**Exam 5 Study Guide**

Please note, this is a highlight of the most important aspects of this unit and reminders of commonly missed concepts. Please do not study only the material on this sheet. The PowerPoints, audio clips, discussion forums and videos are the online lecture components and have the material required for this exam. After learning this unit, you should be able to:

**Chapter 5 – The Eukaryotes**

* Compare and contrast the characteristics of fungi with those of bacteria
* Define mycology. Understand that only a small percentage of known fungal species are pathogenic. Discuss how multicellular fungi are identified
* Differentiate molds from yeasts and briefly describe preferred growth environment of fungi
* Define the following terms: thallus, hyphae, septate hyphae, coencytic hyphae, vegetative hyphae, aerial hyphae and mycelium
* Contrast fission and budding yeasts
* Describe the concept of fungal dimorphism
* Discuss sexual and asexual spore production. Which is more common among fungi?
* Be able to name an example of each of the following categories as well as the detail(s) provided:
  + Conidiospores – are they enclosed in a sac?
  + Arthrospores – formed by segmentation of \_\_\_\_\_\_?
  + Blastospores – Buds from \_\_\_\_?
  + Chlamydospores – Thick-walled spores
  + Sporangiospores – Formed within a \_\_\_\_\_?
* Discuss and define the following terms: plasmogamy, karyogamy, meiosis.
* Know some examples of zygomycota and Ascomycota. Discuss why anamorphs are not a true phylum
* Define the terms telomorphic and anamorphic. Which is more common?
* Be prepared to discuss one positive and one negative example of fungi
* Define mycorrhizae
* Define the 5 groups of mycoses
* Describe a lichen and discuss the mutualistic relationship present
* Be familiar with the basic characteristics of algae
* Discuss the anatomy of seaweed
* Associate the groups corresponding with brown, red and green algae
* Discuss oomycote and diatoms
* Discuss dinoflagellates
* Be familiar with the basic characteristics of protozoa
* Define the terms: trophozoite, schizogony, protozoan conjugation and cysts
* Describe African Sleeping Sickness and its cause
* Identify the association of *Plasmodium vivax* with malaria
* Discuss *Toxoplasma gondii*. How can it affect pregnant women?
* Discuss Giardia and Leishmania
* Describe Amoebozoa. Know the conditions caused by *E. histolytica* and *Acanthamoeba*
* Be familiar with the basic characteristics of helminths
* Compare parasitic versus free-living helminths
* Define the terms: degenerative evolution, dioecious, and monoecious
* Briefly describe tapeworms
* Understand the difference between definitive and intermediate hosts
* Discuss roundworms
* Know the organism(s) responsible for pinworm, hookworm and heartworm
* Discuss a vector and provide some examples

**Chapter 6 - Viruses**

* Know who is considered to be the founder of virology
* Be familiar with the basic characteristics of viruses and why they are not considered to be living
* Define the terms: host range, bacteriophages, phage therapy and oncolytic viruses
* Define the terms: Virion, capsid and capsomeres
* Discuss envelope and spikes as they relate to viral structure
* Understand the specificity of viruses and that most are pathogenic
* Provide examples of the following viral shapes: helical, polyhedral, enveloped and complex
* Discuss the taxonomy of viruses
* Describe and discuss the lytic versus lysogenic cycles of bacteriophages
* Describe the process of transduction by a bacteriophage
* Discuss the entry of a virus into an animal cell via pinocytosis or fusion
* Define uncoating and biosynthesis
* Discuss the process of replication of DNA-containing animal viruses
* Describe the biosynthesis of RNA virus. Define the terms reverse transcriptase and provirus
* Discuss how animal viruses multiply within animal cells
* Discuss limitations that may arise from attempting to grow animal viruses in a lab environment
* Compare and contrast latent and persistent viral infections
* Which type of microscope is needed to visualize a virus?
* Describe oncogenic viruses
* Know all cell cycle phases in order and by brief definition. Discuss the purpose of having multiple check points throughout this process
* Discuss tumor-suppressor genes, proto-oncogenes and oncogenes
* Describe prions and know examples of the diseases they are associated with
* Discuss: the Tobacco mosaic virus, West Nile virus, Hantavirus, Ebola and Rabies virus

**Chapter 16 – Principles of Disease and Epidemiology**

* Define the following terms: pathology, etiology, pathogens, infection, pathogenesis, disease, symbiosis, parasitism, commensalism and mutualism
* Discuss normal microbiota and transient microbiota
* Discuss the concepts of microbial antagonism and opportunistic pathogens
* Discuss why Koch’s postulates cannot determine the cause of all diseases
* Define the term predisposing factors and provide some examples
* Define syndrome. Distinguish sign from symptom and know some examples of each
* Discuss the periods within the development of a disease
* Define the terms: local infection, systemic infection, focal infection, sepsis, bacteremia, septicemia, toxemia, viremia, primary and secondary infections, and subclinical infection
* Describe and discuss vaccines and their purpose in the prevention of infectious diseases
* Define the terms: sporadic, endemic, epidemic, and pandemic diseases
* Differentiate incidence from prevalence
* Define carriers and zoonoses
* Define fomites
* Define vector, mechanical and biological transmissions of disease
* Discuss nosocomial infections and how they relate to compromised hosts
* Discuss why we still have emerging infectious diseases even today
* Define and discuss epidemiology
* Know the contributions made by: Snow, Semmelweis and Nightingale
* Discuss the three types of epidemiology
* Describe the purpose and function of the CDC