

Molecular ecology of *Fonsecaea* sibling species isolated from endemic areas of chromoblastomycosis in Brazil

- **Vania Vicente**
- **Javad Najafzadeh**
- **Jiufeng Sun**
- **Sybren de Hoog**

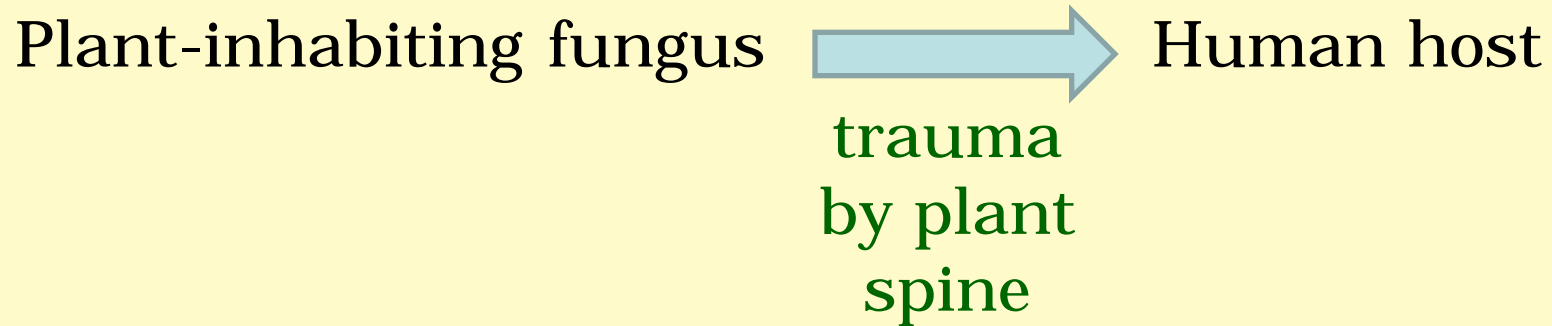


Chromoblastomycosis

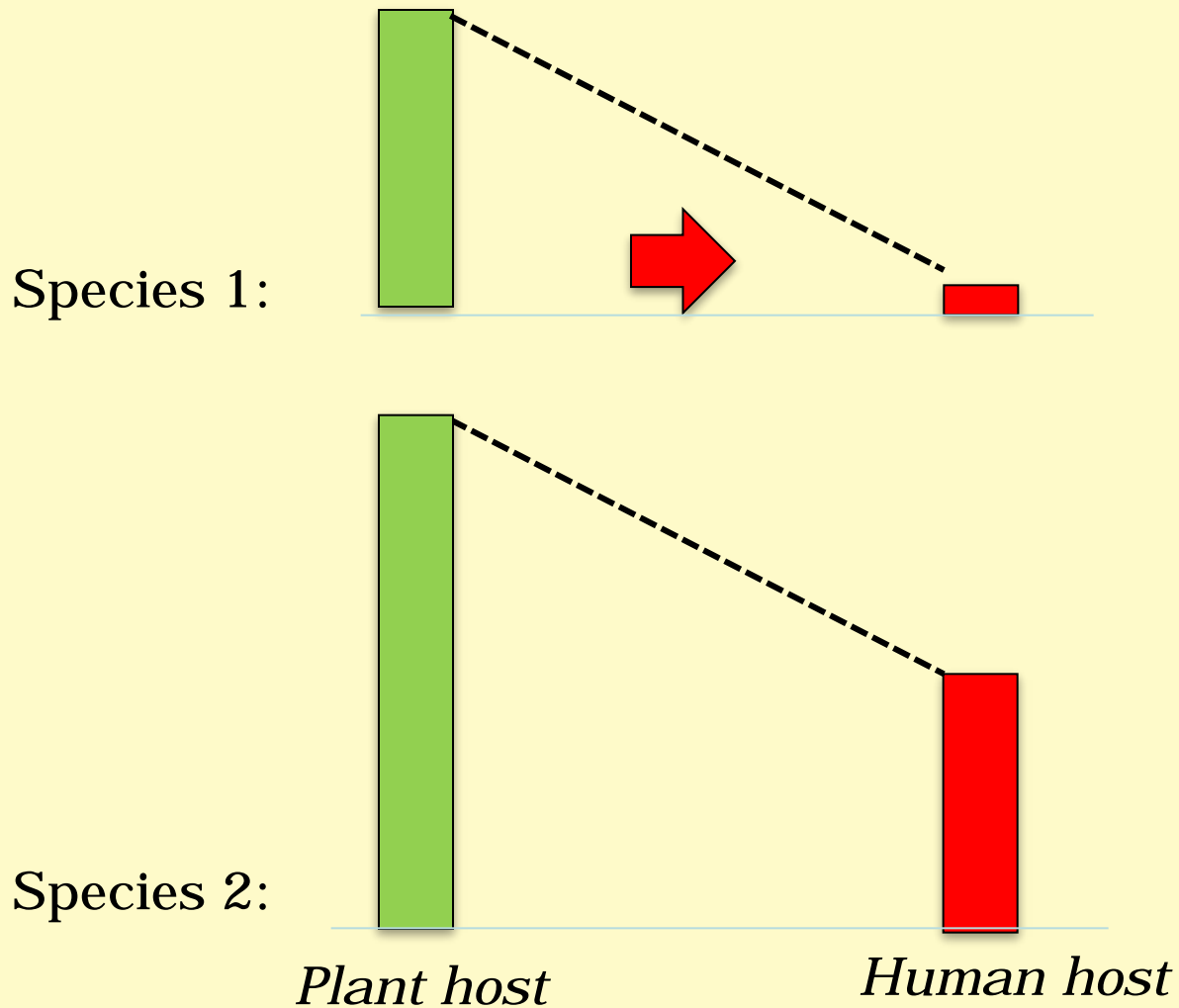
- Chronic, progressive cutaneous and subcutaneous fungal infection
- Muriform cells
- Common agents:
Fonsecaea pedrosoi,
F. monophora, *F. nubica*,
Cladophialophora carrionii



