

A bird's eye view of the fungal Kingdom

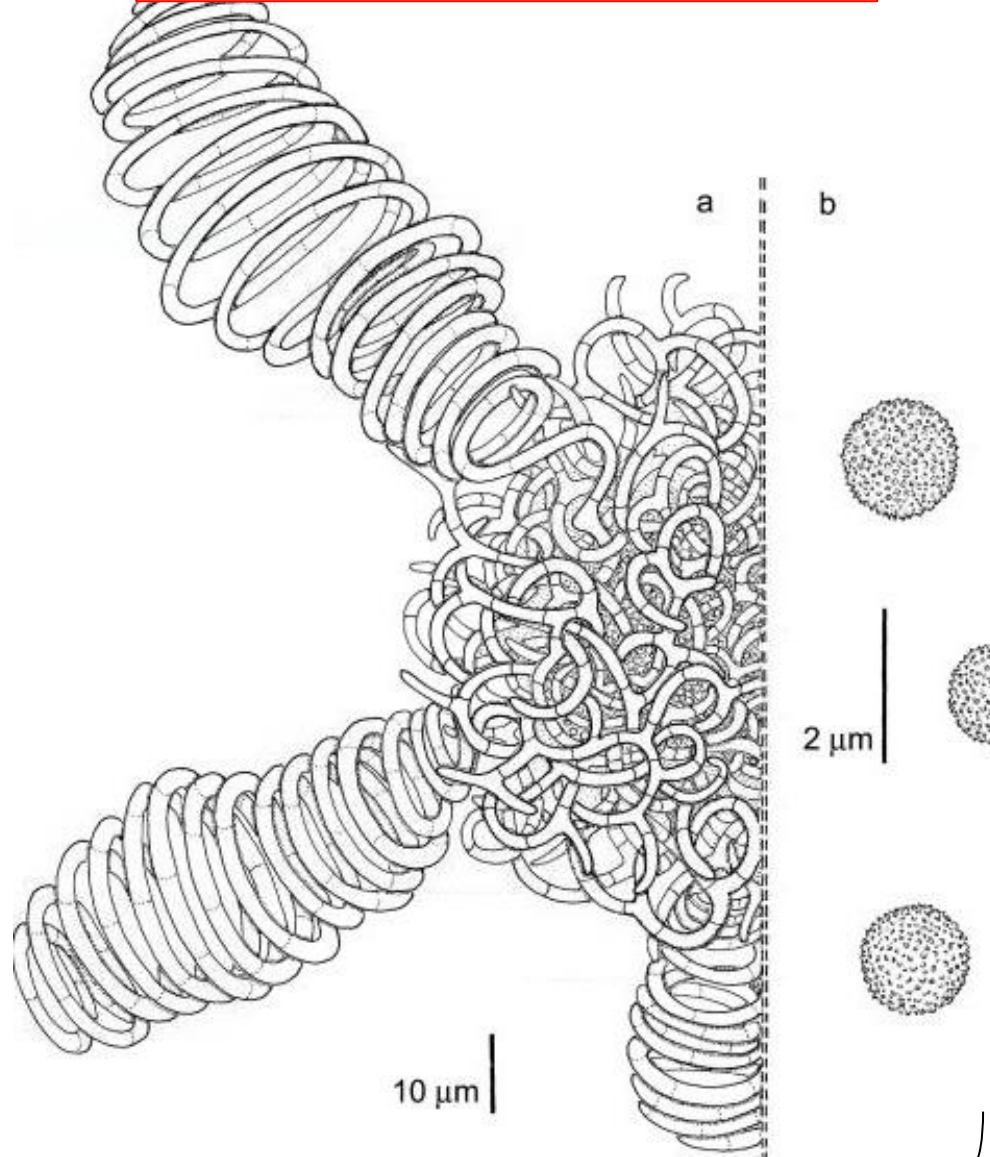
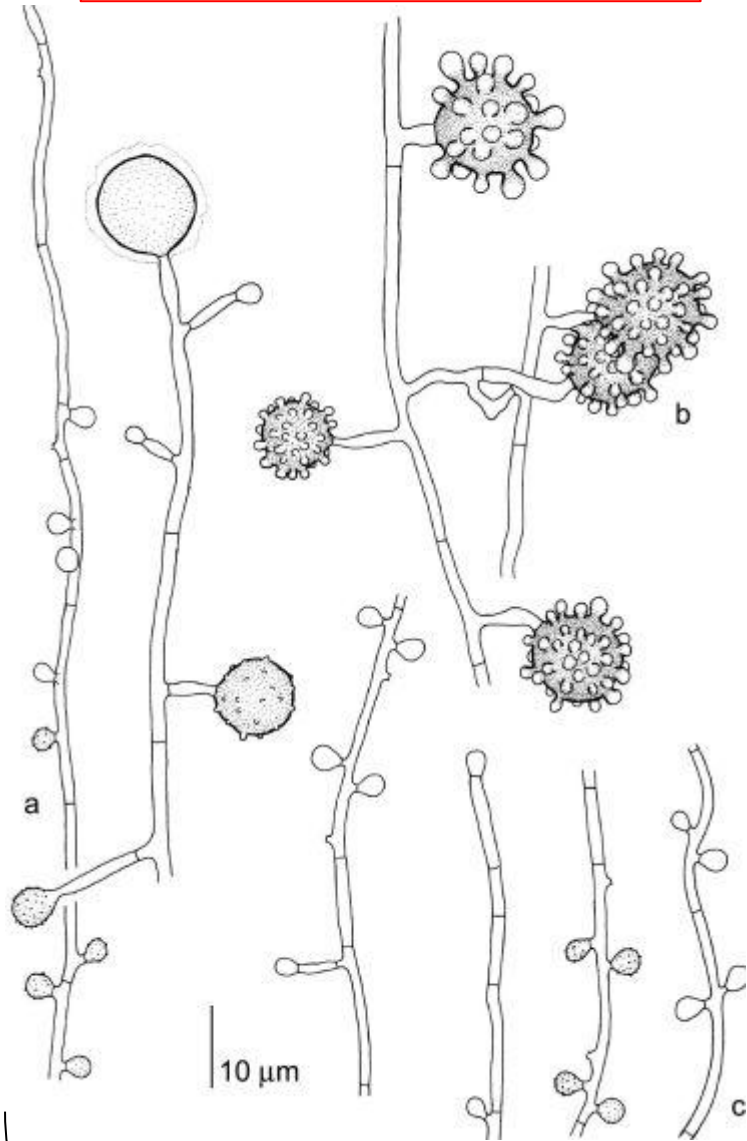
A quest for nomenclatural stability

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Histoplasma capsulatum on routine media: anamorph

