FIG. S1

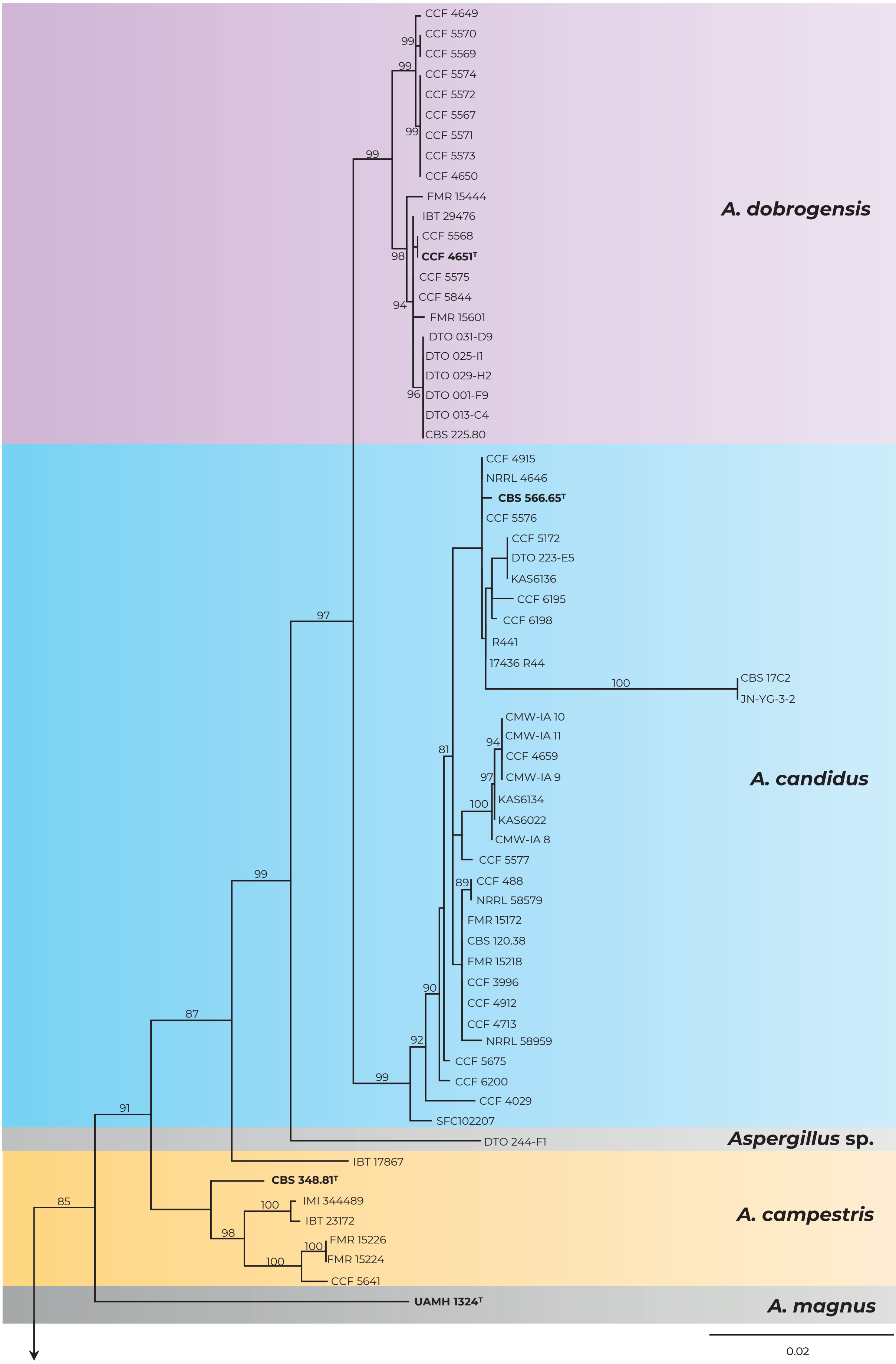

Fig. S1. Multi-locus phylogenetic tree (*benA*, *CaM* and *RPB2* loci) of *Aspergillus* section *Candidi* comprising isolates from GenBank (Supplementary Table S3) and those included in Table 1. Best scoring Maximum Likelihood tree inferred in the IQ-TREE is shown, bootstrap values are appended to nodes, only support values higher than 70 % are shown. The ex-type strains are designated with a superscripted T and bold print.

