

# BIOLOGY 6

## LAB EXAM II STUDY GUIDE

### Mitosis

- Be able to recognize and describe the major stages and events of mitosis
- Be able to answer these questions:
  - o Why choose an embryonic mass of cells to study stages of mitosis?
  - o Why stage of mitosis is often associated with the beginning of cytokinesis?
  - o Does the cell cycle have a beginning and an end? Explain.

### Meiosis

- Be able to recognize and describe the major stages and events of meiosis
- Know these terms (synapsis, alleles, crossing-over, haploid)
- Be able to summarize mammalian spermatogenesis and oogenesis

### Genetics

- Be able to determine di-hybrid crosses using the Punnett Square
- Know these terms (phenotype, genotype, incomplete dominance, codominance, transposons)
- Know how the ABO and Rh blood typing system works
- Be able to answer these questions:
  - o Are dominant characteristics always more frequent in a population than recessive characteristics? Why or why not?
  - o Is it possible to determine the genotype of an individual having a dominant phenotype? How?

### Survey of Bacteria

- Be able to perform and describe the steps of the Gram Stain.
- Know these terms (bacillus, coccus, spirillum, fission, conjugation, bacterial colony, sensitivity plate, nitrogen fixation, nodules, sheath, heterocysts)
- Be able to identify the following prokaryotes
  - o Nostoc
  - o Oscillatoria
  - o Gloeocapsa
  - o Merismopedia
- Be able to answer these questions:
  - o Describe the relationship between Rhizobium and certain legumes.
  - o What happens when milk is pasteurized?
  - o How do antibiotics kill bacteria? Explain why do they not affect viruses?
  - o What ecological roles are performed by cyanobacteria and other non-pathogenic bacteria?
  - o How could bacteria become resistant to an antibiotic?

### Survey of Protista

- Know these terms (oogamy, zygote, isogamous, syngamy, sporophyte, gametophyte, alternation of generations, fucoxanthins, alginic acid, diatomaceous earth, micronuclei, macronuclei, pseudopod, sclerotium).
- Be able to identify the following Protists
  - o Chlamydomonas
  - o Spirogyra
  - o Cladophora
  - o Volvox
  - o Diatoms
  - o Dinoflagellates
  - o Euglenoids (Euglena)
  - o Amoeba
  - o Forams
  - o Trypanosoma
  - o Paramecium
  - o Plasmodium
  - o Slime molds
  - o Brown algae (Phaeophyta)
  - o Red algae (Rhodophyta)

- Be able to answer these questions:
  - What characteristics are shared by land plants and Green Algae?
  - How are Phaeophyta economically important?
  - How are green algae different from cyanobacteria?
  - What is meant by “alternation of generations”?
  - How do algae affect your life?
  - Are the stem, holdfast, and blade of brown algae the same as stems, roots, and leaves of land plants? Why or why not?
  - Is the cell the fundamental unit of life in plasmodial slime molds? Or is the “whole organism”, the fundamental unit? Explain your answer.
  - In what sense are protists “primitive” and in what sense are they “advanced”?
  - Why are unicellular organisms that reproduce by mitosis considered immortal?

### Survey of Fungi

- Know these terms (budding, fragmentation, conidiophores, septa, coenocytic, phototaxis, dikaryotic, monokaryotic, mycelium, saprophytes, hypha)
- Be able to identify these fungi groups, fungal structures and know their respective phylum
  - Rhizopus
    - Sporangiphore
    - Sporangia
    - Zygosporangium
    - Zygosporangium
  - Yeast (*Saccharomyces*)
  - Peziza
    - Ascus
    - Ascospores
  - Penicillium
    - Conidiophore
    - Conidia
  - Morel (*Morchella*)
  - Mushrooms, puffballs
    - Cap
    - Gills
  - Lichen and types of i.e. crustose, fruticose, foliose
- Be able to answer these questions
  - How can you tell whether *Rhizopus* is reproducing sexually or asexually?
  - Describe the relationship found in lichen.
  - What are the benefits of fungi?
  - Explain what is meant by “the only distinction between a fungi spore and gamete is function”.