889	0	146868.019	0
Dayhoff+F	-72441.116	145314.233	0	145322.817	0	146894.946	0
mtMet+F	-72518.772	145469.545	0	145478.129	0	147050.258	0
Q.plant+F	-72837.964	146107.928	0	146116.512	0	147688.642	0
FLU+F	-72858.819	146149.637	0	146158.221	0	147730.351	0
DCMut	-73052.624	146499.248	0	146506.379	0	147940.918	0
Q.bird+F	-72967.2	146366.401	0	146374.985	0	147947.114	0
Dayhoff	-73066.613	146527.225	0	146534.356	0	147968.894	0
Q.plant	-73367.502	147129.004	0	147136.135	0	148570.673	0
Q.bird	-73385.239	147164.477	0	147171.608	0	148606.146	0
mtZOA+F	-73444.444	147320.889	0	147329.473	0	148901.602	0
FLU	-73617.837	147629.674	0	147636.805	0	149071.343	0
HIVb+F	-73555.167	147542.334	0	147550.917	0	149123.047	0
mtVer+F	-73816.866	148065.732	0	148074.316	0	149646.446	0
HIVb	-74365.119	149124.238	0	149131.369	0	150565.907	0
mtInv	-74497.122	149388.243	0	149395.374	0	150829.913	0
mtMet	-74544.756	149483.513	0	149490.644	0	150925.182	0
HIVw+F	-74531.456	149494.913	0	149503.497	0	151075.626	0
mtART+F	-74969.398	150370.796	0	150379.38	0	151951.51	0
mtREV	-75073.279	150540.558	0	150547.689	0	151982.227	0
FLAVI+F	-75086.664	150605.329	0	150613.912	0	152186.042	0
FLAVI	-76037.085	152468.17	0	152475.301	0	153909.839	0
HIVw	-76077.243	152548.486	0	152555.617	0	153990.155	0

	mtZOA	-76092.539	152579.078	0	152586.209	0	154020.747	0
	mtVer	-76503.175	153400.35	0	153407.481	0	154842.019	0
	mtMAM+F	-76428.207	153288.415	0	153296.998	0	154869.128	0
	mtART	-77797.705	155989.41	0	155996.541	0	157431.079	0
	mtMAM	-79353.185	159100.37	0	159107.501	0	160542.039	0
TD4	SC2-Proteome+F	-81364.693	163161.386	1	163169.213	1	164761.647	1
	PMB+F	-81577.087	163586.173	5.74E-93	163594.001	5.74E-93	165186.434	5.74E-93
	VT+F	-81619.51	163671.02	2.16E-111	163678.847	2.16E-111	165271.281	2.16E-111
	Blosum62+F	-81676.821	163785.642	2.78E-136	163793.469	2.78E-136	165385.903	2.78E-136
	PMB	-81955.67	164305.34	3.92E-249	164311.844	7.60E-249	165764.838	1.45E-218
	Blosum62	-82075.176	164544.352	4.93E-301	164550.855	9.56E-301	166003.849	1.82E-270
	WAG+F	-82147.461	164726.922	0	164734.75	0	166327.184	0
	VT	-82264.657	164923.313	0	164929.817	0	166382.811	0
	cpREV+F	-82418.134	165268.268	0	165276.096	0	166868.529	0
	WAG	-82824.839	166043.678	0	166050.182	0	167503.176	0
	JTT+F	-82803.345	166038.69	0	166046.518	0	167638.951	0
	JTTDCMut+F	-82829.67	166091.34	0	166099.167	0	167691.601	0
	Q.pfam+F	-83119.432	166670.863	0	166678.691	0	168271.125	0
	LG+F	-83272.279	166976.558	0	166984.385	0	168576.819	0
	cpREV	-83401.71	167197.42	0	167203.924	0	168656.918	0
	JTT	-83416.142	167226.284	0	167232.787	0	168685.781	0
	Q.insect+F	-83328.186	167088.372	0	167096.2	0	168688.633	0
	JTTDCMut	-83424.045	167242.09	0	167248.594	0	168701.587	0
	rtREV+F	-83351.435	167134.87	0	167142.698	0	168735.132	0

