

Supplemental file 1

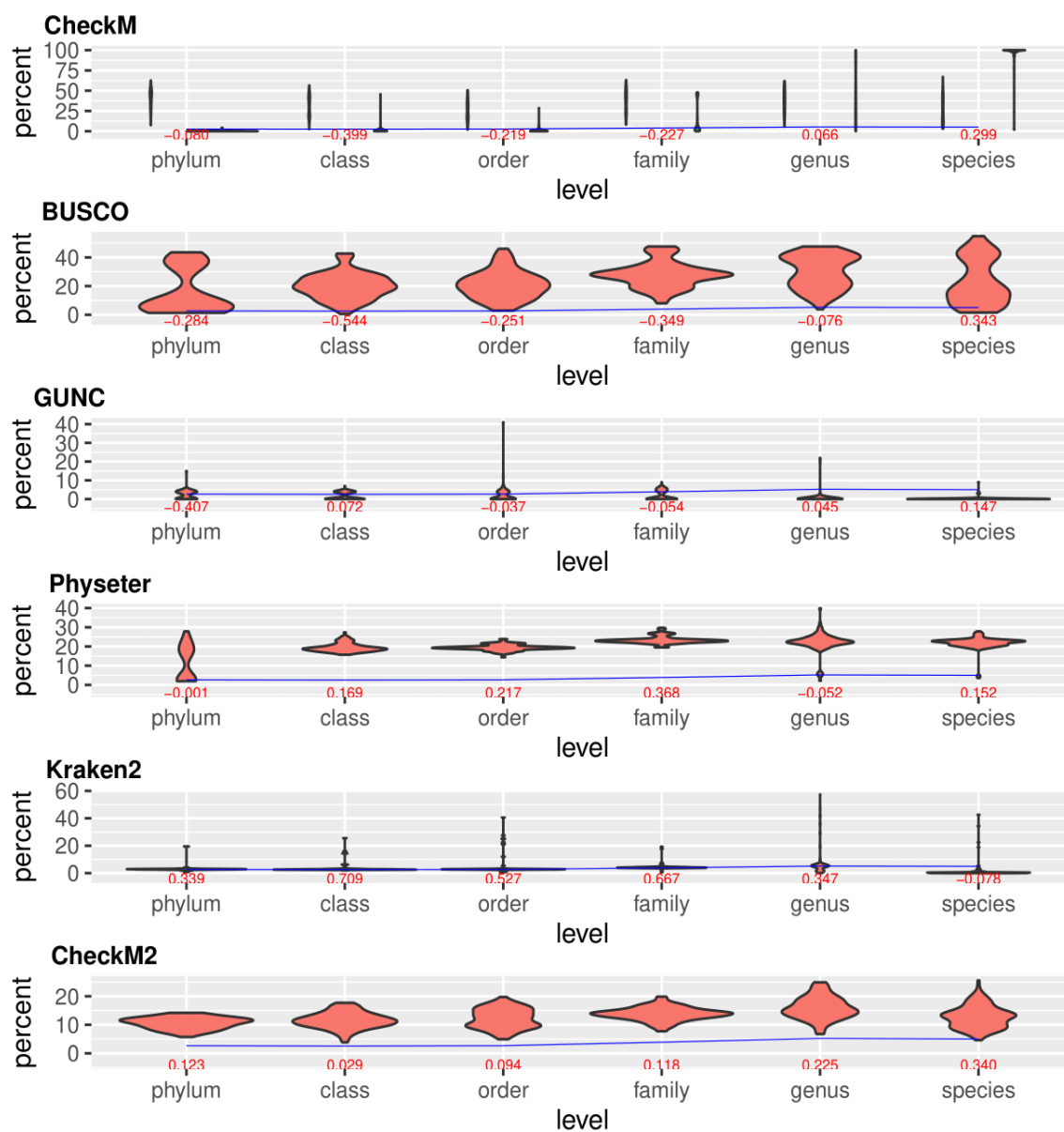


Figure S1: Contamination estimation, at six taxonomic ranks, of the redundant type of contamination.

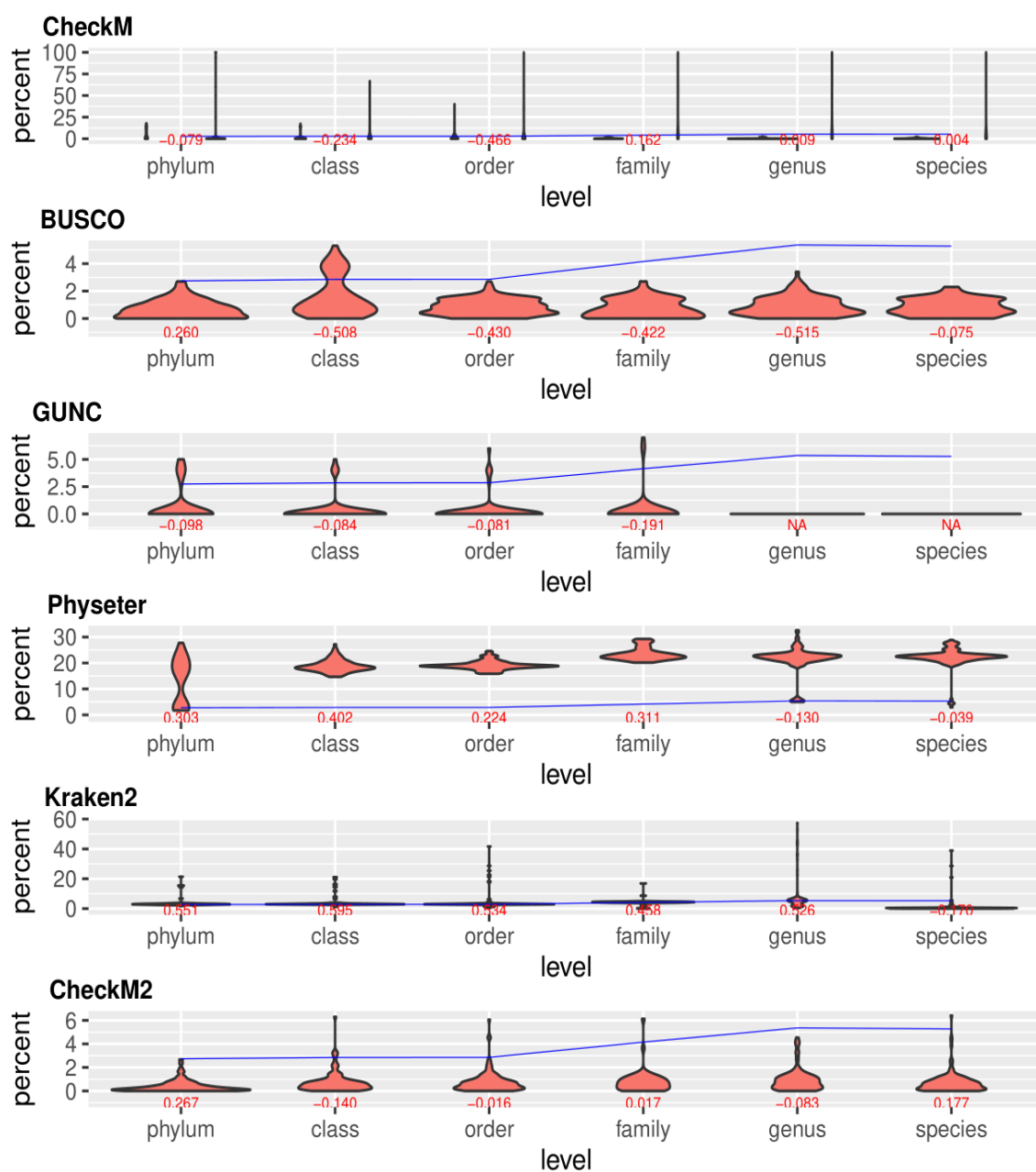


Figure S2: Contamination estimation, at six taxonomic ranks, of the replaced type of contamination.

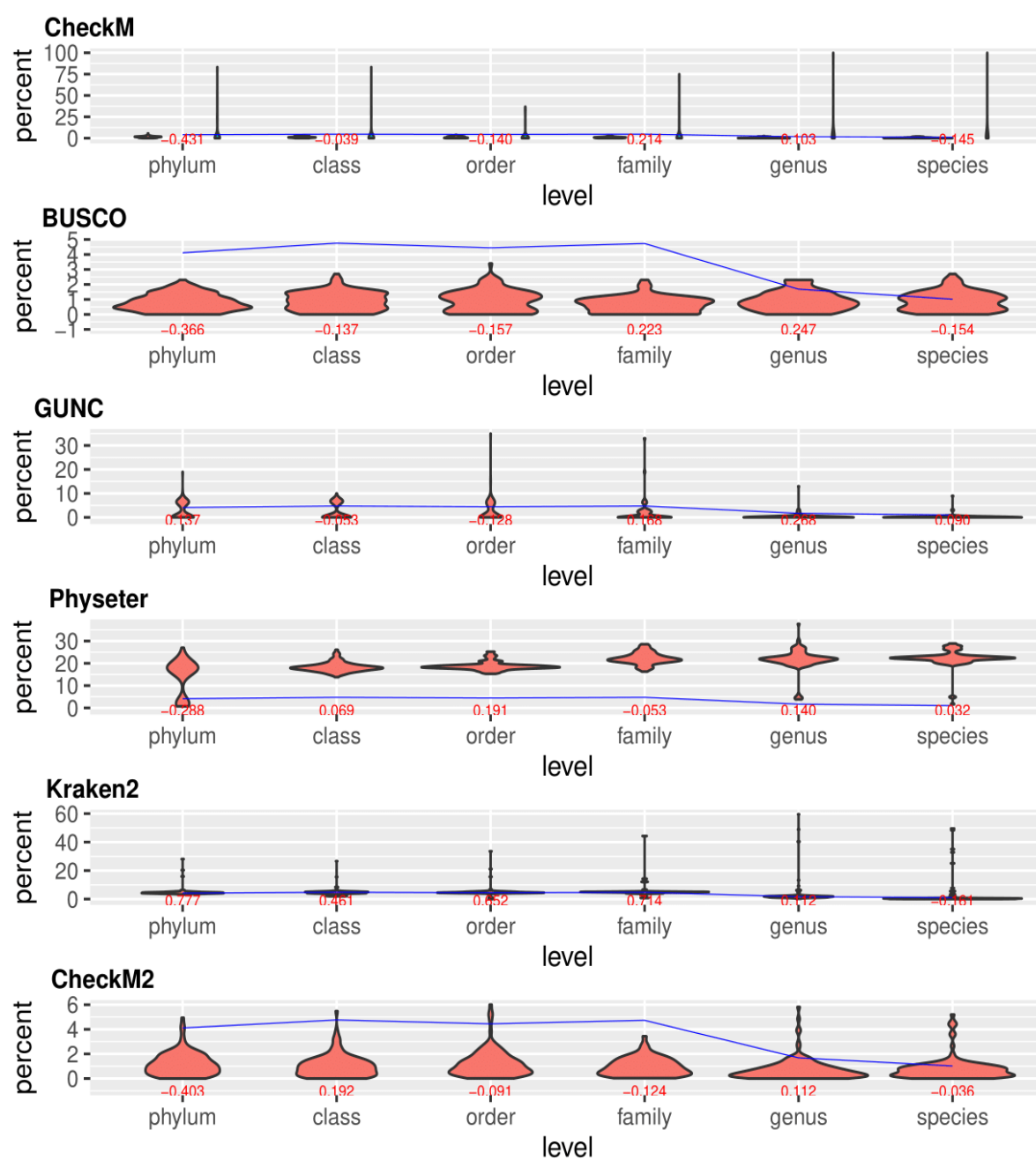


Figure S3: Contamination estimation, at six taxonomic ranks, of the single type of contamination.

