
*Microbiology Experiments & Lab Techniques* is a loose-leaf lab manual targeting allied health majors. Alderson includes 38 exercises covering basic microbiology techniques with applications to clinical environments, including labs on medical asepsis and handling patient specimens. The exercises have short, succinct and engaging introductions, and are inquiry-based and technically straightforward. The author provides a basic framework of exercises with scientific inquiry extensions. Instructors can develop a portfolio of exercises that allow students to test their own hypotheses. One of these is the handwashing experiment in which students design how they want to wash their hands, determine the number of individuals that should be in their group, what controls to use, and how to record, analyze and present the results.

An additional strength of the lab manual is Alderson’s modifications of classic experiments to simpler versions that are cost-effective and ensure success. One example is the qualitative phage typing exercise, which uses toothpicks to apply the bacteriophages, instead of the more complicated dilution schemes. The lysozyme experiment uses student-collected tears, diluted and applied to a lawn of bacteria. In addition to classic microbiology exercises, Alderson includes the scientific method, Koch’s postulates, and guidance for an independent research project. The “DNA Fingerprinting Lab” adds a touch of modern molecular biology, and the “White Blood Cell Lab” helps students visualize and understand the immune response to infection.

The accompanying CD-ROM includes a color atlas with abundant images for each exercise, lab techniques, and interactive learning applications. The images of protozoa, colony descriptions, hemolysis patterns, and DNA fingerprinting are particularly good. Some could be better; for example, the MacConkey agar image needs a negative control and the lysozyme image is not clearly labeled.

In addition to an animation on pipetting technique, the CD-ROM includes an interactive problem-solving unit on working with dilutions and determining colony-forming units/ml. The exercise “Loss of the Magic Bullet” uses challenging quiz questions to guide students’ understanding of misconceptions about antibiotic use, and development of resistance. In the “Gambling Germ Game”, students bet on their knowledge of various diseases and the etiologic agents. The game reinforces correct answers (if they get it right, there is a cheer), and their understanding of how well they think they know the material. The spelling must be absolutely correct. Perhaps the next edition of the enjoyable game will include the viral diseases.

The *Microbiology Prep Handbook* is written in conversational first person, and has a plethora of tips and advice on the best way to prepare each lab and combine the experiments. One
gets the feeling the author is standing in the room in careful oversight to ensure successful exercises by sharing troubleshooting experiences. Alderson provides money-saving shortcuts and detailed purchasing information, including vendors and catalog numbers. As with the exercises themselves, the prep handbook is written so that the exercises can easily be repeated and includes a key word index and answer keys to the lab manual questions.

The strengths of this manual are the low cost for the student, the inquiry-based exercises with extensions, and the exceptionally helpful prep handbook. There is a glossary of microbiology terms but no keyword index in the lab manual. The lab manual has a safety section but does not introduce the students to the biosafety levels, although this is in the lab prep handbook. Overall, this is an outstanding and unique lab manual for allied health science majors with exercises that ensure success. The lab manual is very highly recommended.

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