

**Table S1:** List of 65 fungi and 65 bacterial whole genomes downloaded from NCBI

<b>Microbial group</b>	<b>Phylum</b>	<b>Species</b>	<b>RefSeq Identifier</b>
Fungi (65)	<i>Ascomycota</i>	<i>Alternaria infectoria</i>	GCF_024043175.1
	<i>Ascomycota</i>	<i>Aspergillus fischeri</i>	GCF_000149645.3
	<i>Ascomycota</i>	<i>Aspergillus flavus</i>	GCF_014117465.1
	<i>Ascomycota</i>	<i>Aspergillus japonicus</i>	GCF_003184785.1
	<i>Ascomycota</i>	<i>Aspergillus terreus</i>	GCF_000149615.1
	<i>Ascomycota</i>	<i>Aspergillus versicolor</i>	GCF_001890125.1
	<i>Ascomycota</i>	<i>Aureobasidium melanogenum</i>	GCF_000721775.1
	<i>Ascomycota</i>	<i>Beauveria bassiana</i>	GCF_000280675.1
	<i>Ascomycota</i>	<i>Bipolaris maydis</i>	GCF_000354255.1
	<i>Ascomycota</i>	<i>Bipolaris oryzae</i>	GCF_000523455.1
	<i>Ascomycota</i>	<i>Bipolaris sorokiniana</i>	GCF_000338995.1
	<i>Ascomycota</i>	<i>Bipolaris zeicola</i>	GCF_000523435.1
	<i>Ascomycota</i>	<i>Botrytis cinerea</i>	GCF_000143535.2
	<i>Ascomycota</i>	<i>Cercospora beticola</i>	GCF_002742065.1
	<i>Ascomycota</i>	<i>Chaetomium globosum</i>	GCF_000143365.1
	<i>Ascomycota</i>	<i>Cladophialophora carrionii</i>	GCF_000365165.1
	<i>Ascomycota</i>	<i>Clavispora lusitaniae</i>	GCF_000003835.1
	<i>Ascomycota</i>	<i>Colletotrichum graminicola</i>	GCF_000149035.1
	<i>Ascomycota</i>	<i>Colletotrichum karsti</i>	GCF_011947395.1
	<i>Ascomycota</i>	<i>Cordyceps fumosorosea</i>	GCF_001636725.1
	<i>Ascomycota</i>	<i>Cordyceps militaris</i>	GCF_000225605.1
	<i>Ascomycota</i>	<i>Daldinia childiae</i>	GCF_008694065.1
	<i>Ascomycota</i>	<i>Daldinia loculata</i>	GCF_022478755.1
	<i>Ascomycota</i>	<i>Debaryomyces hansenii</i>	GCF_000006445.2
	<i>Ascomycota</i>	<i>Diaporthe amygdali</i>	GCF_026229845.1
	<i>Ascomycota</i>	<i>Exophiala dermatitidis</i>	GCF_000230625.1
	<i>Ascomycota</i>	<i>Exophiala oligosperma</i>	GCF_000835515.1
	<i>Ascomycota</i>	<i>Exophiala xenobiotica</i>	GCF_000835505.1
	<i>Ascomycota</i>	<i>Fusarium keratoplasticum</i>	GCF_025433545.1
		<i>Ascomycota</i>	<i>Histoplasma capsulatum</i>