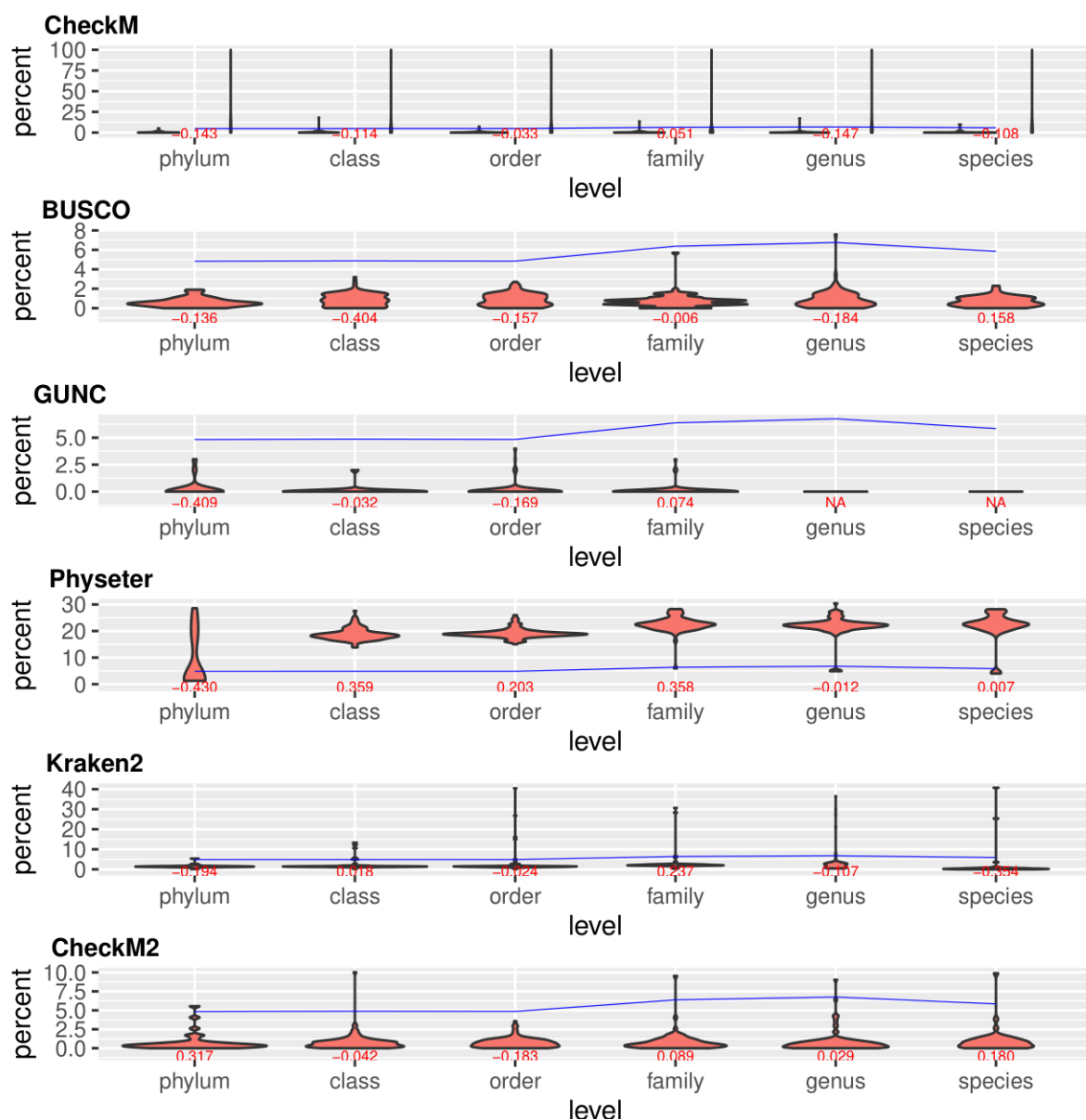


Figure S4: Contamination estimation, at six taxonomic ranks and with a mutation rate of 10%, of the combined types of contamination.

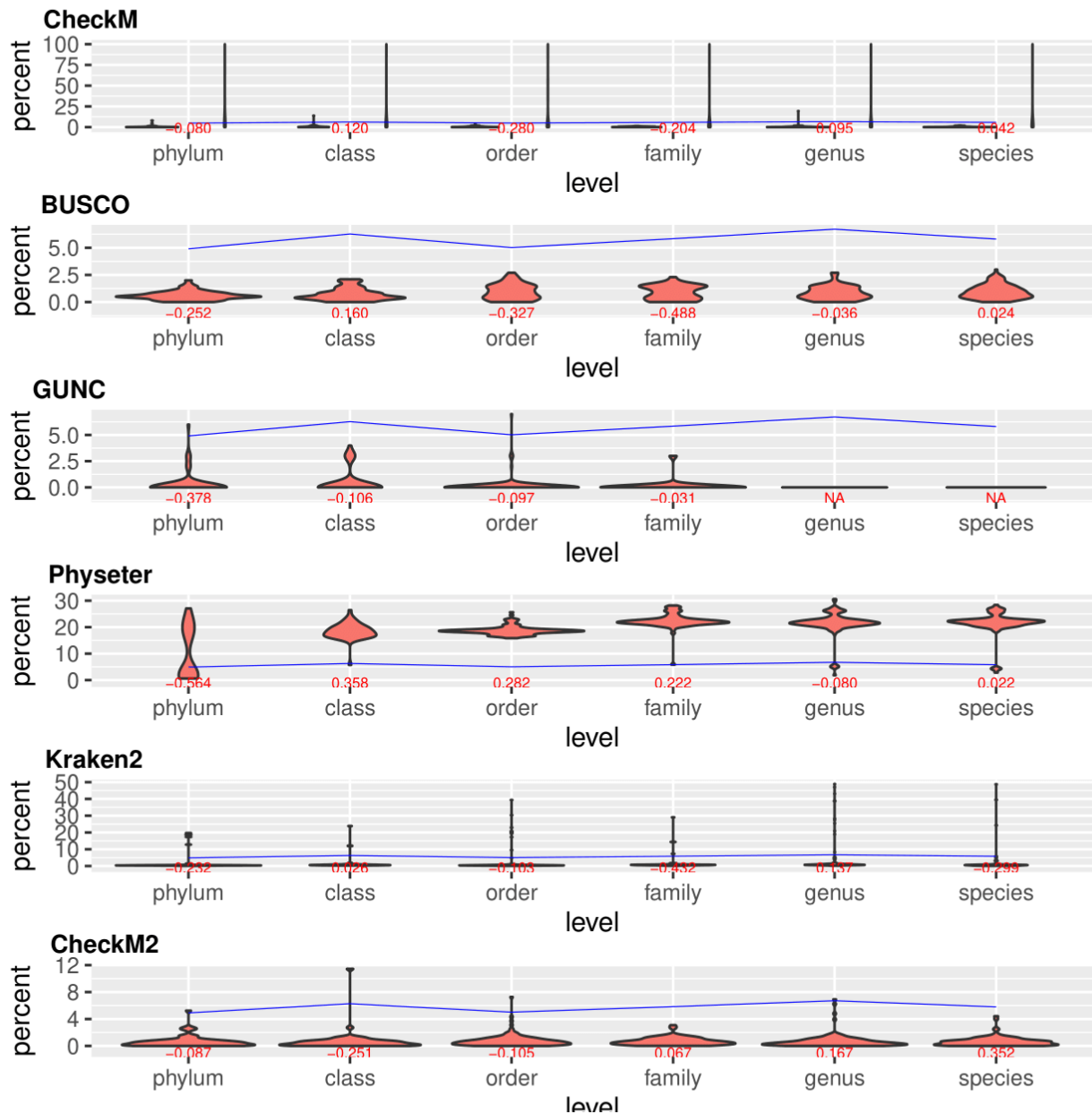


Figure S5: Contamination estimation, at six taxonomic ranks and with a mutation rate of 25%, of the combined types of contamination.

Genome	Checkm	Busco	GUNC	Physeter	Kraken	Checkm2
GCF_902388275.1	0.00	1.1	0.0	24.76	0.14	10.09
GCF_902386435.1	0.00	0.4	0.0	22.63	0.51	10.13
GCF_901523095.1	0.00	0.4	0.0	22.98	0.35	0.06
GCF_901482515.1	0.00	0.4	0.0	22.95	0.25	0.04
GCF_900478015.1	0.00	0.8	0.0	22.73	0.44	0.07
GCF_900461415.1	0.00	0.4	0.0	23.21	0.34	0.53
GCF_900461395.1	0.00	0.4	0.0	22.88	0.98	0.29
GCF_900461135.1	0.00	0.4	0.0	22.59	0.51	0.34
GCF_900447135.1	0.00	0.8	0.0	22.12	0.54	10.13
GCF_900447095.1	0.00	0.4	0.0	23.10	0.34	10.13
GCF_900447085.1	0.00	0.8	0.0	23.15	1.15	0.1
GCF_900447035.1	0.00	0.4	0.0	23.49	0.41	0.43
GCF_900209925.1	1.34	0.0	0.0	22.27	0.18	10.61
GCF_900184165.1	0.24	0.0	0.0	21.42	0.98	0.04
GCF_021561035.1	0.70	1.5	0.0	22.37	12.68	0.29
GCF_021560735.1	0.00	0.8	0.0	21.97	0.46	0.14
GCF_020809405.1	0.00	1.5	0.0	22.28	0.13	6.01
GCF_020139295.1	0.00	0.4	0.0	22.69	0.35	0.4
GCF_020139	0.00	0.8	0.0	21.31	0.26	0.25

255.1						
GCF_020139 235.1	0.00	0.8	0.0	22.16	0.44	0.07
GCF_020139 215.1	0.00	0.8	0.0	22.45	0.45	10.13
GCF_020138 795.1	0.00	0.8	0.0	22.36	0.40	0.09
GCF_020138 775.1	0.00	0.8	0.0	23.14	0.30	0.14
GCF_020138 755.1	0.00	0.4	0.0	23.28	0.31	0.37
GCF_020138 735.1	0.00	0.4	0.0	21.64	0.39	0.68
GCF_020138 715.1	0.00	0.4	0.0	22.04	0.38	0.17
GCF_020138 695.1	0.00	0.4	0.0	22.36	0.25	10.13
GCF_020138 675.1	0.00	0.4	0.0	23.23	0.30	0.39
GCF_020138 655.1	0.00	0.8	0.0	22.31	0.29	0.67
GCF_020138 635.1	0.00	0.4	0.0	22.54	0.27	0.47
GCF_020138 595.1	0.00	0.4	0.0	22.24	0.46	0.07
GCF_020138 575.1	0.00	0.4	0.0	22.62	0.23	0.08
GCF_020138 555.1	0.00	0.4	0.0	23.04	0.27	0.09
GCF_020138 535.1	0.00	0.4	0.0	22.67	0.38	0.3
GCF_020138 515.1	0.00	0.4	0.0	21.93	0.41	0.45
GCF_020138 475.1	0.00	0.4	0.0	21.96	0.41	10.13
GCF_020138 455.1	0.00	0.4	0.0	21.95	0.49	0.06
GCF_020138	0.00	0.4	0.0	21.57	0.36	0.31

375.1						
GCF_020138 355.1	0.00	0.4	0.0	22.33	0.46	0.06
GCF_020138 335.1	0.00	0.4	0.0	22.33	0.31	0.13
GCF_019977 655.1	0.00	1.9	0.0	18.81	0.06	1.31
GCF_019969 455.1	0.00	0.8	0.0	22.35	3.36	12.06
GCF_019969 425.1	0.00	0.8	0.0	23.65	0.05	0.94
GCF_019969 405.1	0.34	1.1	0.0	23.10	3.27	1.33
GCF_019969 385.1	0.00	0.0	0.0	24.53	1.20	0.11
GCF_019968 075.1	0.00	0.0	0.0	25.84	0.05	0.13
GCF_019968 055.1	0.00	0.0	0.0	26.11	0.04	0.23
GCF_019968 035.1	0.00	0.8	0.0	23.71	0.05	9.98
GCF_019968 015.1	0.00	0.8	0.0	23.87	0.04	0.93
GCF_019967 995.1	0.00	0.8	0.0	23.37	0.04	0.9
GCF_019967 975.1	0.00	0.8	0.0	23.26	0.08	1.01
GCF_019967 955.1	0.00	1.1	0.0	24.89	0.13	1.36
GCF_018223 625.1	0.13	0.0	0.0	23.56	0.07	2.92
GCF_017897 335.1	0.00	0.4	0.0	23.26	0.35	0.37
GCF_017352 215.1	0.70	0.4	0.0	28.34	0.00	0.04
GCF_017347 585.1	0.24	0.2	0.0	24.15	0.36	0.04
GCF_017100	0.69	0.4	0.0	22.66	0.27	10.54