Current hypothesis: traumatic inoculation



Frequencies plant / human of sibling species



Sclerotic bodies in human skin

Sclerotic bodies from cactus



muriform cells
in cactus spines

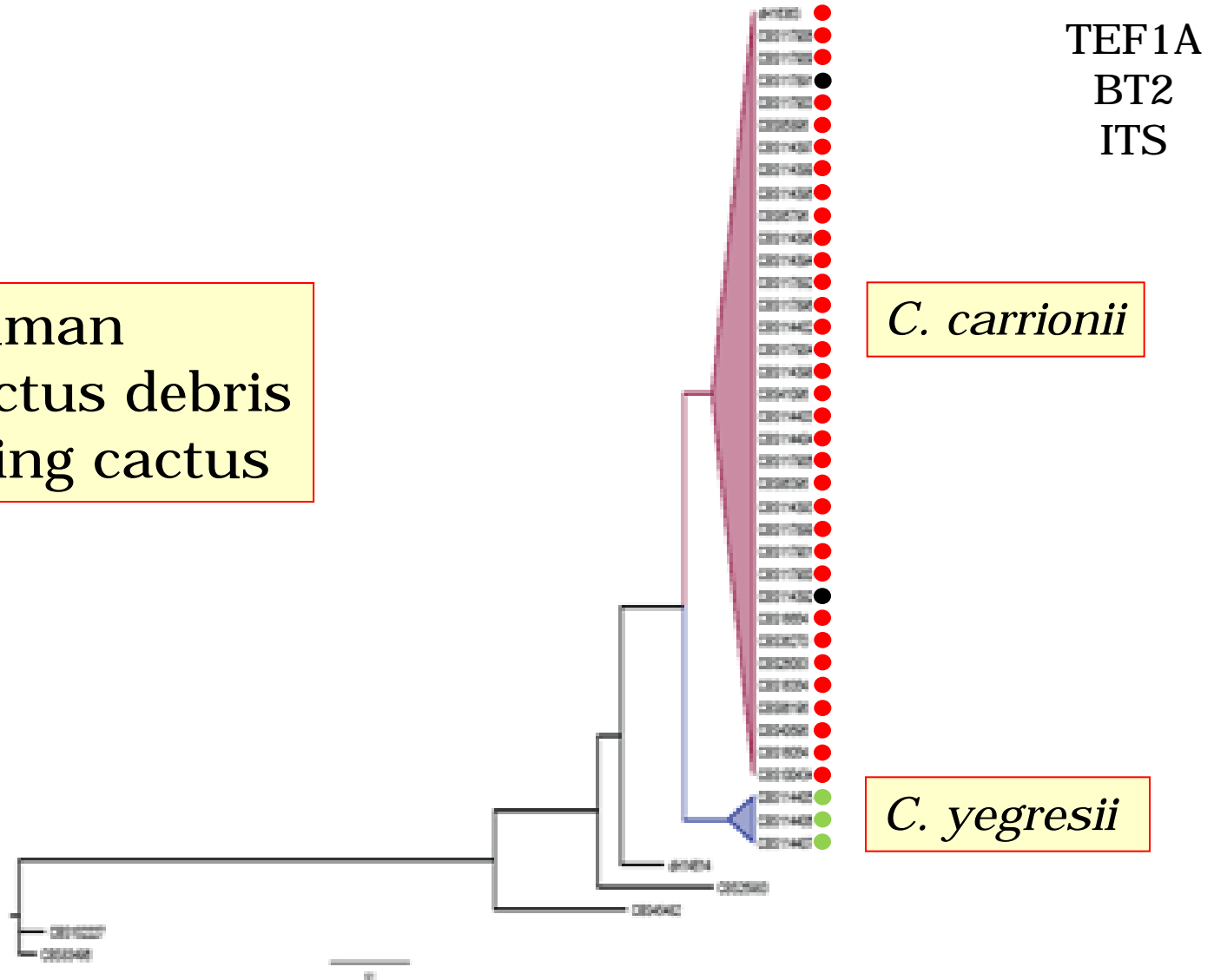
Cadophialophora carrionii

Cladophialophora yegresii

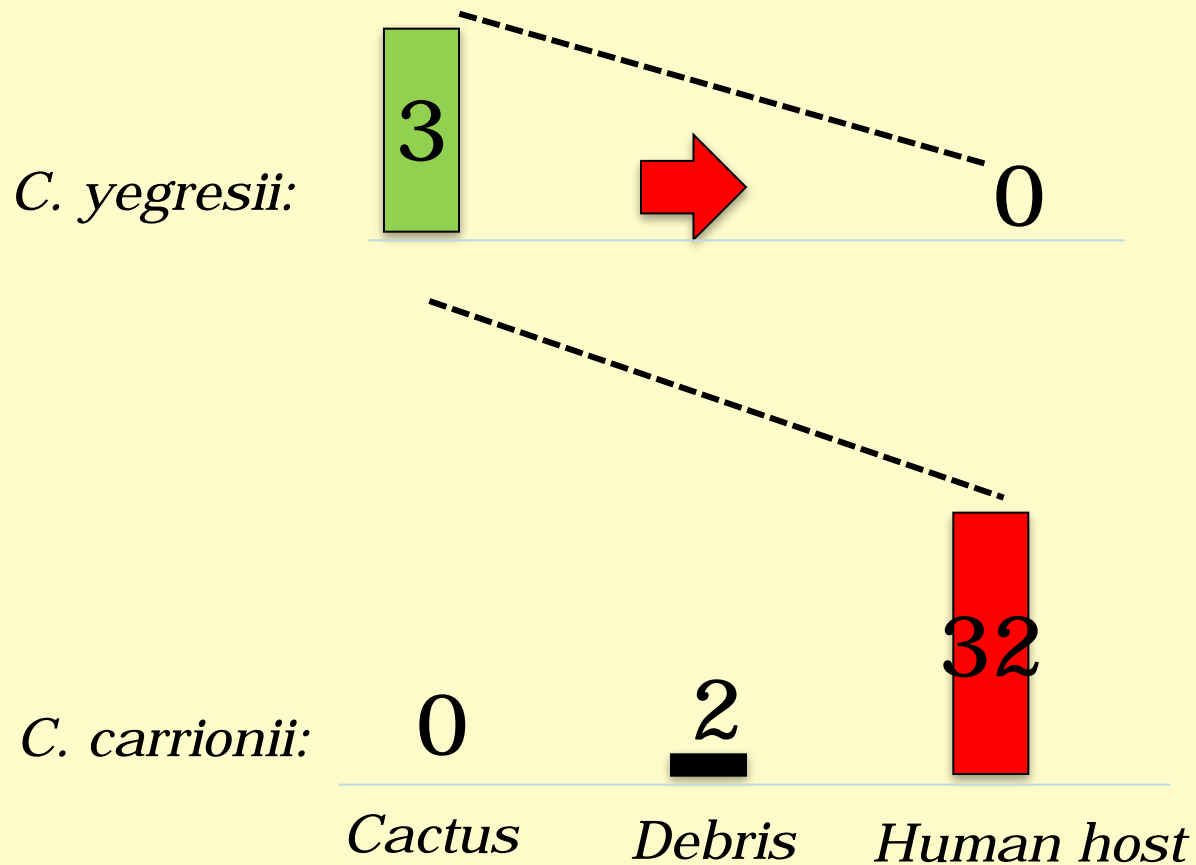