<i>Ascomycota</i>	<i>Kluyveromyces marxianus</i>	GCF_001417885.1
<i>Ascomycota</i>	<i>Lachancea thermotolerans</i>	GCF_000142805.1
<i>Ascomycota</i>	<i>Metarhizium robertsii</i>	GCF_000187425.2
<i>Ascomycota</i>	<i>Meyerozyma guilliermondii</i>	GCF_000149425.1
<i>Ascomycota</i>	<i>Microsporum canis</i>	GCF_000151145.1
<i>Ascomycota</i>	<i>Paraphaeosphaeria sporulosa</i>	GCF_001642045.1
<i>Ascomycota</i>	<i>Penicillium digitatum</i>	GCF_000315645.1
<i>Ascomycota</i>	<i>Penicillium oxalicum</i>	GCF_001723175.1
<i>Ascomycota</i>	<i>Pichia membranifaciens</i>	GCF_001661235.1
<i>Ascomycota</i>	<i>Pseudogymnoascus destructans</i>	GCF_000184105.1
<i>Ascomycota</i>	<i>Purpureocillium lilacinum</i>	GCF_001653265.1
<i>Ascomycota</i>	<i>Pyrenophora tritici-repentis</i>	GCF_000149985.1
<i>Ascomycota</i>	<i>Saccharomyces cerevisiae</i>	GCF_000146045.2
<i>Ascomycota</i>	<i>Saccharomyces paradoxus</i>	GCF_002079055.1
<i>Ascomycota</i>	<i>Sclerotinia sclerotiorum</i>	GCF_000146945.2
<i>Ascomycota</i>	<i>Talaromyces amestolkiae</i>	GCF_001896365.1
<i>Ascomycota</i>	<i>Talaromyces marneffeii</i>	GCF_009556855.1
<i>Ascomycota</i>	<i>Trichoderma citrinoviride</i>	GCF_003025115.1
<i>Ascomycota</i>	<i>Trichoderma virens</i>	GCF_000170995.1
<i>Ascomycota</i>	<i>Trichophyton rubrum</i>	GCF_000151425.1
<i>Ascomycota</i>	<i>Trichophyton verrucosum</i>	GCF_000151505.1
<i>Ascomycota</i>	<i>Ustilaginoidea virens</i>	GCF_000687475.1
<i>Ascomycota</i>	<i>Verticillium dahliae</i>	GCF_000150675.1
<i>Ascomycota</i>	<i>Wickerhamomyces anomalus</i>	GCF_001661255.1
<i>Ascomycota</i>	<i>Zygosaccharomyces rouxii</i>	GCF_000026365.1
<i>Basidiomycota</i>	<i>Agaricus bisporus</i>	GCF_000300555.1
<i>Basidiomycota</i>	<i>Cryptococcus gattii</i>	GCF_000185945.1
<i>Basidiomycota</i>	<i>Cryptococcus neoformans</i>	GCF_000091045.1
<i>Basidiomycota</i>	<i>Laetiporus sulphureus</i>	GCF_001632365.1
<i>Basidiomycota</i>	<i>Malassezia pachydermatis</i>	GCF_001278385.1
<i>Basidiomycota</i>	<i>Malassezia sympodialis</i>	GCF_000349305.1

	<i>Basidiomycota</i>	<i>Puccinia graminis</i>	GCF_000149925.1
	<i>Basidiomycota</i>	<i>Schizophyllum commune</i>	GCF_000143185.2
	<i>Basidiomycota</i>	<i>Trametes versicolor</i>	GCF_000271585.1
	<i>Basidiomycota</i>	<i>Trichosporon asahii</i>	GCF_000293215.1
Bacteria	<i>Proteobacteria</i>	<i>Escherichia coli</i>	GCF_000005845.2
	<i>Proteobacteria</i>	<i>Yersinia pestis</i>	GCF_000006645.1
	<i>Proteobacteria</i>	<i>Xylella fastidiosa</i>	GCF_000006725.1
	<i>Proteobacteria</i>	<i>Vibrio cholerae</i>	GCF_000006745.1
	<i>Proteobacteria</i>	<i>Pseudomonas aeruginosa</i>	GCF_000006765.1
	<i>Proteobacteria</i>	<i>Pasteurella multocida</i>	GCF_000006825.1
	<i>Proteobacteria</i>	<i>Neisseria gonorrhoeae</i>	GCF_000006845.1
	<i>Proteobacteria</i>	<i>Caulobacter vibrioides</i>	GCF_000006905.1
	<i>Proteobacteria</i>	<i>Shigella flexneri</i>	GCF_000006925.2
	<i>Proteobacteria</i>	<i>Salmonella enterica</i>	GCF_000006945.2
	<i>Proteobacteria</i>	<i>Sinorhizobium meliloti</i>	GCF_000006965.1
	<i>Proteobacteria</i>	<i>Rickettsia conorii</i>	GCF_000007025.1
	<i>Proteobacteria</i>	<i>Zymomonas mobilis</i>	GCF_000007105.1
	<i>Proteobacteria</i>	<i>Brucella melitensis</i>	GCF_000007125.1
	<i>Proteobacteria</i>	<i>Xanthomonas campestris</i>	GCF_000007145.1
	<i>Proteobacteria</i>	<i>Xanthomonas citri</i>	GCF_000007165.1
	<i>Proteobacteria</i>	<i>Buchnera aphidicola</i>	GCF_000007365.1
	<i>Proteobacteria</i>	<i>Brucella suis</i>	GCF_000007505.1
	<i>Proteobacteria</i>	<i>Pseudomonas putida</i>	GCF_000007565.2
	<i>Proteobacteria</i>	<i>Chromobacterium violaceum</i>	GCF_000007705.1
	<i>Proteobacteria</i>	<i>Coxiella burnetii</i>	GCF_000007765.2
	<i>Proteobacteria</i>	<i>Pseudomonas syringae</i>	GCF_000007805.1
	<i>Proteobacteria</i>	<i>Wolbachia endosymbiont</i>	GCF_000008025.1
	<i>Proteobacteria</i>	<i>Rickettsia typhi</i>	GCF_000008045.1
	<i>Proteobacteria</i>	<i>Brucella abortus</i>	GCF_000008145.1
	<i>Proteobacteria</i>	<i>Methylococcus capsulatus</i>	GCF_000008325.1
	<i>Proteobacteria</i>	<i>Idiomarina loihiensis</i>	GCF_000008465.1
	<i>Proteobacteria</i>	<i>Legionella pneumophila</i>	GCF_000008485.1