SC2-Proteome	-83465.603	167325.206	0	167331.71	0	168784.704	0
Q.insect	-83619.947	167633.894	0	167640.398	0	169093.392	0
Q.yeast+F	-83553.072	167538.144	0	167545.971	0	169138.405	0
Q.pfam	-83806.817	168007.634	0	168014.137	0	169467.131	0
LG	-83849.202	168092.405	0	168098.908	0	169551.902	0
mtInv+F	-83781.913	167995.827	0	168003.654	0	169596.088	0
rtREV	-84057.161	168508.321	0	168514.825	0	169967.819	0
Q.mammal+F	-83984.673	168401.346	0	168409.174	0	170001.608	0
Q.yeast	-84156.906	168707.811	0	168714.315	0	170167.309	0
DCMut+F	-84220.794	168873.587	0	168881.415	0	170473.849	0
Dayhoff+F	-84238.356	168908.713	0	168916.54	0	170508.974	0
mtREV+F	-84379.052	169190.104	0	169197.932	0	170790.366	0
Q.mammal	-84505.17	169404.34	0	169410.844	0	170863.837	0
mtMet+F	-84525.265	169482.531	0	169490.358	0	171082.792	0
DCMut	-84881.001	170156.002	0	170162.505	0	171615.499	0
Dayhoff	-84899.247	170192.495	0	170198.998	0	171651.992	0
Q.plant+F	-84902.443	170236.887	0	170244.714	0	171837.148	0
FLU+F	-84987.609	170407.218	0	170415.045	0	172007.479	0
Q.bird+F	-85175.303	170782.607	0	170790.434	0	172382.868	0
Q.plant	-85498.683	171391.366	0	171397.87	0	172850.864	0
Q.bird	-85580.869	171555.737	0	171562.241	0	173015.235	0
mtZOA+F	-85514.585	171461.17	0	171468.998	0	173061.432	0
FLU	-85719.49	171832.98	0	171839.484	0	173292.478	0
HIVb+F	-85764.75	171961.499	0	171969.327	0	173561.761	0
mtVer+F	-86129.161	172690.323	0	172698.151	0	174290.584	0

	HIVb	-86575.208	173544.417	0	173550.92	0	175003.914	0
	mtInv	-86885.89	174165.78	0	174172.284	0	175625.277	0
	HIVw+F	-86818.687	174069.374	0	174077.202	0	175669.636	0
	mtMet	-87003.513	174401.026	0	174407.53	0	175860.524	0
	mtART+F	-87242.714	174917.427	0	174925.255	0	176517.689	0
	mtREV	-87495.803	175385.606	0	175392.11	0	176845.103	0
	FLAVI+F	-87597.584	175627.169	0	175634.996	0	177227.43	0
	mtZOA	-88489.98	177373.96	0	177380.464	0	178833.458	0
	HIVw	-88547.116	177488.232	0	177494.736	0	178947.73	0
	FLAVI	-88629.715	177653.43	0	177659.933	0	179112.927	0
	mtMAM+F	-88878.334	178188.667	0	178196.495	0	179788.929	0
	mtVer	-89351.258	179096.516	0	179103.02	0	180556.014	0
	mtART	-90500.747	181395.494	0	181401.998	0	182854.992	0
	mtMAM	-92320.309	185034.619	0	185041.122	0	186494.116	0
TD5	SC2-Proteome+F	-77462.069	155356.139	1	155364.299	1	156947.577	1
	PMB+F	-78066.36	156564.721	3.63E-263	156572.881	3.63E-263	158156.159	3.63E-263
	VT+F	-78083.683	156599.366	1.09E-270	156607.526	1.09E-270	158190.805	1.09E-270
	Blosum62+F	-78180.439	156792.878	1.04e-312	156801.038	1.04e-312	158384.316	1.04e-312
	PMB	-78395.176	157184.352	0	157191.132	0	158635.803	0
	Blosum62	-78477.785	157349.569	0	157356.349	0	158801.02	0
	VT	-78561.787	157517.574	0	157524.353	0	158969.025	0
	WAG+F	-78592.229	157616.459	0	157624.619	0	159207.897	0
	cpREV+F	-78702.393	157836.785	0	157844.946	0	159428.224	0
	SC2-Proteome	-78868.621	158131.242	0	158138.022	0	159582.693	0

WAG	-79075.029	158544.058	0	158550.837	0	159995.509	0
JTT+F	-79259.321	158950.642	0	158958.802	0	160542.081	0
JTTDCMut+F	-79300.251	159032.503	0	159040.663	0	160623.941	0
cpREV	-79577.943	159549.886	0	159556.666	0	161001.337	0
Q.pfam+F	-79622.051	159676.103	0	159684.263	0	161267.541	0
JTT	-79720.411	159834.821	0	159841.601	0	161286.272	0
JTTDCMut	-79738.464	159870.928	0	159877.707	0	161322.379	0
LG+F	-79743.377	159918.753	0	159926.913	0	161510.192	0
Q.insect	-79905.542	160205.085	0	160211.864	0	161656.536	0
Q.insect+F	-79845.446	160122.892	0	160131.052	0	161714.331	0
rtREV+F	-79881.427	160194.855	0	160203.015	0	161786.293	0
LG	-80129.949	160653.898	0	160660.678	0	162105.349	0
Q.pfam	-80133.868	160661.737	0	160668.517	0	162113.188	0
Q.yeast+F	-80057.524	160547.049	0	160555.209	0	162138.487	0
mtInv+F	-80161.987	160755.974	0	160764.134	0	162347.412	0
rtREV	-80342.563	161079.126	0	161085.906	0	162530.577	0
Q.yeast	-80370.251	161134.502	0	161141.281	0	162585.953	0
Q.mammal+F	-80378.245	161188.491	0	161196.651	0	162779.929	0
DCMut+F	-80658.523	161749.046	0	161757.206	0	163340.485	0
Q.mammal	-80762.134	161918.269	0	161925.048	0	163369.72	0
Dayhoff+F	-80678.581	161789.163	0	161797.323	0	163380.601	0
mtREV+F	-80693.377	161818.753	0	161826.914	0	163410.192	0
mtMet+F	-80838.099	162108.198	0	162116.358	0	163699.637	0
DCMut	-81037.711	162469.423	0	162476.202	0	163920.874	0
Dayhoff	-81058.325	162510.651	0	162517.43	0	163962.102	0