FIG. S1 (Continued).

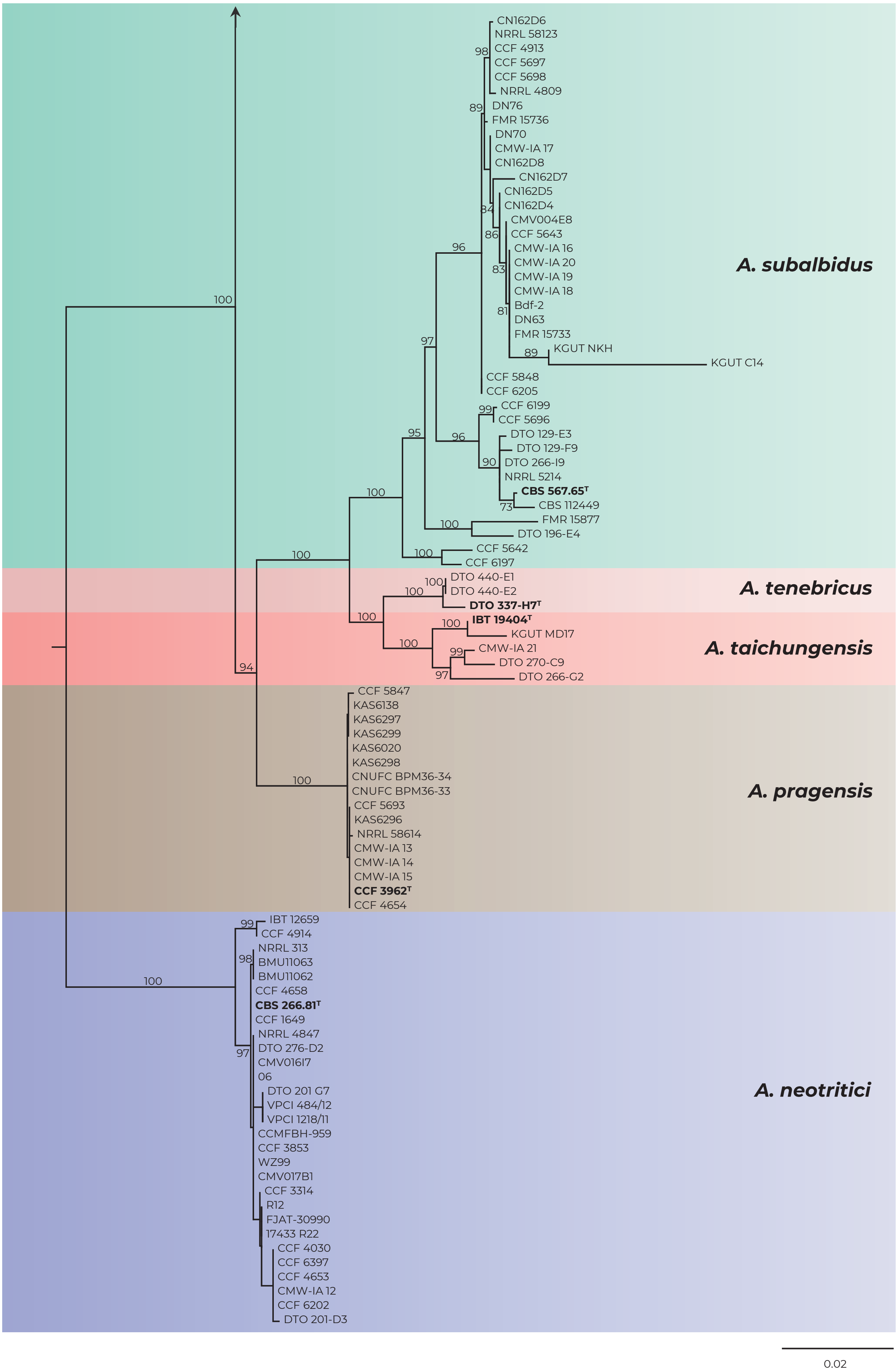

Fig. S1. (Continued).

