**BIOL 483 - Infection, Immunity, and Evolution of Disease**

**Spring 2022**

**Homework 6**

Review your Medical Microbiology text (Fungi, 57-60 and Parasites 68-70). Write or draw your answers and submit via Web Campus

**Classification (568-572)**

What does it mean to be saprophytic?

Saprophytic means that an organism (in this case fungi) consumes dead or decaying matter to grow

What are the four major taxa of fungi of medical importance?

The four major taxa of fungi of medical importance are:

1. Glomeromycota
2. Basidiomycota
3. Ascomycota
4. Microspora

What kingdom are fungi in?

Fungi are classified in their separate kingdom, ‘Kingdom Fungi’

**Structure/Morphology (568-572)**

What are the unique features of fungal cell walls?

Fungal cell walls are composed of glucans and chitin making it rigid in nature.

**Replication (568-572)**

Why are fungal pathogens unusual with respect to their reproductive characteristics?

Fungi are unusual with respect to their reproductive characteristics as they are able to reproduce asexually and sexually.

How is a teleomorph different from an anamorph?

Fungus reproduces by the production of spores. Teleomorphs are fungi producing sexual spores, while anamorphs are fungi producing asexual spores.

**Pathogenesis (574-577)**

What does it mean to be primary pathogen?

Primary pathogen means that a pathogen can cause a disease in a host regardless of host immunity. “They can colonize the host, find a suitable microenvironmental niche with sufficient nutritional substrates, avoid or subvert the normal host defense mechanisms, and then multiply within the microenvironmental niche.”

Are fungi often considered primary pathogens- why or why not?

No. Only a few fungi are considered primary pathogens as they are not sufficiently virulent. Most hosts’ immune system can defend against fungi infection. Only four fungi are sufficiently virulent to be considered a primary pathogen.

What is dimorphism and why is it relevant for fungal pathogenesis?

Dimorphism is the ability of a fungus to exist in different morphologic forms allowing them to adapt to the environment. It is relevant for fungal pathogenesis as the ability to respond to the host environment is essential for survival.

**Parasites Section**

**Classification (686-691)**

What domain of life are parasites in?

Eukarya 🡪 (Protozoa, Stramenopila, Animalia)

What kinds of parasites are single-celled and which are multicellular?

* Stramenopila and Protozoa are single-celled parasites
* Nematoda, Cestoda, Trematode, and Arthropods are multicellular parasites

**Structure/Morphology (686-691)**

What are three different mechanisms that protozoa use for motility?

* Protozoa can move by cytoplasmic extrusions (pseudopodia)
* Protozoa can move by whipping of flagellum (flagellates)
* Protozoa can move by coordinating movement of hairlike structures (cilia)
* Pseudopodia, cilia, and flagella

What is tegument?

Tegument is a protective covering of flatworms

What are other features that helminths frequently have for attachment?

The features helminths frequently have for attachments are hooks, suckers, teeth, and plates.

**Replication/Reproduction (686-691)**

How do the terms oviparous and viviparous mean?

Oviparous refers to the act of laying eggs (such as helminthic parasites), while viviparous refers to live birth of the young.

What parasites use these modes?

Oviparous – Helminths & arthropods

Viviparous – few species of helminths

**Pathogenesis (692-695)**

What are the primary factors associated with parasite pathogenicity?

The primary factors associated with parasite pathogenicity is the direct penetration of the skin through a bite such as from an arthropod

Why might temperature be an important factor for parasitic infections?

Temperature is an important factor for parasitic infection as certain parasites thrive in different temperatures (such as a requisite of a higher internal temperature in comparison to a lower external temperature)