

AV & Software Reviews

LABORATORY TEACHING SOFTWARE

LABTUTOR®. 2007. CD-ROM. Developed by ADInstruments, Inc. Visit www.adinstruments.com for ordering and pricing information, or within North America call (888) 965-6040.

System Requirements:

- Windows XP Professional Service Pack 2
- USB interface for operation with Power Lab
- Internet Explorer v5.5 or later
- 1.6 GHz Pentium processor
- 256 MB RAM
- A computer that supports a 1024 x 768 color display

The LabTutor® software has been developed to be used in conjunction with PowerLab data acquisition hardware and both are designed for laboratory teaching specific experiment files. The range of activities included is:

- Spectrophotometry
- Acid-Base Titration
- Biological Membranes
- Cellular Respiration
- Photosynthesis - CO₂ Fixation
- Photosynthesis - O₂ Production
- Temperature Effects on Enzyme Performance
- Water Balance
- Human Anatomy & Physiology (a wide-range of activities)
- Animal Physiology (a wide-range of activities)

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- Pharmacology (a set of related activities)
- Biochemistry (a set of related activities)

Once the software and hardware are connected to the appropriate devices (depending upon the laboratory exercise), students are allowed to control the sampling, storage of experimental data, and data analysis.

During the progression of any of the lab activities, students are prompted to follow steps as needed. Upon data collection, then the data can be analyzed, followed by a Lab Report section linked to background material. The various stages of the data acquisition process are very intuitive and allow the students to access background information necessary to make sense of the results obtained and to delete data (if necessary). The Lab Report section allows the students to record and manipulate data in a sophisticated manner, perhaps the closest to data manipulation in a research lab.

Software installation is extremely easy and quick. There is a user license attached to the software, which allows a great deal of security and prevents changing configurations. During the experimentation and data collection processes, there are features that allow students to calibrate parameters, enter comments, provide answers, and to graph data. The graphs produced are of top quality, which should make students more familiar with those graphs that appear in peer-reviewed scientific journals. The CD also comes with a manual that describes every aspect of the software and hardware use in a user-friendly format, including a chapter devoted to troubleshooting.

LabTutor® is superior software that gives a new range of possibilities to laboratory activities for very inquisitive students and for those in a science course with a rigorous lab component. The level of engagement required allows both the teacher and the student to make lots of experimental manipulations and to perform data analysis in a fast way, all within the time-limits of a typical laboratory period. The activities can be used in advanced high school biology and/or physiology courses and undergraduate biology courses as well.

I was very impressed by the breadth and depth of the activities, as they surpass other software currently produced for the same target audience. This is an important addition to the resources available for enhancing the teaching of labs and increasing the scope of inquiry-based activities.

José Vázquez

BIOTECHNOLOGY

Modules In Emerging Fields, Volume 6, Part 2: Green Fluorescent Protein. 2007. Developed at Connecticut College with grants from the Howard Hughes Medical Institute. Presented by Dr. Marc Zimmer, Director, and Janet Hayes, Instructional Designer/Developer. Interested teachers should contact Prof. Marc Zimmer at mzim@concoll.edu. Free of charge.

System Requirements:

- Windows
 - 300MHz or faster
 - Windows 98/NT/2000/XP
 - 64 MB RAM
 - 800 x 600 display, 16-bit color minimum
 - Windows-compatible sound card
 - CD-ROM drive (16x or better recommended)

- Macintosh
 - PowerPC based Macintosh computer
 - MAC OS software version 9.1, 10, and OS X
 - 64 MB RAM
 - 800 x 600 display, 16-bit color minimum
 - CD-ROM drive (16x or better recommended)

This effort was part of a faculty development program designed to bring scientists to Connecticut College to work with faculty in incorporating emerging and changing sub-fields into courses and laboratories. This CD is a companion to Volume 6, Part 1, *Bioanalytical Applications of Bioluminescence*. While Part 1 focused on the firefly luciferase enzyme, Part 2 focuses on the history, chemistry, and applications of the jellyfish green

fluorescent protein (GFP). There is also information on the CD about the five scholars who visited Connecticut College to contribute to their faculty development program.