Cladophialophora in plant and human


- human
- cactus debris
- living cactus

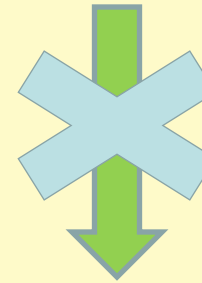
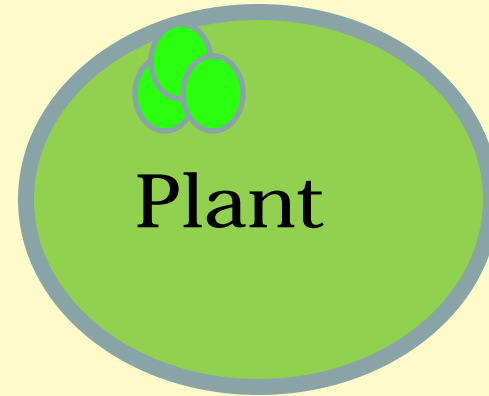



Frequencies plant / human of sibling species

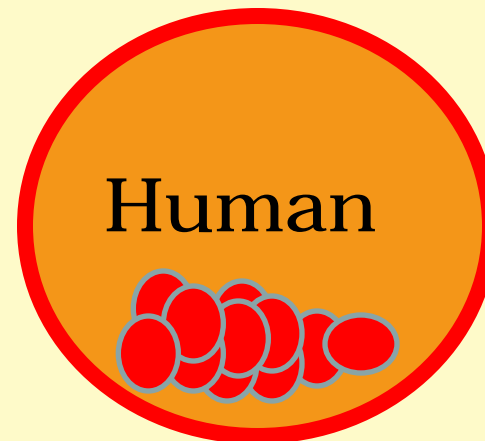
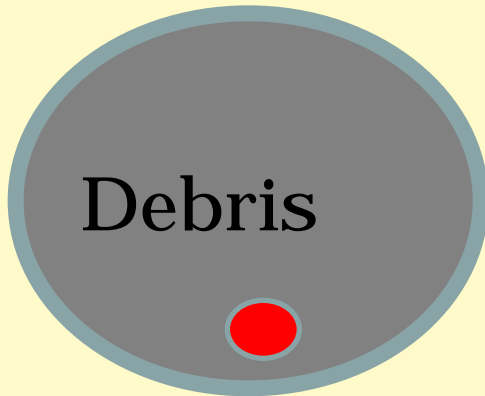