<i>Proteobacteria</i>	<i>Neisseria meningitidis</i>	GCF_000008805.1
<i>Proteobacteria</i>	<i>Francisella tularensis</i>	GCF_000008985.1
<i>Proteobacteria</i>	<i>Ralstonia nicotianae</i>	GCF_000009125.1
<i>Proteobacteria</i>	<i>Nitrosomonas europaea</i>	GCF_000009145.1
<i>Proteobacteria</i>	<i>Pseudomonas fluorescens</i>	GCF_000009225.2
<i>Proteobacteria</i>	<i>Rhizobium leguminosarum</i>	GCF_000009265.1
<i>Proteobacteria</i>	<i>Cupriavidus necator</i>	GCF_000009285.1
<i>Proteobacteria</i>	<i>Yersinia enterocolitica</i>	GCF_000009345.1
<i>Proteobacteria</i>	<i>Alcanivorax borkumensis</i>	GCF_000009365.1
<i>Proteobacteria</i>	<i>Burkholderia cenocepacia</i>	GCF_000009485.1
<i>Proteobacteria</i>	<i>Mesorhizobium japonicum</i>	GCF_000009625.1
<i>Proteobacteria</i>	<i>Vibrio vulnificus</i>	GCF_000009745.1
<i>Proteobacteria</i>	<i>Klebsiella pneumoniae</i>	GCF_000009885.1
<i>Proteobacteria</i>	<i>Magnetospirillum magneticum</i>	GCF_000009985.1
<i>Proteobacteria</i>	<i>Xanthomonas oryzae</i>	GCF_000010025.1
<i>Proteobacteria</i>	<i>Sodalis glossinidius</i>	GCF_000010085.1
<i>Proteobacteria</i>	<i>Orientia tsutsugamushi</i>	GCF_000010205.1
<i>Proteobacteria</i>	<i>Candidatus Vesicomysocius</i>	GCF_000010405.1
<i>Proteobacteria</i>	<i>Azorhizobium caulinodans</i>	GCF_000010525.1
<i>Proteobacteria</i>	<i>Burkholderia multivorans</i>	GCF_000010545.1
<i>Proteobacteria</i>	<i>Azospirillum sp.</i>	GCF_000010725.1
<i>Proteobacteria</i>	<i>Acetobacter pasteurianus</i>	GCF_000010825.1
<i>Proteobacteria</i>	<i>Bradyrhizobium diazoefficiens</i>	GCF_000011365.1
<i>Proteobacteria</i>	<i>Burkholderia pseudomallei</i>	GCF_000011545.1
<i>Proteobacteria</i>	<i>Pectobacterium atrosepticum</i>	GCF_000011605.1
<i>Proteobacteria</i>	<i>Gluconobacter oxydans</i>	GCF_000011685.1
<i>Proteobacteria</i>	<i>Burkholderia mallei</i>	GCF_000011705.1
<i>Proteobacteria</i>	<i>Candidatus Blochmannia</i>	GCF_000011745.1
<i>Proteobacteria</i>	<i>Aliivibrio fischeri</i>	GCF_000011805.1
<i>Proteobacteria</i>	<i>Anaplasma marginale</i>	GCF_000011945.1
<i>Proteobacteria</i>	<i>Ruegeria pomeroyi</i>	GCF_000011965.2
<i>Proteobacteria</i>	<i>Shigella dysenteriae</i>	GCF_000012005.1

