Medically Significant Fungi

Clinically Significant Agents of Systemic Mycoses

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Disclaimer

- This presentation was meant to provide students with both didactic and laboratory skills as they apply to clinical mycology. It is meant for educational purposes only and does not represent Cleveland Clinic views or practices.
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- Most of the information was adopted from the Textbook of Diagnostic Microbiology by Mahon & Lehman (see citation) but condensed for bite sized learning.

Clinically Significant Agents of Systemic Mycoses: Overview

Dimorphic Fungus	Geographic Distribution	Disease
Sporothrix schenckii complex	Worldwide (vegetation)	Subcutaneous
Blastomyces dermatitidis	Ohio and Mississippi River Valleys	Systemic
Histoplasma capsulatum	Ohio, Missouri, and Mississippi River valleys (bird and bat guano)	Systemic
Coccidiodides species	Semi-arid regions in SW USA, Mexico, and Central & South America (soil)	Systemic
Paracoccidioides brasiliensis	Central and South America (soil)	Systemic
Talaromyces marneffei	Southeast Asia (bamboo rats)	Systemic

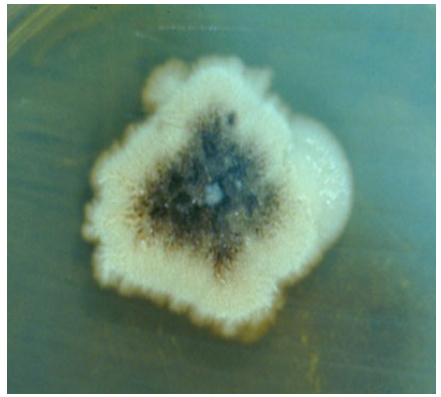
When incubated at 37°C, brain heart infusion agar can be used to convert thermally dimorphic fungi from the mold form to the yeast form.

Clinically Significant Agents of Systemic Mycoses: *Sporothrix schenckii* complex

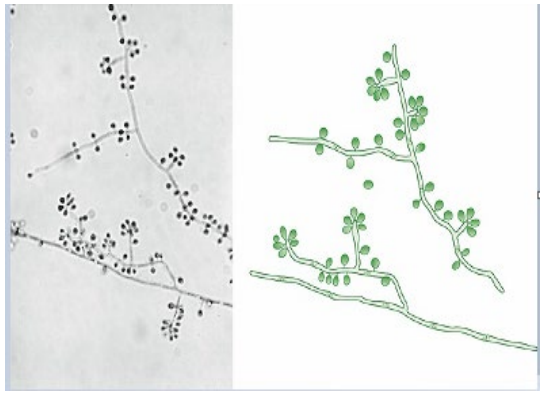
Yeast

Cigar-shaped yeast

Mold



1. 7 days
2. Brown w/ white border
3. Light

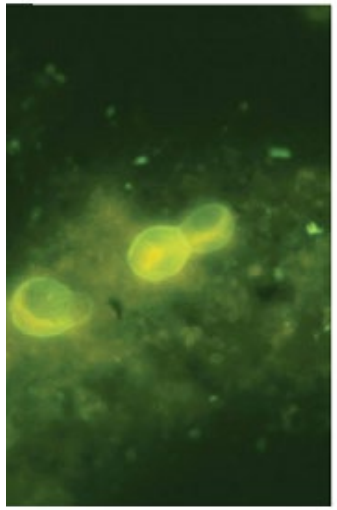


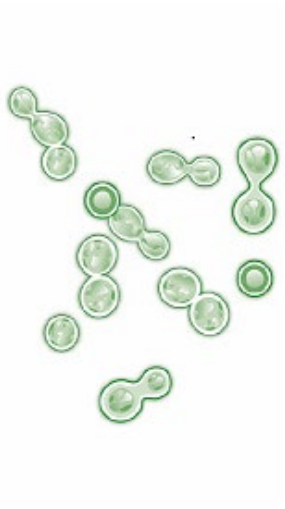
1. Hyaline
2. Septate
3. Tapered conidiophores bearing many small tear-shaped conidia on denticles in a rosettelike pattern

Rose gardener's disease

Clinically Significant Agents of Systemic Mycoses: *Blastomyces dermatitidis*

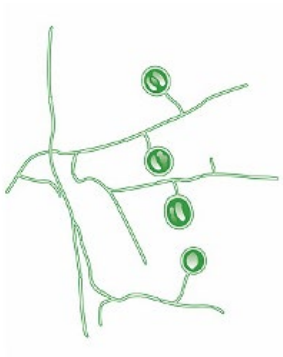
Yeast

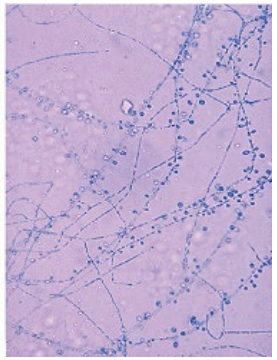




Large yeasts with broad based buds with a thick double contoured wall.