Sibling species

 *C. yegresii*

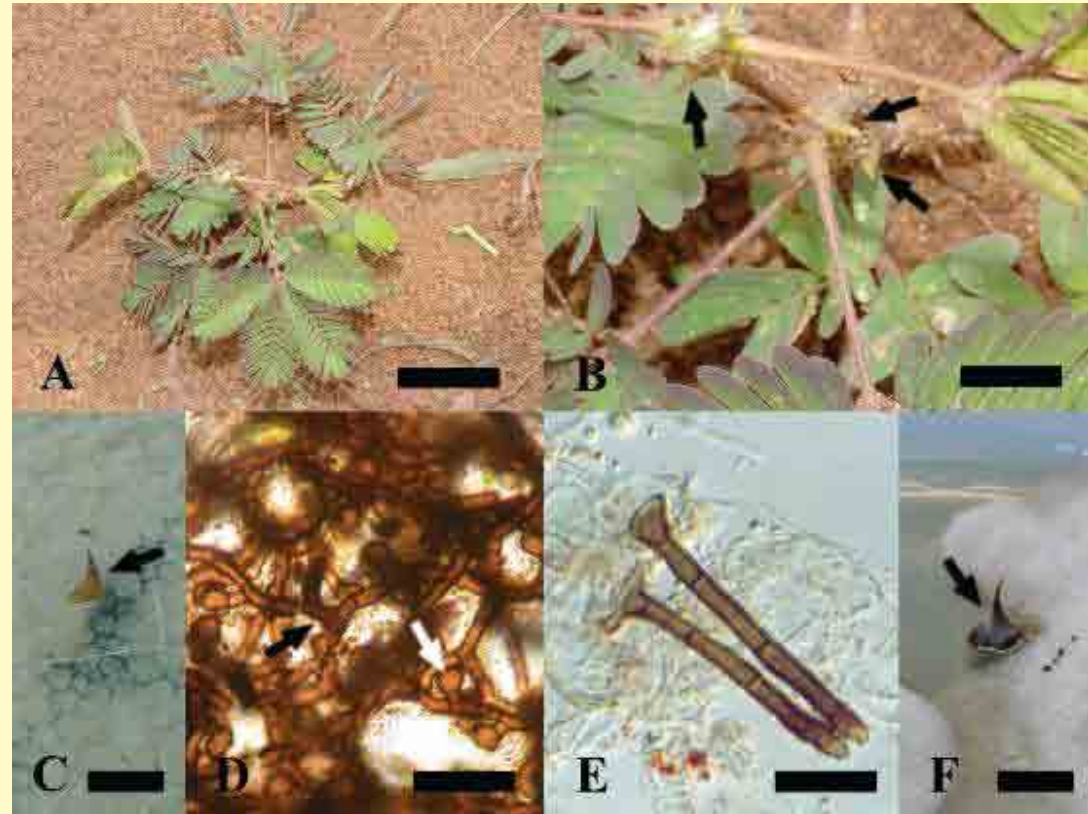


 *C. carrionii*



Fonsecaea pedrosoi: a similar plant origin

- Isolation from thorns of plant: *Mimosa pudica*
- Supposed to be *Fonsecaea pedrosoi*



Isolation from the natural environment

- Endemic area
 - Maranhão state
in Northeast Brazil







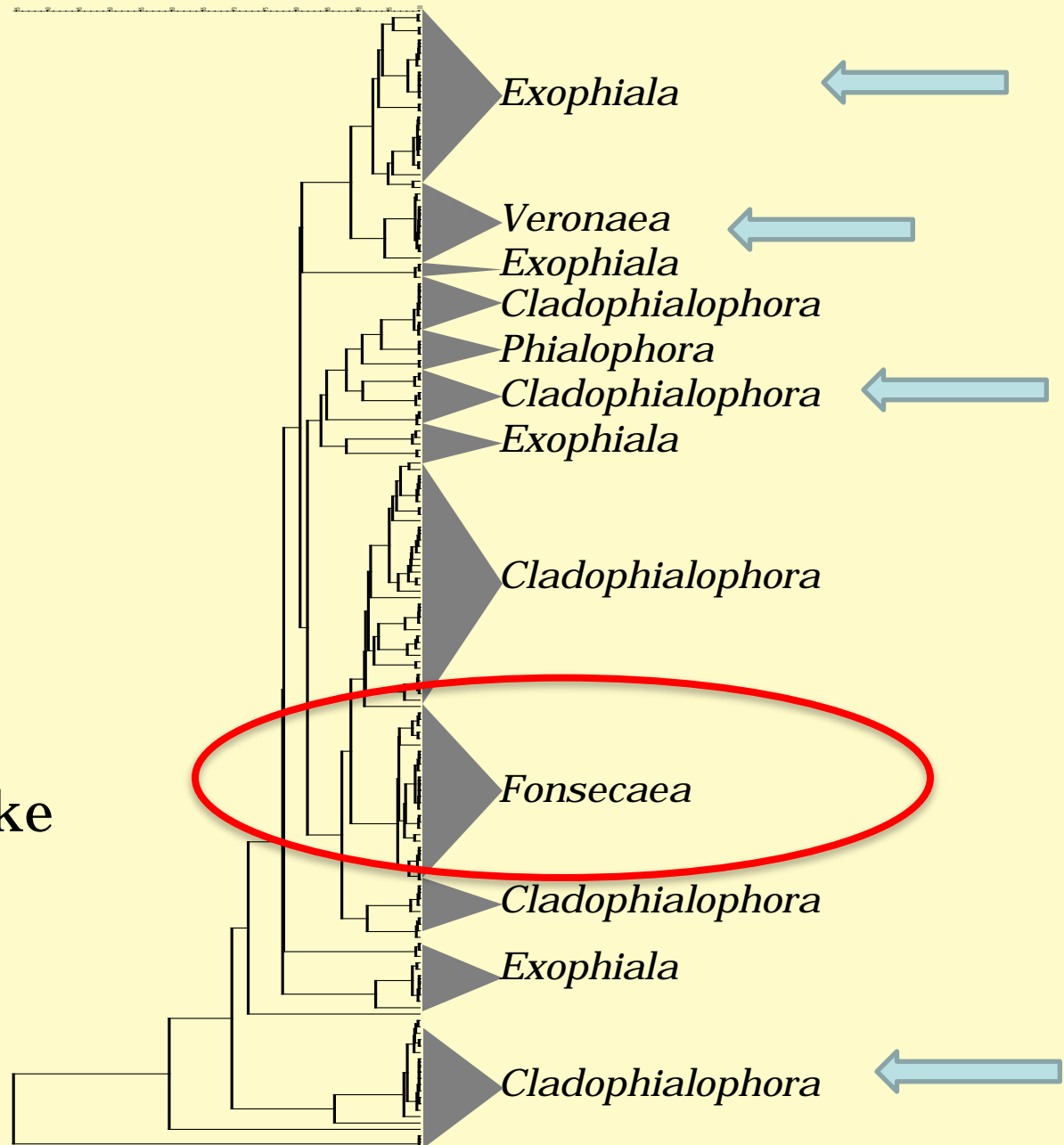
Isolation - Flotation method

(Vicente *et al.* 2008, Studies in Mycology 61: 137–144)

