

# Supporting Information

## **Systematic analyses reveal uniqueness and origin of the CFEM domain in fungi**

Zhen-Na Zhang<sup>1,2,†</sup>, Qin-Yi Wu<sup>1,†</sup>, Gui-Zhi Zhang<sup>2</sup>, Yue-Yan Zhu<sup>1</sup>, Robert W. Murphy<sup>3</sup>, Zhen Liu<sup>3,\*</sup> and Cheng-Gang Zou<sup>1,\*</sup>

<sup>1</sup>Laboratory for Conservation and Utilization of Bio-Resources, Yunnan University, Kunming, China

<sup>2</sup>Xiamen Tobacco Industrial CO., LTD, Xiamen, China

<sup>3</sup>State Key Laboratory of Genetic Resources and Evolution, Kunming Institute of Zoology, Chinese Academy of Sciences, Kunming, China

Table S1. Fungal species used in this study.

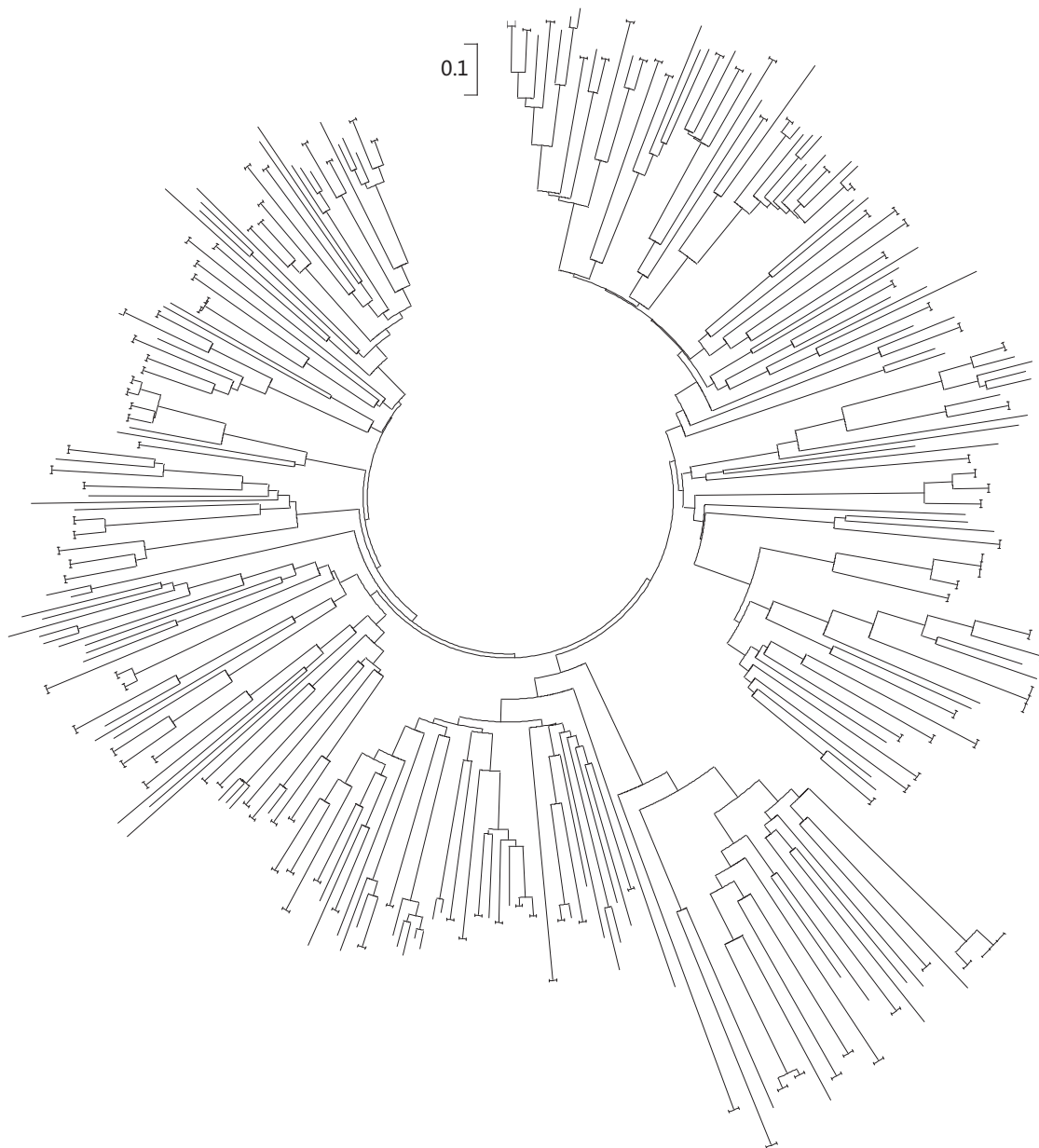
Species	Phylum	Genome source
<i>Ajellomyces capsulata</i>	Ascomycota	BROAD-FGI
<i>Ajellomyces dermatitidis</i>	Ascomycota	BROAD-FGI
<i>Arthrobotrys oligospora</i>	Ascomycota	NCBI
<i>Arthroderma benhamiae</i>	Ascomycota	BROAD-FGI
<i>Arthroderma gypseum</i>	Ascomycota	NCBI
<i>Ascospaera apis</i>	Ascomycota	NCBI
<i>Aspergillus carbonarius</i>	Ascomycota	BROAD-FGI
<i>Aspergillus clavatus</i>	Ascomycota	BROAD-FGI
<i>Aspergillus flavus</i>	Ascomycota	BROAD-FGI
<i>Asperigillus fumigates</i>	Ascomycota	BROAD-FGI
<i>Asperigillus nidulans</i>	Ascomycota	BROAD-FGI
<i>Asperigillus niger</i>	Ascomycota	BROAD-FGI
<i>Aspergillus oryzae</i>	Ascomycota	BROAD-FGI
<i>Aspergillus terreus</i>	Ascomycota	BROAD-FGI
<i>Botryotinia fuckeliana</i>	Ascomycota	BROAD-FGI
<i>Candida albicans</i>	Ascomycota	BROAD-FGI
<i>Candida dubliniensis</i>	Ascomycota	NCBI
<i>Candida glabrata</i>	Ascomycota	NCBI
<i>Candida parapsilosis</i>	Ascomycota	BROAD-FGI
<i>Candida tropicalis</i>	Ascomycota	BROAD-FGI
<i>Chaetomium globosum</i>	Ascomycota	BROAD-FGI
<i>Clavispora lusitaniae</i>	Ascomycota	NCBI
<i>Coccidioides immitis</i>	Ascomycota	BROAD-FGI
<i>Coccidioides posadasii</i>	Ascomycota	BROAD-FGI
<i>Cochliobolus heterostrophus</i>	Ascomycota	JGI
<i>Debaryomyces hansenii</i>	Ascomycota	BROAD-FGI