	FLU+F	-81134.453	162700.905	0	162709.065	0	164292.344	0
	Q.plant+F	-81393.476	163218.952	0	163227.112	0	164810.39	0
	Q.bird+F	-81522.622	163477.245	0	163485.405	0	165068.683	0
	FLU	-81689.341	163772.682	0	163779.461	0	165224.133	0
	Q.plant	-81784.767	163963.533	0	163970.313	0	165414.984	0
	Q.bird	-81796.548	163987.096	0	163993.876	0	165438.547	0
	mtZOA+F	-81839.869	164111.739	0	164119.899	0	165703.177	0
	HIVb+F	-82113.475	164658.949	0	164667.109	0	166250.388	0
	mtVer+F	-82390.883	165213.766	0	165221.926	0	166805.204	0
	HIVb	-82797.707	165989.414	0	165996.193	0	167440.865	0
	mtInv	-83248.06	166890.121	0	166896.9	0	168341.572	0
	HIVw+F	-83225.218	166882.437	0	166890.597	0	168473.875	0
	mtMet	-83373.116	167140.233	0	167147.012	0	168591.684	0
	mtART+F	-83568.158	167568.316	0	167576.477	0	169159.755	0
	FLAVI+F	-83865.591	168163.182	0	168171.342	0	169754.621	0
	mtREV	-84008.931	168411.861	0	168418.641	0	169863.312	0
	HIVw	-84631.171	169656.343	0	169663.122	0	171107.794	0
	FLAVI	-84761.711	169917.422	0	169924.202	0	171368.873	0
	mtZOA	-85110.386	170614.771	0	170621.551	0	172066.222	0
	mtMAM+F	-85227.286	170886.573	0	170894.733	0	172478.012	0
	mtVer	-85745.567	171885.134	0	171891.913	0	173336.585	0
	mtART	-87046.288	174486.576	0	174493.356	0	175938.027	0
	mtMAM	-88875.285	178144.571	0	178151.35	0	179596.022	0
TD6	SC2-Proteome+F	-83917.19	168266.38	1	168274.519	1	169858.353	1

PMB+F	-84538.193	169508.386	2.00E-270	169516.525	2.00E-270	171100.359	2.00E-270
VT+F	-84575.176	169582.353	1.74E-286	169590.492	1.74E-286	171174.326	1.74E-286
Blosum62+F	-84641.366	169714.732	3.12e-315	169722.872	3.12e-315	171306.705	3.12e-315
PMB	-84878.138	170150.276	0	170157.038	0	171602.214	0
Blosum62	-84958.192	170310.385	0	170317.147	0	171762.323	0
VT	-85090.182	170574.363	0	170581.126	0	172026.302	0
WAG+F	-85149.732	170731.464	0	170739.604	0	172323.437	0
cpREV+F	-85314.719	171061.438	0	171069.577	0	172653.411	0
SC2-Proteome	-85615.709	171625.419	0	171632.181	0	173077.357	0
WAG	-85674.432	171742.865	0	171749.627	0	173194.803	0
JTT+F	-85935.468	172302.935	0	172311.075	0	173894.908	0
JTTDCMut+F	-85983.28	172398.559	0	172406.699	0	173990.533	0
cpREV	-86200.674	172795.348	0	172802.111	0	174247.287	0
Q.pfam+F	-86321.539	173075.078	0	173083.218	0	174667.051	0
JTT	-86434.003	173262.007	0	173268.769	0	174713.945	0
JTTDCMut	-86458.456	173310.912	0	173317.674	0	174762.85	0
LG+F	-86471.063	173374.126	0	173382.265	0	174966.099	0
rtREV+F	-86505.308	173442.616	0	173450.756	0	175034.589	0
Q.insect+F	-86594.95	173621.9	0	173630.04	0	175213.873	0
Q.insect	-86703.532	173801.064	0	173807.827	0	175253.003	0
Q.pfam	-86844.277	174082.555	0	174089.317	0	175534.493	0
LG	-86880.725	174155.449	0	174162.212	0	175607.388	0
Q.yeast+F	-86816.846	174065.692	0	174073.831	0	175657.665	0
rtREV	-86956.754	174307.508	0	174314.271	0	175759.447	0
mtInv+F	-86974.487	174380.973	0	174389.113	0	175972.947	0