- Samples: **210**
 - replications **50**
 - **400** isolates of black fungi
- Morphology screening for clinically relevant species:
Fonsecaea-like, *Exophiala* spp., *Cladophialophora* spp.
 - **100** isolates morphologically looking like clinical species
 - **38** isolates were *Fonsecaea*-like

100 isolates

38 isolates
Fonsecaea-like



Fonsecaea species



F. pedrosoi

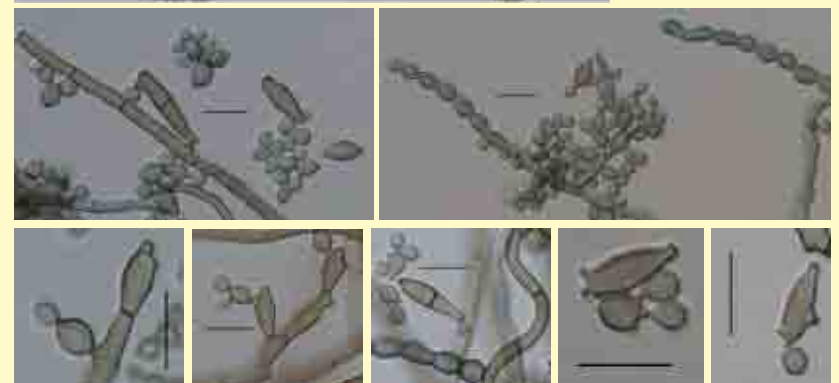
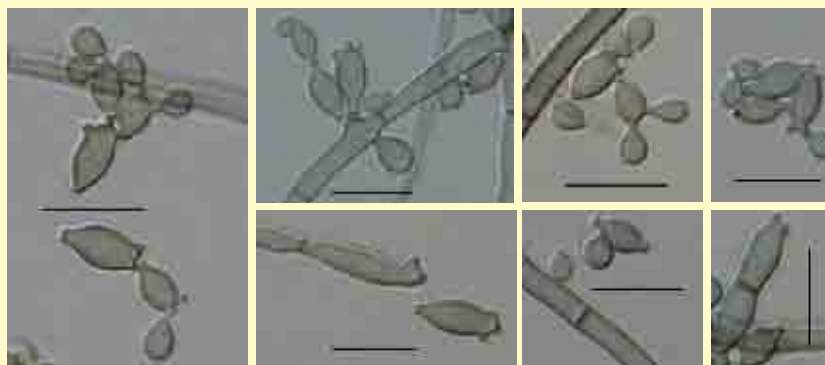
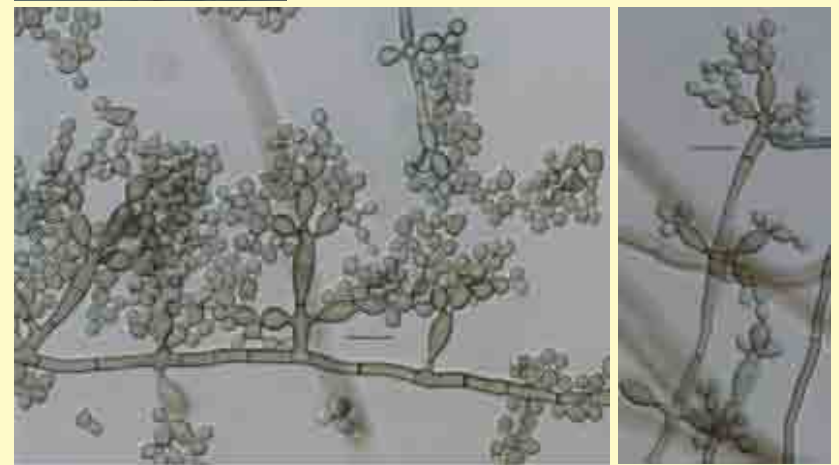
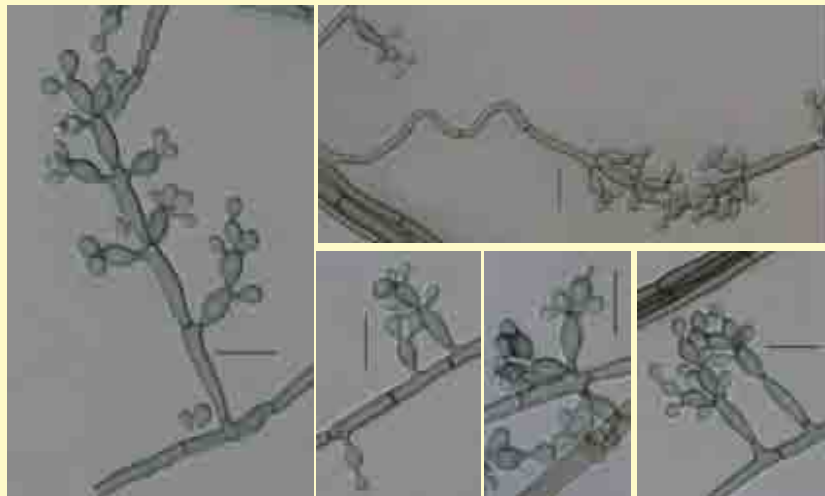
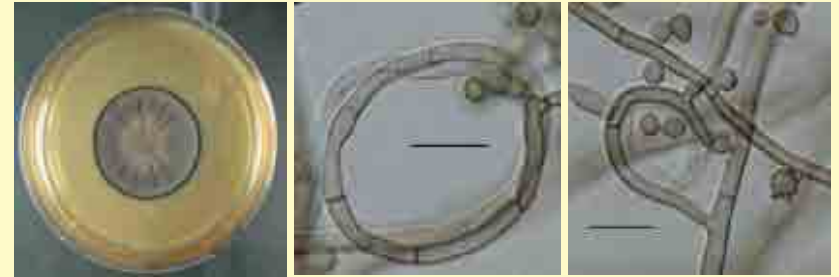
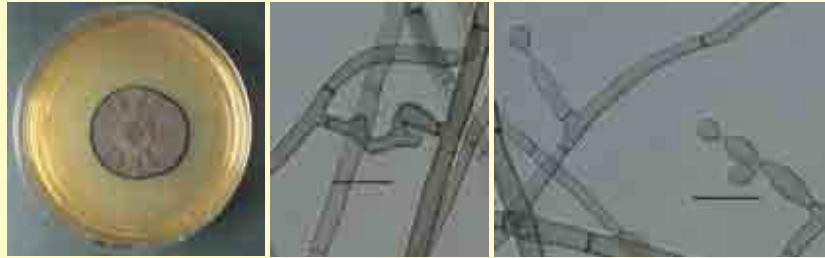