085.1						
GCF_016694 795.1	0.00	1.1	0.0	24.16	0.21	0.67
GCF_016027 155.1	0.00	0.8	0.0	22.30	0.50	0.05
GCF_016026 675.1	0.00	0.4	0.0	22.18	0.40	10.13
GCF_013149 375.1	0.00	1.1	0.0	20.76	0.05	11.19
GCF_011065 855.2	0.20	0.8	0.0	20.64	4.96	1.89
GCF_010509 575.1	0.00	0.0	0.0	23.58	0.19	10.09
GCF_008151 785.1	0.00	1.1	0.0	22.99	0.25	9.42
GCF_006351 925.1	0.96	1.5	0.0	23.44	0.02	10.91
GCF_003403 315.2	0.00	0.0	0.0	22.20	0.11	11.63
GCF_003350 945.1	0.00	0.4	0.0	23.01	0.37	10.13
GCF_003312 465.1	0.00	1.1	0.0	24.61	0.06	9.98
GCF_003293 635.1	0.00	1.1	0.0	24.76	0.14	10.09
GCF_003203 455.1	0.00	0.8	0.0	20.88	0.66	10.61
GCF_002865 995.1	1.63	1.1	0.0	22.69	0.17	10.63
GCF_002844 395.1	0.67	0.8	0.0	18.99	0.22	10.7
GCF_002796 935.1	1.03	1.1	0.0	20.57	39.39	13.86
GCF_002734 145.1	0.00	0.0	0.0	23.91	0.17	10.09
GCF_002586 945.1	0.00	1.1	0.0	25.02	0.03	9.98
GCF_002564	0.00	0.0	0.0	21.73	1.11	10.56

225.1						
GCF_002355 795.1	0.00	0.8	0.0	23.37	0.30	10.13
GCF_001950 115.1	0.93	0.8	0.0	22.89	1.51	10.63
GCF_001889 325.1	0.69	1.1	0.0	21.57	7.65	11.19
GCF_001856 695.1	0.08	1.1	0.0	23.09	0.11	11.19
GCF_001856 645.1	0.08	1.1	0.0	23.07	0.14	11.19
GCF_001854 085.1	0.00	0.4	0.0	22.63	0.51	10.13
GCF_001735 765.2	0.00	0.4	0.0	21.41	0.37	10.59
GCF_001705 235.1	1.03	1.1	0.0	20.57	39.39	13.86
GCF_000828 305.1	0.16	0.4	0.0	22.49	3.44	10.89
GCF_000807 255.1	0.08	1.1	0.0	23.06	0.15	11.19
GCF_000807 175.1	0.08	1.1	0.0	23.23	0.15	11.19
GCF_000789 355.1	0.00	0.4	0.0	20.92	0.15	10.89
GCF_000703 125.1	0.69	0.4	0.0	25.13	38.94	10.13
GCF_000526 495.1	0.34	0.4	0.0	20.02	20.63	13.67
GCF_000389 635.1	0.39	3.0	0.0	21.05	0.02	13.71
GCF_000307 125.1	0.00	0.0	0.0	21.66	0.11	10.89
GCF_000284 435.1	0.00	0.8	0.0	21.61	40.35	4.79
GCF_000283 555.1	0.99	0.4	0.0	21.58	0.10	4.73
GCF_000270	0.00	0.8	0.0	21.59	40.51	6.8

205.1						
GCF_000247 605.1	1.06	0.8	0.0	22.95	0.01	11.82
GCF_000244 875.1	1.35	1.1	0.0	19.74	0.01	15.79
GCF_000237 085.1	0.00	0.4	0.0	18.76	0.03	15.83
GCF_000218 855.1	0.00	1.1	0.0	20.95	0.07	11.19
GCF_000191 905.1	0.00	1.1	0.0	21.07	0.06	11.19
GCF_000190 635.1	0.34	0.0	0.0	24.12	0.02	10.59
GCF_000184 705.1	0.00	0.0	0.0	21.68	0.12	11.25
GCF_000166 695.1	0.00	0.0	0.0	23.29	1.97	10.13
GCF_000165 465.1	0.87	0.8	0.0	29.02	0.12	9.3
GCF_000022 325.1	0.00	0.0	0.0	21.66	1.02	10.56
GCF_000020 165.1	0.00	0.4	0.0	21.26	0.12	10.89
GCF_000019 165.1	0.89	0.5	0.0	25.72	0.01	9.97
GCF_000016 165.1	1.27	1.5	0.0	25.90	0.00	10.59
GCF_000014 125.1	0.00	0.4	0.0	26.64	0.19	9.55
GCF_000013 845.2	0.00	0.4	0.0	23.20	0.26	9.76
GCF_000012 865.1	0.00	0.6	0.0	29.44	0.00	10.31
GCF_000009 685.1	0.00	0.4	0.0	23.25	0.35	10.13
GCF_000008 765.1	0.00	1.1	0.0	21.07	0.05	11.19
GCF_000512	0.47	0.4	0.0	24.70	0.07	10.47

895.1						
GCF_000305 815.1	0.00	0.8	0.0	24.30	6.19	10.52
GCF_000305 775.1	0.00	0.8	0.0	23.79	7.12	10.52
GCF_002005 145.1	0.84	1.1	0.0	28.12	0.05	10.03
GCF_900184 125.1	0.00	0.0	0.0	21.47	1.12	0.03
GCF_900166 995.1	0.00	0.0	0.0	21.35	1.03	0.02
GCF_002564 135.1	0.00	0.0	0.0	21.47	1.08	10.56
GCF_002300 505.1	0.00	0.2	0.0	21.90	1.02	10.56
GCF_002300 425.1	0.00	0.0	0.0	21.78	1.12	10.56
GCF_002300 395.1	0.00	0.0	0.0	21.50	1.11	10.56
GCF_002300 375.1	0.00	0.0	0.0	21.47	1.05	10.56
GCF_002300 335.1	0.00	0.0	0.0	21.80	1.02	10.56
GCF_002564 185.1	0.00	0.0	0.0	22.22	1.01	10.56
GCF_003047 205.1	1.19	1.8	0.0	28.73	0.00	10.22
GCF_006380 995.1	0.55	1.5	0.0	22.10	0.93	11.19
GCF_018884 745.1	0.38	1.5	0.0	22.05	0.48	0.54
GCF_006381 115.1	1.06	2.7	0.0	22.21	0.48	11.19
GCF_002082 985.1	0.45	1.5	0.02	21.51	0.88	11.19
GCF_900184 185.1	0.00	0.0	0.0	21.71	1.02	0.02
GCF_900184	0.00	0.0	0.0	21.63	1.00	0.02

135.1						
GCF_900168 285.1	0.48	0.0	0.0	21.29	1.05	0.02
GCF_900168 145.1	1.01	0.6	0.0	21.54	1.06	0.92
GCF_900168 085.1	0.24	0.0	0.0	21.75	1.08	0.02
GCF_009905 255.1	0.00	0.4	0.0	28.73	4.85	0.0
GCF_000955 725.1	0.00	0.0	0.0	22.63	62.21	10.51
GCF_000806 225.2	1.00	0.8	0.0	29.94	60.63	9.93
GCF_000307 585.2	0.00	0.4	0.0	27.37	6.91	10.13
GCF_000189 775.2	0.96	0.8	0.0	29.22	0.07	9.65
GCF_000175 295.2	0.24	0.4	0.0	31.79	5.69	9.83
GCF_000166 775.1	0.00	0.0	0.0	22.70	0.91	10.56
GCF_000166 355.1	0.00	0.0	0.0	23.93	0.46	10.13
GCF_000166 335.1	0.00	0.0	0.0	24.64	0.33	10.3
GCF_000147 695.2	0.00	0.6	0.0	29.52	1.54	9.93
GCF_000145 215.1	0.00	0.0	0.0	24.59	0.38	10.45
GCF_000025 645.1	0.00	0.0	0.0	30.71	1.55	9.95
GCF_000019 085.1	0.24	0.4	0.0	31.85	6.16	9.85
GCF_000019 065.1	0.00	0.6	0.0	32.72	45.11	9.94
GCF_902386 365.1	0.37	1.1	0.0	22.83	0.47	0.85
GCF_900446	0.37	1.5	0.02	22.12	0.52	0.4

965.1						
GCF_021378 415.1	0.37	1.5	0.0	22.38	0.31	11.19
GCF_019095 765.1	0.45	1.5	0.0	22.50	0.38	0.76
GCF_018885 105.1	0.37	1.5	0.0	22.31	0.39	0.26
GCF_018884 965.1	0.53	1.5	0.0	23.38	0.42	0.54
GCF_018884 885.1	0.32	1.5	0.0	22.18	0.43	0.25
GCF_018884 765.1	0.37	1.5	0.02	22.31	0.59	0.46
GCF_018255 775.1	0.37	1.5	0.0	23.09	0.36	0.84
GCF_015732 555.1	0.37	1.5	0.0	22.76	0.43	1.18
GCF_015238 635.1	0.44	1.5	0.0	21.71	0.47	0.66
GCF_014236 775.1	0.37	1.5	0.0	22.52	0.53	11.19
GCF_009867 095.1	0.70	1.5	0.0	22.20	0.39	0.52
GCF_009730 495.1	0.37	1.5	0.0	22.73	0.44	11.19
GCF_008245 165.1	0.37	1.5	0.0	22.25	0.29	11.19
GCF_006408 335.1	0.62	2.3	0.0	23.86	1.27	11.19
GCF_006408 325.1	0.40	1.5	0.0	22.90	0.38	11.19
GCF_006381 095.1	0.37	1.5	0.0	22.82	0.46	11.19
GCF_006381 025.1	0.57	1.9	0.0	22.77	0.40	11.19
GCF_006379 355.1	0.37	1.5	0.0	22.55	0.45	11.19
GCF_003482	0.37	1.5	0.0	23.50	0.32	11.19

345.1						
GCF_003482 325.1	0.37	1.5	0.0	22.41	0.27	11.19
GCF_003482 255.1	0.45	1.5	0.0	22.02	0.48	11.19
GCF_003482 035.1	0.37	1.5	0.0	22.51	0.35	11.19
GCF_003481 965.1	0.32	1.1	0.0	22.35	0.47	11.19
GCF_003481 905.1	0.37	1.5	0.0	21.92	0.56	11.19
GCF_003313 585.1	0.37	1.5	0.0	23.01	0.40	11.19
GCF_003313 565.1	0.37	1.5	0.0	23.21	0.47	11.19
GCF_003313 545.1	0.37	1.5	0.0	22.79	0.37	11.19
GCF_002946 195.1	0.37	1.5	0.0	22.22	0.30	11.19
GCF_002946 135.1	0.37	1.5	0.0	22.41	0.38	11.19
GCF_002945 945.1	0.37	1.5	0.0	22.29	0.35	11.19
GCF_002945 755.1	0.37	1.5	0.0	22.91	0.38	11.19
GCF_002945 665.1	0.37	1.5	0.0	22.68	0.29	11.19
GCF_002945 515.1	0.37	1.5	0.0	22.86	0.43	11.19
GCF_002945 415.1	0.37	1.5	0.0	22.33	0.38	11.19
GCF_002812 585.1	0.37	1.1	0.0	22.83	0.47	11.19
GCF_002080 065.1	0.37	1.5	0.0	23.35	0.47	11.19
GCF_001972 015.1	0.37	1.5	0.0	22.63	0.42	11.19
GCF_000953	0.37	1.5	0.0	23.45	0.45	11.19

