

**Supplemental Table S1. List of fungal isolates and related information.**

Study ID	Organism Type	Original ID	Source	Method Used for Original ID	WGS ID	Marker/Method Used for WGS ID
UCLA_024	Mold - Dematiaceous	<i>Scedosporium apiospermum</i>	Eye, Cornea	Microscopic morphology	<i>Scedosporium dehoogii</i>	ITS
UCLA_058	Mold - Mucorales	<i>Lichtheimia ornata</i>	N/A	DNA Sequencing - UT San Antonio	<i>Lichtheimia ornata</i>	28S
UCLA_076	Mold - Mucorales	<i>Rhizomucor pusillus</i>	N/A	DNA Sequencing - UT San Antonio	<i>Rhizomucor pusillus</i>	28S
UCLA_144	Mold - Dematiaceous	<i>Scedosporium apiospermum</i>	Eye, Cornea	Microscopic morphology	<i>Scedosporium dehoogii</i>	ITS
UCLA_145	Yeast	<i>Candida auris</i>	Swab, Inguinal/Axillary	MALDI-TOF MS	<i>Candida auris</i>	ITS
UCLA_146	Mold - Dimorphic	<i>Blastomyces dermatitidis</i>	Bronchoalveolar Lavage	Accuprobe	<i>Blastomyces dermatitidis</i>	ITS
UCLA_147	Yeast	<i>Candida auris</i>	N/A	Reference Isolate	<i>Candida auris</i>	ITS
UCLA_148	Mold - Mucorales	<i>Syncephalastrum spp.</i>	Tissue, Abdomen	Microscopic morphology	<i>Syncephalastrum racemosum</i>	28S
UCLA_149	Yeast	<i>Cryptococcus neoformans</i>	N/A	Reference Isolate (ATCC 32045)	<i>Cryptococcus neoformans</i>	ITS
UCLA_150	Mold - Hyaline	<i>Fusarium proliferatum</i>	Tracheal Aspirate	DNA Sequencing - UT San Antonio	<i>Fusarium proliferatum</i>	ITS
UCLA_151	Mold - Hyaline	<i>Paecilomyces variotti</i>	Endotracheal	Microscopic morphology	<i>Paecilomyces variotti</i>	ITS
UCLA_154	Yeast	<i>Candida auris</i>	Tracheal Suction	MALDI-TOF MS	<i>Candida auris</i>	ITS
UCLA_156	Yeast	<i>Candida haemulonii</i>	N/A	Reference Isolate (CDC AR0393)	<i>Candida spp.</i> most closely related to <i>C. haemulonii</i>	ITS
UCLA_158	Mold - Dematiaceous	<i>Scedosporium prolificans</i>	Bronchoalveolar Lavage	Microscopic morphology	<i>Scedosporium prolificans</i>	ITS
UCLA_160	Mold - Hyaline	<i>Aspergillus terreus</i>	Tracheal Aspirate	Microscopic morphology	<i>Aspergillus terreus</i>	K-mer Analysis & beta-tubulin
UCLA_164	Dermatophyte	<i>Trichophyton tonsurans</i>	Skin Scraping	Microscopic morphology	<i>Trichophyton tonsurans</i>	ITS
UCLA_261	Mold - Hyaline	<i>Aspergillus niger</i>	Bronchoalveolar Lavage	Microscopic morphology	<i>Aspergillus tubingensis</i>	K-mer Analysis & beta-tubulin
UCLA_262	Mold - Hyaline	<i>Aspergillus niger</i>	Tracheal Aspirate	Microscopic morphology	<i>Aspergillus niger</i>	K-mer Analysis & beta-tubulin
UCLA_274	Mold - Hyaline	<i>Aspergillus nidulans</i>	Expectorated Sputum	Microscopic morphology	<i>Aspergillus quadrilineatus</i>	K-mer Analysis & beta-tubulin
UCLA_273	Mold - Dermatophyte	<i>Trichophyton mentagrophytes</i>	Nails, Toe	Microscopic morphology	<i>Trichophyton mentagrophytes</i>	ITS
UCLA_272	Mold - Dermatophyte	<i>Trichophyton rubrum</i>	Biopsy, Leg	Microscopic morphology	<i>Trichophyton rubrum</i>	ITS
UCLA_280	Mold - Hyaline	<i>Aspergillus terreus</i>	Expectorated Sputum	Microscopic morphology	<i>Aspergillus terreus</i>	K-mer Analysis & beta-tubulin
UCLA_281	Mold - Hyaline	<i>Aspergillus fumigatus</i>	Swab, Maxillary Sinus	Microscopic morphology	<i>Aspergillus fumigatus</i>	K-mer Analysis & beta-tubulin
UCLA_283	Mold - Mucorales	<i>Syncephalastrum spp.</i>	N/A	Reference Isolate	<i>Syncephalastrum monosporum</i>	28S
UCLA_287	Mold - Dematiaceous	<i>Alternaria spp.</i>	Nails, Toe	MALDI-TOF MS	<i>Alternaria alternata/cerealis/alstroemeriae/gossypina/tenuissima</i>	ITS
UCLA_289	Mold - Hyaline	<i>Aspergillus fumigatus</i>	Pleural Fluid	Microscopic morphology	<i>Aspergillus fumigatus</i>	K-mer Analysis & beta-tubulin