TABLE S1

Table S1. Comparison of micromorphological characters between species of *Aspergillus* section *Candidi* and statistical significances.

p value
>0.05
0.01-0.05
0.001-0.01
< 0.001

CONIDIA - LENGTH	*A. candidus*	*A. dobrogensis*	*A. campestris*	*A. magnus*	*A. subalbidus*	*A. taichungensis*	*A. tenebricus*	*A. pragensis*	*A. neotritici*
A. candidus									
A. dobrogensis	0,893								
A. campestris	0,334	0,9821							
A. magnus	0,0285	0.0029	< 0.001						
A. subalbidus	0,4192	0,0029	< 0.001	0,2242					
A. taichungensis	< 0.001	< 0.001	< 0.001	0,8463	< 0.001				
A. tenebricus	0,1473	0,7149	0,9914	< 0.001	< 0.001	< 0.001			
A. pragensis	1.000	0,9625	0,5652	0,0411	0,7014	< 0.001	0,2544		
A. neotritici	< 0.001	< 0.001	< 0.001	0,9996	< 0.001	0,0109	< 0.001	< 0.001	

CONIDIA - WIDTH	*A. candidus*	*A. dobrogensis*	*A. campestris*	*A. magnus*	*A. subalbidus*	*A. taichungensis*	*A. tenebricus*	*A. pragensis*	*A. neotritici*
A. candidus									
A. dobrogensis	1.000								
A. campestris	< 0.001	< 0.001							
A. magnus	< 0.001	< 0.001	< 0.001						
A. subalbidus	0,2262	0,2404	0,0989	< 0.001					
A. taichungensis	< 0.001	< 0.001	< 0.001	0,9982	< 0.001				
A. tenebricus	0,6737	0,6092	< 0.001	< 0.001	0,0105	< 0.001			
A. pragensis	0,9923	0,9954	0,0628	< 0.001	0,9851	< 0.001	0,3111		
A. neotritici	< 0.001	< 0.001	< 0.001	0,9699	< 0.001	0,9999	< 0.001	< 0.001	

STIPE - LENGTH	*A. candidus*	*A. dobrogensis*	*A. campestris*	*A. magnus*	*A. subalbidus*	*A. taichungensis*	*A. tenebricus*	*A. pragensis*	*A. neotritici*
A. candidus									
A. dobrogensis	< 0.001								
A. campestris	< 0.001	< 0.001							
A. magnus	< 0.001	< 0.001	< 0.001						
A. subalbidus	< 0.001	< 0.001	< 0.001	< 0.001					
A. taichungensis	< 0.001	< 0.001	< 0.001	< 0.001	0,0015				
A. tenebricus	< 0.001	< 0.001	< 0.001	< 0.001	0,9604	0,3967			
A. pragensis	0,0024	< 0.001	< 0.001	< 0.001	0,1902	< 0.001	0,119		
A. neotritici	0,3228	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	

PHIALIDES - LENGTH	*A. candidus*	*A. dobrogensis*	*A. campestris*	*A. magnus*	*A. subalbidus*	*A. taichungensis*	*A. tenebricus*	*A. pragensis*	*A. neotritici*
A. candidus									
A. dobrogensis	< 0.001								
A. campestris	< 0.001	< 0.001							
A. magnus	< 0.001	0,3614	0,3955						
A. subalbidus	0,0174	< 0.001	< 0.001	< 0.001					
A. taichungensis	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001				
A. tenebricus	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001			
A. pragensis	< 0.001	< 0.001	< 0.001	< 0.001	0,1532	0,032	< 0.001		
A. neotritici	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	