	<i>Proteobacteria</i>	<i>Shigella boydii</i>	GCF_000012025.1
	<i>Proteobacteria</i>	<i>Haemophilus influenzae</i>	GCF_000012185.1
	<i>Proteobacteria</i>	<i>Pseudomonas savastanoi</i>	GCF_000012205.1
	<i>Proteobacteria</i>	<i>Pseudomonas protegens</i>	GCF_000012265.1
	<i>Proteobacteria</i>	<i>Psychrobacter arcticus</i>	GCF_000012305.1

**Table S2.** Details of the simulation of reads and assembly of contigs for 65 fungi and 65 bacterial whole genomes.

Microbial group	Species	Read Simulation		Assembly	
		Genome Size (Mb)	No. of simulated reads (bp)	No. of contigs	Contig N50 (Mb)
Fungi (65)	<i>Alternaria infectoria</i>	36.5	2,43,33,333	250	1
	<i>Aspergillus fischeri</i>	31.4	2,09,33,333	252	1.2
	<i>Aspergillus flavus</i>	37	2,46,66,667	16	2.41
	<i>Aspergillus japonicus</i>	36.1	2,40,66,667	320	2.2
	<i>Aspergillus terreus</i>	29.3	1,95,33,333	265	2.2
	<i>Aspergillus versicolor</i>	33.1	2,20,66,667	130	0.71
	<i>Aureobasidium melanogenum</i>	26.2	1,74,66,667	174	0.654
	<i>Beauveria bassiana</i>	33.7	2,24,66,667	1225	0.0847
	<i>Bipolaris maydis</i>	32.9	2,19,33,333	899	0.084
	<i>Bipolaris oryzae</i>	31.4	2,09,33,333	670	0.131
	<i>Bipolaris sorokiniana</i>	34.4	2,29,33,333	500	0.243
	<i>Bipolaris zeicola</i>	31.3	2,08,66,667	879	0.105
	<i>Botrytis cinerea</i>	42.6	2,84,00,000	18	2.6

	<i>Cercospora beticola</i>	37.1	2,47,33,333	1950	0.173
	<i>Chaetomium globosum</i>	34.3	2,28,66,667	1228	0.05
	<i>Cladophialophora carrionii</i>	29	1,93,33,333	102	0.547
	<i>Clavispora lusitaniae</i>	12.1	80,66,667	85	0.266
	<i>Colletotrichum graminicola</i>	51.6	3,44,00,000	1150	0.229
	<i>Colletotrichum karsti</i>	51.9	3,46,00,000	200	0.461
	<i>Cordyceps fumosorosea</i>	33.5	2,23,33,333	685	0.201
	<i>Cordyceps militaris</i>	32.3	2,15,33,333	595	0.108
	<i>Daldinia childiae</i>	38.7	2,58,00,000	282	1.3
	<i>Daldinia loculata</i>	37.8	2,52,00,000	316	0.318
	<i>Debaryomyces hansenii</i>	12.2	81,33,333	14	0.993
	<i>Diaporthe amygdali</i>	51.5	3,43,33,333	271	1
	<i>Exophiala dermatitidis</i>	26.4	1,76,00,000	238	0.259
	<i>Exophiala oligosperma</i>	38.2	2,54,66,667	287	0.973
	<i>Exophiala xenobiotica</i>	31.4	2,09,33,333	64	1.2
	<i>Fusarium keratoplasticum</i>	49.5	3,30,00,000	25	4.2
	<i>Histoplasma capsulatum</i>	30.4	2,02,66,667	355	0.191
	<i>Kluyveromyces marxianus</i>	10.9	72,66,667	8	1.4
	<i>Lachancea thermotolerans</i>	10.4	69,33,333	10	1.5
	<i>Metarhizium robertsii</i>	41.7	2,78,00,000	940	0.27
	<i>Meyerozyma guilliermondii</i>	10.6	70,66,667	70	0.313
	<i>Microsporum canis</i>	23.2	1,54,66,667	300	0.135
	<i>Paraphaeosphaeria sporulosa</i>	38.5	2,56,66,667	445	0.447
	<i>Penicillium digitatum</i>	26.1	1,74,00,000	560	0.089