UCLA_291	Mushroom-forming Fungi	<i>Coprinellus micaceus</i>	Bronchoalveolar lavage	MALDI-TOF MS	<i>Coprinellus</i> spp. most closely related to <i>C. micaceus</i>	ITS
UCLA_292	Mold - Hyaline	<i>Fusarium</i> spp.	Blood	Microscopic morphology	<i>Fusarium dimerum</i>	ITS
UCLA_293	Mold - Dimorphic	<i>Coccidioides immitis</i>	CSF	Accuprobe	<i>Coccidioides immitis</i>	ITS
UCLA_294	Mold - Dimorphic	<i>Coccidioides immitis</i>	Expectorated Sputum	Accuprobe	<i>Coccidioides immitis</i>	ITS
UCLA_295	Mold - Dimorphic	<i>Coccidioides immitis</i>	Synovial Fluid	Accuprobe	<i>Coccidioides immitis</i>	ITS
UCLA_296	Mold - Hyaline	<i>Scopulariopsis brevicaulis</i>	Swab, Sinus	Microscopic morphology	<i>Scopulariopsis brevicaulis</i>	ITS
UCLA_297	Mold - Hyaline	<i>Aspergillus sydowii</i>	Nails, Finger	Microscopic morphology	<i>Aspergillus sydowii</i>	K-mer Analysis & beta-tubulin
UCLA_299	Mold - Dimorphic	<i>Sporothrix schenckii</i>	Synovial Fluid	Microscopic morphology	<i>Sporothrix schenckii</i>	ITS
UCLA_300	Mold - Dematiaceous	<i>Bipolaris</i> spp.	Induced Sputum	Microscopic morphology	<i>Bipolaris spicifera</i>	ITS
UCLA_301	Mold - Dematiaceous	<i>Exophiala dermatitidis</i>	Bronchoalveolar lavage	Microscopic morphology	<i>Exophiala dermatitidis</i>	ITS
UCLA_302	Mold - Mucorales	<i>Mucor</i> spp.	Tissue, Thigh	Microscopic morphology	<i>Mucor circinelloides</i>	28S
UCLA_303	Mold - Mucorales	<i>Rhizopus</i> spp.	Swab, Bronchus	Microscopic morphology	<i>Rhizopus microsporus</i>	28S
UCLA_305	Mold - Hyaline	<i>Aspergillus flavus-oryzae</i>	Exudate, Earlobe	Microscopic morphology	<i>Aspergillus flavus</i>	K-mer Analysis & beta-tubulin
UCLA_306	Mold - Hyaline	<i>Aspergillus ustus</i>	N/A	Reference Isolate	<i>Aspergillus calidoustus</i>	K-mer Analysis & beta-tubulin
UCLA_298	Mold - Dematiaceous	<i>Exophiala dermatitidis</i>	Expectorated Sputum	Microscopic morphology	<i>Exophiala dermatitidis</i>	ITS
UCLA_304	Mold - Hyaline	<i>Myrmecridium schulzeri</i>	Endotracheal	Microscopic morphology	<i>Myrmecridium schulzeri</i>	ITS
UCLA_307	Mold - Mucorales	<i>Circinella</i> spp.	N/A	DNA Sequencing - UT San Antonio	<i>Circinella muscae</i>	28S
UCLA_308	Mold - Dermatophyte	<i>Neoscytalidium dimidiatum</i>	N/A	Reference Isolate	<i>Neoscytalidium dimidiatum</i>	ITS
UCLA_309	Mold - Mucorales	<i>Mucor</i> spp.	Bone, Foot	Microscopic morphology	<i>Mucor circinelloides</i>	28S
UCLA_310	Mold - Mucorales	<i>Rhizopus</i> spp.	Bronchoalveolar lavage	Microscopic morphology	<i>Rhizopus arrhizus (oryzae)</i>	28S
UCLA_311	Mold - Dimorphic	<i>Sporothrix schenckii</i>	N/A	Reference Isolate	N/A	N/A
UCLA_312	Mold - Hyaline	<i>Aspergillus flavus-oryzae</i>	Bronchial Wash	Microscopic morphology	<i>Aspergillus flavus</i>	K-mer Analysis & beta-tubulin
UCLA_316	Mold - Dermatophyte	<i>Epidermophyton floccosum</i>	N/A	Reference Isolate	<i>Epidermophyton floccosum</i>	ITS
UCLA_317	Mold - Dermatophyte	<i>Microsporum audouinii</i>	N/A	Reference Isolate	<i>Microsporum audouinii</i>	ITS
UCLA_318	Mold - Dermatophyte	<i>Microsporum canis</i>	N/A	Reference Isolate	<i>Microsporum canis</i>	ITS
UCLA_319	Mold - Dermatophyte	<i>Microsporum gypseum</i>	N/A	Reference Isolate	<i>Microsporum gypseum</i>	ITS
UCLA_320	Yeast	<i>Blastobotrys raffinosisfermentans</i>	Swab, Sternum	DNA Sequencing - UT San Antonio	<i>Blastobotrys raffinosisfermentans</i>	ITS
UCLA_321	Yeast	<i>Blastobotrys raffinosisfermentans</i>	Pleural Fluid	DNA Sequencing - UT San Antonio	<i>Blastobotrys raffinosisfermentans</i>	ITS
UCLA_371	Yeast	<i>Rhodotorula</i> spp.	N/A	Reference Isolate	<i>Rhodotorula mucilaginosa</i>	ITS
UCLA_372	Yeast	<i>Candida kefyr</i>	N/A	Reference Isolate (CDC AR0588)	<i>Candida kefyr</i>	ITS