The CD is divided into the following topics:

- History of GFP
- Uses of GFP
- Structure of GFP
- Slide Shows from the Scholars' Presentations
- Seminars by the Scholars
- Resources

Each topic has interactive components. These are easy to navigate. The slide shows are convenient to edit and make into your own PowerPoint® presentations. And a movie of each visiting scholar presenting the seminar brings the professor right into your classroom. The resources topic gave books, articles, and Web sites to be used for further investigations.

This CD would be most useful in an undergraduate molecular biology course where the topic could be studied thoroughly. I also can see this resource used in an introductory biology or a beginning microbiology course where fluorescent markers are studied for their uses in indicating the incorporation of genes. I use many programs like this one in my own instruction, but have not used one that contained so much information on one CD. This CD has extensive information about the green fluorescent protein. It is available free of charge to interested educators who would like to incorporate this information into their curriculum.

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TEACHING OF EVOLUTION

Evolution. 2007. CD-ROM and Workbook. Developed by BioZone International Ltd, 109 Cambridge Rd, Hamilton 3216, New Zealand. Visit www.biozone.co.nz for more information and contact sales@biozone.co.nz for ordering. \$99.95. In addition, it can be purchased as a bundle along with the *Evolution and Genes & Inheritance* CD's for a significant discount price of \$199.95.

This is another recent module developed by BioZone, which nicely complements the **Human Evolution**, and **Genes**

and & Inheritance modules reviewed in previous issues of *ABT*. Topics included are:

- The Origin and Evolution of Life
- Mechanisms of Evolution
- Patterns of Evolution

In addition to a PowerPoint® slide show which can be modified to a particular instructor's needs, the module offers a wide range of activities aimed at providing a different approach to the teaching of evolution at the secondary school level. The activities are well-thought and certainly provocative in the sense that students are probed to examine evolution from a perspective not typically covered by major textbook companies.

The *Origin and Evolution of Life* section includes seventeen sub-sections beginning with life in the universe and expands its thesis to the origin of life on earth, including the origin of eukaryotic cells (including endosymbiosis), DNA hybridization evidence, comparative anatomy, and ends with continental drift and evolution, to name a few.

Mechanisms of Evolution includes 28 sub-sections including genes and evolution, Darwin's theory, population genetics, genetic drift, speciation, and stages in species development. Two notable sub-sections are "Selection for Human Birth Weight", and "Analysis of a Squirrel Gene Pool". What makes these two sub-sections noteworthy is the fresh approach they bring to the understanding of evolutionary mechanisms; most biology textbooks tend to present such mechanisms in a dry format thus making the topic less convincing to our students.

The last section, *Patterns of Evolution*, covers convergent evolution, co-evolution, adaptive radiation, causes of mass extinctions, and other topics pertinent to New Zealand species. Once again, the topics are presented in an engaging format and the activities provide a wide range of opportunities for inquiry. Answers to all questions for the three sections are provided to the teachers on a separate CD.

This module is appropriate for advanced secondary school biology courses such as AP®, IB®, or a stand-alone course in evolution. Also, it could be used at the undergraduate level for non-majors. All the activities provide a wide range of skills and students should have a great command of the subject by the end of the module. Hopefully, students will complete all activities realizing that the teaching and learning of evolution is a cornerstone in biology and ongoing controversies sur-

rounding the teaching of evolution are best kept outside the biology classroom. Regardless of the implications, BioZone has provided a phenomenal tool for teaching evolution that surpasses most (if not all) attempts by other companies to bring evolution to our classrooms in the twenty-first century.

José Vázquez

Make plans for Memphis!



Photo courtesy of the Memphis Convention & Visitors Bureau

NABT 2008
Professional Development Conference
October 15-18
Memphis Cook Convention Center
Memphis, Tennessee

See page 185 for details.