STIPE - WIDTH	*A. candidus*	*A. dobrogensis*	*A. campestris*	*A. magnus*	*A. subalbidus*	*A. taichungensis*	*A. tenebricus*	*A. pragensis*	*A. neotritici*
A. candidus									
A. dobrogensis	< 0.001								
A. campestris	< 0.001	0,0192							
A. magnus	< 0.001	< 0.001	< 0.001						
A. subalbidus	< 0.001	< 0.001	< 0.001	< 0.001					
A. taichungensis	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001				
A. tenebricus	< 0.001	< 0.001	< 0.001	< 0.001	1.000	< 0.001			
A. pragensis	< 0.001	< 0.001	< 0.001	< 0.001	0,9911	< 0.001	0,9992		
A. neotritici	0,1141	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	

VESICLE - DIAMETER	*A. candidus*	*A. dobrogensis*	*A. campestris*	*A. magnus*	*A. subalbidus*	*A. taichungensis*	*A. tenebricus*	*A. pragensis*	*A. neotritici*
A. candidus									
A. dobrogensis	< 0.001								
A. campestris	< 0.001	< 0.001							
A. magnus	< 0.001	< 0.001	< 0.001						
A. subalbidus	< 0.001	< 0.001	< 0.001	< 0.001					
A. taichungensis	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001				
A. tenebricus	0,9978	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001			
A. pragensis	0,2366	< 0.001	< 0.001	< 0.001	0,0015	< 0.001	0,9554		
A. neotritici	0,954	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	1.000	0,871	

METULAE - LENGTH	*A. candidus*	*A. dobrogensis*	*A. campestris*	*A. magnus*	*A. subalbidus*	*A. taichungensis*	*A. tenebricus*	*A. pragensis*	*A. neotritici*
A. candidus									
A. dobrogensis	< 0.001								
A. campestris	< 0.001	< 0.001							
A. magnus	< 0.001	< 0.001	< 0.001						
A. subalbidus	< 0.001	< 0.001	< 0.001	< 0.001					
A. taichungensis	0,9997	< 0.001	< 0.001	< 0.001	< 0.001				
A. tenebricus	< 0.001	< 0.001	0,9861	< 0.001	< 0.001	< 0.001			
A. pragensis	0,4365	< 0.001	< 0.001	< 0.001	< 0.001	0,4196	< 0.001		
A. neotritici	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0,0111	< 0.001	

TABLE S2

Table S2. Delimitation of isolates into populations by BPP 4.3

Designation of population	Isolates belonging to the population
A. candidus population 1	NRRL 4646, CCF 3996, CCF 488, CCF 5172, CCF 5576, CCF 5577, CBS 566.65, CCF 6195, CCF 6198, NRRL 58579, NRRL 58959, DTO 223-E5
A. candidus population 2	CCF 4659, CMW-IA 8, CMW-IA 9, CMW-IA 10, CMW-IA 11
A. candidus population 3	CCF 5675, CCF 6200
A. candidus population 4	CCF 4029
A. dobrogensis population 1	CCF 4649, CCF 4651, CCF 5569, CCF 5570, CCF 5572, CCF 5574
A. dobrogensis population 2	CBS 225.80, CCF 4651, CCF 5575, IBT 29476, CCF 5844, FMR 15601, DTO 025-I1
A. dobrogensis population 3	FMR 15444
Aspergillus sp. DTO 244-F1	DTO 244-F1
A. campestris population 1	CBS 348.81, IBT 17867
A. campestris population 2	IMI 344489, IBT 23172
A. campestris population 3	CCF 5641, FMR 15224, FMR 15226
A. magnus population 1	UAMH 1324
A. subalbidus population 1	DTO 196-E4
A. subalbidus population 2	FMR 15877
A. subalbidus population 3	CMW-IA 16, CMW-IA 17, CMW-IA 18, CMW-IA 19, CMW-IA 20, CN162D4, CN162D5, CN162D6, CN162D7, CN162D8, CCF 6205, NRRL 58123, FMR 15733, FMR 15736, CCF 5848, CCF 5698, CCF 5697, CCF 5643, NRRL 4809, CCF 4913
A. subalbidus population 4	CCF 5696, CCF 6199
A. subalbidus population 5	CBS 567.65, CBS 112449, NRRL 5214
A. subalbidus population 6	CCF 5642, CCF 6197
A. taichungensis population 1	IBT 19404, CMW-IA 21, DTO 270-C9
A. taichungensis population 2	DTO 266-G2
A. tenebricus population 1	DTO 337-H7, DTO 440-E1
A. pragensis population 1	CCF 3962, NRRL 58614, CCF 5693, CCF 5847, CMW-IA 13, CMW-IA 14, CMW-IA 15
A. neotritici population 1	CCF 4914, IBT 12659
A. neotritici population 2	CCF 3853, CCF 4030, CCF 3314, CCF 6202, CCF 1649, CMW-IA 12, DTO 201-D3, DTO 201-G7, NRRL 4847