UCLA_373	Yeast	<i>Candida guilliermondii</i>	N/A	Reference Isolate (CDC AR0590)	<i>Candida guilliermondii</i>	ITS
UCLA_374	Yeast	<i>Candida tropicalis</i>	N/A	Reference Isolate (CDC AR3045)	<i>Candida tropicalis</i>	ITS
UCLA_378	Yeast	<i>Candida duobushaemulonii</i>	N/A	Reference Isolate (CDC AR0391)	<i>Candida duobushaemulonii</i>	ITS
UCLA_379	Yeast	<i>Saccharomyces cerevisiae</i>	N/A	Reference Isolate (CDC AR0399)	<i>Saccharomyces cerevisiae</i>	ITS
UCLA_380	Yeast	<i>Candida parapsilosis</i>	N/A	Reference Isolate (CDC AR0339)	<i>Candida parapsilosis</i>	ITS
UCLA_415	Yeast	<i>Cryptococcus albidus</i>	Blood	API	<i>Cryptococcus liquefaciens</i>	ITS
UCLA_417	Mold - Hyaline	<i>Aspergillus terreus</i>	Bronchoalveolar Lavage	Microscopic morphology	<i>Aspergillus terreus</i>	K-mer Analysis & beta-tubulin
UCLA_423	Yeast	<i>Candida fermentati</i>	Induced Sputum	MALDI-TOF MS	<i>Candida fermentati</i>	ITS
UCLA_424	Yeast	<i>Candida spp.</i>	Blood	MALDI-TOF MS	<i>Candida dubliniensis</i>	ITS
UCLA_425	Yeast	<i>Candida spp.</i>	Blood	MALDI-TOF MS	<i>Candida dubliniensis</i>	ITS
UCLA_429	Yeast	<i>Candida fermentati</i>	Induced Sputum	MALDI-TOF MS	<i>Candida fermentati</i>	ITS
UCLA_430	Yeast	<i>Candida fermentati</i>	Nails, Finger	MALDI-TOF MS	<i>Candida fermentati</i>	ITS
UCLA_530	Yeast	<i>Cryptococcus gattii</i>	N/A	Reference Isolate (ATCC 4560)	<i>Cryptococcus gattii</i>	ITS
UCLA_531	Yeast	<i>Cryptococcus laurentii</i>	N/A	Reference Isolate (ATCC 18803)	<i>Cryptococcus laurentii</i>	ITS
UCLA_536	Mold - Hyaline	<i>Aspergillus fumigatus</i>	Wound, Chest	Microscopic morphology	<i>Aspergillus fumigatus</i>	K-mer Analysis & beta-tubulin
UCLA_581	Mold - Hyaline	<i>Penicillium spp.</i>	N/A	Reference Isolate	<i>Penicillium solitum</i>	ITS
UCLA_582	Mold - Hyaline	<i>Trichoderma spp.</i>	N/A	Reference Isolate	<i>Trichoderma harzianum/lixi</i>	ITS
UCLA_583	Mold - Dematiaceous	<i>Curvularia spp.</i>	N/A	Reference Isolate	<i>Curvularia lunata/hominis/platzii</i>	ITS
UCLA_600	Mold - Dimorphic	<i>Histoplasma capsulatum</i>	Tissue, Lymph Node	MALDI-TOF MS	<i>Histoplasma capsulatum</i>	ITS