Ajellomyces capsulatum on 1/10 SGA with salts: teleomorph



Histoplasma capsulatum

Higher fungi

Ascomycota

Hyphomycetes

Coelomycetes

lower fungi

Basidiomycota

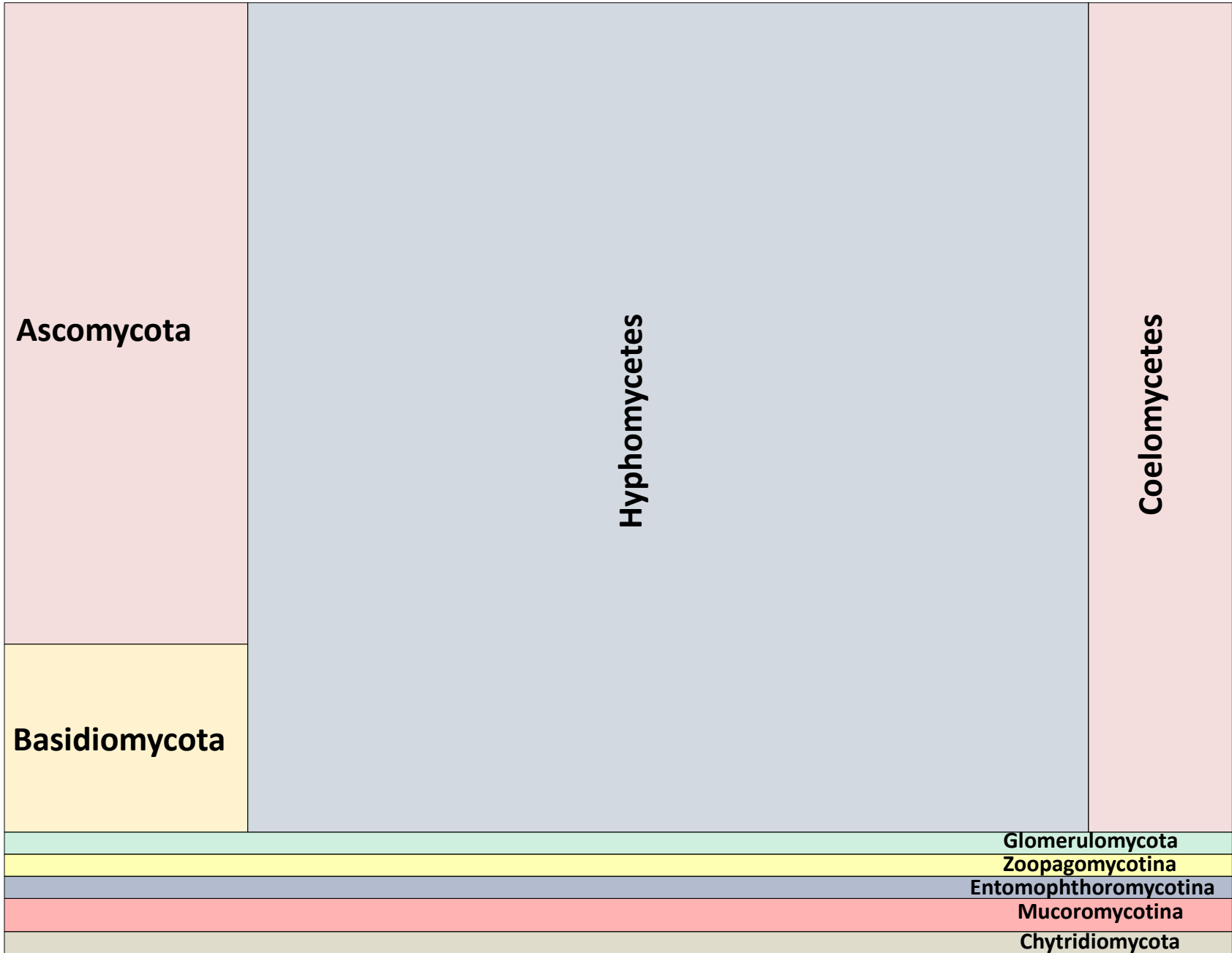
Glomerulomycota

Zoopagomycotina

Entomophthoromycotina

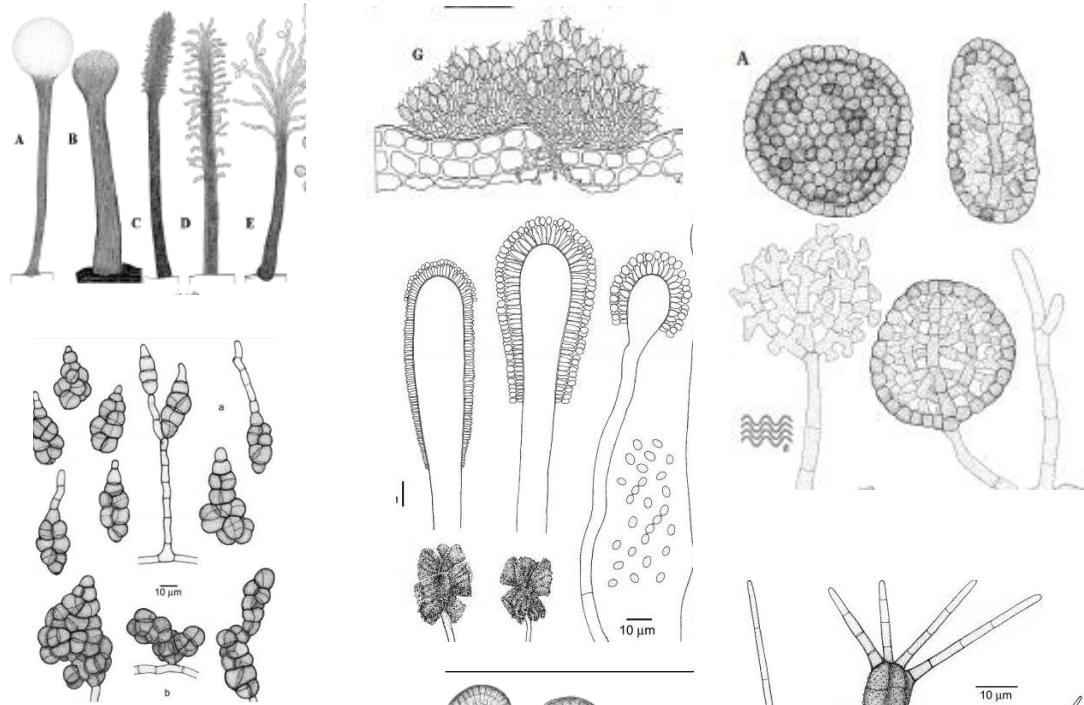
Mucoromycotina

Chytridiomycota



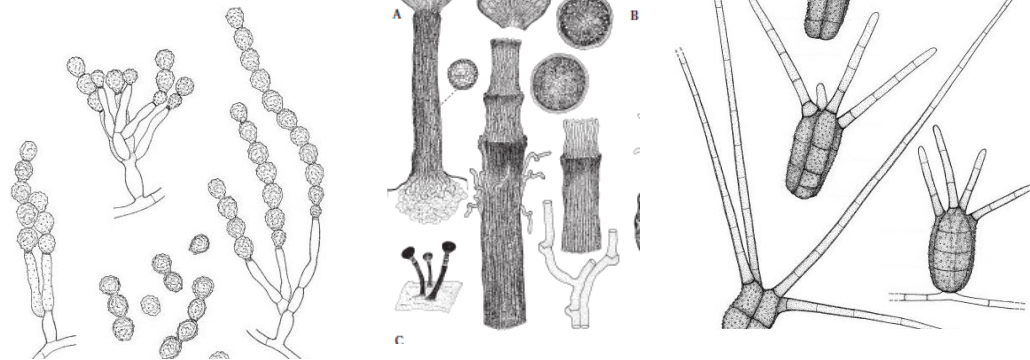
Higher fungi

Ascomycota



Lower fungi

Basidiomycota