Q.yeast	-87186.438	174766.877	0	174773.639	0	176218.815	0
Q.mammal+F	-87274.946	174981.892	0	174990.032	0	176573.866	0
DCMut+F	-87384.057	175200.114	0	175208.254	0	176792.088	0
Dayhoff+F	-87406.783	175245.566	0	175253.706	0	176837.539	0
mtREV+F	-87539.539	175511.078	0	175519.217	0	177103.051	0
Q.mammal	-87676.035	175746.069	0	175752.832	0	177198.008	0
DCMut	-87835.688	176065.376	0	176072.138	0	177517.314	0
mtMet+F	-87763.175	175958.35	0	175966.49	0	177550.323	0
Dayhoff	-87858.997	176111.995	0	176118.757	0	177563.933	0
FLU+F	-88081.993	176595.986	0	176604.125	0	178187.959	0
Q.plant+F	-88361.279	177154.557	0	177162.697	0	178746.53	0
Q.bird+F	-88585.181	177602.361	0	177610.501	0	179194.334	0
FLU	-88704.63	177803.26	0	177810.022	0	179255.198	0
Q.plant	-88782.647	177959.293	0	177966.056	0	179411.232	0
Q.bird	-88871.756	178137.512	0	178144.275	0	179589.451	0
mtZOA+F	-88902.336	178236.672	0	178244.811	0	179828.645	0
HIVb+F	-89061.479	178554.957	0	178563.097	0	180146.93	0
mtVer+F	-89567.308	179566.616	0	179574.756	0	181158.589	0
HIVb	-89756.807	179907.615	0	179914.377	0	181359.553	0
mtInv	-90180.34	180754.68	0	180761.443	0	182206.618	0
mtMet	-90353.208	181100.416	0	181107.178	0	182552.354	0
HIVw+F	-90295.921	181023.842	0	181031.981	0	182615.815	0
mtREV	-90845.844	182085.688	0	182092.451	0	183537.627	0
mtART+F	-90807.087	182046.175	0	182054.314	0	183638.148	0
FLAVI+F	-91275.81	182983.619	0	182991.759	0	184575.592	0

	HIVw	-91844.592	184083.184	0	184089.947	0	185535.122	0
	mtZOA	-92164.401	184722.802	0	184729.565	0	186174.741	0
	FLAVI	-92184.838	184763.676	0	184770.439	0	186215.615	0
	mtMAM+F	-92659.091	185750.182	0	185758.322	0	187342.155	0
	mtVer	-92932.915	186259.829	0	186266.592	0	187711.768	0
	mtART	-94323.154	189040.307	0	189047.07	0	190492.246	0
	mtMAM	-96323.462	193040.924	0	193047.687	0	194492.863	0
TD7	SC2-Proteome+F	-82651.507	165735.014	1	165742.582	1	167342.454	1
	VT+F	-82883.807	166199.614	1.30E-101	166207.181	1.30E-101	167807.053	1.30E-101
	PMB+F	-82891.812	166215.625	4.33E-105	166223.192	4.33E-105	167823.064	4.33E-105
	Blosum62+F	-82963.986	166359.971	1.96E-136	166367.539	1.96E-136	167967.411	1.96E-136
	WAG+F	-83300.433	167032.867	1.50E-282	167040.434	1.50E-282	168640.306	1.50E-282
	cpREV+F	-83516.51	167465.021	0	167472.588	0	169072.46	0
	PMB	-83634.312	167662.624	0	167668.912	0	169128.668	0
	Blosum62	-83739.267	167872.534	0	167878.821	0	169338.578	0
	VT	-83947.668	168289.336	0	168295.624	0	169755.38	0
	JTT+F	-83875.927	168183.854	0	168191.421	0	169791.293	0
	JTTDCMut+F	-83910.641	168253.282	0	168260.849	0	169860.721	0
	Q.pfam+F	-84169.597	168771.194	0	168778.761	0	170378.633	0
	LG+F	-84269.021	168970.043	0	168977.61	0	170577.482	0
	rtREV+F	-84340.892	169113.783	0	169121.351	0	170721.223	0
	Q.insect+F	-84365.797	169163.593	0	169171.161	0	170771.033	0
	WAG	-84494.357	169382.715	0	169389.002	0	170848.759	0
	SC2-Proteome	-84529.358	169452.717	0	169459.004	0	170918.761	0