<i>Eremothecium gossypii</i>	Ascomycota	NCBI
<i>Fusarium oxysporum</i>	Ascomycota	BROAD-FGI
<i>Gibberella moniliformis</i>	Ascomycota	NCBI
<i>Gibberella zeae</i>	Ascomycota	NCBI
<i>Glomerella graminicola</i>	Ascomycota	NCBI
<i>Hypocrea jecorina</i>	Ascomycota	NCBI
<i>Hypocrea virens</i>	Ascomycota	NCBI
<i>Kluyveromyces lactis</i>	Ascomycota	BROAD-FGI
<i>Lachancea kluyveri</i>	Ascomycota	NCBI
<i>Lachancea thermotolerans</i>	Ascomycota	NCBI
<i>Lachancea waltii</i>	Ascomycota	RFCG
<i>Lodderomyces elongisporus</i>	Ascomycota	BROAD-FGI
<i>Magnaporthe grisea</i>	Ascomycota	BROAD-FGI
<i>Nectria haematococca</i>	Ascomycota	JGI
<i>Neosartorya fischeri</i>	Ascomycota	NCBI
<i>Neurospora crassa</i>	Ascomycota	BROAD-FGI
<i>Paracoccidioides brasiliensis</i>	Ascomycota	NCBI
<i>Penicillium chrysogenum</i>	Ascomycota	NCBI
<i>Penicillium marneffeii</i>	Ascomycota	NCBI
<i>Phaeosphaeria nodorum</i>	Ascomycota	NCBI
<i>Pichia pastoris</i>	Ascomycota	NCBI
<i>Pichia guilliermondii</i>	Ascomycota	NCBI
<i>Pneumocystis carinii</i>	Ascomycota	NCBI
<i>Podospora anserina</i>	Ascomycota	NCBI
<i>Pyrenophora tritici-repentis</i>	Ascomycota	BROAD-FGI
<i>Saccharomyces bayanus</i>	Ascomycota	NCBI
<i>Saccharomyces cerevisiae</i>	Ascomycota	NCBI
<i>Saccharomyces kluyveri</i>	Ascomycota	RFCG
<i>Saccharomyces kudriavzevii</i>	Ascomycota	RFCG