Coelomycetes

Glomerulomycota

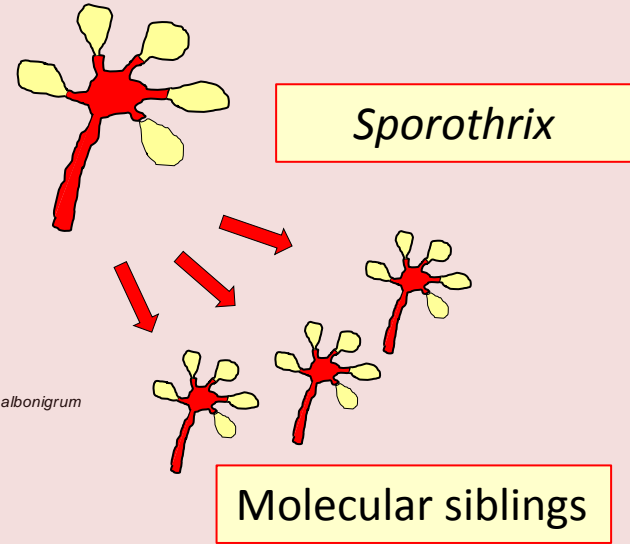
Zoopagomycotina

Entomophthoromycotina

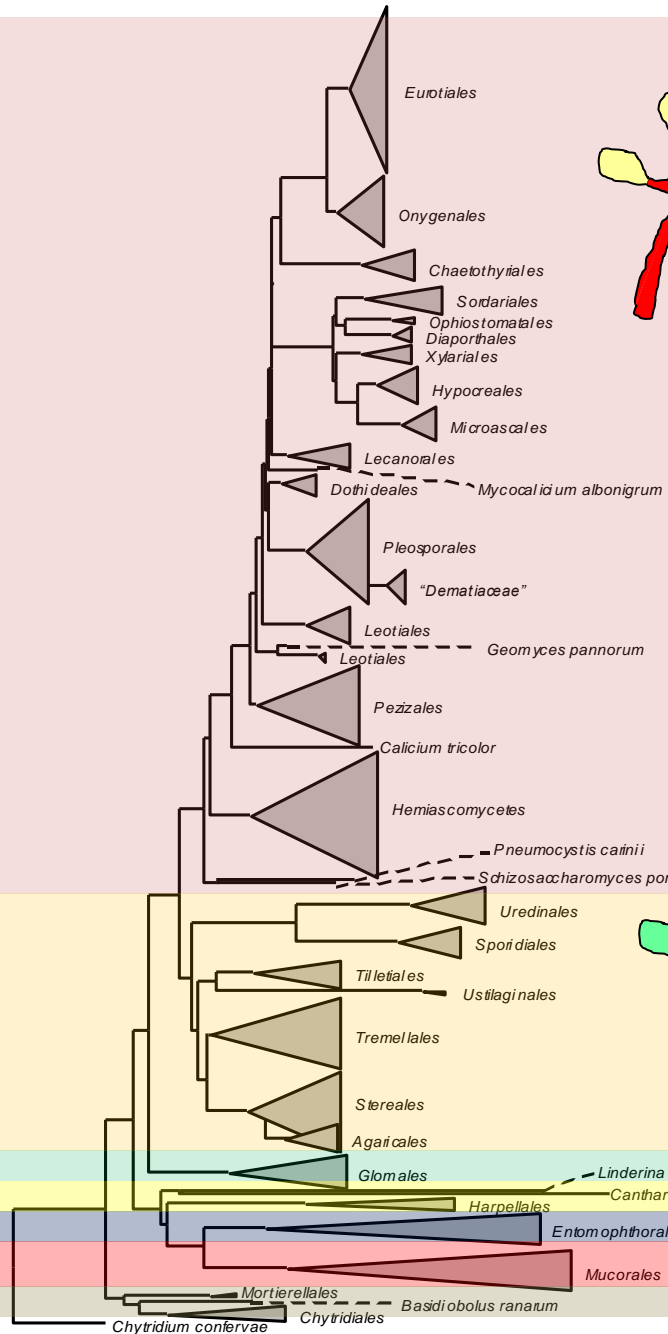
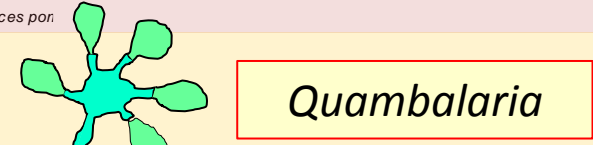
Mucoromycotina

Chytridiomycota

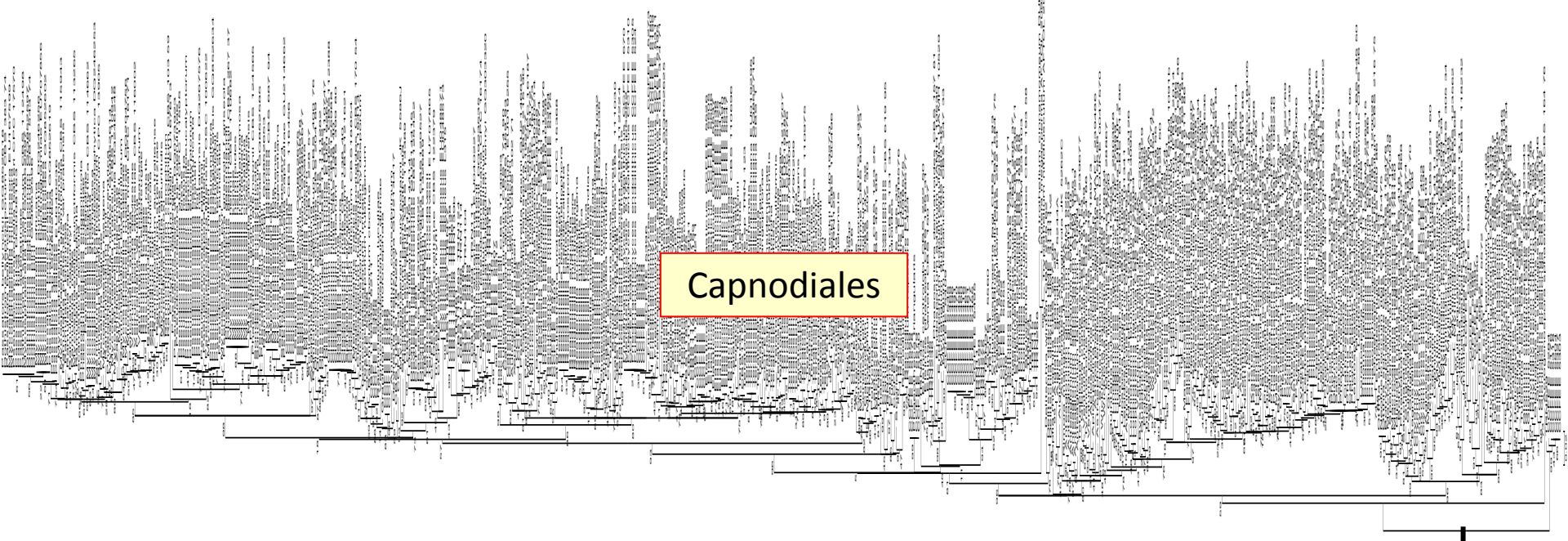
Ascomycota



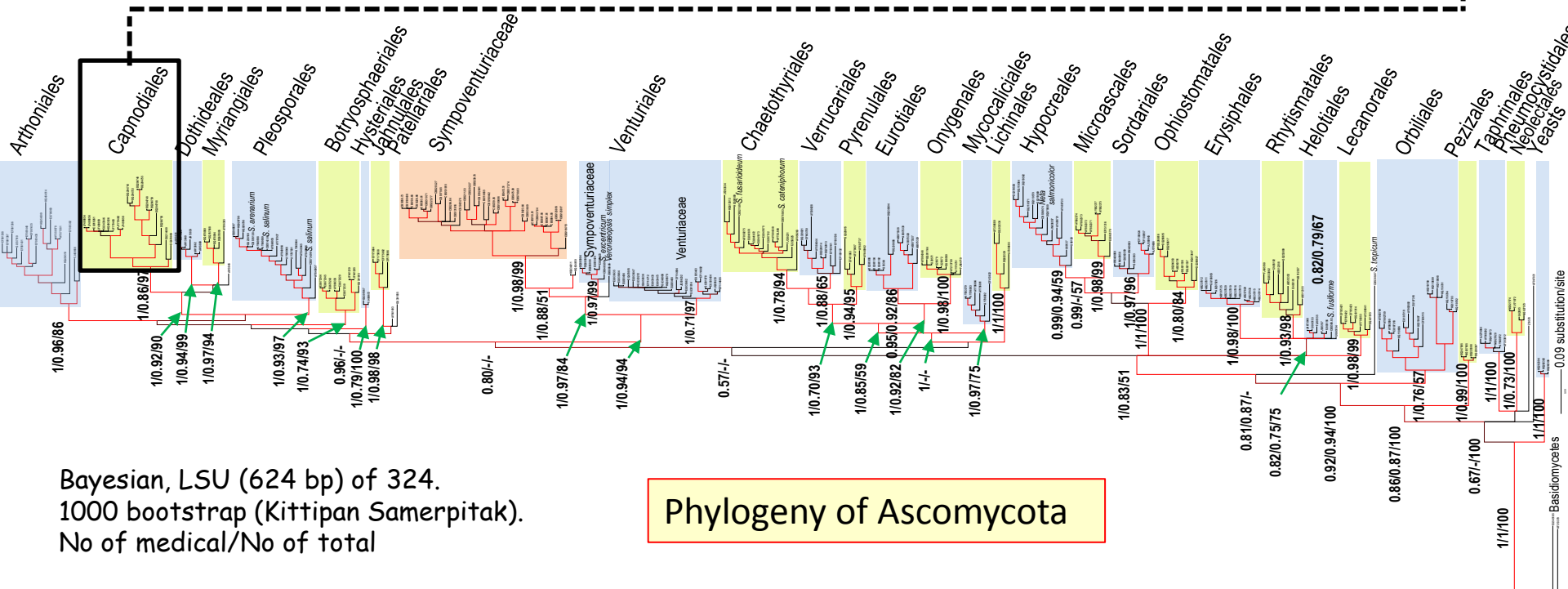
Basidiomycota



- Glomerulomycota
- Zoopagomycotina
- Entomophthoromycotina
- Mucoromycotina
- Chytridiomycota

