

MEDICAL MYCOLOGY - STUDY QUESTIONS FOR THE FINAL EXAM

Review your lecture and laboratory notes, and information about fungal species mentioned in *Medically Important Fungi: A Guide to Identification* by Larone. **This listing forms the pool of questions from which the Final Exam will be derived.** The Final Lecture exam will be held on December 8, 2008 from 12:30 p.m. to 2:30 p.m. in LSE 204. If you run into any difficulties or have any further questions, please feel free to contact me by phone or email. Good luck studying!

- For the diseases listed, describe the symptoms, etiological agent(s), epidemiology, diagnostic techniques, pathogen identification, treatment, and other pertinent or interesting information about it:
 - histoplasmosis
 - coccidioidomycosis
 - candidiasis
 - aspergillosis
 - tinea cruris
 - cryptococcosis
 - zygomycosis
 - pityriasis versicolor
- Describe how hairs plucked from a patient's head can be used to help identify the etiologic agent of tinea capitis.
- Amphotericin B is the drug of choice in many mycoses. Yet many diseases do not respond to this drug. Cite three different kinds of mycoses where Amphotericin B is not used or is not as useful as some other antimycotic. Give the name of each such disease and the preferred drug treatment.
- Allergic reactions are produced by many fungi in humans under different conditions. Discuss these in terms of the fungi involved, the symptoms, diagnosis, and treatment.
- Give the one most obvious morphological, cultural, or other character that would allow one to clearly distinguish between the following pathogens. Assume you are growing them in culture:
 - Aspergillus* spp. and *Rhizopus* spp.
 - Candida albicans* and *Cryptococcus neoformans*
 - Microsporium canis* and *Microsporium audouinii*
 - Histoplasma capsulatum* (filamentous phase) and *Blastomyces dermatitidis* (filamentous phase)
 - Candida albicans* and *Saccharomyces cerevisiae*
- Thermal dimorphism is a phenomenon that occurs in many true pathogenic fungi. Define what it is and give three examples of fungi that exhibit this property. What function does this adaptation probably serve in nature and/or in the host?
- What are opportunistic infections and why do only some people get them? List several examples of opportunistic infections caused by fungi, the parts of the human body that may be affected, and the name(s) of the etiological agent(s).

8. Amatoxins are the cause of most fatalities resulting from eating poisonous mushrooms. How would you identify the most common genus, some of whose species produce amatoxins? What characteristic symptoms would you expect? What treatment can one give the patient?
9. Why are there relatively few antimycotic drugs available for combating fungal infections? What approaches may prove useful in developing more effective antimycotic drugs in the future?
10. List some of the toxins and symptoms associated with their ingestion by animals and humans of foodstuffs (e.g., grain, cheese) contaminated with certain types of filamentous fungi (e.g., species of *Aspergillus*, *Penicillium*, and/or *Fusarium*)?
11. Candidiasis can affect different mucocutaneous regions of the human body. What is the term often used when referring to candidiasis of the mouth and tongue? Vaginal area in a woman?
12. An AIDS patient is suffering from fungal meningitis. Spinal fluid is removed and sedimented by centrifugation. For the most part the spinal fluid is clear, but a few yeast cells are captured and a culture is isolated and grown from these cells. You are given this culture and asked to identify it. You suspend some yeast cells in India ink and examine this on a slide. Microscopic examination indicates the absence of a capsule around the yeast cell. You perform an API 20C diagnostic test and come up with the following test results: API index code number = 2172170. Based on these test results, list all the species that this culture likely represents? What other feature(s) might you look for to help confirm your identification to a single species?
13. What is *Pneumocystis* pneumonia (PCP)? Who is most at risk for this opportunistic infection? What problems does it cause in patients that succumb to this disease?
14. Give the one most obvious morphological, cultural, or other character that would allow one to clearly distinguish between the following pathogens.
 - A. *Histoplasma capsulatum* (filamentous phase in culture) and *Coccidioides immitis* (filamentous phase in culture).
 - B. *Paracoccidioides brasiliensis* (yeast phase in culture or host tissue) and *Blastomyces dermatitidis* (yeast phase in culture or host tissue).
 - C. *Rhinosporidium seeberi* (in host tissue) and *Coccidioides immitis* (in host tissue).
 - D. *Cryptococcus neoformans* (grown in culture on CMA_{Tween80}, BHI, or SDA) and *Candida albicans* (grown in culture on CMA_{Tween80})
 - E. *Aspergillus* spp.(in culture or in host tissue) and *Rhizopus* spp. (in culture or in host tissue)
15. In what respect do mycoses caused by true pathogenic fungi differ from mycoses caused by fungi associated with opportunistic infections? What are the general consequences of these infections to the human host?

16. What is the primary entry point into the body for true pathogenic fungi? What is the usual outcome of exposure to these fungi in the human host

17. Match the common name of the disease with the clinical name of the disease.

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| _____ | 1. Darling's disease | A. paracoccidioidomycosis |
| _____ | 2. Valley fever | B. oral candidiasis |
| _____ | 3. Chicago disease | C. aspergillosis |
| _____ | 4. South American or Brazilian Blastomycosis | D. blastomycosis |
| _____ | 5. Mycotic Mycetoma | E. pseudoallescheriasis |
| _____ | 6. Farmer's lung disease | F. histoplasmosis |
| _____ | 7. Thrush | G. coccidioidomycosis |
| _____ | 8. Balanitis | H. candidiasis of the penis |

18. Give a definition or explanation of the following words or terms, and give one example (i.e., genus and specific epithet) of a fungus associated with each of these.

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| a. zygomycosis | f. potassium iodide (KI) |
| b. candidids | g. tuberculate macroconidium |
| c. thermal dimorphism | h. spherule |
| d. pulmonary infection | i. nasal polyps |
| e. meningitis | j. vaginitis |

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