N/A=Not Applicable, CSF=Cerebrospinal Fluid

**Supplemental Table S2. Impact of fungal isolate pre-treatment methods on organism viability.**

Organism	Heat (100°C, 15min) + bead beat	Heat (100°C, 30min) + bead beat	70% EtOH + bead beat	70% EtOH + Heat (100°C, 30min) + bead beat
<i>Aspergillus brasiliensis</i>	Growth	Growth	No growth	No growth
<i>Blastomyces dermatitidis</i>	Growth	No growth	N/A	No growth
<i>Scedosporium apiospermum</i>	No growth	No growth	N/A	No growth
<i>Microsporum gypseum</i>	No growth	No growth	N/A	No growth
<i>Exophiala dermatitidis</i>	No growth	No growth	N/A	No growth
<i>Fusarium proliferatum</i>	No growth	No growth	N/A	No growth
<i>Candida auris</i>	No growth	No growth	N/A	No growth
<i>Cryptococcus neoformans</i>	No growth	No growth	N/A	No growth
<i>Coccidioides immitis</i>	No growth	No growth	N/A	No growth
<i>Candida haemulonii</i>	No growth	No growth	N/A	No growth
<i>Kodamaeae ohmeri</i>	No growth	No growth	N/A	No growth
<i>Candida lusitanae</i>	No growth	No growth	N/A	No growth
<i>Acremonium spp.</i>	No growth	No growth	N/A	No growth
<i>Aspergillus terreus</i>	No growth	No growth	N/A	No growth
<i>Candida albicans</i>	No growth	No growth	N/A	No growth
<i>Scedosporium prolificans</i>	No growth	No growth	N/A	No growth
<i>Trichophyton tonsurans</i>	No growth	No growth	N/A	No growth
<i>Cryptococcus gattii</i>	No growth	No growth	N/A	No growth
<i>Rhizopus spp.</i>	No growth	No growth	N/A	No growth

EtOH=Ethanol, N/A=Not Applicable

Organisms incubated for 4 weeks before determined to be "No growth", except for *B. dermatitidis* which was incubated for 6 weeks.