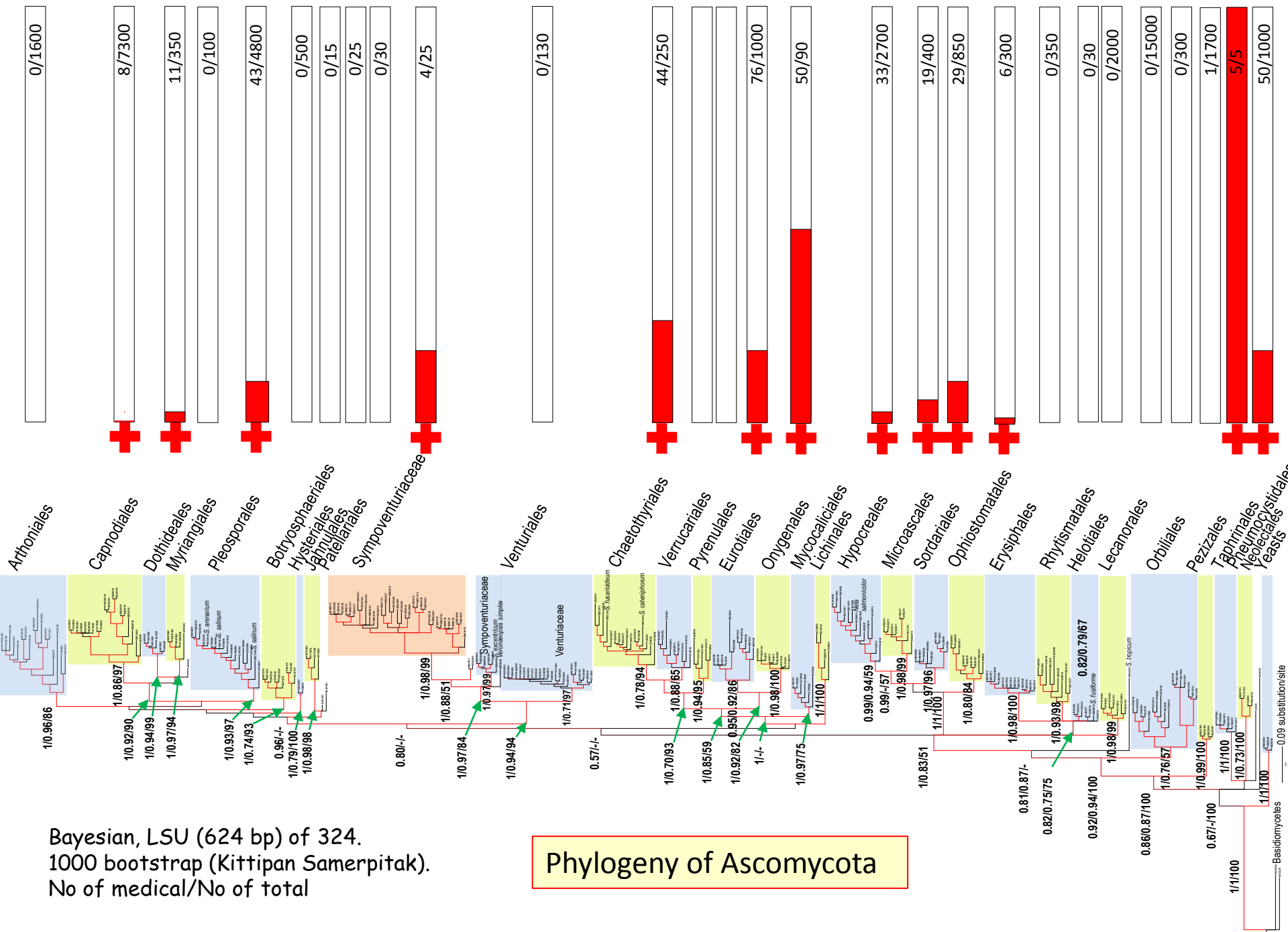


Capnodiales



Bayesian, LSU (624 bp) of 324.
1000 bootstrap (Kittipan Samerpitak).
No of medical/No of total