TABLE S3

Table S3. *Aspergillus* isolates from the *Candidi* section used in the ecological analysis together with the strains listed in Table 1.

Species	Isolate number	Country	Substrate	Accession number			Reference
				benA	***CaM***	***RPB2***	
Aspergillus candidus	KAS6136	Canada	house dust	–	KX894589	–	Visagie CM, Yilmaz N, Renaud JB, *et al*. (2017). A survey of xerophilic *Aspergillus* from indoor environment, including descriptions of two new section *Aspergillus* species producing eurotium–like sexual states. *MycoKeys* **19**: 1–30.
Aspergillus candidus	KAS6134	Canada	house dust	–	KX894588	–	Visagie CM, Yilmaz N, Renaud JB, *et al*. (2017). A survey of xerophilic *Aspergillus* from indoor environment, including descriptions of two new section *Aspergillus* species producing eurotium–like sexual states. *MycoKeys* **19**: 1–30.
Aspergillus candidus	KAS6022	Canada	house dust	–	KX894580	–	Visagie CM, Yilmaz N, Renaud JB, *et al*. (2017). A survey of xerophilic *Aspergillus* from indoor environment, including descriptions of two new section *Aspergillus* species producing eurotium–like sexual states. *MycoKeys* **19**: 1–30.
Aspergillus candidus	17436 R44	Italy	cave cheese rind	LS423476	–	–	Anelli P, Haidukowski M, Epifani F, *et al*. (2019). Fungal mycobiota and mycotoxin risk for traditional artisan Italian cave cheese. *Food Microbiology* **78**: 62–72.
Aspergillus candidus	R441	Italy	cave cheese rind	–	LS423534	–	Anelli P, Haidukowski M, Epifani F, *et al*. (2019). Fungal mycobiota and mycotoxin risk for traditional artisan Italian cave cheese. *Food Microbiology* **78**: 62–72.
Aspergillus candidus	SFC102207	South Korea	egg-mass, *Arctoscopus japonicus*	–	MF185902	–	Park MS, Oh S–Y, Lee S, *et al*. (2018). Fungal diversity and enzyme activity associated with sailfin sandfish egg masses in Korea. *Fungal Ecology* **34**: 1–9.
Aspergillus candidus	JN-YG-3-2	South Korea	*Tribolium castaneum*	MH444456	MH424009	–	Yun T–S, Park S–Y, Yu J, *et al*. (2018). Isolation and identification of fungal species from the insect pest *Tribolium castaneum* in rice processing complexes in Korea. *The Plant Pathology Journal* **34**: 356–366.
Aspergillus candidus	FMR 15218	Spain	dung	LT798960	–	–	Siqueira JPZ (2017). Clinical and environmental *Aspergillus*: morphological and molecular characterization, phylogeny, and antifungal susceptibility profile. PhD Thesis. Universitat Rovira i Virgili.
Aspergillus candidus	FMR 15172	Spain	dung	LT798959	–	–	Siqueira JPZ (2017). Clinical and environmental *Aspergillus*: morphological and molecular characterization, phylogeny, and antifungal susceptibility profile. PhD Thesis. Universitat Rovira i Virgili.
Aspergillus candidus	CBS 17C2	The Netherlands	indoor environment	EU076299	–	–	Varga J, Frisvad JC, Samson RA (2007). Polyphasic taxonomy of *Aspergillus* section *Candidi* based on molecular, morphological and physiological data. *Studies in Mycology* **59:** 75–88.
Aspergillus candidus	CBS 120.38	unknown	unknown	EU076292	–	–	Varga J, Frisvad JC, Samson RA (2007). Polyphasic taxonomy of *Aspergillus* section *Candidi* based on molecular, morphological and physiological data. *Studies in Mycology* **59:** 75–88.

