**Exam 2 Study Guide**

Chapter 21

**Viral Structure**

Are viruses alive? Why or why not?

**Viral Morphology**

What are viruses made of?

What four shapes do viruses com in?

What is different about enveloped viruses?

**Viral Nucleic Acid**

Viruses can have either RNA or DNA nucleic acid

Their nucleic acid can be double stranded or single stranded

How are DNA viruses different from RNA viruses?

Which nucleic acid types require an intermediate between the viral nucleic acid and mRNA transcription? (I think the pictures help a lot with this confusing topic)

How are retroviruses different?

**Viral Life Cycle**

How do virus recognize, enter and infect host cells?

What is the difference between lytic viral life cycle and lysogenic viral life cycle?

**Viruses and Hosts**

What is a host range?

How is the host range determine? How do viruses recognize their host cells?

What role do glycoproteins play in host cell recognition?

What are the two types of viral transmission?

What is relationship between viruses and vaccines? Between viruses and antibiotics?

Chapter 22

**Prokaryote History**

When did they appear?

How are the three domains related to each other?

Where/How did ancient prokaryotes live?

How did they eventually colonize the surface of Earth?

**Prokaryote Structure**

Know the detailed structure of prokaryotes

How are they different than eukaryotes (eukaryote structure is discussed in Chapter 23)

What shapes to prokaryotes come in?

What are the differences between Gram positive and Gram negative bacteria?

How do prokaryotes reproduce? Is it sexual or asexual?

What are the mechanisms for genetic diversity?

What are the differences between transformation, transduction, conjugation?

**Human Disease and Antibiotic Resistance**

How are bacteria both helpful and harmful to humans?

What is the difference between an epidemic, a pandemic, and an endemic disease?

What is the relationship between bacteria and antibiotics?

What is antibiotic resistance? How is it spread between bacteria?

Chapter 23

**Eukaryote Structure**

Know detailed structure of eukaryotes and how they different from prokaryotes

**Endosymbiont Theory**

Give three reasons for why mitochondria and chloroplasts were once free-living organisms

**Fungal Structure**

Prokaryotes or eukaryotes?

Cellular structure

**Fungal Growth**

They are haploid organisms (only a very short diploid stage)

Vegetative versus reproductive state

Hyphae/mycelium

Septated versus coenocytic hyphae

**Fungal Nutrition**

Heterotrophs, saprophytes, parasites

Fungal digestion/ingestion

Carbohydrate storage

**Fungal Reproduction**

Asexual versus sexual reproduction

Asexual: fragmentation, budding, spores

Sexual: Plasmogamy, heterokaryotic stage, karyogamy, zygote stage, meiosis, spores

**Mutualism with Plants**

Mycorrhizae

Ecto versus endo

Endophytes

**Mutualism with algae**

Lichens, what are they?

How do they each benefit?

**Mutualism with animals**

Give examples of this

Mutualism versus parasitism

**Parasitic Fungus**

Give examples of parasitism on plants, animals, humans