Phylogeny of Ascomycota



1. Changing genus names





Sarah Abdalla Ahmed

Madurella mycetomatis

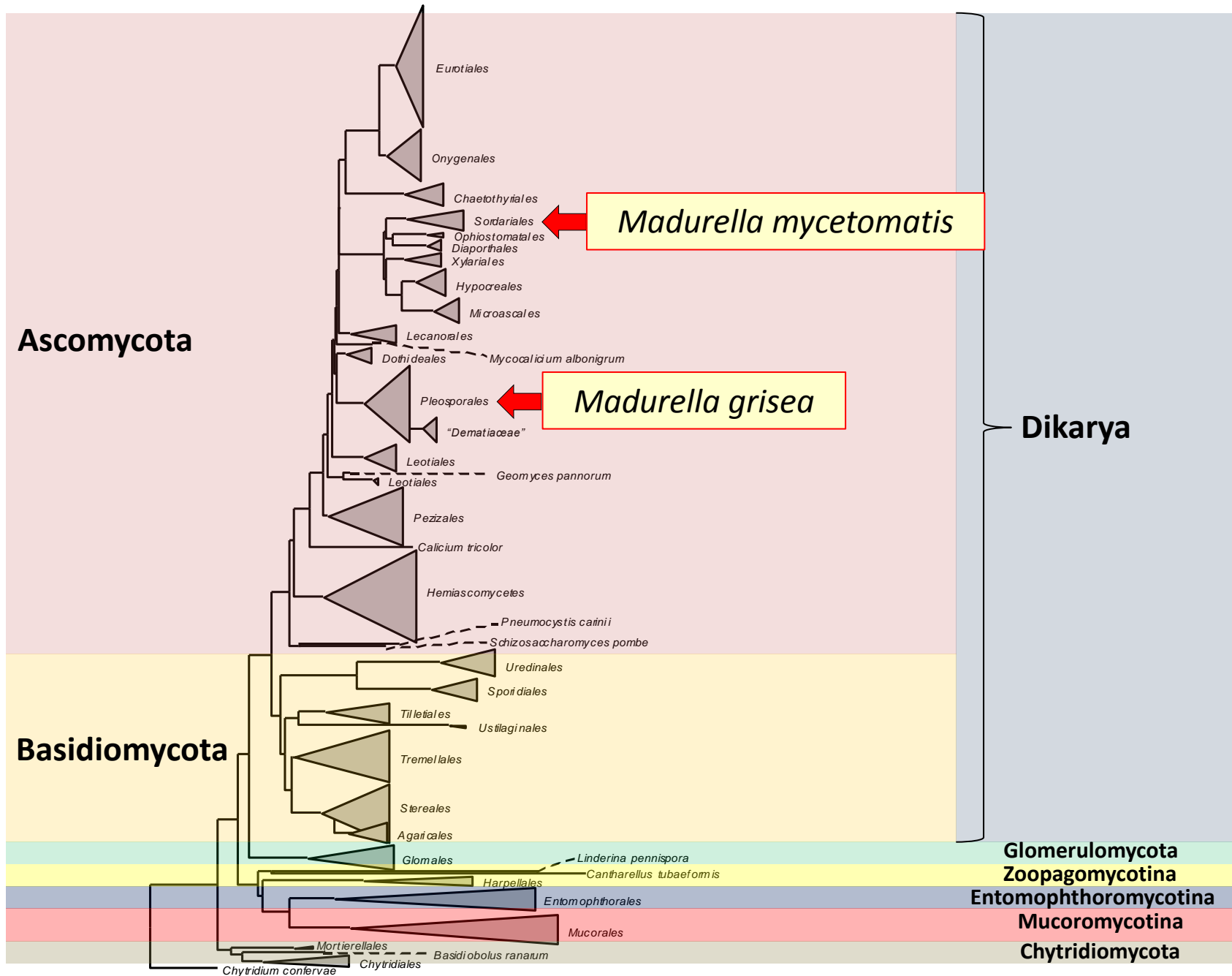
Madurella grisea





Sole clinical picture: mycetoma = fibrosis, grains, fistels, osteomyelitis





Madurella mycetomatis: endemic in arid climate zone northeastern Africa



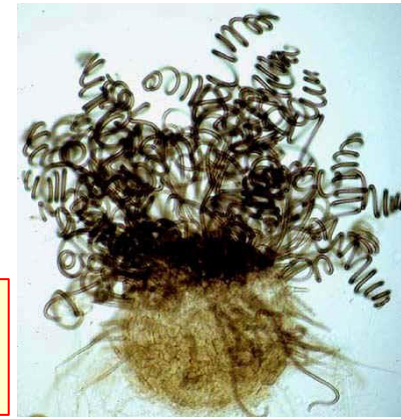
Mycetoma Research Center, Khartoum



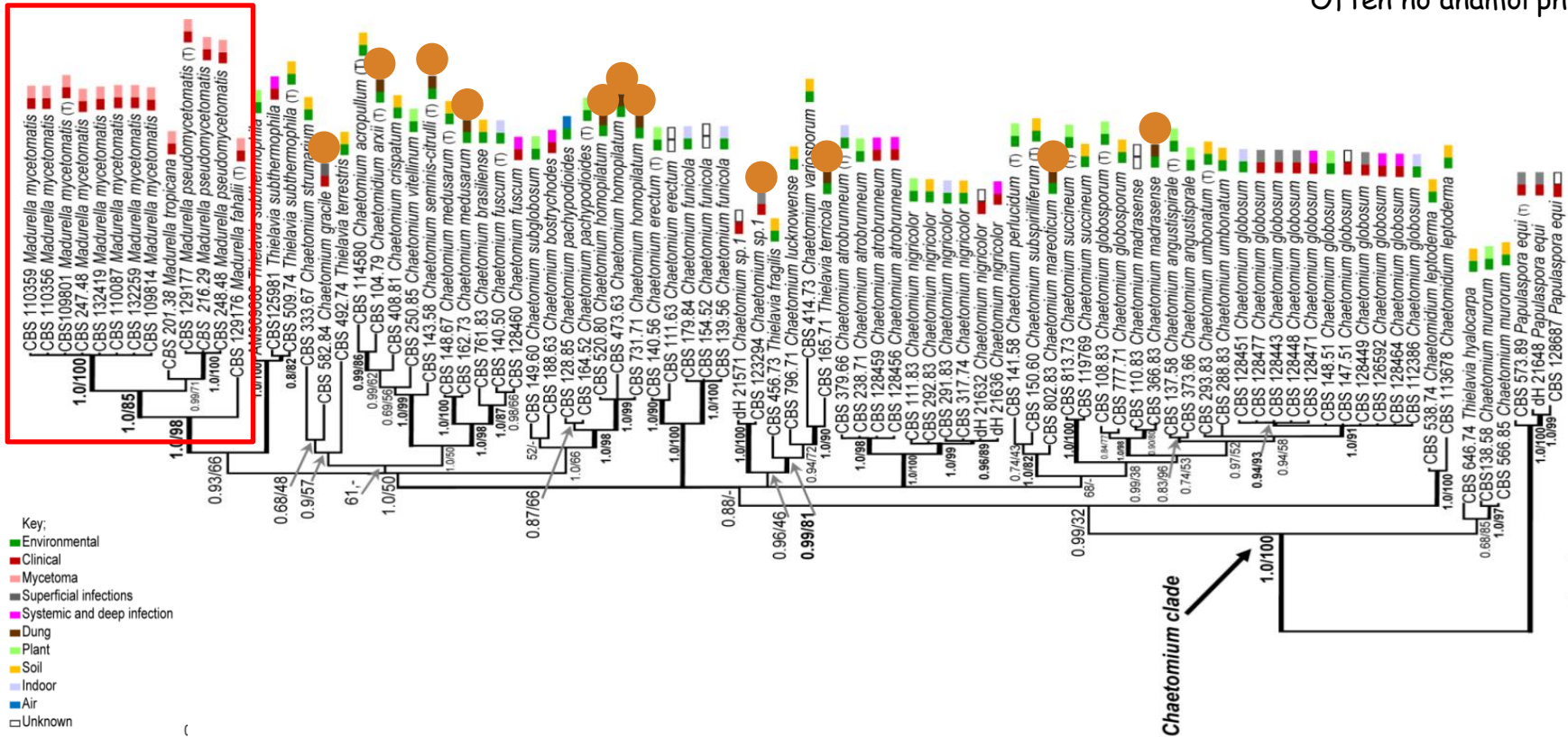
Order Sordariales

Madurella mycetomatis
 Madurella pseudomycetomatis
 Madurella fahlii

Nearest neighbor: *Chaetomium*
 Natural habitat coprophilic



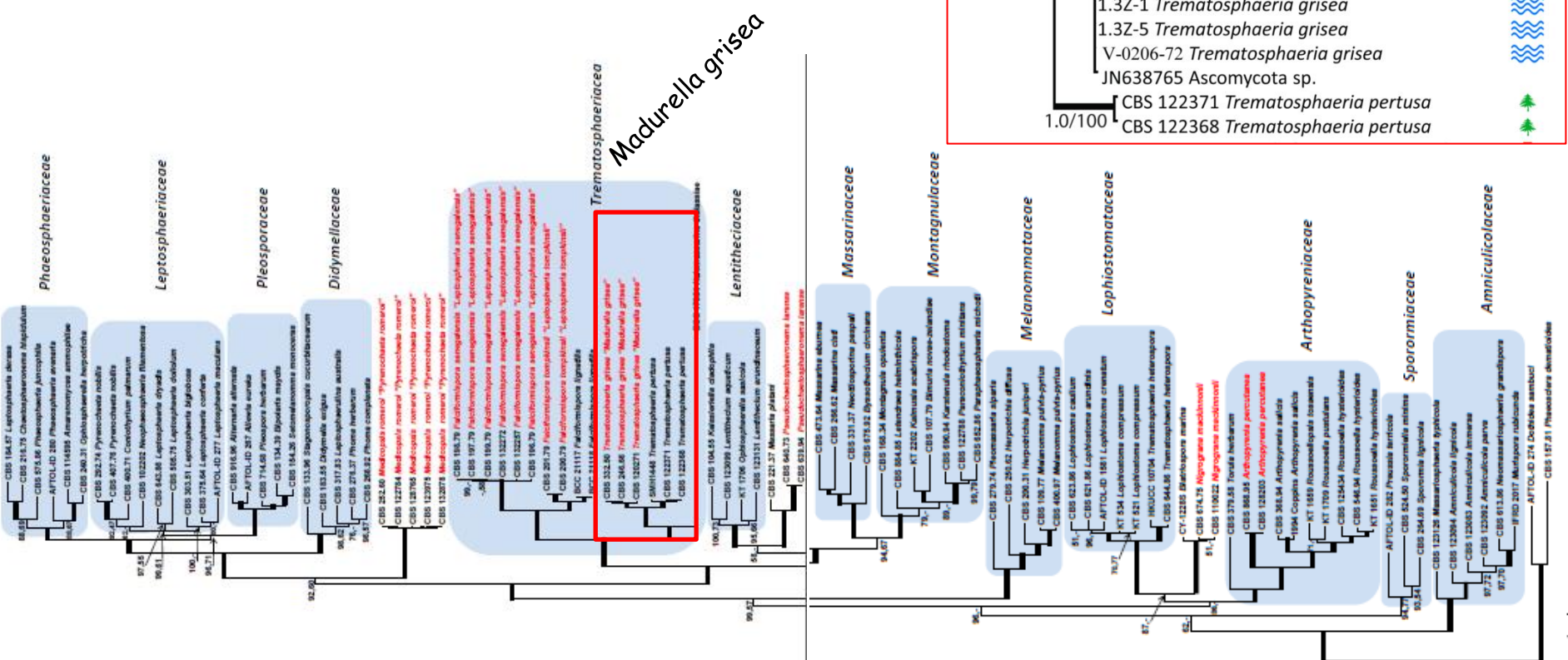
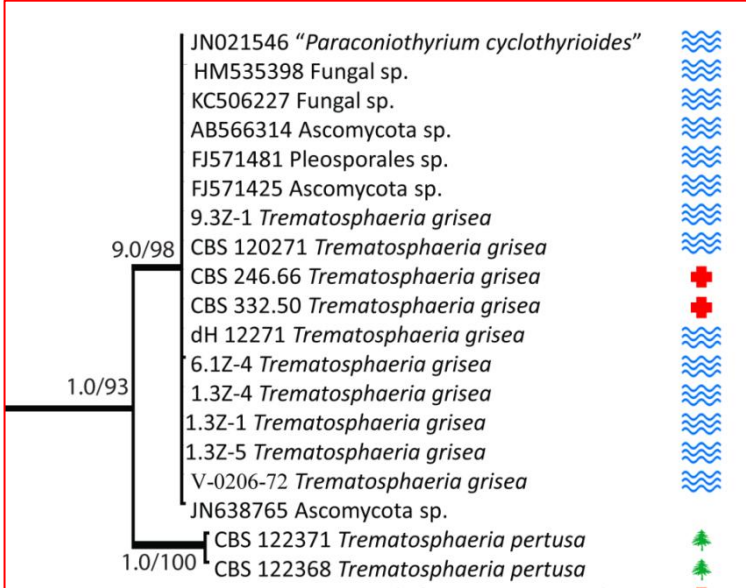
Often no anamorph