**Supplemental Table S3. Sequencing run QC metrics and results.**

Metric	Passing Criteria	Comment	Average (SD)	Pass Rate (%)
% PF	≥60%	Mandatory criteria	97 (3)	100% (20/20)
Evenness of % PF	≥2% per sample	Mandatory criteria	8 (5)	99% (74/75) <sup>a</sup>
Calculated Total Reads	1,000,000	Mandatory criteria	3027986 (1720534)	99% (74/75) <sup>a</sup>
% Undetermined Reads	<5%	Optimal criteria	2 (0)	100% (20/20)
Lane Density	1000±400	Optimal criteria	980 (217)	90% (18/20)
% >Q30 (Read 1)	≥60%	Mandatory criteria	90 (3)	100% (20/20)
% >Q30 (Read 2)	≥60%	Mandatory criteria	95 (4)	100% (20/20)
% >Q30 (Read 3)	≥60%	Mandatory criteria	94 (4)	100% (20/20)
% >Q30 (Read 4)	≥60%	Mandatory criteria	80 (5)	100% (20/20)

<sup>a</sup> Isolate UCLA\_311 (*Sporothrix schenckii*) was excluded from the subsequent analyses because the % PF per sample was <2% (0.77%); the total reads were 277,700.

SD=Standard Deviation

PF=Passing Filter

**Supplemental Table S4. Isolate QC metrics and results.**

Metric	Range	Average (SD)	QC Criteria
<b>de novo Assembly:</b>			
N50	1,446-1,191,171	141,681 (225,637)	None
GC Content (%)	33.00-60.50	47.54 (5.49)	None
<b>ITS Mapping:</b>			
Average Coverage	204-4622	982 (684)	None
5X Coverage (%)	66.16-100	98.67 (4.68)	≥80%
10X Coverage (%)	66.16-100	98.41 (5.19)	≥80%
<b>28S Mapping (Mucorales):</b>			
	N=9	N=9	
Average Coverage	448-2179	1098 (620)	None
5X Coverage (%)	99.43-100	99.81 (0.25)	≥80%
10X Coverage (%)	98.73-100	99.71 (0.44)	≥80%

SD=Standard Deviation

**Supplemental Table S5. In-house *Aspergillus* Reference Genomes**

Species	Strain Identifier
<i>Aspergillus aculeatus</i>	ATCC16872
<i>Aspergillus alliaceus</i>	Aspalli1
<i>Aspergillus amoenus</i>	ASM981243v1
<i>Aspergillus arachidicola</i>	Aspara19utr
<i>Aspergillus avenaceus</i>	Aspave1
<i>Aspergillus awamori</i>	Aawm
<i>Aspergillus bertholleticus</i>	Aspber1
<i>Aspergillus bombycis</i>	ASM179269
<i>Aspergillus brasiliensis</i>	CBS101740
<i>Aspergillus brunneoviolaceus</i>	Aspbbru1
<i>Aspergillus caelatus</i>	Aspcae1
<i>Aspergillus calidoustus</i>	Acal_Allpaths_LG
<i>Aspergillus campestris</i>	IBT28561
<i>Aspergillus candidus</i>	Aspcand1
<i>Aspergillus carbonarius</i>	ITEM5010
<i>Aspergillus cejpai</i>	ASM476916
<i>Aspergillus chevalieri</i>	JCM_23047
<i>Aspergillus clavatus</i>	NRRL1
<i>Aspergillus coremiiformis</i>	Aspcor1
<i>Aspergillus costaricensis</i>	Aspcos1
<i>Aspergillus cristatus</i>	ASM169335
<i>Aspergillus ellipticus</i>	Aspell1
<i>Aspergillus eucalypticola</i>	Aspeuc1
<i>Aspergillus fijiensis</i>	Aspfij1
<i>Aspergillus fischeri</i>	iNRRL181
<i>Aspergillus flavus</i>	NRRL3357
<i>Aspergillus fumigatus</i>	A1163