275.1						
GCF_000932 055.2	0.37	1.5	0.0	23.08	0.49	11.19
GCF_000826 625.1	0.37	1.5	0.0	22.50	0.45	11.19
GCF_000085 225.1	0.37	1.5	0.0	22.62	0.30	11.19
GCF_000009 205.2	0.37	1.5	0.0	23.28	0.44	11.19
GCF_003999 255.1	0.16	0.2	0.0	23.43	0.50	10.56
GCF_000016 545.1	0.00	0.0	0.0	23.61	0.66	10.56
GCF_003490 105.1	0.71	1.5	0.0	21.79	0.36	11.19
GCF_003482 065.1	0.91	1.5	0.0	23.24	0.43	11.19
GCF_001972 105.1	0.38	1.5	0.0	21.91	0.79	11.19
GCF_000092 945.1	1.28	1.1	0.0	26.19	0.01	10.16
GCF_014170 115.1	0.23	0.4	0.0	27.57	0.06	0.16
GCF_001679 705.1	0.23	0.4	0.0	27.39	0.04	10.54
GCF_001642 655.1	0.23	0.4	0.0	26.94	0.04	10.54
GCF_006408 435.1	0.64	1.5	0.0	22.65	0.44	11.19
GCF_003482 225.1	0.84	1.5	0.0	21.82	0.41	11.19
GCF_018885 065.1	0.38	1.5	0.0	22.13	0.54	11.19
GCF_018885 085.1	0.53	1.5	0.0	21.78	0.37	0.21
GCF_006408 375.1	0.53	1.5	0.02	21.84	0.38	11.19
GCF_002812	0.55	1.1	0.0	22.41	0.31	11.19

645.1						
GCF_013487 845.1	0.00	0.5	0.0	16.86	0.02	9.09
GCF_018884 825.1	0.55	1.5	0.0	22.65	0.24	0.16
GCF_006408 285.1	0.55	1.5	0.0	22.62	1.72	11.19
GCF_002812 605.1	0.55	1.1	0.0	22.85	0.35	11.19
GCF_002007 885.1	0.55	1.5	0.0	22.40	0.33	11.19
GCF_001971 945.1	0.55	1.5	0.0	22.51	0.32	11.19
GCF_002945 855.1	0.37	1.5	0.0	22.43	0.36	11.19
GCF_902387 955.1	0.24	0.0	0.0	23.38	0.20	12.21
GCF_000225 345.1	0.24	0.0	0.0	23.38	0.20	12.21
GCF_009796 305.1	0.00	0.4	0.0	24.39	0.03	10.52
GCF_900604 355.1	0.23	0.0	0.0	23.70	21.01	4.29
GCF_020181 455.1	0.39	0.4	0.0	23.88	0.49	0.97
GCF_016904 155.1	0.00	0.4	0.0	25.61	0.30	10.66
GCF_016904 015.1	0.00	0.0	0.0	27.02	0.38	10.61
GCF_016889 005.1	0.00	0.0	0.0	25.26	0.04	1.41
GCF_009831 375.1	0.00	0.0	0.0	25.27	0.37	10.66
GCF_009684 695.1	0.58	0.0	0.0	23.57	0.08	12.21
GCF_004295 125.1	1.17	1.1	0.0	25.27	0.04	12.21
GCF_002234	0.55	1.5	0.0	22.49	0.32	11.19

355.1						
GCF_011058 795.1	0.44	0.0	0.0	26.43	0.13	3.19
GCF_011058 775.1	0.44	0.0	0.0	26.83	0.06	3.19
GCF_011058 755.1	0.44	0.2	0.0	25.13	0.32	0.1
GCF_011058 735.1	0.44	0.2	0.0	25.84	0.15	5.08
GCF_011058 715.1	0.44	0.0	0.0	26.36	0.16	3.28
GCF_009857 205.1	0.44	0.0	0.0	26.45	1.24	3.21
GCF_009649 955.1	1.83	0.5	0.0	23.27	0.00	10.51
GCF_002250 075.1	1.99	1.5	0.0	27.15	0.07	10.13
GCF_000145 615.1	0.48	0.2	0.0	27.95	0.09	10.13
GCF_001972 085.1	0.55	1.5	0.0	22.27	0.29	11.19
GCF_006454 545.1	0.37	1.5	0.0	22.94	0.45	11.19
GCF_002946 035.1	0.37	1.5	0.0	22.34	0.33	11.19
GCF_009903 525.1	0.42	1.5	0.0	22.05	0.39	11.19
GCF_006380 905.1	0.42	1.5	0.0	21.97	0.39	11.19
GCF_006379 335.1	0.42	1.5	0.0	21.89	0.43	11.19
GCF_902387 945.1	0.00	0.0	0.0	25.51	0.06	10.13
GCF_900461 315.1	0.63	0.0	0.0	23.81	0.00	15.98
GCF_900461 275.1	0.00	0.0	0.0	20.68	18.47	1.55
GCF_900105	0.63	0.4	0.0	22.16	3.69	0.65

215.1						
GCF_020735 365.1	0.32	0.4	0.0	23.62	1.88	1.41
GCF_018866 245.1	0.00	0.4	0.0	26.80	0.01	0.7
GCF_005848 555.1	0.32	0.4	0.0	24.59	0.58	12.21
GCF_003589 745.1	0.00	0.0	0.0	25.51	0.06	10.13
GCF_002797 975.1	0.00	0.0	0.0	24.07	5.58	15.98
GCF_000686 105.1	0.95	1.1	0.0	16.92	17.19	23.71
GCF_000526 995.1	0.95	0.0	0.0	21.98	30.77	17.58
GCF_000214 435.1	0.00	1.1	0.0	29.05	0.00	9.85
GCF_000159 975.2	0.00	0.0	0.0	22.20	29.11	13.24
GCF_000144 625.1	0.00	0.4	0.0	23.52	0.00	15.63
GCF_900461 125.1	0.00	0.0	0.0	20.77	5.63	17.58
GCF_020215 665.1	0.00	0.0	0.0	20.09	0.15	3.89
GCF_014131 715.1	0.00	0.0	0.0	20.14	0.05	4.32
GCF_013112 015.1	1.91	0.0	0.0	20.24	0.03	1.05
GCF_010669 205.1	0.00	0.0	0.0	20.25	0.04	4.33
GCF_004210 255.1	0.21	0.0	0.0	19.83	0.04	17.58
GCF_002222 595.2	0.00	0.0	0.0	24.02	0.76	10.61
GCF_001689 125.2	1.91	0.0	0.0	20.89	0.02	15.77
GCF_000231	0.98	0.0	0.0	25.24	0.00	10.47

405.2						
GCF_001577 795.1	0.38	1.5	0.0	22.46	0.41	11.19
GCF_000014 405.1	0.00	0.5	0.0	4.34	0.03	9.15
GCF_005886 215.1	0.95	0.0	0.0	18.61	0.00	16.01
GCF_003482 125.1	0.76	1.5	0.0	21.92	0.44	11.19
GCF_902388 025.1	1.34	0.4	0.0	24.81	0.35	1.04
GCF_900215 405.1	0.00	0.0	0.0	21.47	0.15	10.63
GCF_020735 705.1	0.00	0.8	0.0	21.33	0.12	1.59
GCF_020181 555.1	0.81	0.4	0.0	19.73	0.04	15.7
GCF_010508 875.1	0.13	0.4	0.0	21.28	0.03	15.39
GCF_008727 735.1	0.00	0.4	0.0	24.76	0.02	10.09
GCF_005473 905.2	0.34	0.0	0.0	18.48	0.03	13.67
GCF_002564 085.1	0.00	0.0	0.0	21.59	0.13	10.58
GCF_001998 765.1	1.34	0.4	0.0	24.81	0.35	10.61
GCF_001692 755.1	0.00	0.0	0.0	21.55	0.15	10.58
GCF_001688 625.2	0.13	0.4	0.0	22.25	0.03	15.31
GCF_000255 615.2	0.00	0.0	0.0	21.59	0.13	10.58
GCF_000184 925.1	0.00	0.0	0.0	21.54	0.11	10.58
GCF_000015 865.1	0.67	0.0	0.0	21.03	0.14	10.98
GCF_000022	1.01	0.8	0.0	21.22	0.01	11.82

065.1						
GCF_020297 485.1	1.69	1.9	0.0	22.38	48.00	4.78
GCF_016889 665.1	0.00	0.4	0.0	21.31	0.07	4.41
GCF_013112 035.1	0.00	0.0	0.0	20.74	0.05	20.37
GCF_006538 465.1	0.00	1.1	0.0	21.47	4.71	17.33
GCF_002234 575.2	0.00	0.4	0.0	21.20	0.08	22.12
GCF_001688 665.2	1.27	1.9	0.0	19.15	1.90	22.12
GCF_000210 455.1	0.37	1.5	0.0	23.18	0.39	11.19
GCF_020731 185.1	0.00	0.8	0.0	16.98	10.30	2.29
GCF_006454 575.1	0.74	2.3	0.0	22.00	0.36	11.19
GCF_021495 975.1	1.38	1.5	0.0	23.20	32.31	1.37
GCF_020099 295.1	1.38	1.5	0.0	22.86	34.66	0.58
GCF_016838 665.1	0.69	0.8	0.0	22.00	0.61	0.73
GCF_016798 345.1	0.00	1.1	0.0	23.42	0.56	0.81
GCF_014068 615.1	0.00	1.1	0.0	22.96	0.57	0.66
GCF_009733 885.1	0.00	1.1	0.0	23.25	0.56	10.7
GCF_003345 335.1	0.13	0.8	0.0	21.42	0.61	11.19
GCF_003345 315.1	0.69	1.1	0.0	22.64	0.54	11.19
GCF_003058 445.1	0.00	1.1	0.0	22.98	0.55	10.7
GCF_003058	0.00	1.1	0.0	23.36	0.50	10.7

345.1						
GCF_003017 225.1	0.00	1.1	0.0	22.82	3.89	11.19
GCF_003017 195.1	0.00	0.8	0.0	23.34	4.61	11.19
GCF_003017 145.1	0.00	0.8	0.0	23.53	4.43	11.19
GCF_002866 225.1	1.38	1.1	0.0	22.12	0.61	11.19
GCF_002866 125.1	0.69	1.1	0.0	22.31	0.52	11.19
GCF_002866 045.1	0.08	1.1	0.0	21.72	0.56	11.19
GCF_002865 885.1	0.00	1.1	0.0	22.07	0.54	11.19
GCF_002865 845.1	0.00	1.1	0.0	22.28	0.57	11.19
GCF_002865 805.1	0.69	1.1	0.0	22.71	0.49	10.7
GCF_002865 785.1	0.08	1.1	0.0	22.04	28.40	11.19
GCF_002865 765.1	0.00	1.1	0.0	22.90	0.51	10.7
GCF_002865 745.1	0.00	1.1	0.0	22.72	0.52	10.7
GCF_001921 965.1	0.00	1.1	0.0	22.56	0.60	11.19
GCF_001921 945.1	0.77	1.1	0.0	21.70	0.60	11.19
GCF_001921 905.1	0.69	1.1	0.0	22.84	0.61	10.98
GCF_001889 345.1	0.00	1.1	0.0	23.13	0.58	10.7
GCF_001886 775.1	0.69	1.1	0.0	21.63	8.16	11.19
GCF_001879 625.1	0.69	1.1	0.0	22.80	0.59	11.19
GCF_001879	0.00	1.1	0.0	22.31	0.57	11.19

605.1						
GCF_000829 015.1	0.00	1.1	0.0	22.97	0.57	10.7
GCF_000817 935.1	0.08	1.1	0.0	20.62	0.60	11.19
GCF_000063 585.1	0.00	1.1	0.0	23.05	0.54	10.7
GCF_000022 765.1	0.00	1.1	0.0	22.13	0.58	11.19
GCF_000020 345.1	0.05	1.1	0.0	21.36	0.54	11.19
GCF_000019 545.1	0.08	1.1	0.0	21.49	0.45	11.19
GCF_000019 305.1	0.00	1.1	0.0	22.06	0.57	11.19
GCF_000017 045.1	0.00	1.1	0.0	23.73	0.49	10.7
GCF_000017 025.1	0.00	1.1	0.0	23.36	0.52	10.7
GCF_000016 505.1	0.00	0.4	0.0	22.00	0.12	10.98
GCF_000010 265.1	0.00	0.4	0.0	22.50	0.11	10.98
GCF_020641 055.1	0.00	1.5	0.0	20.97	25.55	0.14
GCF_002441 855.2	0.00	0.8	0.0	21.79	1.07	13.44
GCF_001481 725.1	0.00	0.8	0.0	21.78	0.47	13.45
GCF_000807 675.2	0.00	0.8	0.0	21.63	0.06	13.44
GCF_000152 245.2	0.00	0.8	0.0	21.45	0.45	13.44
GCF_019884 785.1	1.77	1.5	0.0	23.77	0.03	3.67
GCF_019203 185.1	1.06	0.8	0.0	26.97	0.07	0.09
GCF_004103	0.35	0.4	0.0	20.86	0.01	10.18