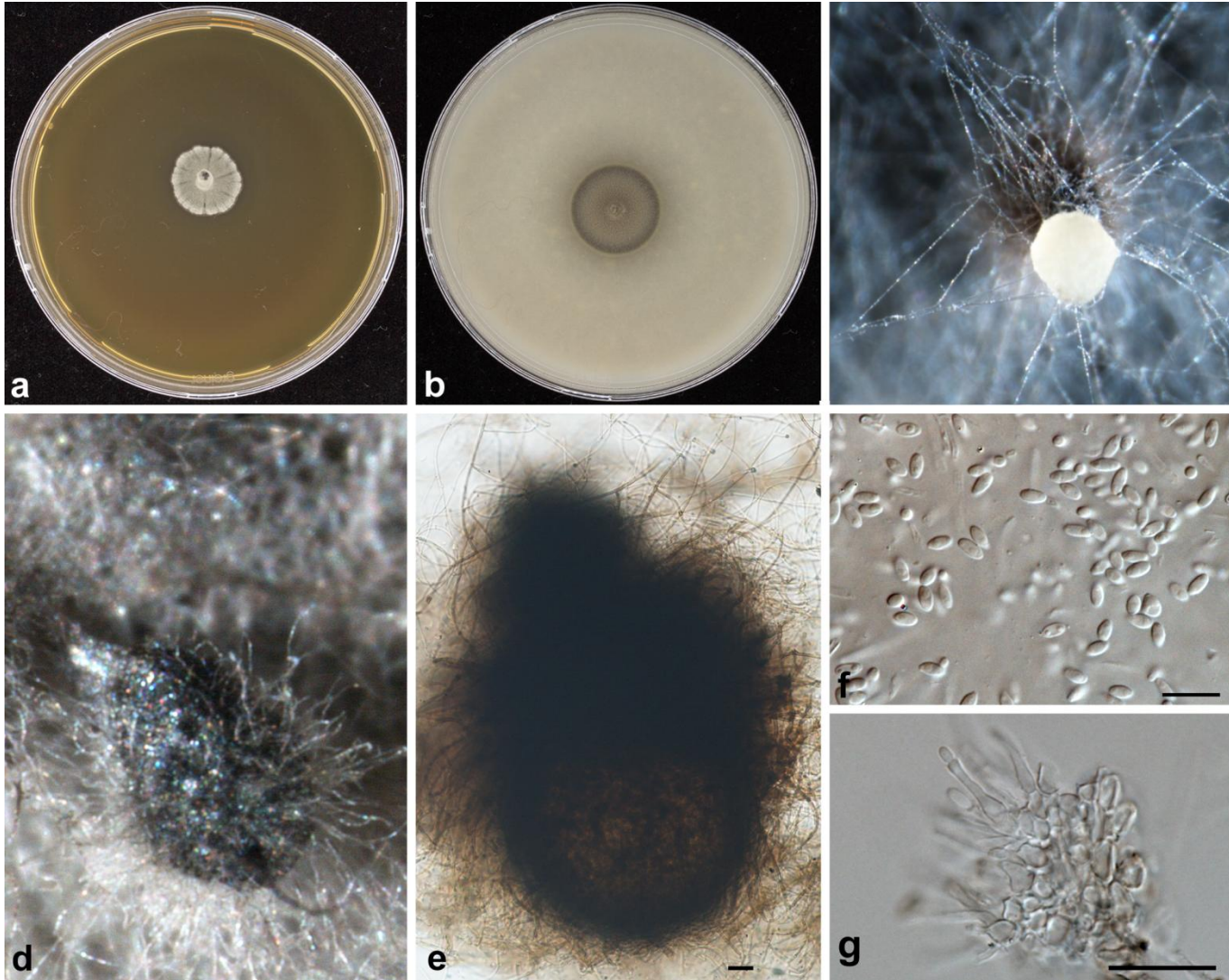


Order Pleosporales

Madurella grisea = *Trematosphaeria grisea*
 Natural habitat waterborne

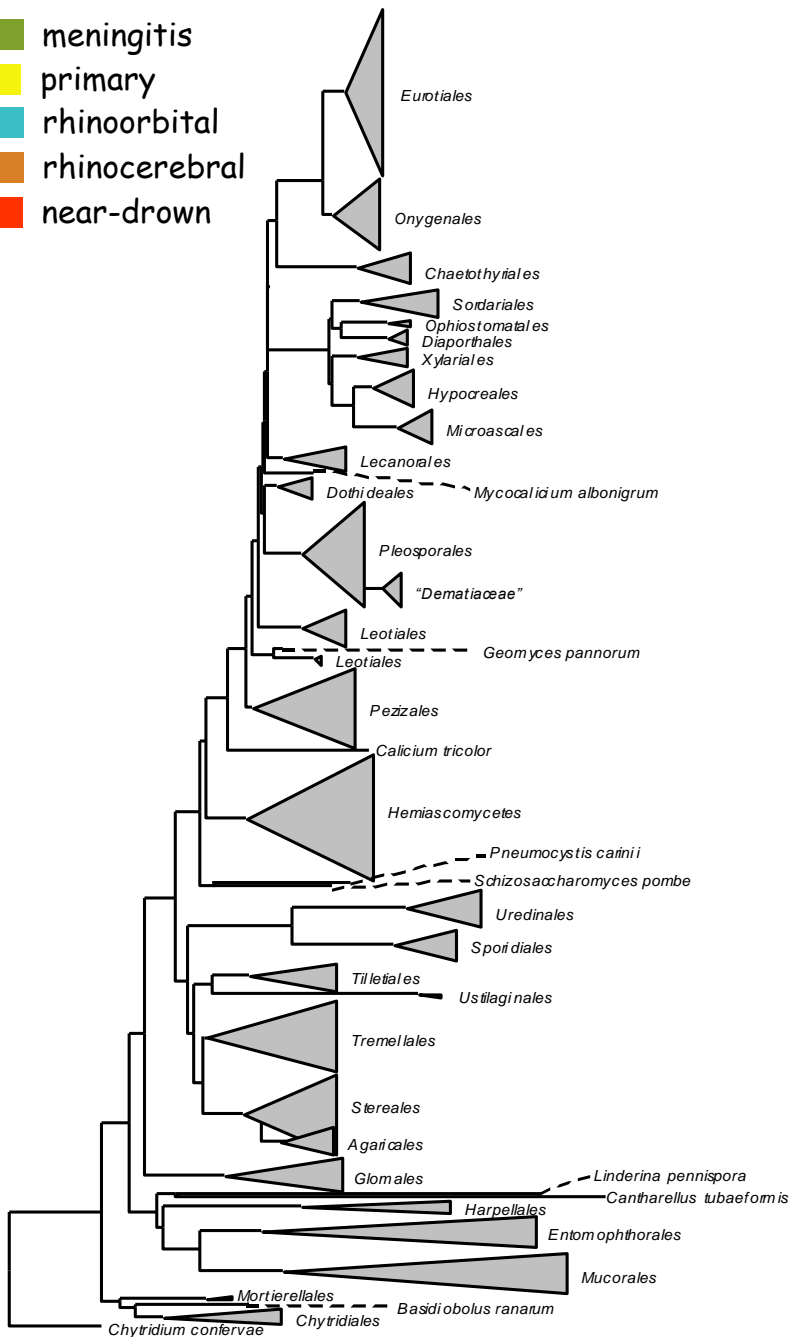


Trematosphaeria grisea

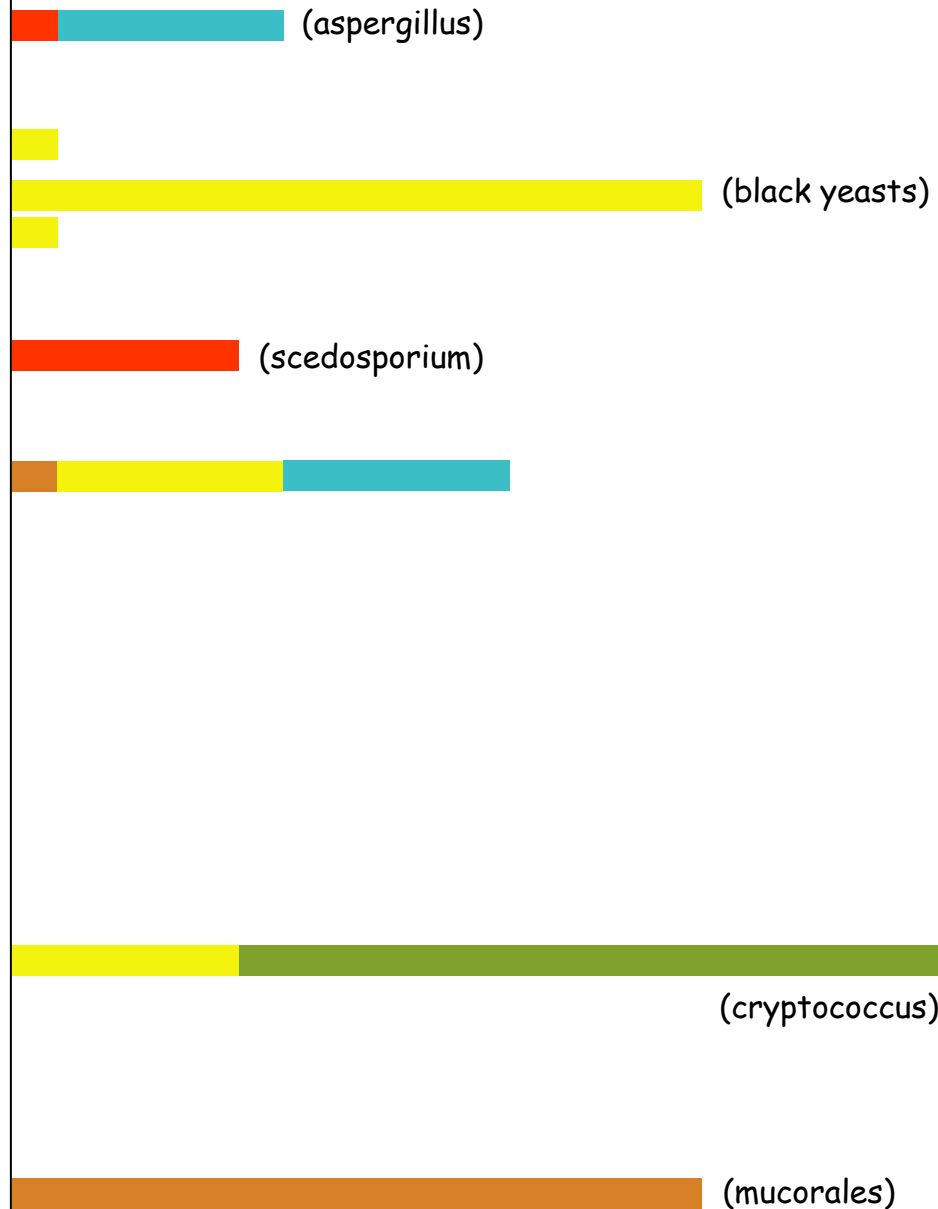


Delayed sporulation with coelomycetous anamorph

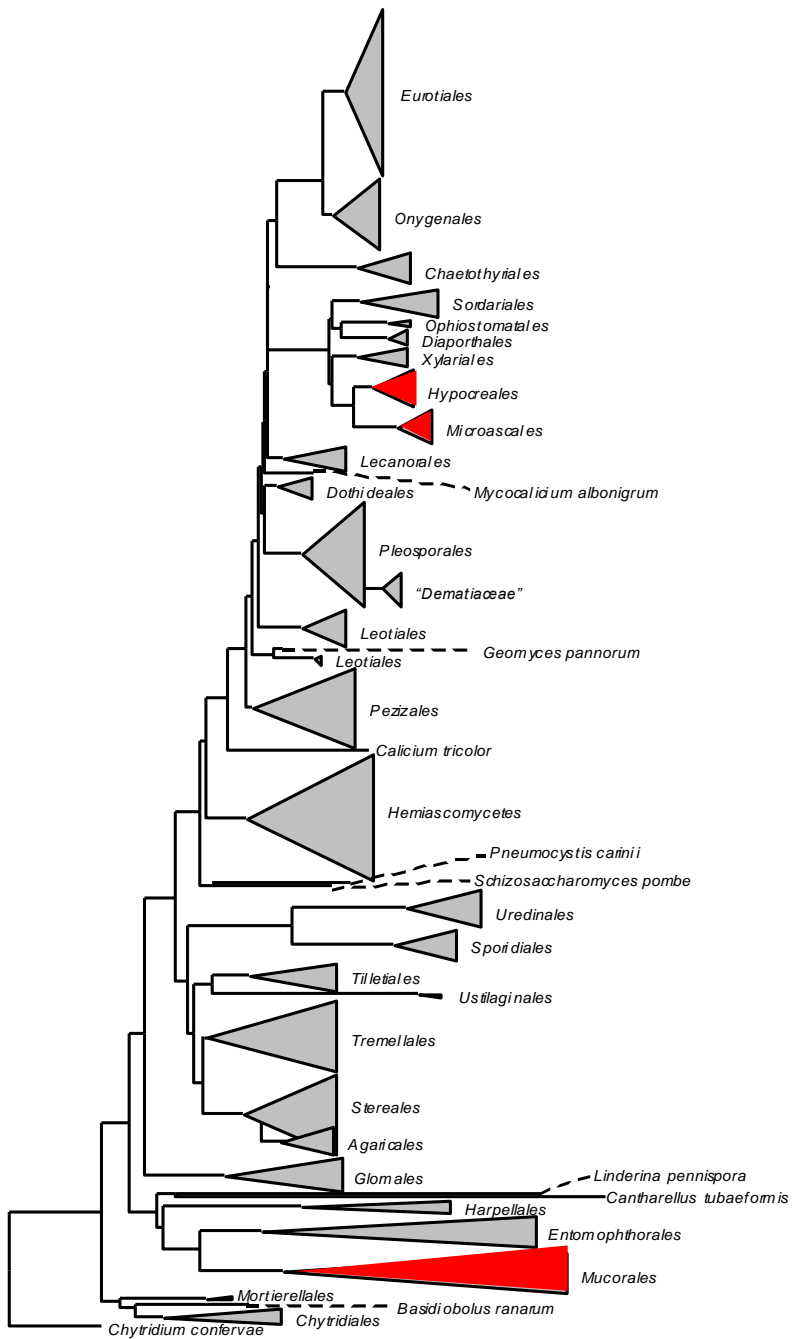
- meningitis
- primary
- rhinoorbital
