

Preface

To the Student

A microbiology laboratory is valuable because it actually gives you a chance to see and study microorganisms firsthand. In addition, it provides you with the opportunity to learn the special techniques used to study and identify these organisms. The ability to make observations, record data, and analyze results is useful throughout life.

It is very important to read the scheduled exercises before coming to class so that class time can be used efficiently. It is helpful to ask yourself the purpose of each step as you are reading and carrying out the steps of the experiment. Sometimes it will be necessary to read an exercise several times before it makes sense.

Conducting experiments in microbiology laboratories is particularly gratifying because the results can be seen in a day or two (as opposed, for instance, to plant genetics laboratories). Opening the incubator door to see how your cultures have grown and how the experiment has turned out is a pleasurable moment. We hope you will enjoy your experience with microorganisms as well as acquire skills and understanding that will be valuable in the future.

To the Instructor

The manual includes a wide range of exercises—some more difficult and time-consuming than others. Usually more than one exercise can be done in a two-hour laboratory period. In these classes, students can actually see the applications of the principles they have learned in the lectures and text. We have tried to integrate the manual with the text *Microbiology: A Human Perspective*, Sixth Edition by Eugene Nester et al.

The exercises were chosen to give students an opportunity to learn new techniques and to expose them to a variety of experiences and observations. We did not assume that the school or department has a large budget; thus, exercises were written to

use as little expensive media and equipment as possible. The manual contains more exercises than can be done in one course so that instructors will have an opportunity to select the appropriate exercises for their particular students and class.

An online Instructor's Manual is available from the publisher. It lists equipment, cultures, media, and reagents needed for each exercise and has extensive information for storing cultures and making media. The Notes to the Instructor section gives suggestions for preparing and presenting the laboratory sessions, and there is a section of questions that can be used to supplement those in the student manual. **We highly recommend that the instructors utilize this additional aid.** Contact your local McGraw-Hill representative for the URL and password for this site.

Revisions to the Sixth Edition include a new exercise on acne and an updated identification of the pathogenic *streptococci*. Some of the exercises have been rearranged to give a more logical introduction to techniques, and others have been simplified. The *Staphylococcus* Carrier Study, an exercise that has potential health risks, has been eliminated.

If a student has a special interest in microbiology and would like to do independent work, four special projects are included. Two are available online: the isolation of *Deinococcus*, an organism exceptionally resistant to radiation; and the isolation of an organism utilizing methanol from plant leaves. You can access these special projects at www.mhhe.com/Nester6e. Isolation techniques for two other interesting organisms, petroleum-utilizing bacteria (important in oil-polluted water) and bioluminescent bacteria, are in the back of the manual. The luminescent bacteria are particularly intriguing. Not only are they an example of quorum sensing, but they are exciting to view in a dark room. Also, these bacteria can be easily isolated by the whole class.

We hope these changes are helpful and that the manual contributes to the students' understanding of microbiology. We also hope both students and instructors enjoy their experience with a very interesting group of organisms.

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