NAME

SS#

EXAM 1
February 19, 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 (20 pts @ 2 each); circle the number of the correct choice.

   a. The evolutionary history (phylogeny) of a fungus is reflected best

      1. when it is included in the taxon known as the Fungi Imperfecti
      2. by its proper classification
      3. by its holomorphic species name
      4. by its identification as a yeast or as a mold
      5. none of these choices

   b. There are many reasons why there is a paucity of public awareness about the mycosis. These include:

      1. a general lack of government reporting requirements
      2. the difficulty in documenting the existence of fungal infections
      3. the fact that mycosis are not considered to be communicable diseases
      4. a general lack of knowledge about fungi and their mycoses even among the public health community
      5. all of these choices

   c. The Kingdom Fungi does not currently include the phylum

      1. Myxomycota
      2. Basidiomycota
      3. Chytidiomycota
      4. Zygomycota
      5. Ascomycota

   d. Current evidence supports the concept that the basel phylum of the Kingdom Fungi had its original evolutionary origins among eukaryotic heterotrophic species

      1. that produced biflagellate zoospores
      2. that derived lysine via the diaminopimelic acid biosynthetic pathway
      3. that were nonzoosporic
      4. that produced anteriorly flagellated cells having flagella of the tinsel-type
      5. none of the above

   e. Fungi that produce septate basidia, as put forth in this course, are classified in the class

1. Urediniomycetes
2. Ustomycetes
3. Holobasidiomycetes
4. Phragmobasidiomycetes
5. none of these choices

f. Fungi that produce ascocarps/ascoma known as cleistothecia are classified into the class

1. Discomycetes
2. Plectomycetes
3. Loculoascomycetes
4. Pyrenomycetes
5. none of these choices

g. Members of the Hemiascomycotina, and presummably all Archiascomycotina, are differentiated from other Ascomycota by

1. the production of apothecia
2. the production of teliospores
3. the absence of ascocarps
4. never producing hypha (they are always yeast)
5. none of these choices

h. Teliospores of rusts and smuts are best thought of as

1. karyospores
2. sporangiospores
3. zoospores
4. basidiospores
5. none of these choices

i. A dolipore septum is generally associated with members of the

1. Chytridiomycota
2. Zygomycota
3. Oomycota
4. Basidiomycota
5. Ascomycota

j. The karyospore of the Zygomycota is called a

1. sporangiospore
2. conidium
3. ascospore
4. basidiospore
5. none of these choices

2. Fill in the blanks (30 pts @ 2 pts each).

a. Primary pulmonary mycoses associated with restricted areas of the world are said to be _____ mycoses.

b. Mycoses that are most often associated with the immunocompromised patient are said to be _____ mycoses.

c. A hyphal septum having a central septal pore and associated is called a _____ septum.

d. Entroblastic conidia are produced by cells called _____ or _____ depending on whether the zone of spore detachment is or is not hidden by a collar on the conidiogenous cell.

e. Granulocytes that are phagocytic, circulate in blood and other tissue and are generally the first phagocytes to arrive at fungal-induced inflammations are _____.

f. The predominant tissue reaction by the human host to fungi in CMI-competent patients is the _____ (may be one or more words).

g. Conidia derived from the differentiation of an existing hypha and which are not readily detached from that hypha in an organized fashion are said to be conidia.

h. Another name for the taxon known as the Fungi Imperfecti is _____.

i. Asexual fungi that are nonconidial and appear to reproduce only by hyphal fragmentation are included in the form-class _____.

j. If one is observing only the cleistothecia of an ascomycete, then one is observing a portion of its _____ phase.

k. Fungal strains of the same species, which are self-sterile, but can mate with other strains of the same species, are said to be _____, with respect to mating capacity.

l. Most mushrooms are technically multihyphal aggregates called _____.

m. Fungi that tend to be coenocytic or produce irregularly spaced complete septa in their hyphae, and that produce endogenous mitospores and karyospores are probably members of the phylum _____.

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

   a. Define the word fungus/fungi, and then point out any problems with your definition, if they exist.

   b. Clamp connections.

   c. entroarthric conidia

   d. dikaryon

   e. dimorphism/polymorphism as related to fungi

4. Essays: Below please find two exam topics and a bonus topic for you to respond to in essay fashion (see comments on page 1 about sentences and spelling). Please provide your responses on the attached lined sheets. If you write normal size your responses should be at least one page long for each essay. Should you need additional space just use the backs of each lined page, or other pages of the exam.

A. Essay 1 (15 pts). Two very different types of drugs are used to treat the majority of life-threatening mycosis. Identify these two drug types by class or family, as well as a specific member of each class, and then describe their basic chemical structures, fungal cellular targets, and different modes of action.

B. Essay 2 (15 pts). For a variety of reasons, many more cases of mycoses are being diagnosed by physicians and other health care professionals then ever before. Please explain in some detail why this is happening, and provide reasons why you think this trend will continue into the near future.

5. Bonus: 10 pts. (optional; e.g. no credit reductions for no answers or wrong answers.)

The classification of Ascomycota and Basidiomycota has been on relatively firm ground ever since it was recognized that methods of sexual reproduction among their members were rather excellent criteria for speculating about their evolutionary history. However, because so many fungi were not known to be sexual, the majority of fungal species have been difficult, if not impossible, to classify. Fortunately during the last decade or so this problem has been circumvented by new methods. In a paragraph or two suggest how this has been accomplished, and whether and why you think these efforts are of value or only make medical mycology more difficult for students like yourself. (Hopefully you will choose to defend the position that these efforts are valuable.)

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