

Klamm's Microbiology Laboratory Manual

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Introduction

This laboratory manual was developed for a microbiology laboratory course designed to give students in the health care professions basic knowledge and skills of the techniques used to study microbes. The course is taken by first-time college students in the 6-year medical program and by pre-pharmacy undergraduates. Because this is the only microbiology laboratory course these students take, the laboratory experiments are essential to illustrate microbiological principles and methods presented in lecture companion course. The laboratory exercises demonstrate basic concepts of microbiology with emphasis on infectious diseases and host defenses.

Throughout the course, students gain competency in the following areas:

- Safe handling of microbes
- Knowledge of the techniques and media used to subculture microbes
- Use of the light microscope
- Staining techniques
- Quantitative methods
- Identification of microbes using biochemical tests and/or immunological techniques
- Interpretation of experimental results

In the past, I supplemented a commercially published lab manual with detailed weekly instructions posted to the course website. My instructions summarized the theory presented, pointing out the important concepts. Based on past experience, I made changes to the lab procedure accommodating organisms that work well in the UMKC teaching lab. In addition, the instructions gave students clarification on the post lab questions, encouraging critical thinking and evaluation of their actual experimental results. Students were required to use both the manual and my handouts to fully understand the exercise. As much as I tried to make each week's activities clear, there was often confusion about the procedure, observations and/or expectations on the post-lab questions. This work aims to put it all together in one place for the student.

For this project, I have built upon much of my original supplementary material using several open educational resources, most notably, *OpenStax Microbiology*.

I appreciate the funding and support from the UM-system and the UMKC Libraries. I am grateful to my students who make teaching fun and interesting and will be unwitting editors and evaluators of this work.

Sincerely,

Loretta Sanderson Klamm

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7-ImE ELISA