Q.yeast+F	-84554.726	169541.452	0	169549.019	0	171148.891	0
Q.insect	-84826.755	170047.509	0	170053.797	0	171513.553	0
mtInv+F	-84753.657	169939.315	0	169946.882	0	171546.754	0
cpREV	-84887.923	170169.845	0	170176.133	0	171635.889	0
JTT	-84914.154	170222.309	0	170228.597	0	171688.353	0
Q.mammal+F	-84840.822	170113.645	0	170121.212	0	171721.084	0
JTTDCMut	-84936.928	170267.856	0	170274.143	0	171733.9	0
DCMut+F	-85091.03	170614.06	0	170621.627	0	172221.499	0
Dayhoff+F	-85107.139	170646.278	0	170653.845	0	172253.717	0
LG	-85258.644	170911.288	0	170917.575	0	172377.332	0
Q.pfam	-85346.294	171086.589	0	171092.877	0	172552.633	0
rtREV	-85367.994	171129.989	0	171136.276	0	172596.033	0
mtMet+F	-85335.767	171103.534	0	171111.101	0	172710.973	0
mtREV+F	-85346.781	171125.562	0	171133.13	0	172733.002	0
Q.yeast	-85463.768	171321.536	0	171327.823	0	172787.58	0
FLU+F	-85558.69	171549.381	0	171556.948	0	173156.82	0
Q.mammal	-85687.586	171769.172	0	171775.459	0	173235.216	0
Q.plant+F	-85680.573	171793.145	0	171800.713	0	173400.585	0
Q.bird+F	-85787.993	172007.986	0	172015.553	0	173615.425	0
DCMut	-86237.887	172869.774	0	172876.062	0	174335.818	0
Dayhoff	-86254.935	172903.87	0	172910.157	0	174369.914	0
HIVb+F	-86192.104	172816.208	0	172823.775	0	174423.647	0
mtZOA+F	-86262.813	172957.626	0	172965.193	0	174565.065	0
Q.bird	-86536.332	173466.664	0	173472.951	0	174932.708	0
Q.plant	-86657.227	173708.454	0	173714.741	0	175174.498	0

	FLU	-86728.198	173850.397	0	173856.684	0	175316.441	0
	mtVer+F	-86659.408	173750.815	0	173758.383	0	175358.255	0
	HIVb	-87307.63	175009.26	0	175015.547	0	176475.304	0
	HIVw+F	-87278.299	174988.598	0	174996.166	0	176596.038	0
	FLAVI+F	-87747.964	175927.927	0	175935.495	0	177535.367	0
	mtART+F	-87762.371	175956.741	0	175964.309	0	177564.181	0
	mtMet	-87879.816	176153.632	0	176159.92	0	177619.676	0
	mtInv	-87931.797	176257.594	0	176263.882	0	177723.638	0
	mtREV	-88651.774	177697.548	0	177703.836	0	179163.592	0
	FLAVI	-89029.34	178452.68	0	178458.968	0	179918.724	0
	mtMAM+F	-89168.852	178769.704	0	178777.271	0	180377.143	0
	HIVw	-89553.768	179501.536	0	179507.824	0	180967.58	0
	mtZOA	-89555.925	179505.85	0	179512.138	0	180971.895	0
	mtVer	-89941.207	180276.415	0	180282.703	0	181742.459	0
	mtART	-91294.052	182982.104	0	182988.391	0	184448.148	0
	mtMAM	-92756.63	185907.26	0	185913.548	0	187373.304	0
TD8	PMB+F	-112202.55	224837.098	1	224844.204	1	226457.893	1
	Blosum62+F	-112277.28	224986.564	3.50E-33	224993.67	3.50E-33	226607.359	3.50E-33
	VT+F	-112382.15	225196.29	1.01E-78	225203.396	1.01E-78	226817.085	1.01E-78
	SC2-Proteome+F	-112673.54	225779.082	2.82E-205	225786.188	2.82E-205	227399.877	2.82E-205
	PMB	-112892.36	226178.713	4.70E-292	226184.618	8.57E-292	227656.938	4.27E-261
	Blosum62	-113053.01	226500.029	0	226505.934	0	227978.254	0
	WAG+F	-113234.01	226900.02	0	226907.126	0	228520.815	0
	VT	-113588.57	227571.131	0	227577.036	0	229049.356	0