TABLE S3 (Continued).

Table S3. (Continued).

Species	Isolate number	Country	Substrate	Accession number			Reference
				benA	*CaM*	*RPB2*	
Aspergillus neotritici	O6	Brazil	oat flour	MW079288	–	–	Vogel P, Da Silva GL, Esswein IZ, *et al*. (2021). Effects of infestations of the storage mite *Tyrophagus putrescentiae* (*Acaridae*) on the presence of fungal species and mycotoxin production in stored products. *Journal of Stored Products Research* **94:** 1–8.
Aspergillus neotritici	BMU11062	China	clinical material	MZ062546	–	–	Li R, Yu J, Shao J. unpublished.
Aspergillus neotritici	BMU11063	China	clinical material	MZ062547	–	–	Xiao RF, Zhu YJ, Liu B. unpublished.
Aspergillus neotritici	FJAT-30990	China	deep litter for pig raising	KU737553	–	–	Xiao RF, Zhu YJ, Liu B. unpublished.
Aspergillus neotritici	WZ99	China	soil	KX495180	KX495181	–	Xian L, Feng J–X (2018). Purification and biochemical characterization of a novel mesophilic glucoamylase from *Aspergillus tritici* WZ99. *International Journal of Biological Macromolecules* **107**: 1122–1130.
Aspergillus neotritici	CCMFBH-959	Cuba	indoor environment	MT410468	–	–	Espinosa KCS, Chávez MA, Duarte–Escalante E, *et al*. (2021). Phylogenetic identification, diversity, and richness of *Aspergillus* from homes in Havana, Cuba. *Microorganisms* **9**: 1–12.
Aspergillus neotritici	VPCI 1218/11	India	clinical sample	KX455763	KX455805	–	Masih A, Singh PK, Kathuria S, *et al*. (2016). Clinically significant rare *Aspergillus* species in a referral chest hospital, Delhi, India: molecular and MALDI TOF identification and their antifungal susceptibility profiles. *Journal of Clinical Microbiology*: 1–24.
Aspergillus neotritici	VPCI 484/12	India	clinical sample	KX455764	KX455806	–	Masih A, Singh PK, Kathuria S, *et al*. (2016). Clinically significant rare *Aspergillus* species in a referral chest hospital, Delhi, India: molecular and MALDI TOF identification and their antifungal susceptibility profiles. *Journal of Clinical Microbiology*: 1–24.
Aspergillus neotritici	DTO 276-D2	Iran	inside of the hematology ward	–	MZ027899	–	Najafzadeh MJ, Dolatabadi S, Zarrinfar H, *et al*. (2021). Molecular diversity of Aspergilli in two Iranian hospitals. *Mycopathologia* **186**: 519–533.
Aspergillus neotritici	17433 R22	Italy	cave cheese rind	LS423474	–	–	Anelli P, Haidukowski M, Epifani F, *et al*. (2019). Fungal mycobiota and mycotoxin risk for traditional artisan Italian cave cheese. *Food Microbiology* **78**: 62–72.
Aspergillus neotritici	R12	Italy	cave cheese rind	LS423533	–	–	Anelli P, Haidukowski M, Epifani F, *et al*. (2019). Fungal mycobiota and mycotoxin risk for traditional artisan Italian cave cheese. *Food Microbiology* **78**: 62–72.
Aspergillus neotritici	CMV016I7	South Africa	sorghum malt	–	MK951916	–	Visagie CM, Houbraken J (2020). Updating the taxonomy of *Aspergillus* in South Africa. *Studies in Mycology* **95**: 293–380.
Aspergillus neotritici	CMV017B1	South Africa	maize	–	MK951927	–	Visagie CM, Houbraken J (2020). Updating the taxonomy of *Aspergillus* in South Africa. *Studies in Mycology* **95**: 293–380.

