

Preface

We designed this laboratory manual for an introductory biology course with a broad survey of basic laboratory techniques. The experiments and procedures are simple, safe, easy to perform, and especially appropriate for large classes. Few experiments require a second class-meeting to complete the procedure. Each exercise includes many photographs, traditional topics, and experiments that help students learn about life. Procedures within each exercise are numerous and discrete so that an exercise can be tailored to the needs of the students, the style of the instructor, and the facilities available.

TO THE STUDENT

We hope this manual is an interesting guide to many areas of biology. As you read about these areas, you'll probably spend equal amounts of time observing and experimenting. Don't hesitate to go beyond the observations that we've outlined—your future success as a scientist depends on your ability to seek and notice things that others may overlook. Now is the time to develop this ability with a mixture of hard work and relaxed observation. Have fun, and learning will come easily. Also, remember that this manual is designed with your instructors in mind as well. Go to them often with questions—their experience is a valuable tool that you should use as you work.

TO THE INSTRUCTOR

This manual's straightforward approach emphasizes experiments and activities that optimize students' investment of time and your investment of supplies, equipment, and preparation. Simple, safe, and straightforward experiments can be the most effective if you interpret the work in depth. Most experiments can be done easily by a student in two to three hours. Terminology, structures, photographs, and concepts are limited to those the student can readily observe and understand. In each exercise we have included a few activities requiring a greater investment of effort if resources are available, but omitting them will not detract from the objectives.

This manual functions best with an instructor's guidance, and is not an autotutorial system. We've tried to guide students from observations to conclusions, to help students

make their own discoveries, and to make the transition from observation to biological principles. But discussions and interactions between student and instructor are major components of a successful laboratory. Be sure to examine the "Questions for Further Thought and Study" in each exercise. We hope they will help you expand students' perceptions that each exercise has broad applications to their world.

THE SIXTH EDITION

All exercises were critiqued by a review panel of current users, and their suggested revisions were carefully considered and incorporated. These revisions have further enhanced the precision of introductory material to many exercises and added to the clarity of instructions for the students. Notable among the revisions is an increased emphasis on evolutionary adaptations of organisms surveyed in the exercises on the animal kingdom. In addition, over fifty figures have been revised or replaced, and well over seventy questions have been revised or added throughout the exercises to further stimulate student thinking during their work.

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Reviewers

We thank the following reviewers for their helpful comments and suggestions during the preparation of this new edition.

Elizabeth Torrey Amsley	Coastal Georgia Community College
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