735.1						
GCF_002998 925.1	0.00	0.4	0.0	5.91	0.10	7.37
GCF_002080 475.1	0.71	0.8	0.0	23.45	0.03	12.04
GCF_001854 185.1	0.71	0.8	0.0	23.28	0.03	12.04
GCF_001042 715.1	0.71	1.1	0.0	24.01	0.02	11.74
GCF_000024 205.1	0.16	1.9	0.0	19.22	0.00	15.54
GCF_006228 565.1	0.00	1.3	0.0	27.60	0.00	10.2
GCF_001729 945.1	1.83	2.1	0.0	25.40	0.00	9.83
GCF_001267 405.1	0.00	1.3	0.0	28.23	0.00	10.19
GCF_000231 385.2	0.51	1.5	0.0	22.56	0.01	13.94
GCF_900636 895.1	0.00	0.5	0.0	27.48	3.04	9.29
GCF_020995 385.1	0.15	0.5	0.0	26.69	49.39	0.04
GCF_020991 185.1	0.00	0.5	0.0	27.64	0.55	0.01
GCF_017840 575.1	0.00	0.5	0.0	25.36	15.72	0.55
GCF_017638 885.1	0.78	0.5	0.0	25.40	0.43	0.11
GCF_017498 665.1	0.00	0.5	0.0	27.68	2.21	0.09
GCF_014841 035.1	0.39	0.5	0.0	26.34	0.19	9.2
GCF_009834 385.1	0.00	0.5	0.0	26.07	11.92	9.22
GCF_007876 425.1	1.29	1.2	0.0	25.79	3.78	9.22
GCF_005886	0.00	0.5	0.0	26.10	2.91	9.32

075.1						
GCF_003584 685.1	0.00	0.5	0.0	26.09	3.12	9.16
GCF_003428 395.1	0.00	0.2	0.0	27.14	0.09	9.15
GCF_003316 915.1	0.00	0.5	0.0	27.97	0.10	9.15
GCF_002176 855.1	0.00	0.5	0.0	26.40	0.24	9.29
GCF_002176 835.1	0.78	0.7	0.0	25.81	0.36	9.19
GCF_000439 915.2	0.00	0.5	0.0	28.35	0.85	9.15
GCF_000204 985.1	0.00	0.5	0.0	27.44	0.17	9.19
GCF_000091 405.1	0.00	0.2	0.0	27.93	0.17	7.38
GCF_000008 065.1	0.00	0.5	0.0	26.17	0.24	9.32
GCF_902459 515.1	0.00	0.4	0.0	22.81	0.44	10.13
GCF_900604 345.1	0.81	0.4	0.0	24.58	0.02	10.13
GCF_900475 545.1	0.09	0.8	0.0	22.90	0.52	0.05
GCF_900465 025.1	1.61	1.1	0.0	22.58	3.71	2.36
GCF_900461 205.1	0.00	0.8	0.0	22.34	0.45	0.12
GCF_900168 365.1	0.00	0.4	0.0	24.45	0.25	0.09
GCF_900010 805.1	1.61	2.3	0.0	19.67	0.15	0.87
GCF_020911 725.1	1.61	0.4	0.0	24.72	0.04	10.98
GCF_020139 275.1	0.00	0.8	0.0	21.81	0.59	0.06
GCF_018223	0.81	1.9	0.0	20.48	1.14	13.78

745.1						
GCF_018140 655.1	0.00	1.1	0.0	22.51	0.09	13.82
GCF_018140 595.1	1.61	2.3	0.0	20.54	0.60	0.52
GCF_016027 375.1	0.00	0.8	0.0	22.42	0.49	0.12
GCF_016026 995.1	0.00	0.4	0.0	22.43	0.60	0.11
GCF_015643 605.1	1.61	2.3	0.0	20.19	0.65	15.9
GCF_014137 775.1	0.81	0.8	0.0	19.32	0.08	0.05
GCF_014137 745.1	0.00	1.1	0.0	22.08	0.10	1.13
GCF_014137 665.1	0.81	0.4	0.0	19.31	0.07	0.06
GCF_014131 795.1	0.27	1.1	0.0	21.73	0.07	1.81
GCF_013407 635.1	1.75	2.3	0.0	20.23	0.68	0.62
GCF_013407 215.1	1.69	2.3	0.0	20.71	0.52	0.25
GCF_013297 265.1	1.69	2.3	0.0	20.57	0.51	15.9
GCF_013297 175.1	1.69	2.3	0.0	20.81	0.53	0.24
GCF_013297 125.1	1.69	1.9	0.0	19.18	0.11	0.93
GCF_013297 065.1	1.69	2.3	0.0	20.61	0.49	15.9
GCF_013296 465.1	1.69	2.3	0.0	20.64	0.48	0.26
GCF_013296 445.1	1.69	2.3	0.0	20.61	0.57	15.9
GCF_013296 425.1	1.69	2.3	0.0	20.79	0.52	15.9
GCF_013296	1.61	2.3	0.0	19.59	2.85	0.99

395.1						
GCF_013294 755.1	1.69	2.3	0.0	20.63	0.52	15.9
GCF_013294 745.1	1.69	2.3	0.0	20.59	0.47	0.23
GCF_013294 705.1	1.69	2.3	0.0	20.76	0.52	0.22
GCF_013294 675.1	1.69	2.3	0.0	20.60	0.51	15.9
GCF_013294 665.1	1.69	2.3	0.0	20.61	0.51	0.23
GCF_013294 605.1	1.69	2.3	0.0	20.71	0.49	0.24
GCF_013294 555.1	1.61	2.3	0.0	19.61	2.02	0.72
GCF_013294 515.1	1.69	2.3	0.0	20.46	0.48	15.9
GCF_013294 505.1	1.69	2.3	0.0	20.58	0.49	15.9
GCF_013294 475.1	1.69	2.3	0.0	20.79	0.58	0.2
GCF_013294 465.1	1.69	2.3	0.0	20.59	0.48	0.23
GCF_013294 445.1	1.69	1.9	0.0	19.03	0.12	0.87
GCF_013294 405.1	1.61	2.3	0.0	20.46	5.70	0.36
GCF_013294 375.1	1.61	2.3	0.0	19.50	0.15	0.88
GCF_013294 345.1	1.61	2.3	0.0	19.56	2.94	1.03
GCF_013294 325.1	1.69	2.3	0.0	20.68	0.51	15.9
GCF_013294 205.1	1.61	2.3	0.0	19.51	0.17	15.9
GCF_013294 145.1	1.69	2.3	0.0	20.68	0.47	0.23
GCF_013149	0.81	0.8	0.0	19.42	0.07	0.04

715.1						
GCF_013149 705.1	0.81	0.8	0.0	19.36	0.07	0.06
GCF_013149 665.1	0.81	0.8	0.0	19.27	0.07	0.12
GCF_013149 605.1	0.81	0.8	0.0	19.26	0.07	0.07
GCF_013149 565.1	1.61	2.3	0.0	19.88	10.34	1.1
GCF_013149 465.1	0.81	0.8	0.0	19.50	0.07	13.67
GCF_013149 325.1	0.81	0.8	0.0	19.39	0.12	0.02
GCF_013112 415.1	0.00	1.1	0.0	22.18	0.14	1.13
GCF_009650 335.1	0.00	1.1	0.0	22.29	0.06	13.67
GCF_009650 315.1	0.00	1.1	0.0	22.16	0.06	13.67
GCF_006742 065.1	0.27	1.1	0.0	21.95	0.10	13.67
GCF_006016 075.1	0.81	0.8	0.0	29.01	0.06	10.13
GCF_005145 085.1	0.00	1.1	0.0	22.06	0.10	13.82
GCF_004328 885.1	0.00	0.4	0.0	24.40	0.28	10.13
GCF_004101 825.1	0.00	0.8	0.0	21.21	0.24	10.18
GCF_003606 265.1	0.16	0.8	0.0	21.40	0.20	10.18
GCF_003315 755.1	0.00	1.1	0.0	22.30	0.07	13.82
GCF_002327 205.1	0.00	0.4	0.0	24.05	0.26	10.13
GCF_002327 185.1	0.00	0.4	0.0	24.19	0.17	10.13
GCF_002003	0.81	0.8	0.0	19.30	0.06	13.67

385.1						
GCF_002003 365.1	0.81	0.8	0.0	19.46	0.08	13.67
GCF_002003 345.1	1.69	2.3	0.0	20.85	0.49	15.9
GCF_002003 325.1	0.81	0.8	0.0	19.29	0.07	13.67
GCF_002003 305.1	1.29	1.9	0.0	19.84	0.04	15.98
GCF_002003 285.1	0.81	0.8	0.0	19.39	0.07	13.67
GCF_001991 075.2	1.61	0.8	0.0	24.88	0.10	10.13
GCF_001886 875.1	0.00	1.1	0.0	22.13	0.17	13.82
GCF_001646 605.1	0.00	1.1	0.0	22.36	0.08	13.82
GCF_001456 065.2	0.00	1.5	0.0	22.12	0.10	13.82
GCF_001304 735.1	0.44	2.3	0.0	22.45	0.54	10.13
GCF_000878 275.1	0.00	1.1	0.0	22.27	0.15	13.82
GCF_000833 105.2	1.61	2.3	0.0	20.79	0.42	15.98
GCF_000827 955.1	0.00	0.4	0.0	23.23	0.13	10.59
GCF_000827 935.1	0.00	0.4	0.0	23.11	0.13	10.59
GCF_000767 745.1	1.61	2.3	0.0	20.35	0.60	13.78
GCF_000473 995.1	0.81	0.8	0.0	19.30	0.07	13.67
GCF_000340 885.1	1.69	1.9	0.0	19.05	0.11	16.01
GCF_000020 285.1	0.00	0.4	0.0	22.76	0.13	10.7
GCF_000016	1.61	2.3	0.0	20.46	0.62	13.78

965.1						
GCF_000013 285.1	0.00	0.8	0.0	22.66	0.54	10.13
GCF_002812 625.1	0.38	1.1	0.0	22.21	0.42	11.19
GCF_018884 665.1	0.37	1.5	0.02	22.00	0.49	0.48
GCF_002082 945.2	0.96	2.7	0.0	23.28	0.49	11.19
GCF_000235 605.1	0.51	2.3	0.0	22.97	0.00	15.98
GCF_013781 885.1	1.40	1.9	0.0	22.07	0.05	1.96
GCF_001465 175.1	0.00	1.1	0.0	22.42	0.09	13.82
GCF_018884 605.1	0.38	1.5	0.0	22.29	0.45	11.19
GCF_000687 955.1	0.70	1.1	0.0	23.30	33.06	10.13
GCF_003482 305.1	0.47	1.5	0.0	22.48	0.36	11.19
GCF_017751 145.1	1.75	1.2	0.0	24.39	0.65	1.15
GCF_000020 485.1	0.88	2.0	0.0	26.70	0.05	9.53
GCF_013295 945.1	1.69	1.9	0.0	21.00	0.55	15.9
GCF_009903 465.1	0.53	1.5	0.0	21.94	0.78	11.19
GCF_010586 925.1	0.78	1.0	0.0	24.95	0.21	9.26
GCF_006380 915.1	0.42	1.5	0.02	21.77	0.44	11.19
GCF_014174 405.1	0.00	0.4	0.0	20.38	20.90	1.23
GCF_000210 415.1	0.37	1.1	0.0	22.39	0.47	11.19
GCF_000214	0.32	1.1	0.0	26.38	16.57	10.29