F. monophora

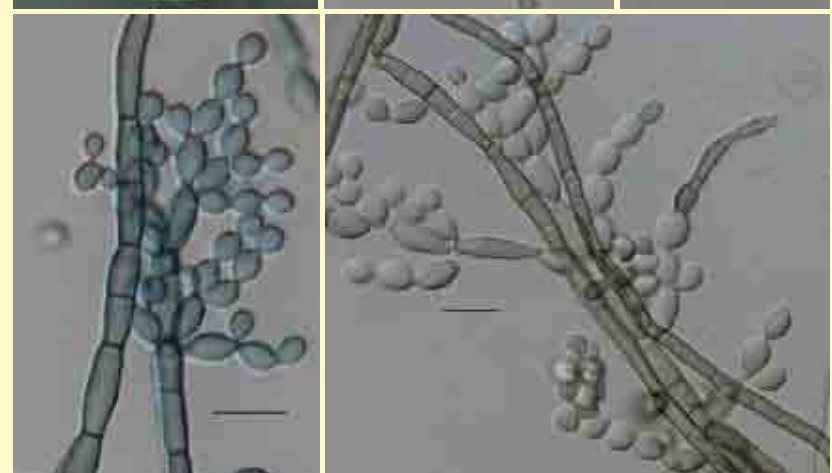


F. nubica

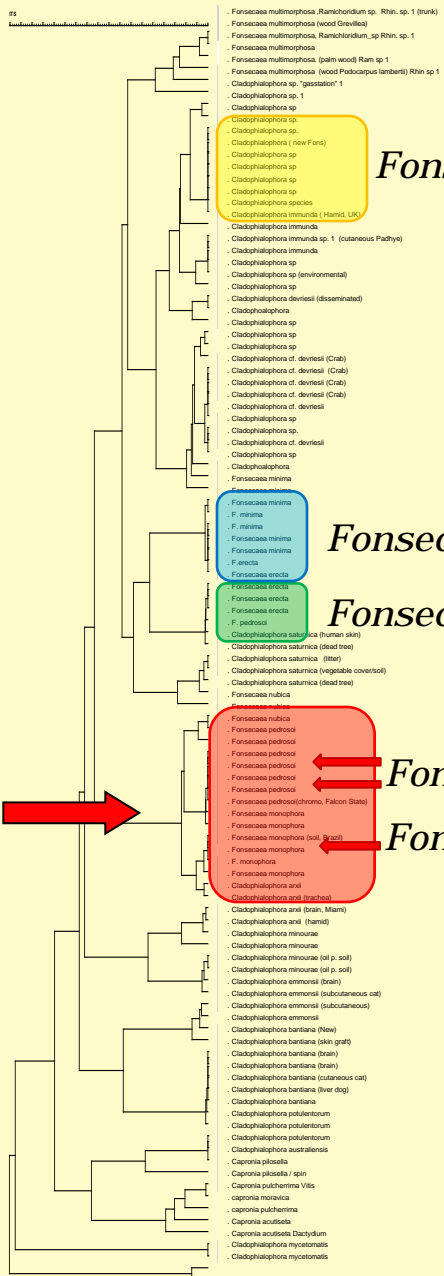
Fonsecaea-like



Fonsecaea-like



ITS – Tree: UPGMA



Fonsecaea-like species 3

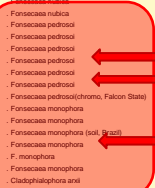
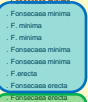
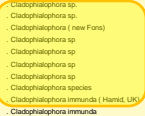
Fonsecaea-like species 2

