

**Miramar College**  
**Biology 205 General Microbiology**  
**Lab Exam III Study Guide**

In addition to this study guide, use your notes, text, lab manual and other resources (*i.e.*, **the Objectives & Discussion section of the Labs and the bold words in the Background and Introduction sections**) to make sure that you are fully prepared for your exam. Topics & experiments covered in lab are fair game, even if you personally did not perform them.

**Physiological & Biochemical Tests for Minor & Major unknowns**

- For all of the tests performed in lab, be able to identify: the media used, the chemical being tested, a positive and negative result, the microbial enzyme(s) involved, and products being produced. **You WILL see several of these media out and you will need to determine “what’s happening.”** For example, if you are shown a Lactose Durham Tube that is cloudy, yellow and has marked gas in the inverted vial: the organism has the enzyme lactase and has fermented lactose, producing both acid & gas, this is visible because the pH indicator Phenol Red has turned yellow, which happens in acidic media. The *Media Use Descriptions* at the end of the Lab Manual will be very useful for this purpose.
- Be familiar with the use of dichotomous keys to determine the genus to which a bacterial unknown belongs.

**LE 21: A Glo Germ™ Epidemic & Herd Immunity**

- Define sporadic, endemic, epidemic, pandemic, and herd immunity.
- Understand how immunizations can create herd immunity.

**Staphylococci: Isolation & Identification**

- Know introductory material, including the use of Mannitol Salt Agar and SM110 medium.
- Know the tests that were available to you in class that help to differentiate between staphylococcal species, and which tests were done to isolate a *Staphylococcus* species.
- Recognize an unknown *Staphylococcus* as *S. aureus*, *S. epidermidis*, and *S. saprophyticus* based on their mannitol fermentation, Novobiocin susceptibility, coagulase production, and  $\alpha$ -toxin production.
- Recognize staphylococcal bacteria on a Gram stain.
- Understand how each of the tests performed in lab is used to determine an unknown *Staphylococcus* species, use *SSE Media Use Descriptions* in the Lab Manual.

**Streptococci: Isolation & Identification**

- Know introductory material, including the use of Blood Agar and Brain-Heart Infusion Agar.
- Differentiate between  $\gamma$ -hemolysis,  $\alpha$ -hemolysis, and  $\beta$ -hemolysis and know which media is used to determine this property.
- Recognize streptococcal bacteria on a Gram stain.
- Understand how to determine a streptococcal species using the table in the SSE handout.
- Understand how each of the tests performed in lab is used to determine an unknown *Streptococcus/Enterococcus* species, use *SSE Media Use Descriptions* in the Lab Manual.

**Gram-Negative Enteric Organisms**

- Define enteric.
- Know introductory material, including the use of MacConkey Agar and Eosin Methylene Blue Agar.
- Know the tests used to differentiate normal flora from pathogens, and the pathogens used in lab.
- Recognize enteric bacteria on a Gram stain.
- Understand how each of the tests performed in lab is used to determine an unknown Enteric species, use *SSE Media Use Descriptions* in the Lab Manual.

**LE 23: Immunological Assays**

- Define immunoassay, agglutination, sensitivity, specificity, indirect, direct, and seroconversion.
- Understand the mechanics of immunoassays, specifically Latex Agglutination tests, Lateral Flow Immunoassays, and Microtiter ELISAs.
- Understand what makes all immunoassays specific.
- Understand what, in particular, makes Latex Agglutination, Lateral Flow, and ELISA immunoassays sensitive.

- Recognize positive and negative results for each of the immunoassays performed in class.

**The Major Unknown**

- Know the characteristics used to determine the bacterial genera for Gram positive and Gram negative organisms. (See the dichotomous keys in the Lab Manual for details.)
- Know how to use Bergey's Manual of Determinative Bacteriology to decide a strategy for isolate identification.