	<i>Penicillium oxalicum</i>	30.8	2,05,33,333	23	3.8
	<i>Pichia membranifaciens</i>	11.6	77,33,333	144	0.472
	<i>Pseudogymnoascus destructans</i>	35.8	2,38,66,667	86	1.2
	<i>Purpureocillium lilacinum</i>	38.5	2,56,66,667	680	0.15
	<i>Pyrenophora tritici-repentis</i>	37.8	2,52,00,000	700	0.115
	<i>Saccharomyces cerevisiae</i>	12.1	80,66,667	16	0.924
	<i>Saccharomyces paradoxus</i>	12	80,00,000	17	0.835
	<i>Sclerotinia sclerotiorum</i>	38.5	2,56,66,667	675	0.122
	<i>Talaromyces amestolkiae</i>	33.7	2,24,66,667	288	0.936
	<i>Talaromyces marneffeii</i>	28.2	1,88,00,000	8	3.7
	<i>Trichoderma citrinoviride</i>	33.2	2,21,33,333	750	0.24
	<i>Trichoderma virens</i>	39	2,60,00,000	90	1.8
	<i>Trichophyton rubrum</i>	22.5	1,50,00,000	622	0.0854
	<i>Trichophyton verrucosum</i>	22.5	1,50,00,000	612	0.069
	<i>Ustilaginoidea virens</i>	37.1	2,47,33,333	7	6.4
	<i>Verticillium dahliae</i>	33.8	2,25,33,333	1562	0.043
	<i>Wickerhamomyces anomalus</i>	14.1	94,00,000	222	0.185
	<i>Zygosaccharomyces rouxii</i>	9.8	65,33,333	9	1.5
	<i>Agaricus bisporus</i>	32.6	2,17,33,333	2526	0.163
	<i>Cryptococcus gattii</i>	18.4	1,22,66,667	21	1.3
	<i>Cryptococcus neoformans</i>	19.1	1,27,33,333	37	1.1
	<i>Laetiporus sulphureus</i>	39.9	2,66,00,000	1203	0.114
	<i>Malassezia pachydermatis</i>	8.2	54,66,667	118	0.642

	<i>Malassezia sympodialis</i>	7.7	51,33,333	88	0.377
	<i>Puccinia graminis</i>	88.7	5,91,33,333	455	3.9
	<i>Schizophyllum commune</i>	38.7	2,58,00,000	72	1.5
	<i>Trametes versicolor</i>	44.8	2,98,66,667	975	0.204
	<i>Trichosporon asahii</i>	24.5	1,63,33,333	341	0.151
Bacteria (65)	<i>Escherichia coli</i>	4.8	32,00,000	2	2.4
	<i>Yersinia pestis</i>	4.7	31,33,333	2	4.6
	<i>Xylella fastidiosa</i>	2.7	18,00,000	3	2.1
	<i>Vibrio cholerae</i>	4	26,66,667	2	3
	<i>Pseudomonas aeruginosa</i>	6.3	42,00,000	1	6.3
	<i>Pasteurella multocida</i>	2.3	15,33,333	2	2.1
	<i>Neisseria gonorrhoeae</i>	2.2	14,66,667	1	2.2
	<i>Caulobacter vibrioides</i>	4	26,66,667	3	3.7
	<i>Shigella flexneri</i>	4.8	32,00,000	2	4.6
	<i>Salmonella enterica</i>	5	33,33,333	2	4.9
	<i>Sinorhizobium meliloti</i>	6.7	44,66,667	3	3.7
	<i>Rickettsia conorii</i>	1.3	8,66,667	2	1.1
	<i>Zymomonas mobilis</i>	2.1	14,00,000	2	1.9
	<i>Brucella melitensis</i>	3.3	22,00,000	2	2.1
	<i>Xanthomonas campestris</i>	5.1	34,00,000	2	4.7
	<i>Xanthomonas citri</i>	5.3	35,33,333	3	5.2
	<i>Buchnera aphidicola</i>	0.641	4,27,333	1	0.641