Fonsecaea-like species 1

Fonsecaea pedrosoi

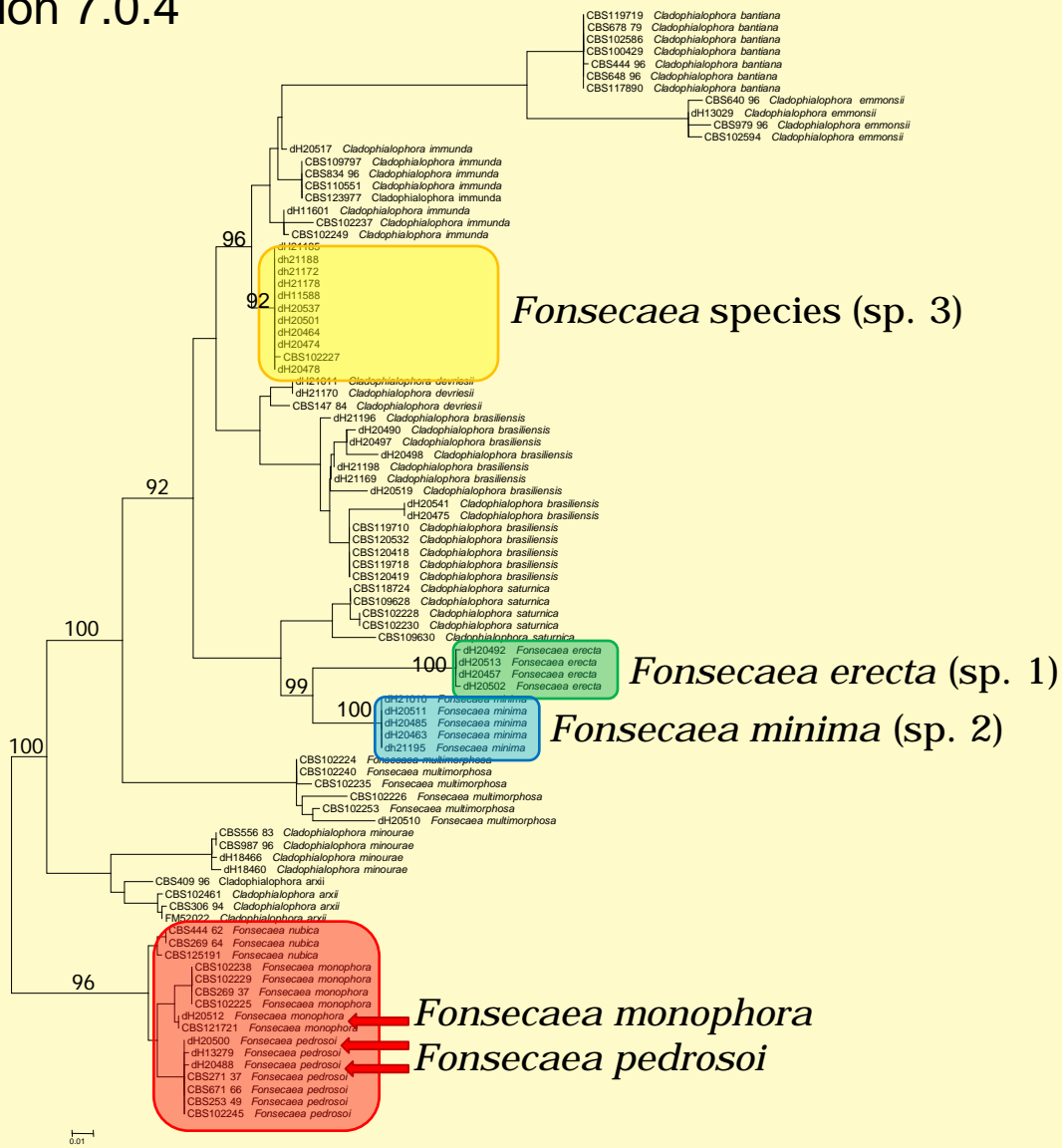
Fonsecaea monophora

Fonsecaea spp.