- rhinocerebral
- near-drown



Distribution of cerebral infections



Orders with intrinsic antifungal resistance



Conclusion: phylogeny places fungi in logical arrangement.
Natural behaviour significantly different between groups.

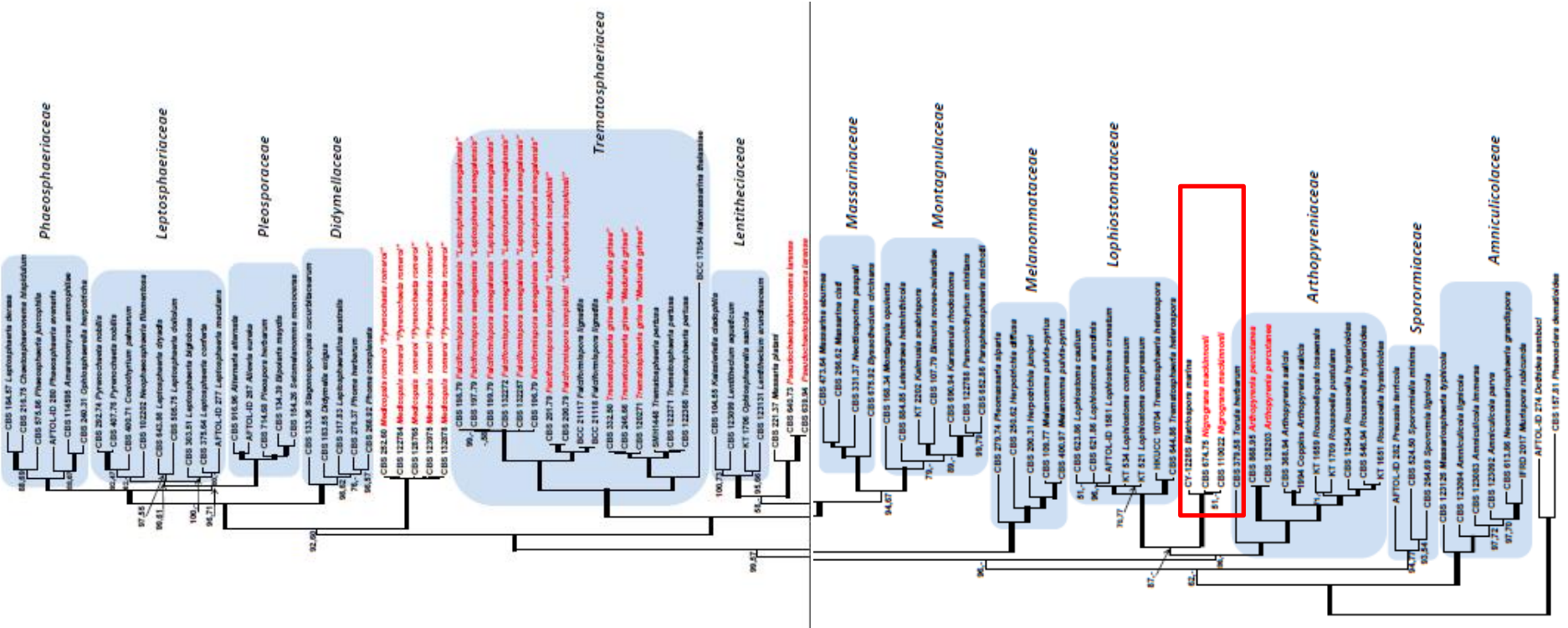
- Virulence potential and safety issues.
- Infection route and course.
- Therapy.