cpREV+F	-113907.34	228246.678	0	228253.784	0	229867.473	0
WAG	-114500.8	229395.598	0	229401.503	0	230873.823	0
JTT+F	-114493.91	229419.813	0	229426.92	0	231040.609	0
JTTDCMut+F	-114547.66	229527.32	0	229534.426	0	231148.115	0
Q.pfam+F	-114624.03	229680.054	0	229687.161	0	231300.85	0
LG+F	-114873.34	230178.685	0	230185.791	0	231799.48	0
rtREV+F	-114895.66	230223.313	0	230230.419	0	231844.108	0
Q.insect+F	-115129.25	230690.492	0	230697.598	0	232311.287	0
SC2-Proteome	-115308.47	231010.938	0	231016.843	0	232489.163	0
Q.yeast+F	-115384.22	231200.435	0	231207.542	0	232821.231	0
cpREV	-115498.21	231390.426	0	231396.331	0	232868.651	0
JTT	-115639.91	231673.817	0	231679.722	0	233152.042	0
Q.insect	-115662.13	231718.25	0	231724.155	0	233196.475	0
JTTDCMut	-115666.29	231726.582	0	231732.487	0	233204.807	0
mtInv+F	-115740.83	231913.664	0	231920.77	0	233534.459	0
Q.pfam	-115883.11	232160.229	0	232166.134	0	233638.454	0
LG	-115943.76	232281.528	0	232287.433	0	233759.753	0
rtREV	-115991.52	232377.031	0	232382.936	0	233855.256	0
DCMut+F	-116272.35	232976.7	0	232983.806	0	234597.495	0
Dayhoff+F	-116302.54	233037.076	0	233044.183	0	234657.872	0
Q.mammal+F	-116349.34	233130.675	0	233137.781	0	234751.47	0
Q.yeast	-116502.38	233398.763	0	233404.668	0	234876.988	0
mtREV+F	-116824.82	234081.634	0	234088.74	0	235702.429	0
mtMet+F	-116913.17	234258.342	0	234265.448	0	235879.137	0
Q.mammal	-117223.38	234840.764	0	234846.669	0	236318.989	0

DCMut	-117523.78	235441.569	0	235447.474	0	236919.794	0
Dayhoff	-117555.69	235505.384	0	235511.289	0	236983.609	0
Q.plant+F	-117678.24	235788.488	0	235795.595	0	237409.284	0
FLU+F	-117684.73	235801.457	0	235808.563	0	237422.252	0
Q.bird+F	-118102.25	236636.507	0	236643.613	0	238257.302	0
mtZOA+F	-118271.8	236975.604	0	236982.71	0	238596.399	0
Q.plant	-118761.79	237917.574	0	237923.479	0	239395.799	0
Q.bird	-118841.42	238076.837	0	238082.742	0	239555.062	0
FLU	-118923.76	238241.526	0	238247.431	0	239719.751	0
HIVb+F	-118975.4	238382.805	0	238389.912	0	240003.601	0
mtVer+F	-119515.34	239462.678	0	239469.784	0	241083.473	0
mtInv	-120027.44	240448.878	0	240454.783	0	241927.103	0
HIVb	-120130.05	240654.105	0	240660.01	0	242132.33	0
mtMet	-120424.31	241242.627	0	241248.532	0	242720.852	0
mtART+F	-120735.44	241902.876	0	241909.982	0	243523.671	0
HIVw+F	-120800.47	242032.947	0	242040.053	0	243653.742	0
mtREV	-121266.8	242927.604	0	242933.509	0	244405.829	0
FLAVI+F	-121655.3	243742.6	0	243749.706	0	245363.395	0
mtZOA	-122572.26	245538.517	0	245544.422	0	247016.742	0
FLAVI	-123134.05	246662.108	0	246668.013	0	248140.333	0
mtMAM+F	-123104.48	246640.952	0	246648.059	0	248261.748	0
HIVw	-123585.71	247565.419	0	247571.324	0	249043.644	0
mtVer	-124067.02	248528.029	0	248533.934	0	250006.255	0
mtART	-125470.82	251335.638	0	251341.543	0	252813.863	0