	<i>Brucella suis</i>	3.3	22,00,000	2	2.1
	<i>Pseudomonas putida</i>	6.2	41,33,333	2	5.9
	<i>Chromobacterium violaceum</i>	4.8	32,00,000	1	4.8
	<i>Coxiella burnetii</i>	2	13,33,333	2	1.8
	<i>Pseudomonas syringae</i>	6.5	43,33,333	3	5.5
	<i>Wolbachia endosymbiont</i>	1.3	8,66,667	1	1.3
	<i>Rickettsia typhi</i>	1.1	7,33,333	2	1
	<i>Brucella abortus</i>	3.3	22,00,000	2	2.1
	<i>Methylococcus capsulatus</i>	3.3	22,00,000	3	2.5
	<i>Idiomarina loihiensis</i>	2.8	18,66,667	2	2.1
	<i>Legionella pneumophila</i>	3.4	22,66,667	2	2.8
	<i>Neisseria meningitidis</i>	2.3	15,33,333	1	2.3
	<i>Francisella tularensis</i>	1.9	12,66,667	1	1.9
	<i>Ralstonia nicotianae</i>	5.8	38,66,667	2	3.7
	<i>Nitrosomonas europaea</i>	2.8	18,66,667	2	2.5
	<i>Pseudomonas fluorescens</i>	6.7	44,66,667	3	4.2
	<i>Rhizobium leguminosarum</i>	7.8	52,00,000	7	5.1
	<i>Cupriavidus necator</i>	7.4	49,33,333	3	4.1
	<i>Yersinia enterocolitica</i>	4.7	31,33,333	2	4.1
	<i>Alcanivorax borkumensis</i>	3.1	20,66,667	1	3.1
	<i>Burkholderia cenocepacia</i>	8.1	54,00,000	4	3.2
	<i>Mesorhizobium japonicum</i>	7.6	50,66,667	3	6.8
	<i>Vibrio vulnificus</i>	5.3	35,33,333	3	3.4
	<i>Klebsiella pneumoniae</i>	5.5	36,66,667	3	4.7

	<i>Magnetospirillum magneticum</i>	5.1	34,00,000	2	3.1
	<i>Xanthomonas oryzae</i>	4.9	32,66,667	3	3.4
	<i>Sodalis glossinidius</i>	4.3	28,66,667	4	3.5
	<i>Orientia tsutsugamushi</i>	2	13,33,333	2	1.9
	<i>Candidatus Vesicomysocius</i>	1.1	7,33,333	1	1.1
	<i>Azorhizobium caulinodans</i>	5.4	36,00,000	3	4.4
	<i>Burkholderia multivorans</i>	7	46,66,667	4	2.5
	<i>Azospirillum sp.</i>	7.6	50,66,667	7	1.5
	<i>Acetobacter pasteurianus</i>	3.3	22,00,000	7	2.5
	<i>Bradyrhizobium diazoefficiens</i>	9.1	60,66,667	5	4.2
	<i>Burkholderia pseudomallei</i>	7.2	48,00,000	2	4.1
	<i>Pectobacterium atrosepticum</i>	5.1	34,00,000	3	4.1
	<i>Gluconobacter oxydans</i>	2.9	19,33,333	6	2.5
	<i>Burkholderia mallei</i>	5.8	38,66,667	2	3.5
	<i>Candidatus Blochmannia</i>	0.792	5,28,000	1	0.792
	<i>Aliivibrio fischeri</i>	4.3	28,66,667	3	2.9
	<i>Anaplasma marginale</i>	1.2	8,00,000	1	1.2
	<i>Ruegeria pomeroyi</i>	4.6	30,66,667	2	4.1
	<i>Shigella dysenteriae</i>	4.6	30,66,667	3	4.4
	<i>Shigella boydii</i>	4.6	30,66,667	2	4.1
	<i>Haemophilus influenzae</i>	1.9	12,66,667	1	1.9
	<i>Pseudomonas savastanoi</i>	6.1	40,66,667	3	5.9
	<i>Pseudomonas protegens</i>	7.1	47,33,333	4	3.6

	<i>Psychrobacter arcticus</i>	2.7	18,00,000	1	2.7
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**Table S3:** Actual species names and species predicted by Species\_Model.h5 model from the simulated metagenome (Wrong predictions are highlighted in bold)