<i>Aspergillus fumigatus</i>	Af293
<i>Aspergillus glaucus</i>	CBS516.65
<i>Aspergillus hancockii</i>	ASM169659
<i>Aspergillus heteromorphus</i>	Asphet1
<i>Aspergillus homomorphus</i>	Asphom1
<i>Aspergillus ibericus</i>	Aspibe1
<i>Aspergillus indologenus</i>	Aspind1
<i>Aspergillus japonicus</i>	Aspjap1
<i>Aspergillus kawachii</i>	IFO4308
<i>Aspergillus lentulus</i>	Alt_assembly01
<i>Aspergillus leporis</i>	Asplep1
<i>Aspergillus luchuensis</i>	CBS106.47
<i>Aspergillus minisclerotigenes</i>	Aspmin1
<i>Aspergillus mulundensis</i>	ASM336962
<i>Aspergillus neoellipticus</i>	ASM311656
<i>Aspergillus neoniger</i>	Aspneo1
<i>Aspergillus nidulans</i>	FGSCA4
<i>Aspergillus niger</i>	ATCC1015
<i>Aspergillus niger</i>	ATCC13496
<i>Aspergillus niger</i>	CBS513-88
<i>Aspergillus niger</i>	N402ATCC64974
<i>Aspergillus nomius</i>	ASM120477v1
<i>Aspergillus novofumigatus</i>	IBT16806
<i>Aspergillus novoparasiticus</i>	Aspnovo1
<i>Aspergillus ochraceoroseus</i>	IBT24754
<i>Aspergillus ochraceus</i>	AoFc
<i>Aspergillus olivimuriae</i>	ASM371941
<i>Aspergillus oryzae</i>	RIB40
<i>Aspergillus parasiticus</i>	Asppar1



<i>Aspergillus persii</i>	ASM221596
<i>Aspergillus piperis</i>	Asppip1
<i>Aspergillus pseudocaelatus</i>	Asppsec1
<i>Aspergillus pseudonomius</i>	Asppsen1
<i>Aspergillus pseudotamarii</i>	Asppset1
<i>Aspergillus pseudoterreus</i>	ASM292700
<i>Aspergillus rambellii</i>	ASM98664
<i>Aspergillus ruber</i>	Eurhe1
<i>Aspergillus saccharolyticus</i>	Aspsac1
<i>Aspergillus sclerotialis</i>	phiScl
<i>Aspergillus sclerotiicarbonarius</i>	Aspsc1
<i>Aspergillus sclerotioniger</i>	Aspscl1
<i>Aspergillus sclerotiorum</i>	HBR18v1
<i>Aspergillus sergii</i>	Aspser1
<i>Aspergillus sojae</i>	ASM827498v1
<i>Aspergillus spinulosporus</i>	ASM357481
<i>Aspergillus steynii</i>	IBT23096
<i>Aspergillus sydowii</i>	CBS593.65
<i>Aspergillus taichungensis</i>	Asptaic1
<i>Aspergillus tamarii</i>	Asptam1
<i>Aspergillus tanneri</i>	ASM342696
<i>Aspergillus terreus</i>	NIH2624
<i>Aspergillus thermomutatus</i>	ASM223726
<i>Aspergillus transmontanensis</i>	Asptr1
<i>Aspergillus tritici</i>	ASM981242v1
<i>Aspergillus tubingensis</i>	CBS134.48
<i>Aspergillus turcosus</i>	ASM223496
<i>Aspergillus udagawae</i>	Aud_assembly01
<i>Aspergillus unguis</i>	ASM332417

<i>Aspergillus ustus</i>	Austus1.0
<i>Aspergillus uvarum</i>	Aspuva1
<i>Aspergillus vadensis</i>	Aspvad1
<i>Aspergillus versicolor</i>	CBS583.65
<i>Aspergillus violaceofuscus</i>	Aspvio1
<i>Aspergillus viridinutans</i>	ASM436809
<i>Aspergillus welwitschiae</i>	Aspwel1
<i>Aspergillus wentii</i>	DTO134E9
<i>Aspergillus westerdijkiae</i>	ASM130734
<i>Aspergillus zonata</i>	CBS506.65
<i>Aspergillus quadrilineatus</i>	ASM1330552v1