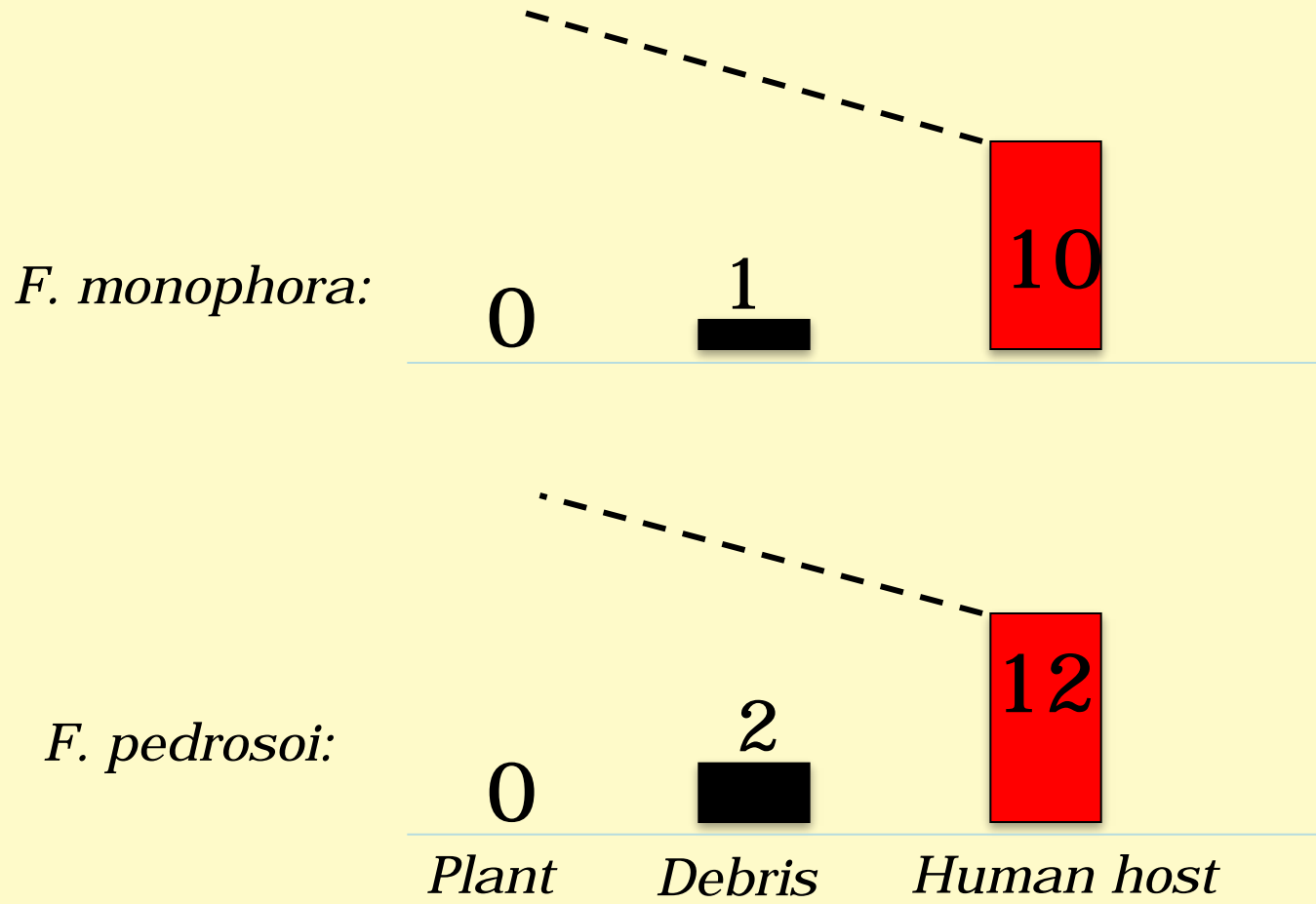


Multilocus Analysis: ITS, ACT, CDC 42, BT2

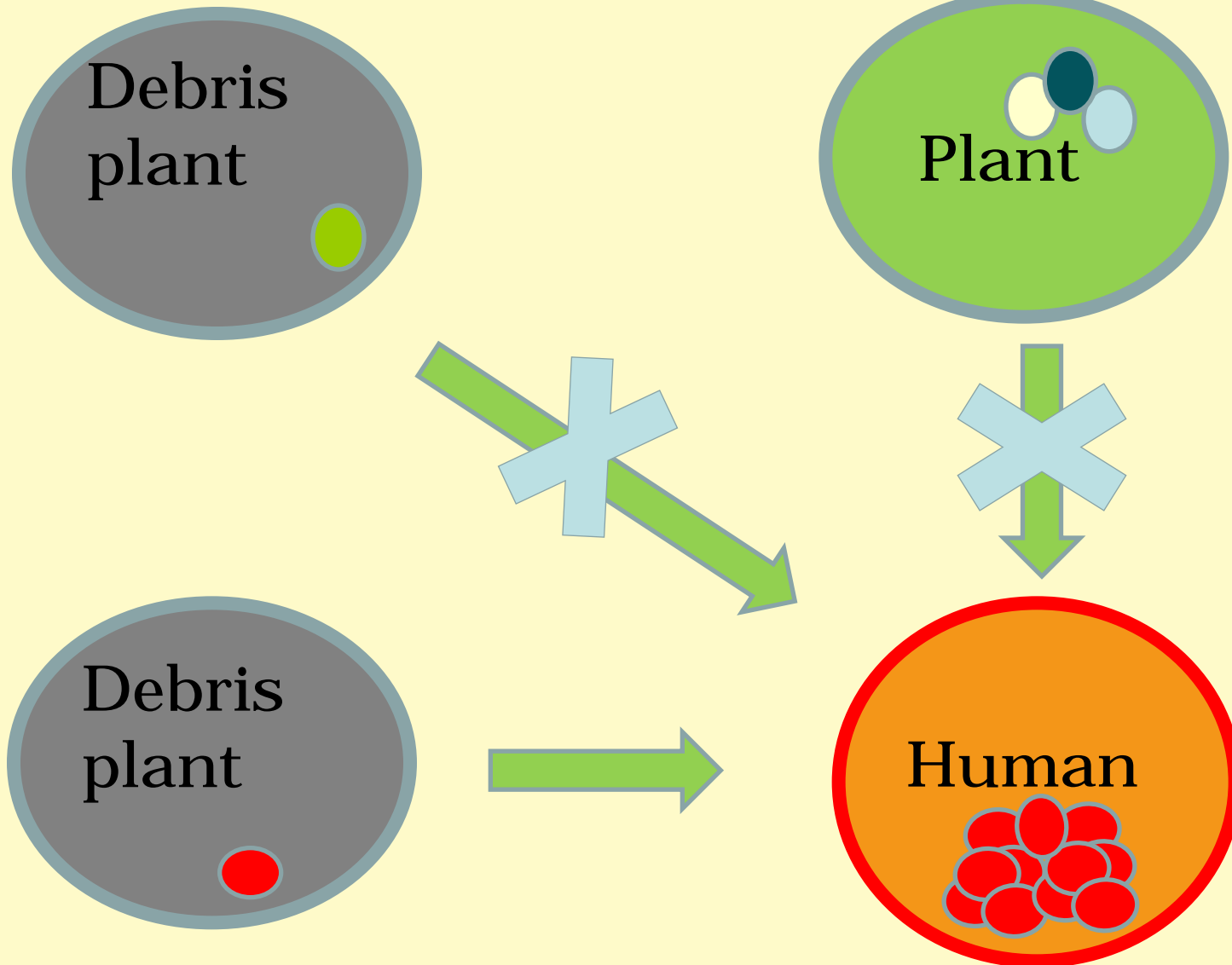
Tree: RaxML version 7.0.4



Frequencies plant / human of sibling species



Fonsecaea: sibling species



Conclusions

- Relative frequency host / environment is a useful parameter to predict virulence of the fungus
- Sibling species can be very different in ecology
- Living plant-associated species are different from their human-pathogenic siblings



**Thank you for your
attention !!!**



Isolation method