Temporary problems:

- Sampling effects.
- Taxonomic level undetermined.

1. Sampling effect:

New species added, old species sequenced; 'final' tree does not exist

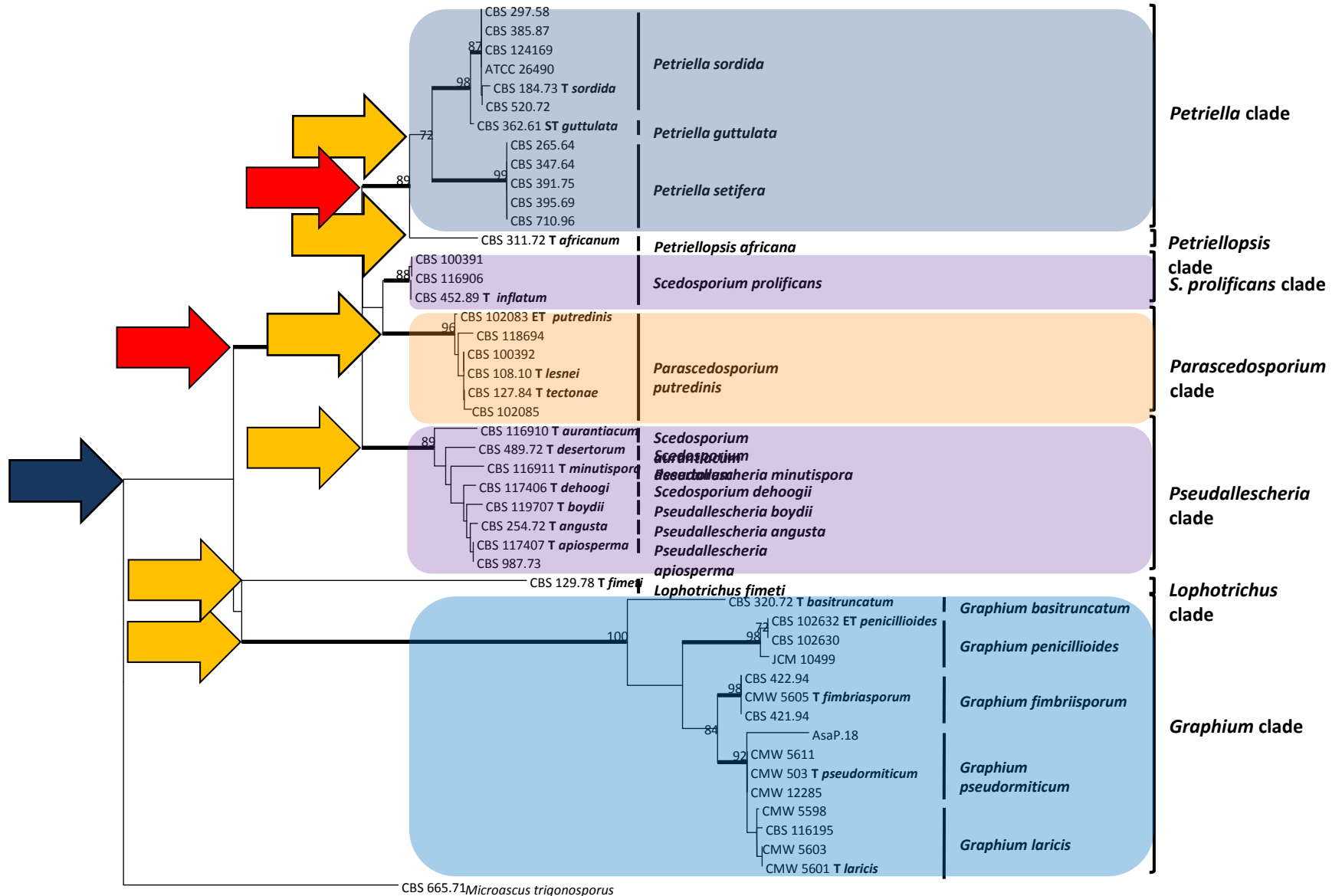


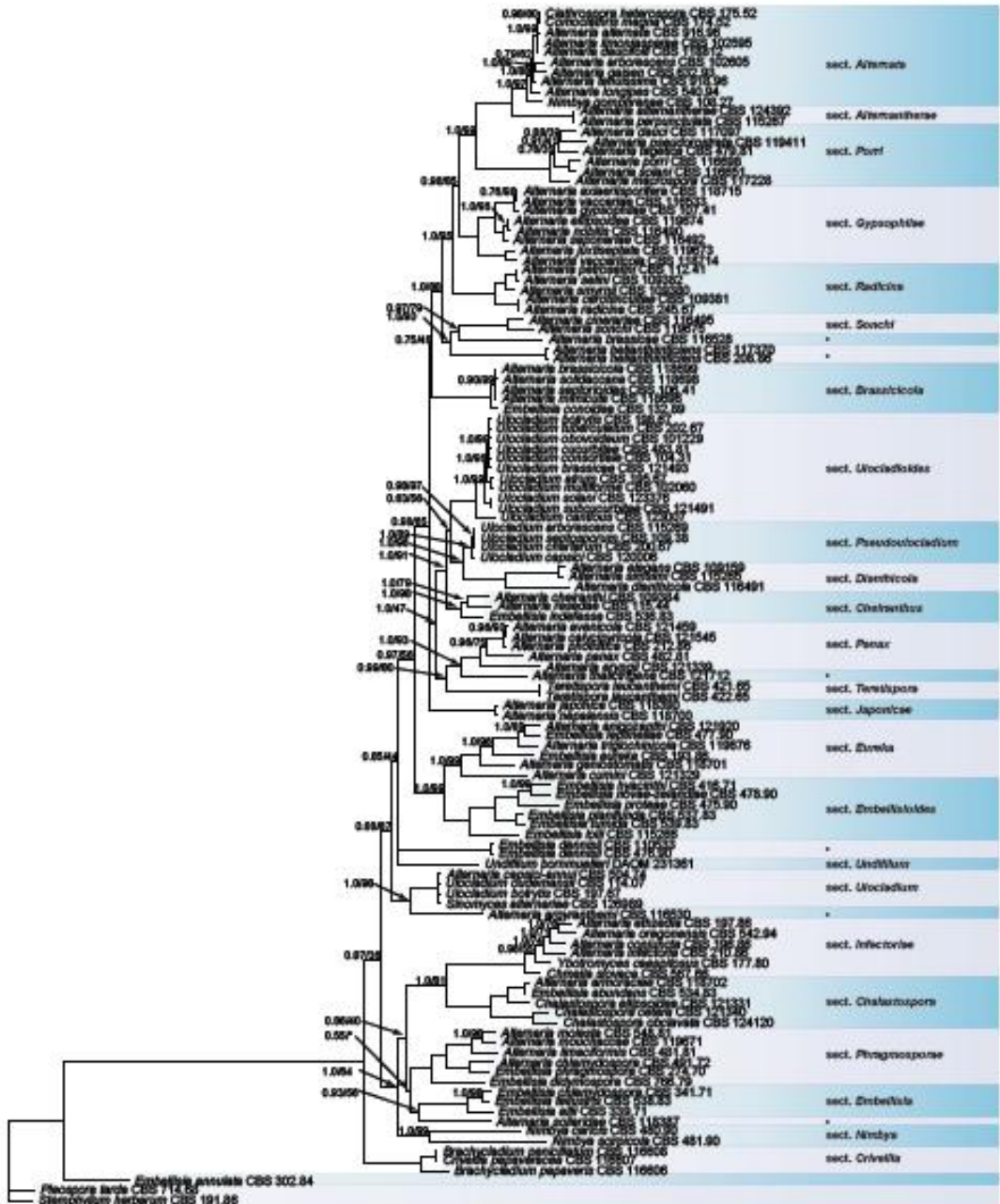
Pyrenochaeta mackinonii 1976
 = *Nigrograna mackinonii* 2012
 = *Biatriospora mackinonii* or *B. marina* 2014



2. Clade definitions:

No operational criterium for clade delimitation, generic concepts may vary





Alternaria

- = *Allewia* 1990
- = *Chalastospora* 2007
- = *Embellisia* 1971
- = *Lewia* 1986
- = *Nimbya* 1989
- = *Pseudoalternaria* 2013
- = *Sinomyces* 2009
- = *Teretispora* 2007
- = *Ulocladium* 1851
- = *Undifilum* 2009
- = *Ybotromyces* 1986

Woudenberg et al. - Stud. Mycol. 2013



Proposed solution for temporary problems at the genus level:
Follow changes with some delay, until established.

