

NAME \_\_\_\_\_  
SS# \_\_\_\_\_

**EXAM 3**  
**April 25, 2002**  
**BIO 329**

**Directions:** All explanations, definitions, and descriptions should be presented in good English. This means complete sentences should be used except when lists or fill-in-the-blanks are required. Spelling of mycological terms should be accurate. Slight misspellings may be overlooked, but major misspellings will result in wrong answers.

1. Multiple choice (40 pts @ 2 each); circle the number of the correct choice.
  - a. So-called "pathogenic yeast" can be described accurately by a definition that includes they
    1. grow predominantly by the vegetative reproductive growth process called budding
    2. are rarely vegetatively monomorphic, but are mostly dimorphic or polymorphic
    3. tend to be members of the Fungi Imperfecti, but for those that are sexual the majority are Hemiascomycotina species
    4. are not yeast phases of conidiogenous molds
    5. all of these choices
    6. none of these choices
  - b. *Candida albicans* strains are
    1. heterothallic and thus self-sterile with respect to mating potential
    2. asexual diploids
    3. Fungi Imperfecti because they have lost or never had mating-type gene sequences
    4. most likely asexual basidiomycetes because when induced to form hyphae, the hyphae have clamp connections
    5. all of these choices
    6. none of these choices

- c. The traditional minimal essential information for the identification of *Candida albicans* includes
1. growth at 37°C
  2. being negative for capsules in India ink preparations
  3. an ability to produce a germ tube in fetal calf serum or selected substitutes
  4. an ability to form chlamydospores in Tween-80 agar medium
  5. all of these choices
  6. none of these choices
- d. The parasitic tissue forms of *Filobasidiella (Cryptococcus) neoformans* are usually
1. dikaryotic hyphae
  2. chlamydospores
  3. encapsulated yeast cells
  4. bowling pin-shaped, uninucleate yeast
  5. all of these choices
  6. none of these choices
- e. The most commonly diagnosed form of cryptococcosis usually presents as
1. a primary acute and symptomatic pulmonary pneumonia
  2. a primary cutaneous lesion
  3. a chronic pulmonary disease known as farmer's lung
  4. a neurological disease involving headaches, mental changes and disorientation due to central nervous system infection
  5. none of these choices
- f. Primary pulmonary mycoses known collectively as the U.S. endemic mycoses do not include
- |                   |                         |
|-------------------|-------------------------|
| 1. aspergillosis  | 4. coccidioidomycosis   |
| 2. histoplasmosis | 5. any of these choices |
| 3. blastomycosis  |                         |

- g. A form of histoplasmosis that is fairly well known from Central Texas to Mexico is
1. farmer's lung disease
  2. pigeon breeder's disease
  3. valley fever
  4. cave fever or spelunker's disease
  5. none of these choices
- h. Candidiasis, particularly in HIV-positive individuals, often presents as
1. thrush (oropharyngeal overgrowth)
  2. esophagitis
  3. vulvovaginitis
  4. bronchopulmonary disease
  5. all of these choices
  6. none of these choices
- i. The parasitic tissue forms of *Aspergillus fumigatus* in invasive aspergillosis are
1. dichotomous branching and septate hyphae
  2. spherules
  3. hyphae with clamp connections
  4. yeast with capsules
  5. none of these choices
- j. Tuberculate macroconidia and microconidia are most associated with the endemic fungal pathogen of humans
1. *Ajellomyces (Blastomyces) dermatitidis*
  2. *Coccidioides immitis*
  3. *Filobasidiella (Cryptococcus) neoformans*
  4. *Aspergillus fumigatus*
  5. none of these choices
- k. European starling roosting sites are most associated with the endemic mycosis
1. cryptococcosis
  2. blastomycosis
  3. candidiasis
  4. histoplasmosis
  5. none of these choices
- l. The cleistothecial Ascomycota (Plectomycetes class) does not include the agents of
1. candidiasis
  2. histoplasmosis
  3. aspergillosis
  4. blastomycosis
  5. any of these choices