455.1						
GCF_000007 085.1	0.60	0.6	0.0	29.83	0.15	9.5
GCF_900537 995.1	1.57	0.0	0.0	20.60	0.19	15.54
GCF_020991 205.1	0.78	0.5	0.0	26.21	1.30	0.01
GCF_017894 345.1	0.00	0.5	0.0	23.63	0.44	0.09
GCF_902386 585.1	0.00	0.2	0.0	21.56	0.36	9.88
GCF_900196 735.1	0.00	0.7	0.0	4.43	0.01	0.95
GCF_021091 115.1	0.00	0.7	0.0	4.96	0.01	0.42
GCF_020042 225.1	0.09	0.7	0.0	20.26	0.15	0.41
GCF_020042 125.1	0.09	0.7	0.0	20.64	0.14	0.62
GCF_019443 925.1	0.00	0.2	0.0	20.81	0.45	0.53
GCF_018987 235.1	0.09	0.5	0.0	21.14	0.06	0.26
GCF_018885 325.1	0.09	0.2	0.0	20.64	0.22	0.48
GCF_016767 795.1	0.09	0.5	0.0	21.50	0.10	0.36
GCF_016647 595.1	0.00	0.7	0.0	21.95	0.07	0.14
GCF_015709 185.1	0.00	0.0	0.0	22.56	0.60	9.92
GCF_015377 785.1	0.00	0.7	0.0	4.56	0.01	0.56
GCF_014656 585.1	0.32	0.0	0.0	22.03	0.52	9.92
GCF_013487 905.1	0.19	0.5	0.0	19.48	0.11	0.06
GCF_013456	0.00	0.5	0.0	20.67	0.15	0.6

995.1						
GCF_011044 195.1	0.00	0.7	0.0	4.27	0.01	0.82
GCF_009933 525.1	0.19	0.7	0.0	20.10	0.22	9.67
GCF_009769 205.1	0.00	0.2	0.0	20.20	0.09	9.17
GCF_009734 125.1	0.00	0.7	0.0	4.67	0.01	9.15
GCF_009184 665.1	1.21	0.5	0.0	20.71	0.50	9.82
GCF_006740 305.1	0.00	0.7	0.0	3.86	0.00	9.15
GCF_004114 755.1	0.00	0.0	0.0	22.11	0.59	9.92
GCF_003999 355.1	0.97	0.5	0.0	20.44	0.20	7.2
GCF_003971 565.1	0.09	0.2	0.0	21.18	0.17	9.87
GCF_003955 865.1	0.00	0.0	0.0	22.22	0.60	9.92
GCF_003795 065.1	0.65	0.7	0.0	21.38	0.16	9.81
GCF_003610 975.1	0.00	0.5	0.0	19.87	0.24	10.04
GCF_003597 655.1	0.00	0.5	0.0	4.80	0.01	9.15
GCF_003351 805.1	0.00	0.7	0.0	4.72	0.00	9.15
GCF_002849 955.1	0.00	0.2	0.0	21.39	0.32	10.08
GCF_002849 935.1	0.00	0.2	0.0	20.48	0.35	10.24
GCF_002285 775.1	0.00	0.7	0.0	5.87	0.01	9.95
GCF_002278 095.1	0.00	0.7	0.0	4.41	0.01	9.2
GCF_002142	0.00	0.7	0.0	3.80	0.01	9.15

575.1						
GCF_001953 135.1	0.00	0.5	0.0	4.54	0.01	9.15
GCF_001888 965.1	0.00	0.7	0.0	4.65	0.02	9.19
GCF_001888 925.1	0.65	2.0	0.0	2.92	0.01	9.15
GCF_001888 905.1	0.65	1.0	0.0	5.74	0.01	9.95
GCF_001746 265.1	0.00	0.2	0.0	21.02	0.43	9.88
GCF_001702 095.1	0.00	0.2	0.0	21.56	0.36	9.88
GCF_001469 775.1	0.08	1.0	0.0	4.11	0.00	9.15
GCF_001006 025.1	0.00	0.2	0.0	19.75	0.35	10.06
GCF_000525 715.1	0.32	0.0	0.0	21.14	0.32	9.1
GCF_000466 885.3	0.09	0.7	0.0	20.48	0.13	9.98
GCF_000422 165.1	0.00	0.2	0.0	19.40	0.30	10.15
GCF_000214 785.1	1.21	0.5	0.0	20.08	0.56	9.87
GCF_000189 515.1	1.62	1.2	0.0	22.24	0.49	10.08
GCF_000182 835.1	0.00	0.7	0.0	4.96	0.01	9.19
GCF_002970 935.1	1.13	0.0	0.0	38.02	0.28	9.77
GCF_002970 915.1	1.13	0.0	0.0	36.85	0.28	9.77
GCF_008694 205.1	0.65	0.7	0.0	20.22	2.03	8.82
GCF_001874 605.1	0.64	1.5	0.0	29.15	0.00	10.19
GCF_014058	0.00	0.5	0.0	27.19	0.32	9.18

685.1						
GCF_004010 015.1	0.00	1.0	0.0	25.96	0.48	9.15
GCF_000498 675.1	0.00	0.5	0.0	25.65	0.19	7.78
GCF_000193 435.2	0.00	0.2	0.0	22.72	1.70	10.02
GCF_020887 095.1	0.00	0.5	0.0	21.71	0.10	0.8
GCF_002762 335.1	0.00	0.0	0.0	32.59	0.00	7.24
GCF_021432 145.1	0.00	1.0	0.0	22.16	0.02	0.35
GCF_020883 435.1	0.00	1.0	0.0	22.06	0.02	0.34
GCF_020149 995.1	0.00	0.2	0.0	21.10	0.23	0.02
GCF_013342 945.1	0.00	0.7	0.0	22.04	0.05	9.28
GCF_003952 845.1	0.00	0.5	0.0	22.16	0.02	9.22
GCF_003047 065.1	1.52	1.7	0.0	21.88	0.01	9.28
GCF_002706 375.1	0.00	0.2	0.0	20.85	0.24	9.51
GCF_002286 215.1	0.00	0.7	0.0	22.00	0.04	9.28
GCF_002224 305.1	0.00	0.7	0.0	22.35	0.01	9.28
GCF_000961 015.1	0.00	0.2	0.0	20.23	0.34	10.04
GCF_000934 625.1	0.00	0.7	0.0	21.84	0.03	9.28
GCF_000389 675.2	0.00	0.7	0.0	22.04	0.04	9.28
GCF_000194 115.1	0.00	0.2	0.0	21.23	0.06	9.16
GCF_000191	0.00	0.2	0.0	21.18	0.13	9.19

545.1						
GCF_000011 985.1	0.00	0.7	0.0	22.03	0.04	9.28
GCF_021278 925.1	0.48	1.7	0.0	20.48	1.64	1.53
GCF_007570 935.1	0.00	0.5	0.0	20.87	39.73	9.33
GCF_001888 945.1	0.00	0.7	0.0	3.62	0.00	9.15
GCF_022213 385.1	0.00	0.5	0.0	26.79	0.35	0.03
GCF_021278 945.1	0.09	0.2	0.0	21.10	0.20	0.31
GCF_002849 915.1	0.00	0.2	0.0	20.83	0.34	10.03
GCF_004011 315.1	0.39	0.7	0.0	27.52	0.13	9.2
GCF_009730 255.1	0.00	0.0	0.0	22.55	0.05	5.1
GCF_001936 235.1	0.00	0.2	0.0	23.36	0.19	7.22
GCF_001308 285.1	0.32	0.0	0.0	22.27	0.60	10.05
GCF_900312 975.1	0.00	0.0	0.0	26.83	0.09	1.05
GCF_019597 925.1	0.00	0.0	0.0	24.37	0.06	1.25
GCF_014287 355.1	0.00	0.4	0.0	24.63	35.82	10.61
GCF_000145 275.1	1.61	1.9	0.0	17.96	0.02	15.83
GCF_021398 395.1	0.00	0.2	0.0	21.29	5.50	0.28
GCF_002075 105.1	0.32	0.5	0.0	20.14	0.20	7.2
GCF_000092 405.1	0.51	0.8	0.0	26.17	0.01	10.16
GCF_000686	0.40	0.0	0.0	20.06	21.52	10.8

065.1						
GCF_000746 025.2	1.91	1.4	0.0	27.58	0.00	10.66
GCF_009730 275.1	0.09	0.7	0.0	21.36	0.08	9.87
GCF_009498 395.1	0.00	0.2	0.0	19.30	0.31	10.06
GCF_001888 985.1	0.00	0.7	0.0	1.57	0.01	9.15
GCF_000015 385.1	0.00	0.5	0.0	20.86	0.46	9.88
GCF_900155 615.1	0.00	0.4	0.0	22.62	14.51	1.29
GCF_022174 665.1	0.00	0.0	0.0	21.87	0.04	1.05
GCF_014467 055.1	0.00	0.4	0.0	24.28	0.00	1.61
GCF_013340 725.1	0.00	0.8	0.0	28.99	0.09	8.58
GCF_013315 815.1	0.00	1.6	0.0	29.92	0.10	9.05
GCF_006714 885.1	1.36	2.4	0.0	24.75	21.38	13.44
GCF_004154 955.1	0.00	0.0	0.0	22.94	0.26	10.55
GCF_002564 155.1	0.00	0.0	0.0	21.95	1.05	10.56
GCF_020892 115.1	0.00	0.0	0.0	24.79	0.04	0.41
GCF_000723 465.1	0.00	0.0	0.0	20.06	0.05	10.62
GCF_900461 425.1	0.14	1.9	0.0	24.31	1.21	10.13
GCF_900447 145.1	0.14	1.9	0.0	24.22	1.05	0.0
GCF_900187 165.1	0.87	0.4	0.0	27.27	0.24	0.01
GCF_019056	0.74	1.5	0.0	22.18	0.85	13.67

555.1						
GCF_004006 395.2	1.76	1.1	0.0	22.71	0.34	13.67
GCF_003013 635.1	0.10	1.9	0.0	25.01	0.16	10.13
GCF_001484 725.1	0.50	1.5	0.0	22.92	38.58	12.63
GCF_000253 195.1	0.00	0.8	0.0	22.62	0.54	10.7
GCF_000143 685.1	0.50	1.5	0.0	23.17	41.85	13.67
GCF_000484 505.1	0.50	1.5	0.0	22.82	38.96	12.63
GCF_012317 385.1	0.00	1.1	0.0	24.06	0.24	10.13
GCF_010669 305.1	1.06	0.4	0.0	19.34	0.00	10.61
GCF_000018 325.1	0.95	0.4	0.0	25.01	0.01	10.69
GCF_000270 305.1	1.72	0.0	0.0	25.00	0.03	10.29
GCF_900446 985.1	0.87	0.8	0.0	26.88	1.72	0.23
GCF_008281 175.1	0.00	0.4	0.0	23.67	0.00	13.24
GCF_000305 935.1	0.00	0.8	0.0	24.52	0.03	9.85
GCF_000196 455.1	1.40	1.1	0.0	27.29	0.01	10.56
GCF_900452 355.1	0.43	1.2	0.0	27.92	0.29	1.56
GCF_013487 865.1	0.00	0.5	0.0	26.94	0.23	0.04
GCF_001714 745.1	0.00	0.5	0.0	26.51	0.35	9.23
GCF_000014 425.1	0.00	0.5	0.0	27.04	0.36	9.15
GCF_900070	1.68	0.0	0.0	25.38	0.08	0.36

325.1						
GCF_900447 065.1	0.00	0.4	0.0	22.86	0.38	0.29
GCF_013407 315.1	0.81	0.4	0.0	19.28	0.06	0.07
GCF_013297 165.1	1.61	1.9	0.0	19.00	0.09	1.05
GCF_003628 755.1	0.81	0.4	0.0	23.83	0.03	10.14
GCF_002312 985.1	0.00	0.8	0.0	22.37	0.54	10.13
GCF_012848 655.1	1.52	1.0	0.0	20.28	0.04	7.2
GCF_008831 485.1	0.87	0.2	0.0	21.04	0.03	7.2
GCF_001042 405.1	1.39	1.0	0.0	20.22	0.15	7.35
GCF_000056 065.1	0.00	0.5	0.0	4.44	0.01	9.15
GCF_014467 015.1	0.00	1.4	0.0	23.53	0.02	1.36
GCF_000020 005.1	1.69	1.2	0.0	23.05	0.00	10.52
GCF_003057 965.1	1.72	0.2	0.0	25.45	0.10	8.32
GCF_000212 395.1	1.72	0.4	0.0	25.40	0.03	8.82
GCF_000007 625.1	0.14	1.9	0.0	24.51	0.49	10.13
GCF_016766 995.1	0.50	1.5	0.0	22.27	0.29	0.41
GCF_020892 095.1	0.88	0.0	0.0	25.90	0.08	0.66
GCF_000328 625.1	0.00	1.2	0.0	27.01	0.03	9.84
GCF_001940 235.1	0.71	1.1	0.0	20.83	15.95	10.13
GCF_003932	0.32	0.4	0.0	26.59	0.00	9.52