<i>Saccharomyces mikatae</i>	Ascomycota	RFCG
<i>Saccharomyces paradoxus</i>	Ascomycota	RFCG
<i>Scheffersomyces stipitis</i>	Ascomycota	NCBI
<i>Schizosaccharomyces cryophilus</i>	Ascomycota	NCBI
<i>Schizosaccharomyces japonicas</i>	Ascomycota	BROAD-FGI
<i>Schizosaccharomyces octoporus</i>	Ascomycota	FGR
<i>Schizosaccharomyces pombe</i>	Ascomycota	BROAD-FGI
<i>Sclerotinia sclerotiorum</i>	Ascomycota	BROAD-FGI
<i>Talaromyces stipitatus</i>	Ascomycota	NCBI
<i>Trichoderma atroviride</i>	Ascomycota	JGI
<i>Trichophyton equinum</i>	Ascomycota	NCBI
<i>Trichophyton rubrum</i>	Ascomycota	NCBI
<i>Trichophyton tonsurans</i>	Ascomycota	NCBI
<i>Trichophyton verrucosum</i>	Ascomycota	NCBI
<i>Uncinocarpus reesii</i>	Ascomycota	BROAD-FGI
<i>Vanderwaltozyma polyspora</i>	Ascomycota	NCBI
<i>Verticillium albo-atrum</i>	Ascomycota	BROAD-FGI
<i>Verticillium dahlia</i>	Ascomycota	BROAD-FGI
<i>Yarrowia lipolytica</i>	Ascomycota	NCBI
<i>Zygosaccharomyces rouxii</i>	Ascomycota	NCBI
<i>Corpinus cinereus</i>	Basidiomycota	BROAD-FGI
<i>Cryptococcus gattii</i>	Basidiomycota	RFCG
<i>Cryptococcus neoformans</i> var. <i>grubii</i>	Basidiomycota	BROAD-FGI
<i>Cryptococcus neoformans</i> var. <i>neoformans</i>	Basidiomycota	BROAD-FGI
<i>Laccaria bicolor</i>	Basidiomycota	JGI
<i>Malassezia globosa</i>	Basidiomycota	FGR
<i>Malassezia restricta</i>	Basidiomycota	NCBI

<i>Moniliophthora perniciosa</i>	Basidiomycota	NCBI
<i>Phanerochaete chrysosporium</i>	Basidiomycota	JGI
<i>Postia placenta</i>	Basidiomycota	JGI
<i>Puccinia graminis</i>	Basidiomycota	BROAD-FGI
<i>Puccinia triticina</i>	Basidiomycota	NCBI
<i>Schizophyllum commune</i>	Basidiomycota	NCBI
<i>Ustilago maydis</i>	Basidiomycota	BROAD-FGI
<i>Phycomyces blakesleeanus</i>	Zygomycota	NCBI
<i>Rhizopus oryzae</i>	Zygomycota	NCBI
<i>Batrachochytrium dendrobatidis</i>	Chytridiomycota	NCBI
<i>Spizellomyces punctatus</i>	Chytridiomycota	NCBI
<i>Encephalitozoon cuniculi</i>	Microsporidia	NCBI
<i>Encephalitozoon intestinalis</i>	Microsporidia	NCBI
<i>Enterocytozoon bieneusi</i>	Microsporidia	NCBI
<i>Nematocida parisii</i>	Microsporidia	NCBI
<i>Nosema ceranae</i>	Microsporidia	NCBI
<i>Nosema locustae</i>	Microsporidia	NCBI
<i>Octosporea bayeri</i>	Microsporidia	NCBI

---



Supplementary figure 1. Neighbor-joining diagram constructed by using all CFEM sequences we identified from 64 fungal species.