TABLE S3 (Continued).

Table S3. (Continued).

Species	Isolate number	Country	Substrate	Accession number			Reference
				benA	*CaM*	*RPB2*	
Aspergillus neotritici	NRRL 313	unknown	unknown	EU014093	EF669552	EF669636	Peterson SW (2008). Phylogenetic analysis of *Aspergillus* species using DNA sequences from four loci. *Mycologia* **100**: 205–226.
Aspergillus pragensis	KAS6138	Canada	house dust	–	KX894590	–	Visagie CM, Yilmaz N, Renaud JB, *et al.* (2017). A survey of xerophilic *Aspergillus* from indoor environment, including descriptions of two new section *Aspergillus* species producing eurotium–like sexual states. *MycoKeys* **19**: 1–30.
Aspergillus pragensis	KAS6297	Canada	house dust	–	KX894604	–	Visagie CM, Yilmaz N, Renaud JB, *et al.* (2017). A survey of xerophilic *Aspergillus* from indoor environment, including descriptions of two new section *Aspergillus* species producing eurotium–like sexual states. *MycoKeys* **19**: 1–30.
Aspergillus pragensis	KAS6299	Canada	house dust	–	KX894606	–	Visagie CM, Yilmaz N, Renaud JB, *et al.* (2017). A survey of xerophilic *Aspergillus* from indoor environment, including descriptions of two new section *Aspergillus* species producing eurotium–like sexual states. *MycoKeys* **19**: 1–30.
Aspergillus pragensis	KAS6296	Canada	house dust	–	KX894603	–	Visagie CM, Yilmaz N, Renaud JB, *et al.* (2017). A survey of xerophilic *Aspergillus* from indoor environment, including descriptions of two new section *Aspergillus* species producing eurotium–like sexual states. *MycoKeys* **19**: 1–30.
Aspergillus pragensis	KAS6298	Canada	house dust	–	KX894605	–	Visagie CM, Yilmaz N, Renaud JB, *et al.* (2017). A survey of xerophilic *Aspergillus* from indoor environment, including descriptions of two new section *Aspergillus* species producing eurotium–like sexual states. *MycoKeys* **19**: 1–30.
Aspergillus pragensis	KAS6020	Canada	house dust	–	KX894579	–	Visagie CM, Yilmaz N, Renaud JB, *et al.* (2017). A survey of xerophilic *Aspergillus* from indoor environment, including descriptions of two new section *Aspergillus* species producing eurotium–like sexual states. *MycoKeys* **19**: 1–30.
Aspergillus pragensis	CNUFC BPM36-34	South Korea	by-product rice bran	–	MN337611	–	Nguyen TT, Pangging M, Bangash NK, *et al.* (2020). Five new records of the family *Aspergillaceae* in Korea, *Aspergillus europaeus*, *A. pragensis*, *A. tennesseensis*, *Penicillium fluviserpens*, and *P. scabrosum*. *Mycobiology* **48**: 81–94.
Aspergillus pragensis	CNUFC BPM36-33	South Korea	by-product rice bran	MN337604	MN337610	–	Nguyen TT, Pangging M, Bangash NK, *et al.* (2020). Five new records of the family *Aspergillaceae* in Korea, *Aspergillus europaeus*, *A. pragensis*, *A. tennesseensis*, *Penicillium fluviserpens*, and *P. scabrosum*. *Mycobiology* **48**: 81–94.