- m. The latex particle agglutination test for circulating antigen is most associated with the serodiagnosis of
1. candidiasis
  2. cryptococcosis
  3. histoplasmosis
  4. blastomycosis
  5. coccidioidomycoses
- n. An immunodiffusion test characterized as positive because of the detection of H & M immunoprecipitin bands is associated with the serodiagnosis of
1. coccidioidomycosis
  2. blastomycosis
  3. aspergillosis
  4. cryptococcosis
  5. none of these choices
- o. Protective immunity is often induced by exposure to the fungi that cause the mycoses
1. histoplasmosis and blastomycosis
  2. cryptococcosis and coccidioidomycosis
  3. candidiasis and cryptococcosis
  4. histoplasmosis and coccidioidomycosis
  5. aspergillosis and candidiasis
- p. *Coccidioides immitis* is an asexual fungus (Fungus Imperfecti), which DNA sequencing strongly suggests is a
1. member of the Onygenales order of the Plectomycetes class
  2. member of the Eurotiales order of the Plectomycetes class
  3. is a member of the Hemiascomycotina order Saccharomycetales
  4. is a Basidiomycota member of the Tremellales
  5. none of these choices
- q. Among the so-called systemic mycoses that you have studied in the last third of Medical Mycology, serotypes are most associated with
1. *Candida albicans*
  2. *Ajellomyces (Blastomyces) dermatitidis*
  3. *Ajellomyces (Histoplasma) capsulatum*
  4. *Filobasidiella (Cryptococcus) neoformans*
  5. *Aspergillus fumigatus*
- r. Neutropenia is most associated with the systemic mycoses
1. candidiasis and cryptococcosis
  2. aspergillosis and candidiasis
  3. histoplasmosis and blastomycosis
  4. coccidioidomycosis and histoplasmosis
  5. none of these paired choices

- s. Skin testing to define endemic areas for mycoses have been most successful for
1. cryptococcosis and aspergillosis
  2. candidiasis and cryptococcosis
  3. histoplasmosis and coccidioidomycosis
  4. cryptococcosis and blastomycosis
  5. none of these paired choices
- t. Pulmonary initiation of primary and secondary (opportunistic) forms of disease is generally not associated with
1. candidiasis
  2. cryptococcosis
  3. aspergillosis
  4. coccidioidomycosis
  5. any of these choices

2. Fill in the blanks (25 pts @ 2.5 pts each).

- a. Polarized chains of somewhat elongated yeast cells of *Candida albicans* are called \_\_\_\_\_.
- b. Genetically inadequate children with various types of T-cell inadequacies that often involve the thymus sometimes develop a serious so-called pathogenic yeast infection known as \_\_\_\_\_.
- c. Today the most common risk factor for life-threatening cryptococcosis and some forms of candidiasis in younger adults is \_\_\_\_\_.
- d. The varietal names for the anamorph of *Filobasidiella (Cryptococcus) neoformans* are var. *neoformans* and var. \_\_\_\_\_ whereas those for its teleomorph are var. *neoformans* and var. \_\_\_\_\_.
- e. *Ajellomyces (Histoplasma) capsulatus* seems to have three varieties known as var. \_\_\_\_\_ for the human disease agent in North America, var. \_\_\_\_\_ for the human agent in Africa, and var. \_\_\_\_\_ for the agent most associated with histoplasmosis in horses.
- f. The resident macrophages that tend to be the in vivo home for invasive *Ajellomyces (Histoplasma) capsulatus* are known as \_\_\_\_\_.
- g. Forms of histoplasmosis that resolve on their own and without antifungal intervention are called \_\_\_\_\_ forms.

3. Short answers/definitions (20 pts @ 4 pts each).

a. Pigeon breeder's disease

b. Biserial phialids

c. Aspergilloma

d. Spherules

e. Blastomycosis

4. Essay (15 pts) Coccidioidomycosis manifests as at least three main clinical forms. Using the attached answer sheets, present in essay or table form, a clinical classification that lists these three main forms, their origin, and as many subtypes of each with descriptions as you can. Be sure to include such terms as primary, secondary, resolving, progressive, allergic etc., etc. (hint: you were provided abbreviated and expanded tables with this information (an answer based on the latter would be more appropriate).

**Bonus (5 pts).** Short answer for one only.

a. *Candida dubliniensis*

b. Candida's arranged marriage

c. GXM