<b>Actual species</b>	<b>Predicted species</b>
<i>Alternaria infectoria</i>	<i>Alternaria infectoria</i>
<i>Aspergillus fischeri</i>	<i>Aspergillus fischeri</i>
<i>Aspergillus flavus</i>	<i>Aspergillus flavipes</i>
<i>Aspergillus japonicus</i>	<i>Aspergillus japonicus</i>
<i>Aspergillus terreus</i>	<i>Aspergillus terreus</i>
<i>Aspergillus versicolor</i>	<i>Aspergillus tubingensis</i>
<i>Aureobasidium melanogenum</i>	<i>Aureobasidium melanogenum</i>
<i>Beauveria bassiana</i>	<i>Beauveria bassiana</i>
<i>Bipolaris maydis</i>	<i>Bipolaris maydis</i>
<i>Bipolaris oryzae</i>	<i>Bipolaris oryzae</i>
<i>Bipolaris sorokiniana</i>	<i>Bipolaris sorokiniana</i>
<i>Bipolaris zeicola</i>	<i>Bipolaris zeicola</i>
<i>Botrytis cinerea</i>	<i>Botrytis cinerea</i>
<i>Cercospora beticola</i>	<i>Ceratocystis piceae</i>
<i>Chaetomium globosum</i>	<i>Chaetomium globosum</i>
<i>Cladophialophora carrionii</i>	<i>Cladophialophora carrionii</i>
<i>Clavispora lusitaniae</i>	<i>Clavispora lusitaniae</i>
<i>Colletotrichum graminicola</i>	<i>Colletotrichum graminicola</i>
<i>Colletotrichum karsti</i>	<i>Colletotrichum karsti</i>
<i>Cordyceps fumosorosea</i>	<i>Cordyceps fumosorosea</i>
<i>Cordyceps militaris</i>	<i>Cordyceps militaris</i>
<i>Daldinia childiae</i>	<i>Daldinia childiae</i>

<i>Daldinia loculata</i>	<i>Daldinia loculata</i>
<i>Debaryomyces hansenii</i>	<i>Debaryomyces hansenii</i>
<i>Diaporthe amygdali</i>	<i>Diaporthe amygdali</i>
<i>Exophiala dermatitidis</i>	<i>Exophiala dermatitidis</i>
<i>Exophiala oligosperma</i>	<i>Exophiala oligosperma</i>
<i>Exophiala xenobiotica</i>	<i>Exophiala xenobiotica</i>
<i>Fusarium keratoplasticum</i>	<i>Fusarium keratoplasticum</i>
<i>Histoplasma capsulatum</i>	<i>Histoplasma capsulatum</i>
<i>Kluyveromyces marxianus</i>	<i>Kluyveromyces marxianus</i>
<i>Metarhizium robertsii</i>	<i>Metarhizium robertsii</i>
<i>Meyerozyma guilliermondii</i>	<i>Meyerozyma guilliermondii</i>
<i>Microsporium canis</i>	<i>Microsporium canis</i>
<i>Paraphaeosphaeria sporulosa</i>	<i>Paraphoma chrysanthemicola</i>
<i>Penicillium digitatum</i>	<i>Penicillium digitatum</i>
<i>Penicillium oxalicum</i>	<i>Penicillium oxalicum</i>
<i>Pichia membranifaciens</i>	<i>Pichia membranifaciens</i>
<i>Pseudogymnoascus destructans</i>	<i>Pseudogymnoascus destructans</i>
<i>Purpureocillium lilacinum</i>	<i>Purpureocillium lilacinum</i>
<i>Pyrenophora tritici-repentis</i>	<i>Pyrenophora tritici-repentis</i>
<i>Saccharomyces cerevisiae</i>	<i>Saccharomyces cerevisiae</i>
<i>Saccharomyces paradoxus</i>	<i>Saccharomyces paradoxus</i>
<i>Sclerotinia sclerotiorum</i>	<i>Sclerotinia sclerotiorum</i>
<i>Talaromyces amestolkiae</i>	<i>Talaromyces amestolkiae</i>
<i>Trichoderma citrinoviride</i>	<i>Trichoderma citrinoviride</i>
<i>Trichoderma virens</i>	<i>Trichoderma virens</i>

<i>Trichophyton rubrum</i>	<i>Trichophyton rubrum</i>
<i>Trichophyton verrucosum</i>	<i>Trichophyton verrucosum</i>
<i>Ustilagoidea virens</i>	<i>Ustilagoidea virens</i>
<i>Verticillium dahliae</i>	<i>Verticillium dahliae</i>
<i>Wickerhamomyces anomalus</i>	<i>Wickerhamomyces anomalus</i>
<i>Agaricus bisporus</i>	<i>Agaricus bisporus</i>
<i>Cryptococcus gattii</i>	<i>Cryptococcus gattii</i>
<i>Cryptococcus neoformans</i>	<i>Cryptococcus neoformans</i>
<i>Laetiporus sulphureus</i>	<i>Laetiporus sulphureus</i>
<i>Malassezia pachydermatis</i>	<i>Malassezia pachydermatis</i>
<i>Malassezia sympodialis</i>	<i>Malassezia sympodialis</i>
<i>Puccinia graminis</i>	<i>Puccinia graminis</i>
<i>Schizophyllum commune</i>	<i>Schizophyllum commune</i>
<i>Trametes versicolor</i>	<i>Trichoderma afroharzianum</i>
<i>Trichosporon asahii</i>	<i>Trichosporon asahii</i>