	mtMAM	-128086.89	256567.782	0	256573.687	0	258046.008	0
	MB+F	-119184.17	238800.345	1	238807.231	1	240427.833	1
	Blosum62+F	-119263.15	238958.299	5.02E-35	238965.185	5.02E-35	240585.787	5.02E-35
	VT+F	-119334.94	239101.871	3.34E-66	239108.757	3.34E-66	240729.36	3.34E-66
	SC2-Proteome+F	-119686.09	239804.169	1.05E-218	239811.055	1.05E-218	241431.658	1.05E-218
	PMB	-119817.93	240029.861	1.03E-267	240035.584	1.85E-267	241514.191	1.26E-236
	Blosum62	-120048.22	240490.443	0	240496.165	0	241974.773	0
	WAG+F	-120420	241271.997	0	241278.883	0	242899.485	0
	VT	-120592.62	241579.241	0	241584.963	0	243063.57	0
	cpREV+F	-121076.27	242584.541	0	242591.426	0	244212.029	0
	WAG	-121703.89	243801.779	0	243807.501	0	245286.109	0
	JTT+F	-121808.51	244049.026	0	244055.912	0	245676.515	0
TD9	Q.pfam+F	-121852.05	244136.108	0	244142.993	0	245763.596	0
	JTTDCMut+F	-121858.66	244149.31	0	244156.196	0	245776.798	0
	LG+F	-122146.01	244724.011	0	244730.897	0	246351.5	0
	rtREV+F	-122162.76	244757.528	0	244764.414	0	246385.016	0
	SC2-Proteome	-122435.78	245265.564	0	245271.287	0	246749.894	0
	Q.insect+F	-122387.86	245207.726	0	245214.612	0	246835.214	0
	cpREV	-122714.16	245822.321	0	245828.044	0	247306.651	0
	Q.yeast+F	-122629.24	245690.484	0	245697.37	0	247317.972	0
	JTT	-122961.15	246316.29	0	246322.012	0	247800.62	0
	JTTDCMut	-122980.08	246354.165	0	246359.887	0	247838.495	0
	Q.insect	-122988.35	246370.693	0	246376.415	0	247855.023	0
	Q.pfam	-123132.36	246658.716	0	246664.439	0	248143.046	0

LG	-123274.69	246943.373	0	246949.095	0	248427.703	0
mtInv+F	-123199.79	246831.579	0	246838.465	0	248459.067	0
rtREV	-123312.29	247018.57	0	247024.292	0	248502.899	0
Q.yeast	-123829.47	248052.947	0	248058.669	0	249537.276	0
DCMut+F	-123870.88	248173.751	0	248180.636	0	249801.239	0
Dayhoff+F	-123905.36	248242.717	0	248249.603	0	249870.205	0
Q.mammal+F	-123947.6	248327.19	0	248334.076	0	249954.678	0
mtREV+F	-124531.77	249495.542	0	249502.428	0	251123.03	0
Q.mammal	-124745.31	249884.624	0	249890.346	0	251368.954	0
mtMet+F	-124666.87	249765.741	0	249772.627	0	251393.229	0
DCMut	-125067.58	250529.166	0	250534.888	0	252013.495	0
Dayhoff	-125103.91	250601.815	0	250607.537	0	252086.145	0
Q.plant+F	-125346.61	251125.228	0	251132.114	0	252752.716	0
FLU+F	-125834.44	252100.873	0	252107.759	0	253728.361	0
Q.bird+F	-126003.12	252438.248	0	252445.134	0	254065.736	0
mtZOA+F	-126132.65	252697.302	0	252704.188	0	254324.791	0
Q.plant	-126489.63	253373.264	0	253378.986	0	254857.594	0
Q.bird	-126647.47	253688.936	0	253694.658	0	255173.265	0
FLU	-127026.36	254446.723	0	254452.445	0	255931.052	0
HIVb+F	-126951.62	254335.241	0	254342.127	0	255962.729	0
mtVer+F	-127582.57	255597.147	0	255604.032	0	257224.635	0
mtInv	-127727.25	255848.499	0	255854.221	0	257332.828	0
HIVb	-128112.73	256619.464	0	256625.187	0	258103.794	0
mtMet	-128376.75	257147.49	0	257153.212	0	258631.82	0
mtART+F	-128905.52	258243.038	0	258249.924	0	259870.526	0

	mtREV	-129225.38	258844.767	0	258850.489	0	260329.096	0
	HIVw+F	-129246.68	258925.359	0	258932.245	0	260552.847	0
	FLAVI+F	-130031.31	260494.627	0	260501.513	0	262122.115	0
	mtZOA	-130588.7	261571.393	0	261577.115	0	263055.723	0
	FLAVI	-131675.54	263745.08	0	263750.803	0	265229.41	0
	mtMAM+F	-131747.03	263926.066	0	263932.952	0	265553.554	0
	HIVw	-132020.66	264435.325	0	264441.048	0	265919.655	0
	mtVer	-132472.43	265338.852	0	265344.574	0	266823.182	0
	mtART	-133836.43	268066.852	0	268072.574	0	269551.182	0
	mtMAM	-137058.74	274511.474	0	274517.197	0	275995.804	0
TD10	SC2-Proteome+F	-75597.198	151626.397	1	151634.108	1	153229.841	1
	VT+F	-76033.468	152498.936	3.39E-190	152506.647	3.39E-190	154102.38	3.39E-190
	PMB+F	-76033.977	152499.954	2.04E-190	152507.665	2.04E-190	154103.398	2.04E-190
	Blosum62+F	-76058.582	152549.164	4.20E-201	152556.875	4.20E-201	154152.608	4.20E-201
	WAG+F	-76332.251	153096.502	5.9e-320	153104.213	5.9e-320	154699.946	5.9e-320
	cpREV+F	-76405.009	153242.017	0	153249.728	0	154845.462	0
	SC2-Proteome	-76747.979	153889.958	0	153896.365	0	155352.358	0
	Blosum62	-76798.287	153990.574	0	153996.981	0	155452.975	0
	PMB	-76817.025	154028.05	0	154034.457	0	155490.451	0
	JTT+F	-76914.959	154261.918	0	154269.629	0	155865.362	0
	VT	-77009.665	154413.331	0	154419.738	0	155875.731	0
	JTTDCMut+F	-76953.59	154339.181	0	154346.892	0	155942.625	0
	Q.pfam+F	-77156.439	154744.878	0	154752.589	0	156348.322	0
	LG+F	-77231.872	154895.743	0	154903.454	0	156499.187	0