**Supplemental Table S6. Precision results.**

	WGS ID	ITS Region Query	
		% Overlap	% Similarity
<b>Precision (between run):</b>			
<b><i>C. immitis</i> (Mold_EXT_01)</b>			
Rep1	<i>Coccidioides immitis</i>	100	100
Rep2	<i>Coccidioides immitis</i>	100	100
Rep3	<i>Coccidioides immitis</i>	100	99.82
<b><i>C. tropicalis</i> (Yeast_EXT_01)</b>			
Rep1	<i>Candida tropicalis</i>	100	100
Rep2	<i>Candida tropicalis</i>	100	100
Rep3	<i>Candida tropicalis</i>	100	100
<b>Precision (within run):</b>			
<b><i>C. immitis</i></b>			
Mold_EXT_01	<i>Coccidioides immitis</i>	100	100
Mold_EXT_02	<i>Coccidioides immitis</i>	99.81	100
Mold_EXT_03	<i>Coccidioides immitis</i>	100	100
<b><i>C. tropicalis</i></b>			
Yeast_EXT_01	<i>Candida tropicalis</i>	100	100
Yeast_EXT_02	<i>Candida tropicalis</i>	100	100
Yeast_EXT_03	<i>Candida tropicalis</i>	100	100

Strains used: *Coccidioides immitis* UCLA\_293, *Candida tropicalis* UCLA\_374

Mold\_EXT\_01, 02, and 03 are three unique preparations (sub-culture and DNA extraction) of *C. immitis*

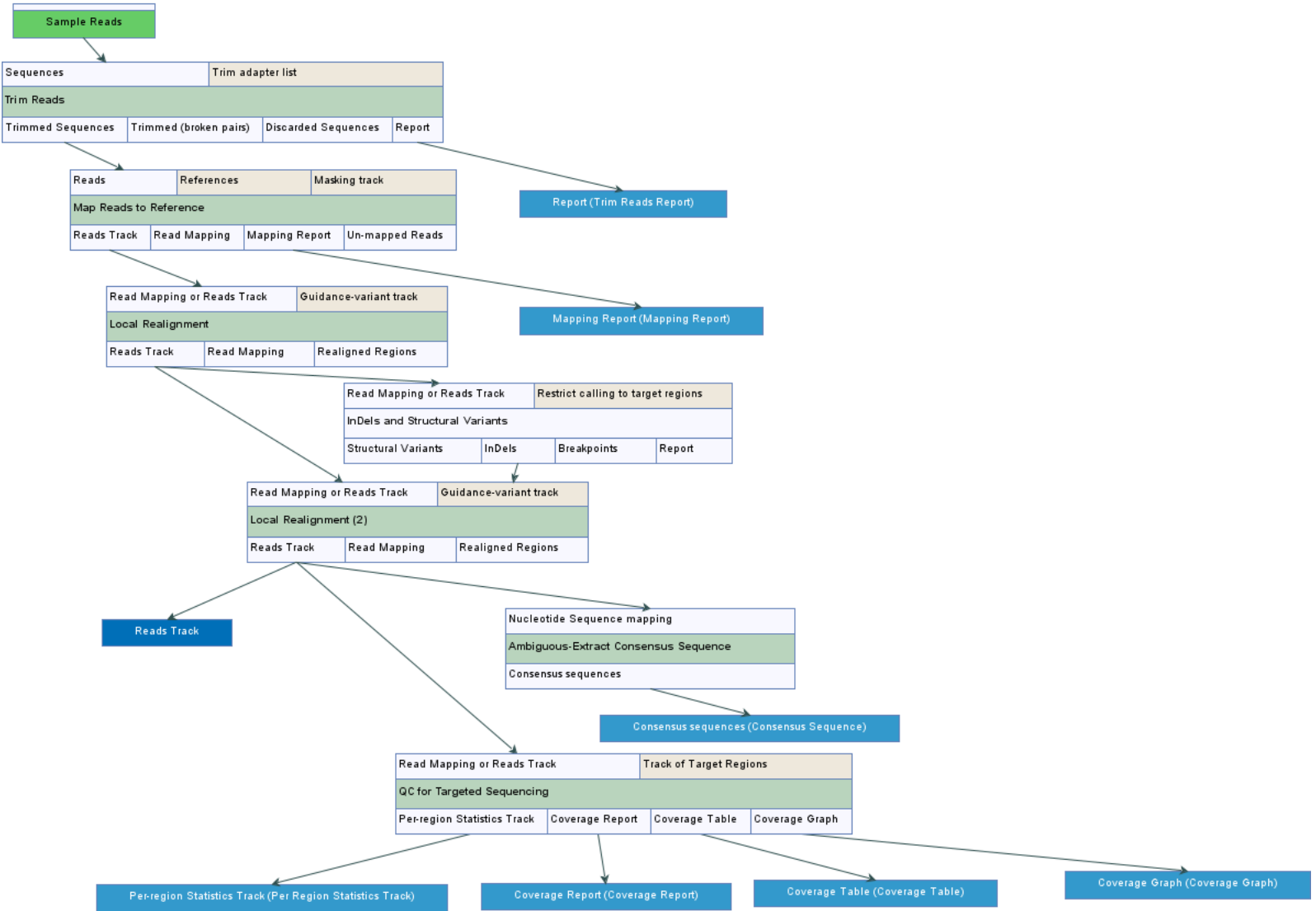
Yeast\_EXT\_01, 02, and 03 are three unique preparations (sub-culture and DNA extraction) of *C. tropicalis*