015.1						
GCF_000018 425.1	0.32	0.4	0.0	25.55	0.00	10.09
GCF_000092 965.1	0.24	0.0	0.0	30.81	1.75	9.83
GCF_017301 615.1	1.80	1.6	0.0	28.54	0.01	0.81
GCF_003457 035.1	0.67	1.1	0.0	21.96	0.32	11.19
GCF_003457 015.1	0.67	1.1	0.0	21.95	0.29	11.19
GCF_003456 975.1	0.67	1.1	0.0	21.89	0.34	11.19
GCF_003697 225.1	0.34	1.5	0.0	22.66	0.33	10.98
GCF_003697 205.1	0.34	1.5	0.0	22.59	0.36	10.98
GCF_000009 905.1	0.03	0.8	0.0	21.80	0.00	11.85
GCF_000732 725.1	1.63	0.8	0.0	20.85	16.97	15.54
GCF_004103 755.1	0.00	1.6	0.0	26.15	0.02	10.66
GCF_902376 065.1	0.81	0.8	0.0	26.43	18.91	0.46
GCF_900087 015.1	0.81	0.8	0.0	26.43	18.91	0.46
GCF_002285 495.1	1.24	1.5	0.0	25.63	0.20	9.76
GCF_000213 255.1	1.48	0.8	0.0	24.80	0.02	10.56
GCF_900683 755.1	0.16	0.8	0.0	19.40	0.05	15.74
GCF_000243 135.2	1.36	0.0	0.0	24.14	0.01	10.6
GCF_003614 235.1	0.69	1.1	0.0	23.85	36.30	9.77
GCF_000163	0.70	1.9	0.0	27.12	0.40	7.39

895.2						
GCF_900683 775.1	0.00	0.8	0.0	20.78	0.06	15.66
GCF_000688 015.1	0.35	0.4	0.0	18.82	14.46	8.87
GCF_014303 955.1	1.68	1.6	0.0	23.16	0.00	2.16
GCF_009738 535.1	0.65	0.2	0.0	22.61	0.10	7.35
GCF_003173 695.1	1.14	0.5	0.0	18.55	0.64	7.78
GCF_000761 135.1	1.14	0.5	0.0	18.57	0.39	7.78
GCF_900095 895.1	0.93	2.3	0.0	23.32	0.47	3.09
GCF_018603 475.1	0.37	1.5	0.0	23.35	0.27	0.75
GCF_018603 455.1	0.37	1.5	0.0	23.26	0.26	0.75
GCF_018603 395.1	0.37	1.5	0.0	23.28	0.28	0.75
GCF_016767 135.1	1.99	1.9	0.0	22.36	0.28	0.66
GCF_016767 115.1	1.83	1.5	0.0	22.56	0.28	10.98
GCF_016767 095.1	1.42	3.4	0.0	22.85	0.40	2.95
GCF_016767 055.1	0.99	1.5	0.0	22.86	0.39	10.98
GCF_016767 035.1	0.99	1.5	0.0	22.35	0.35	0.47
GCF_016767 015.1	0.99	1.5	0.0	22.22	0.30	1.43
GCF_016766 975.1	1.47	1.9	0.0	22.91	0.37	1.36
GCF_016766 955.1	0.69	1.5	0.0	23.47	0.43	1.17
GCF_003482	0.53	1.5	0.0	22.95	0.39	10.98

365.1						
GCF_003482 165.1	0.53	1.5	0.0	23.18	0.34	11.19
GCF_002946 555.2	0.53	1.5	0.0	23.06	0.34	10.98
GCF_002946 535.2	0.53	1.5	0.0	22.87	0.35	10.98
GCF_002946 515.2	0.53	1.5	0.0	23.01	0.34	10.98
GCF_001972 115.1	0.34	1.5	0.02	22.97	0.39	10.98
GCF_018884 725.1	0.50	1.5	0.0	22.46	0.25	0.51
GCF_003287 895.1	0.32	0.4	0.0	25.04	0.14	10.66
GCF_000210 435.1	0.37	1.5	0.0	23.07	0.42	10.98
GCF_000144 695.1	0.00	0.8	0.0	28.70	0.02	9.91
GCF_019469 365.1	0.84	0.5	0.0	19.91	0.00	9.19
GCF_019469 345.1	1.58	0.5	0.0	18.79	0.01	1.5
GCF_019469 325.1	1.49	0.2	0.0	19.89	0.00	0.87
GCF_019469 265.1	1.49	0.5	0.0	20.01	0.01	1.11
GCF_003202 825.1	1.62	0.2	0.0	18.72	27.96	9.29
GCF_003151 025.1	0.97	0.5	0.0	18.87	0.04	9.18
GCF_000014 725.1	0.21	1.5	0.0	23.19	0.00	10.38
GCF_003150 935.1	0.76	0.5	0.0	19.31	0.00	5.54
GCF_015140 235.1	0.00	0.0	0.0	24.62	0.04	1.24
GCF_005222	0.34	0.0	0.0	23.79	0.01	10.45

505.1						
GCF_005121 165.2	0.00	0.0	0.0	21.21	42.86	14.17
GCF_003612 855.1	0.34	0.0	0.0	23.55	0.01	10.52
GCF_003612 835.1	0.34	0.0	0.0	24.08	0.01	10.45
GCF_003020 045.1	0.34	0.0	0.0	23.77	0.01	10.45
GCF_000178 115.2	0.34	0.0	0.0	23.65	0.01	10.45
GCF_009734 445.1	1.06	0.4	0.0	25.56	0.02	10.11
GCF_000213 235.1	0.96	1.3	0.0	28.99	0.00	10.06
GCF_000328 765.2	0.96	1.1	0.0	28.87	0.00	10.06
GCF_001561 955.1	0.00	1.1	0.0	21.87	0.00	10.58
GCF_010120 715.1	0.35	1.5	0.0	17.98	0.01	10.66
GCF_015159 595.1	0.00	0.4	0.0	25.31	0.00	10.85
GCF_006408 235.1	0.37	1.5	0.0	22.64	0.36	11.19
GCF_010669 085.1	0.35	0.4	0.0	26.13	0.06	9.5
GCF_003600 355.1	1.38	0.4	0.0	26.26	0.06	10.13
GCF_013363 915.1	0.00	0.5	0.0	23.80	18.35	0.34
GCF_000144 645.1	0.00	0.2	0.0	30.42	0.00	9.75
GCF_000955 745.1	1.11	0.6	0.0	23.74	43.82	10.37
GCF_018919 205.1	0.67	0.0	0.0	22.31	7.18	12.1
GCF_003718	1.61	0.8	0.0	25.98	0.07	10.13

715.1						
GCF_000025 225.2	0.71	0.0	0.0	27.62	0.14	5.19
GCF_003017 335.1	0.00	1.1	0.0	23.01	24.47	10.98
GCF_018408 575.1	0.67	0.4	0.0	23.26	0.10	0.47

Table S1: Level of contamination estimation in reference genomes for the six tools

type	rank	# simulations
rate0-all	phylum	92
rate0-all	class	133
rate0-all	order	114
rate0-all	family	132
rate0-all	genus	117
rate0-all	species	89
rate10-all	phylum	38
rate10-all	class	109
rate10-all	order	125
rate10-all	family	79
rate10-all	genus	107
rate10-all	species	44
rate25-all	phylum	63
rate25-all	class	52
rate25-all	order	137
rate25-all	family	87
rate25-all	genus	134
rate25-all	species	100
rate0-redundant	phylum	67

rate0-redundant	class	114
rate0-redundant	order	108
rate0-redundant	family	115
rate0-redundant	genus	120
rate0-redundant	species	153
rate0-replacement	phylum	83
rate0-replacement	class	110
rate0-replacement	order	129
rate0-replacement	family	52
rate0-replacement	genus	126
rate0-replacement	species	153
rate0-single	phylum	106
rate0-single	class	121
rate0-single	order	118
rate0-single	family	66
rate0-single	genus	138
rate0-single	species	107

Table S2: Number of simulations used.

trial	rank	redundant level	replacement level	single level	median simulation
rate0-all	phylum	2.0	2.0	4.0	4.811932623820972
rate0-all	class	2.0	2.0	4.0	4.873136198540901
rate0-all	order	2.0	2.0	4.0	5.019076210557307
rate0-all	family	3.0	3.0	4.0	6.1572178296457345
rate0-all	genus	4.0	4.0	3.0	6.577107768849444
rate0-all	species	4.0	4.0	2.0	6.13509647963616
rate10-all	phylum	2.0	2.0	4.0	4.834503241391079
rate10-all	class	2.0	2.0	4.0	4.878188356692574
rate10-all	order	2.0	2.0	4.0	4.846119892534356

rate10-all	family	3.0	3.0	4.0	6.3780520629573765
rate10-all	genus	4.0	4.0	3.0	6.756596677229247
rate10-all	species	4.0	2.0	4.0	5.846661435621631
rate25-all	phylum	2.0	2.0	4.0	4.908778572089017
rate25-all	class	3.0	3.0	4.0	6.272828793654588
rate25-all	order	2.0	2.0	4.0	5.017066148552706
rate25-all	family	3.0	3.0	4.0	5.839175682683982
rate25-all	genus	4.0	4.0	3.0	6.72012660353524
rate25-all	species	4.0	4.0	2.0	5.8049846004168515
rate0-redundant	phylum	4.0	0.0	0.0	2.6791541661854485
rate0-redundant	class	4.0	0.0	0.0	2.530434968221652
rate0-redundant	order	4.0	0.0	0.0	2.669250167328002
rate0-redundant	family	6.0	0.0	0.0	3.891735096323639
rate0-duplication	genus	8.0	0.0	0.0	5.2260866932698065
rate0-redundant	species	8.0	0.0	0.0	5.008258180235766
rate0-replacement	phylum	0.0	4.0	0.0	2.7405731208809545
rate0-replacement	class	0.0	4.0	0.0	2.851081057089025
rate0-replacement	order	0.0	4.0	0.0	2.8589954433991465
rate0-replacement	family	0.0	6.0	0.0	4.151663232543372
rate0-replacement	genus	0.0	8.0	0.0	5.361825783843343
rate0-replacement	species	0.0	8.0	0.0	5.2731246552877575
rate0-single	phylum	0.0	0.0	8.0	4.113109358121008
rate0-single	class	0.0	0.0	8.0	4.756249845972857
rate0-single	order	0.0	0.0	8.0	4.444640457488092

rate0-single	family	0.0	0.0	8.0	4.73017412136555
rate0-single	genus	0.0	0.0	3.0	1.6826151227745412
rate0-single	species	0.0	0.0	2.0	1.017128662251577

Table S3: Chimeric levels of the simulations.