**Table S4:** Actual genus names and fungal genera predicted by Genus\_Model.h5 model from the simulated metagenome. Wrong predictions are highlighted in bold.

<b>Actual Genus</b>	<b>Predicted Genus</b>
<i>Alternaria</i>	<i>Alternaria</i>
<i>Aspergillus</i>	<i>Aspergillus</i>
<i>Aureobasidium</i>	<i>Aureobasidium</i>
<i>Beauveria</i>	<i>Beauveria</i>
<i>Bipolaris</i>	<i>Bipolaris</i>
<i>Botrytis</i>	<i>Botrytis</i>
<i>Cercospora</i>	<b><i>Ceratocystis</i></b>
<i>Chaetomium</i>	<i>Chaetomium</i>
<i>Cladophialophora</i>	<i>Cladophialophora</i>
<i>Clavispora</i>	<i>Clavispora</i>
<i>Colletotrichum</i>	<i>Colletotrichum</i>
<i>Colletotrichum</i>	<i>Colletotrichum</i>
<i>Cordyceps</i>	<i>Cordyceps</i>
<i>Cordyceps</i>	<i>Cordyceps</i>

<i>Daldinia</i>	<i>Daldinia</i>
<i>Daldinia</i>	<i>Daldinia</i>
<i>Debaryomyces</i>	<i>Debaryomyces</i>
<i>Diaporthe</i>	<i>Diaporthe</i>
<i>Exophiala</i>	<i>Exophiala</i>
<i>Exophiala</i>	<i>Exophiala</i>
<i>Exophiala</i>	<i>Exophiala</i>
<i>Fusarium</i>	<i>Fusarium</i>
<i>Histoplasma</i>	<i>Histoplasma</i>
<i>Kluyveromyces</i>	<i>Kluyveromyces</i>
<i>Metarhizium</i>	<i>Metarhizium</i>
<i>Meyerozyma</i>	<i>Meyerozyma</i>
<i>Microsporum</i>	<i>Microsporum</i>
<i>Paraphaeosphaeria</i>	<i>Paraphoma</i>
<i>Penicillium</i>	<i>Penicillium</i>
<i>Penicillium</i>	<i>Penicillium</i>
<i>Pichia</i>	<i>Pichia</i>
<i>Pseudogymnoascus</i>	<i>Pseudogymnoascus</i>
<i>Purpureocillium</i>	<i>Purpureocillium</i>
<i>Pyrenophora</i>	<i>Pyrenophora</i>
<i>Saccharomyces</i>	<i>Saccharomyces</i>
<i>Saccharomyces</i>	<i>Saccharomyces</i>
<i>Sclerotinia</i>	<i>Sclerotinia</i>
<i>Talaromyces</i>	<i>Talaromyces</i>
<i>Trichoderma</i>	<i>Trichoderma</i>

<i>Trichoderma</i>	<i>Trichoderma</i>
<i>Trichophyton</i>	<i>Trichophyton</i>
<i>Trichophyton</i>	<i>Trichophyton</i>
<i>Ustilaginoidea</i>	<i>Ustilaginoidea</i>
<i>Verticillium</i>	<i>Verticillium</i>
<i>Wickerhamomyces</i>	<i>Wickerhamomyces</i>
<i>Agaricus</i>	<i>Agaricus</i>
<i>Cryptococcus</i>	<i>Cryptococcus</i>
<i>Cryptococcus</i>	<i>Cryptococcus</i>
<i>Laetiporus</i>	<i>Laetiporus</i>
<i>Malassezia</i>	<i>Malassezia</i>
<i>Malassezia</i>	<i>Malassezia</i>
<i>Puccinia</i>	<i>Puccinia</i>
<i>Schizophyllum</i>	<i>Schizophyllum</i>
<i>Trametes</i>	<i>Trichoderma</i>
<i>Trichosporon</i>	<i>Trichosporon</i>