**Supplemental Table S7. *In silico* validation of the Westerdijk Fungal Biodiversity Institute database using reference ITS sequences.**

	Organism	NCBI Accession	WGS ID	Query Result: %Overlap/%Similarity	
				ITS	28S
VAL_01	<i>Bipolaris victoriae</i>	NR_147489	<i>Bipolaris victoriae</i>	100/100	N/A
VAL_02	<i>Curvularia lunata</i>	NR_138223	<i>Curvularia lunata</i>	100/100	N/A
VAL_03	<i>Exserohilum turcicum</i>	NR_163537	<i>Exserohilum turcicum</i>	100/100	N/A
VAL_04	<i>Trichophyton rubrum</i>	NR_131330	<i>Trichophyton rubrum</i>	100/100	N/A
VAL_05	<i>Microsporum audouinii</i>	NR_144883	<i>Microsporum audouinii</i>	100/100	N/A
VAL_06	<i>Epidermophyton floccosum</i>	NR_131275	<i>Epidermophyton floccosum</i>	100/100	N/A
VAL_07	<i>Blastomyces dermatitidis</i>	NR_163503	<i>Blastomyces dermatitidis</i>	100/100	N/A
VAL_08	<i>Histoplasma capsulatum</i>	NR_149341	<i>Histoplasma capsulatum</i>	99.62/100	N/A
VAL_09	<i>Coccidioides immitis</i>	NR_157446	<i>Coccidioides immitis</i>	100/100	N/A
VAL_10	<i>Aspergillus nidulans</i>	NR_133684	<i>Aspergillus spp.</i>	100/100	N/A
VAL_11	<i>Aspergillus fumigatus</i>	NR_121481	<i>Aspergillus spp.</i>	100/100	N/A
VAL_12	<i>Aspergillus flavus</i>	NR_111041	<i>Aspergillus spp.</i>	100/100	N/A
VAL_13	<i>Fusarium fujikuroi</i>	NR_111889	<i>Fusarium fujikuroi</i>	100/100	N/A
VAL_14	<i>Beauveria bassiana</i>	NR_111594	<i>Beauveria bassiana</i>	100/100	N/A
VAL_15	<i>Mucor indicus</i>	NG_057878	<i>Mucor indicus</i>	N/A	100/99.86
VAL_16	<i>Rhizopus oryzae</i>	NG_056282	<i>Rhizopus oryzae</i>	N/A	100/100
VAL_17	<i>Lichtheimia ramosa</i>	NG_042518	<i>Lichtheimia ramosa</i>	N/A	100/100
VAL_18	<i>Candida tropicalis</i>	NR_111250	<i>Candida tropicalis</i>	100/100	N/A
VAL_19	<i>Candida albicans</i>	NR_125332	<i>Candida albicans</i>	100/100	N/A
VAL_20	<i>Candida auris</i>	NR_154998	<i>Candida auris</i>	100/100	N/A
VAL_21	<i>Cryptococcus gattii</i>	NR_165941	<i>Cryptococcus gattii</i>	100/100	N/A
VAL_22	<i>Trichosporon coremiiforme</i>	NR_073249	<i>Trichosporon coremiiforme</i>	100/100	N/A

N/A=Not Applicable

**Supplemental Figure S1. CLCbio Workflow for Fungal Species Identification**



## Supplemental Figure S2. Examples of K-mer Tree Analysis for *Aspergillus*