TABLE S3 (Continued).

Table S3. (Continued).

Species	Isolate number	Country	Substrate	Accession number			Reference
				benA	*CaM*	*RPB2*	
Aspergillus subalbidus	DN76	Botswana	soil from batcave	–	MW480778	–	Visagie CM, Goodwell M, Nkwe D (2021). *Aspergillus* diversity from the Gcwihaba Cave in Botswana and description of one new species. *Fungal Systematics and Evolution* **8**: 81–89.
Aspergillus subalbidus	DN70	Botswana	soil from batcave	–	MW480772	–	Visagie CM, Goodwell M, Nkwe D (2021). *Aspergillus* diversity from the Gcwihaba Cave in Botswana and description of one new species. *Fungal Systematics and Evolution* **8**: 81–89.
Aspergillus subalbidus	DN63	Botswana	soil from batcave	–	MW480765	–	Visagie CM, Goodwell M, Nkwe D (2021). *Aspergillus* diversity from the Gcwihaba Cave in Botswana and description of one new species. *Fungal Systematics and Evolution* **8**: 81–89.
Aspergillus subalbidus	Bdf-2	China	*Blaptica dubia*	MN533958		MN533959	Shan T, Wang Y, Wang S, *et al.* (2020). A new p–terphenyl derivative from the insect–derived fungus *Aspergillus candidus* Bdf–2 and the synergistic effects of terphenyllin. *PeerJ* **8**: e8221.
Aspergillus subalbidus	DTO 266-I9	Federated States of Micronesia	indoor house dust	KJ775081	KJ775251	–	Visagie CM, Hirooka Y, Tanney JB, *et al.* (2014). *Aspergillus*, *Penicillium* and *Talaromyces* isolated from house dust samples collected around the world. *Studies in Mycology* **78**: 63–139.
Aspergillus subalbidus	KGUT NKH	Iran	agricultural products	–	MN986428	–	Habibi A, Afzali D (2021). *Aspergillus* section *Flavi* from four agricultural products and association of mycotoxin and sclerotia production with isolation source. *Current Microbiology* **78**: 3674–3685.
Aspergillus subalbidus	KGUT C14	Iran	agricultural products	–	MN986426	–	Habibi A, Afzali D (2021). *Aspergillus* section *Flavi* from four agricultural products and association of mycotoxin and sclerotia production with isolation source. *Current Microbiology* **78**: 3674–3685.
Aspergillus subalbidus	CMV004E8	South Africa	dung	MK451000	MK451330	–	Visagie CM, Houbraken J (2020). Updating the taxonomy of *Aspergillus* in South Africa. *Studies in Mycology* **95**: 293–380.
Aspergillus subalbidus	DTO 129-E3	Thailand	indoor house dust	KJ775068	KJ775249	–	Visagie CM, Hirooka Y, Tanney JB, *et al.* (2014). *Aspergillus*, *Penicillium* and *Talaromyces* isolated from house dust samples collected around the world. *Studies in Mycology* **78**: 63–139.
Aspergillus subalbidus	DTO 129-F9	Thailand	indoor house dust	KJ775069	KJ775250	–	Visagie CM, Hirooka Y, Tanney JB, *et al.* (2014). *Aspergillus*, *Penicillium* and *Talaromyces* isolated from house dust samples collected around the world. *Studies in Mycology* **78**: 63–139.

TABLE S3 (Continued).

Table S3. (Continued).

Species	Isolate number	Country	Substrate	Accession number			Reference
				benA	***CaM***	***RPB2***	
Aspergillus taichungensis	KGUT MD17	Iran	agricultural products	MN986427	–	–	Habibi A, Afzali D (2021). *Aspergillus* section *Flavi* from four agricultural products and association of mycotoxin and sclerotia production with isolation source. *Current Microbiology* **78**: 3674–3685.