type	rank	tool	percentage of underdetection	median under detection	median simulation
rate0-all	phylum	CheckM	2.1739130434782608	0.547367806281502	4.811932623820972
rate0-all	phylum	BUSCO	20.652173913043477	2.9391841151873885	4.811932623820972
rate0-all	phylum	GUNC	59.78260869565217	4.85858972795982	4.811932623820972
rate0-all	phylum	Physeter	30.434782608695656	2.43565650512042	4.811932623820972
rate0-all	phylum	Kraken2	16.304347826086957	0.12644517470050687	4.811932623820972
rate0-all	phylum	CheckM2	2.1739130434782608	0.34084134735905547	4.811932623820972
rate0-all	class	CheckM	3.007518796992481	1.341675015238512	4.873136198540901
rate0-all	class	BUSCO	8.270676691729323	0.8906496557598418	4.873136198540901
rate0-all	class	GUNC	65.41353383458647	4.852431908251488	4.873136198540901
rate0-all	class	Physeter	0	NA	4.873136198540901
rate0-all	class	Kraken2	30.075187969924812	2.1689779719793023	4.873136198540901
rate0-all	class	CheckM2	6.015037593984962	0.9509236442434488	4.873136198540901
rate0-all	order	CheckM	7.894736842105263	3.672384429609872	5.019076210557307
rate0-all	order	BUSCO	15.789473684210526	1.2571785767979746	5.019076210557307
rate0-all	order	GUNC	78.94736842105263	4.98685311620279	5.019076210557307

rate0-all	order	Physeter	0	NA	5.019076210557307
rate0-all	order	Kraken2	13.157894736842104	0.08705687914697613	5.019076210557307
rate0-all	order	CheckM2	13.157894736842104	0.6699853979044166	5.019076210557307
rate0-all	family	CheckM	0	NA	6.1572178296457345
rate0-all	family	BUSCO	3.787878787878788	0.8099278755693158	6.1572178296457345
rate0-all	family	GUNC	63.63636363636363	6.155475937044468	6.1572178296457345
rate0-all	family	Physeter	0	NA	6.1572178296457345
rate0-all	family	Kraken2	15.909090909090909	0.48133315562017387	6.1572178296457345
rate0-all	family	CheckM2	6.818181818181818	1.216142742601419	6.1572178296457345
rate0-all	genus	CheckM	5.982905982905983	3.2880552800398446	6.577107768849444
rate0-all	genus	BUSCO	11.111111111111111	1.6897786638765142	6.577107768849444
rate0-all	genus	GUNC	100.0	6.566047006234399	6.577107768849444
rate0-all	genus	Physeter	2.564102564102564	1.6127173173577631	6.577107768849444
rate0-all	genus	Kraken2	51.28205128205128	3.702722366008586	6.577107768849444
rate0-all	genus	CheckM2	12.82051282051282	0.8280552800398446	6.577107768849444
rate0-all	species	CheckM	19.101123595505616	1.0230093681452876	6.13509647963616
rate0-all	species	BUSCO	33.70786516853933	2.966149927016671	6.13509647963616
rate0-all	species	GUNC	100.0	6.099406536092411	6.13509647963616
rate0-all	species	Physeter	2.247191011235955	1.1266853151578897	6.13509647963616

rate0-all	species	Kraken2	97.75280898876404	5.708448938543611	6.13509647963616
rate0-all	species	CheckM2	23.595505617977526	1.17896236484225	6.13509647963616
rate0-redundant	phylum	CheckM	0	NA	2.6791541661854485
rate0-redundant	phylum	BUSCO	10.44776119402985	0.8777160613884001	2.6791541661854485
rate0-redundant	phylum	GUNC	49.25373134328358	2.7680049896122947	2.6791541661854485
rate0-redundant	phylum	Physeter	32.83582089552239	0.2752726041623468	2.6791541661854485
rate0-redundant	phylum	Kraken2	10.44776119402985	0.9663416075099855	2.6791541661854485
rate0-redundant	phylum	CheckM2	0	NA	2.6791541661854485
rate0-redundant	class	CheckM	0.8771929824561403	0.0738489295303495	2.530434968221652
rate0-redundant	class	BUSCO	0.8771929824561403	2.0638489295303493	2.530434968221652
rate0-redundant	class	GUNC	63.1578947368421	2.518422922309708	2.530434968221652
rate0-redundant	class	Physeter	0	NA	2.530434968221652
rate0-redundant	class	Kraken2	4.385964912280701	0.007164387608035838	2.530434968221652
rate0-redundant	class	CheckM2	0	NA	2.530434968221652
rate0-redundant	order	CheckM	0.9259259259259258	0.6612448837864955	2.669250167328002
rate0-redundant	order	BUSCO	0.9259259259259258	0.08914031096218045	2.669250167328002
rate0-redundant	order	GUNC	62.03703703703704	2.6702495466883254	2.669250167328002
rate0-redundant	order	Physeter	0	NA	2.669250167328002
rate0-redundant	order	Kraken2	13.8888888888888889	0.12302928900511256	2.669250167328002

rate0-redundant	order	CheckM2	0	NA	2.669250167328002
rate0-redundant	family	CheckM	0	NA	3.891735096323639
rate0-redundant	family	BUSCO	0	NA	3.891735096323639
rate0-redundant	family	GUNC	71.30434782608695	3.797801660687545	3.891735096323639
rate0-redundant	family	Physeter	0	NA	3.891735096323639
rate0-redundant	family	Kraken2	4.3478260869565215	0.7405467250892177	3.891735096323639
rate0-redundant	family	CheckM2	0	NA	3.891735096323639
rate0-redundant	genus	CheckM	0	NA	5.2260866932698065
rate0-redundant	genus	BUSCO	0.833333333333333334	1.527495927267415	5.2260866932698065
rate0-redundant	genus	GUNC	98.3333333333333333	5.221863701029459	5.2260866932698065
rate0-redundant	genus	Physeter	3.333333333333333335	0.9145162254893897	5.2260866932698065
rate0-redundant	genus	Kraken2	48.333333333333333336	2.925491955486992	5.2260866932698065
rate0-redundant	genus	CheckM2	0	NA	5.2260866932698065
rate0-redundant	species	CheckM	2.6143790849673203	1.6146680333416403	5.008258180235766
rate0-redundant	species	BUSCO	11.111111111111111111	0.23635017980810868	5.008258180235766
rate0-redundant	species	GUNC	99.34640522875817	4.980161206953943	5.008258180235766
rate0-redundant	species	Physeter	1.3071895424836601	0.8846836918623215	5.008258180235766
rate0-redundant	species	Kraken2	96.73202614379085	4.596433622837286	5.008258180235766
rate0-redundant	species	CheckM2	1.3071895424836601	0.4133483116012959	5.008258180235766

rate0-replacement	phylum	CheckM	60.24096385542169	2.4228506140333854	2.7405731208809545
rate0-replacement	phylum	BUSCO	100.0	2.270097042264002	2.7405731208809545
rate0-replacement	phylum	GUNC	83.13253012048193	2.7411761428531634	2.7405731208809545
rate0-replacement	phylum	Physeter	24.096385542168676	0.36839986350913034	2.7405731208809545
rate0-replacement	phylum	Kraken2	10.843373493975903	0.018144475806775695	2.7405731208809545
rate0-replacement	phylum	CheckM2	100.0	2.488929284161979	2.7405731208809545
rate0-replacement	class	CheckM	76.36363636363637	2.672664125650027	2.851081057089025
rate0-replacement	class	BUSCO	77.27272727272727	2.146217830384028	2.851081057089025
rate0-replacement	class	GUNC	91.81818181818183	2.8609219677617013	2.851081057089025
rate0-replacement	class	Physeter	0	NA	2.851081057089025
rate0-replacement	class	Kraken2	10.0	0.02926693418010551	2.851081057089025
rate0-replacement	class	CheckM2	96.36363636363636	2.3204636993396153	2.851081057089025
rate0-replacement	order	CheckM	70.54263565891473	2.718348929830576	2.8589954433991465
rate0-replacement	order	BUSCO	100.0	2.088465997125148	2.8589954433991465
rate0-replacement	order	GUNC	92.24806201550388	2.8589954433991465	2.8589954433991465
rate0-replacement	order	Physeter	0	NA	2.8589954433991465
rate0-replacement	order	Kraken2	16.27906976744186	0.3167954719175756	2.8589954433991465
rate0-replacement	order	CheckM2	97.67441860465115	2.2534782952096934	2.8589954433991465
rate0-replacement	family	CheckM	100.0	3.7773010142772687	4.151663232543372

rate0-replacement	family	BUSCO	100.0	3.537099035261738	4.151663232543372
rate0-replacement	family	GUNC	94.23076923076923	4.1614971120859305	4.151663232543372
rate0-replacement	family	Physeter	0	NA	4.151663232543372
rate0-replacement	family	Kraken2	26.923076923076923	0.053355342473088596	4.151663232543372
rate0-replacement	family	CheckM2	98.07692307692307	3.5289765857154545	4.151663232543372
rate0-replacement	genus	CheckM	100.0	5.13551635367378	5.361825783843343
rate0-replacement	genus	BUSCO	100.0	4.578141603203857	5.361825783843343
rate0-replacement	genus	GUNC	100.0	5.361825783843343	5.361825783843343
rate0-replacement	genus	Physeter	4.761904761904762	0.34935489267373	5.361825783843343
rate0-replacement	genus	Kraken2	53.96825396825397	2.5090024296601556	5.361825783843343
rate0-replacement	genus	CheckM2	100.0	4.642534208737596	5.361825783843343
rate0-replacement	species	CheckM	100.0	4.948345885778904	5.2731246552877575
rate0-replacement	species	BUSCO	100.0	4.282675557042158	5.2731246552877575
rate0-replacement	species	GUNC	100.0	5.2731246552877575	5.2731246552877575
rate0-replacement	species	Physeter	2.6143790849673203	0.8762394590079698	5.2731246552877575
rate0-replacement	species	Kraken2	97.38562091503267	4.924367217932163	5.2731246552877575
rate0-replacement	species	CheckM2	99.34640522875817	4.64342400971791	5.2731246552877575
rate0-single	phylum	CheckM	98.11320754716981	2.753690553138729	4.113109358121008
rate0-single	phylum	BUSCO	100.0	3.3615234871499187	4.113109358121008

rate0-single	phylum	GUNC	62.2641509433962 24	4.0632742976578 63	4.11310935812 1008
rate0-single	phylum	Physeter	24.5283018867924 52	2.4590398990019 97	4.11310935812 1008
rate0-single	phylum	Kraken2	5.66037735849056 7	0.0332836773839 16466	4.11310935812 1008
rate0-single	phylum	CheckM2	96.2264150943396 3	3.0110062558574 7	4.11310935812 1008
rate0-single	class	CheckM	100.0	3.3957506248593 834	4.75624984597 2857
rate0-single	class	BUSCO	100.0	3.8280322020257 986	4.75624984597 2857
rate0-single	class	GUNC	66.9421487603305 8	4.7620339990797 52	4.75624984597 2857
rate0-single	class	Physeter	0	NA	4.75624984597 2857
rate0-single	class	Kraken2	22.3140495867768 6	2.3301373777536 67	4.75624984597 2857
rate0-single	class	CheckM2	99.1735537190082 7	3.6710371739564 2	4.75624984597 2857
rate0-single	order	CheckM	100.0	3.3533254432998 714	4.44464045748 8092
rate0-single	order	BUSCO	100.0	3.5776031453959 72	4.44464045748 8092
rate0-single	order	GUNC	69.4915254237288 2	4.4929724040431 9	4.44464045748 8092
rate0-single	order	Physeter	0	NA	4.44464045748 8092
rate0-single	order	Kraken2	19.4915254237288 13	0.0454989284027 7536	4.44464045748 8092
rate0-single	order	CheckM2	96.6101694915254 3	3.5852017761205 186	4.44464045748 8092
rate0-single	family	CheckM	100.0	3.8815283203406 183	4.73017412136 555
rate0-single	family	BUSCO	100.0	4.0270798805694 84	4.73017412136 555
rate0-single	family	GUNC	89.3939393939393 9	4.5112524935682 01	4.73017412136 555

rate0-single	family	Physeter	0	NA	4.73017412136555
rate0-single	family	Kraken2	16.6666666666666664	0.5812524935682011	4.73017412136555
rate0-single	family	CheckM2	100.0	3.892943683145122	4.73017412136555
rate0-single	genus	CheckM	91.30434782608695	1.341065010205717	1.6826151227745412
rate0-single	genus	BUSCO	88.40579710144928	0.8779338870099609	1.6826151227745412
rate0-single	genus	GUNC	94.20289855072464	1.6586791330048318	1.6826151227745412
rate0-single	genus	Physeter	0	NA	1.6826151227745412
rate0-single	genus	Kraken2	33.333333333333333	0.7395275004820205	1.6826151227745412
rate0-single	genus	CheckM2	92.02898550724638	1.1865059793997539	1.6826151227745412
rate0-single	species	CheckM	81.30841121495327	0.9039737079849057	1.017128662251577
rate0-single	species	BUSCO	57.943925233644855	0.6150415134750611	1.017128662251577
rate0-single	species	GUNC	97.19626168224299	1.0152493692973965	1.017128662251577
rate0-single	species	Physeter	0	NA	1.017128662251577
rate0-single	species	Kraken2	85.04672897196261	0.6839737079849058	1.017128662251577
rate0-single	species	CheckM2	73.83177570093457	0.6048218745330745	1.017128662251577

Table S4: Underdetection of the tools.