Mold



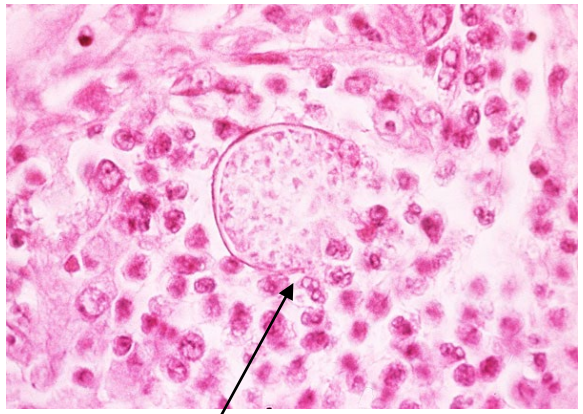


1. 14 days
2. White
3. Light

1. Hyaline
2. Septate
3. Short conidiophores bearing a round conidium

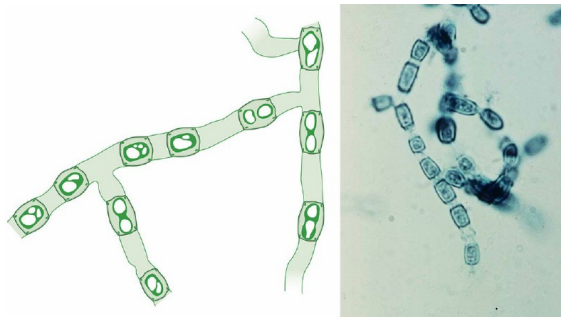
Clinically Significant Agents of Systemic Mycoses: *Coccidioides* species

Yeast



Spherule with endospores

Mold



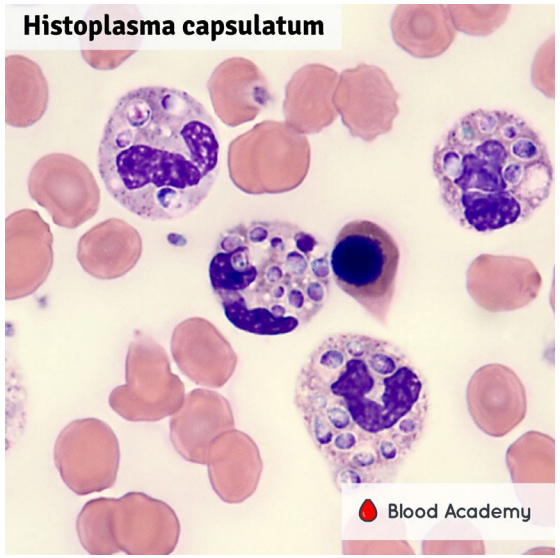
1. 5 days
2. White
3. Light

1. Hyaline
2. Septate
3. Thick-walled barrel-shaped arthroconidia that alternate with empty cells (disjunctor cells).

Valley Fever

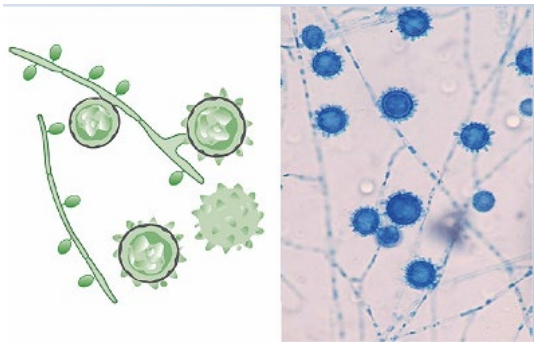
Clinically Significant Agents of Systemic Mycoses: *Histoplasma capsulatum*