rtREV+F	-77284.43	155000.861	0	155008.572	0	156604.305	0
WAG	-77452.499	155298.997	0	155305.404	0	156761.398	0
Q.insect+F	-77401.849	155235.698	0	155243.409	0	156839.142	0
Q.yeast+F	-77547.285	155526.57	0	155534.281	0	157130.015	0
mtInv+F	-77564.595	155561.189	0	155568.9	0	157164.633	0
Q.insect	-77681.317	155756.633	0	155763.04	0	157219.034	0
cpREV	-77721.668	155837.336	0	155843.743	0	157299.737	0
Q.mammal+F	-77730.21	155892.42	0	155900.131	0	157495.864	0
JTT	-77891.544	156177.087	0	156183.495	0	157639.488	0
JTTDCMut	-77916.363	156226.726	0	156233.133	0	157689.126	0
mtREV+F	-77904.415	156240.83	0	156248.541	0	157844.274	0
DCMut+F	-77954.036	156340.072	0	156347.783	0	157943.516	0
mtMet+F	-77958.475	156348.949	0	156356.66	0	157952.393	0
Dayhoff+F	-77964.998	156361.997	0	156369.708	0	157965.441	0
FLU+F	-77990.513	156413.026	0	156420.737	0	158016.47	0
LG	-78113.098	156620.196	0	156626.603	0	158082.597	0
rtREV	-78179.079	156752.159	0	156758.566	0	158214.559	0
Q.yeast	-78228.983	156851.965	0	156858.372	0	158314.366	0
Q.pfam	-78255.55	156905.099	0	156911.506	0	158367.5	0
Q.mammal	-78565.56	157525.121	0	157531.528	0	158987.521	0
Q.plant+F	-78487.459	157406.917	0	157414.628	0	159010.362	0
Q.bird+F	-78505.192	157442.384	0	157450.095	0	159045.828	0
HIVb+F	-78706.156	157844.313	0	157852.024	0	159447.757	0
mtZOA+F	-78742.051	157916.101	0	157923.813	0	159519.546	0
DCMut	-78961.548	158317.096	0	158323.503	0	159779.497	0

Dayhoff	-78973.269	158340.537	0	158346.944	0	159802.938	0
FLU	-79141.818	158677.636	0	158684.043	0	160140.037	0
mtVer+F	-79124.979	158681.958	0	158689.669	0	160285.402	0
Q.bird	-79241.569	158877.139	0	158883.546	0	160339.539	0
Q.plant	-79332.322	159058.645	0	159065.052	0	160521.045	0
HIVb	-79791.352	159976.704	0	159983.111	0	161439.104	0
HIVw+F	-79723.396	159878.792	0	159886.503	0	161482.236	0
mtART+F	-79990.015	160412.03	0	160419.741	0	162015.474	0
FLAVI+F	-80169.322	160770.644	0	160778.355	0	162374.088	0
mtMet	-80367.309	161128.619	0	161135.026	0	162591.019	0
mtInv	-80511.863	161417.725	0	161424.132	0	162880.126	0
mtREV	-81255.961	162905.921	0	162912.328	0	164368.322	0
mtMAM+F	-81184.672	162801.343	0	162809.055	0	164404.788	0
FLAVI	-81318.832	163031.664	0	163038.071	0	164494.064	0
HIVw	-81779.758	163953.515	0	163959.922	0	165415.916	0
mtZOA	-82200.734	164795.468	0	164801.875	0	166257.868	0
mtVer	-82351.101	165096.203	0	165102.61	0	166558.603	0
mtART	-83587.239	167568.479	0	167574.886	0	169030.879	0
mtMAM	-84768.766	169931.532	0	169937.939	0	171393.933	0

Supplementary references

1. Ferreiro D, Gonzalez-Vazquez LD, Prado-Comesana A *et al* (2025) Forecasting protein evolution by integrating birth-death population models with structurally constrained substitution models. *Elife* 14:RP106365.