Yeast



Small oval budding yeast that can be found intracellularly in WBCs

Mold



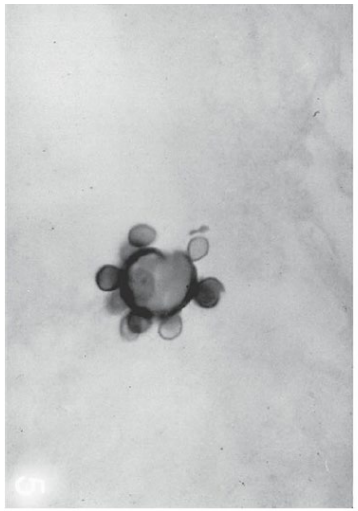
1. 15 days
2. White
3. Light

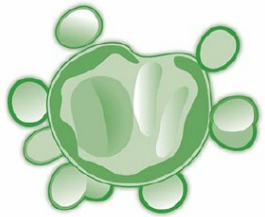
1. Hyaline
2. Septate
3. Pear-shaped microconidia and tuberculate macroconidia

Spelunkers disease

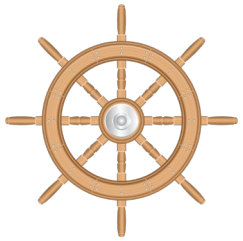
Clinically Significant Agents of Systemic Mycoses: *Paracoccidioides brasiliensis*

Yeast





Blastoconidia surround the mother cell



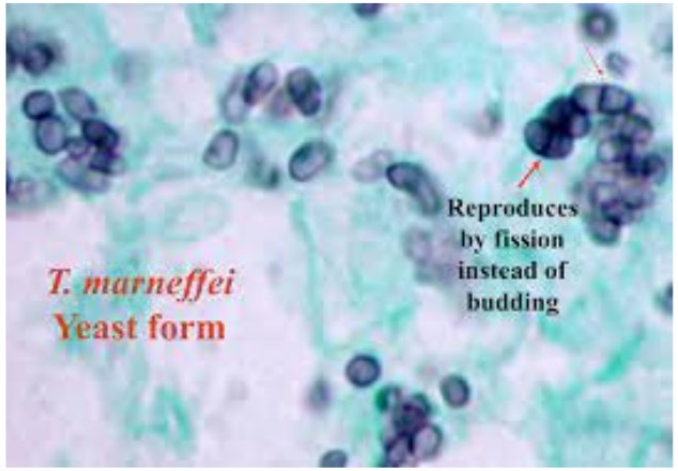
Mold

1. 21 days
2. White
3. Light

1. Hyaline
2. Septate
3. With intercalary and terminal chlamydocondia

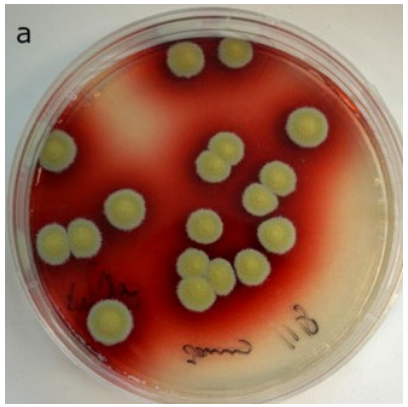
Clinically Significant Agents of Systemic Mycoses: *Talaromyces marneffei*

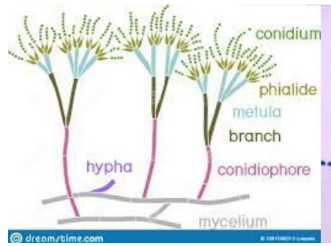
Yeast

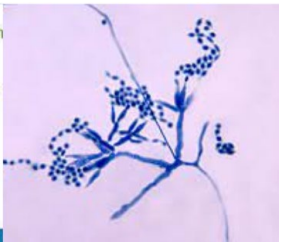


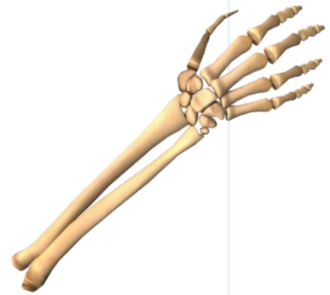
Reproduce by fission

Mold









1. 3 days
2. Green w/ white perimeter and soluble red pigment
3. Light

1. Hyaline
2. Septate
3. Smooth condiophores with 4-5 terminal metulae each bearing 4-6 phialides and chaining conidia.

Citations

- Mahon, C. R., & Lehman, D. C. (2023). *Textbook of Diagnostic Microbiology* (7th ed.). Elsevier.
- Procop, G. W., & Koneman, E. W. (2017). *Koneman's Color Atlas and Textbook of Diagnostic Microbiology* (7th ed.). Wolters Kluwer Health/Lippincott Williams & Wilkins.