

Rachel Hays

Department Editor

Cell Microscope 1.0. 1998. Aurora Educational Technologies (4465 17th St. #2, San Francisco, CA 94114); www.aurora-ed.com.

System Requirements

Macintosh

68030 processor
8MB free RAM
CD-ROM drive
13" color monitor
video capable of displaying 256 colors

Windows PC

100 Mhz Intel Pentium or equivalent
12MB free RAM
CD-ROM drive
13" color monitor
video capable of displaying 256 colors
SoundBlaster-compatible sound card
Windows 3.1, 95, or NT operating system



This CD-ROM is intended primarily for high school biology classes and presents animations and simulations of cell structures and processes. Teachers can use the CD-ROM as a visual aid to show the functions of a cell and its organelles. For students it can be used as an interactive study guide. With the *Virtual Tutor* you can assess your knowledge. In concept this is an excellent CD-ROM for teaching and learning the functions of a cell. Overall, I found all of the concepts, narrations, and on-screen text to be detailed and accurate.

The initial start-up was very easy. I put the CD-ROM into the drive and

double-clicked the icons, and the title page came up without incident. However, when clicking forward to the *Program*, it takes you immediately to the basic functions of a *Cell* every time. Later I found a *Show Map* feature, which is much like a Table of Contents. A more effective way of starting the *Program* would be to allow you to go directly to the *Show Map* feature. At that point you could easily choose what aspect of the cell you wished to study. When the program is running the screen is split, one side showing an animation next to a content outline or simple concept map. This is useful for taking notes of the processes. In addition, there is a *Show Notes* dialog box, which lets you take notes directly on screen and from which you can print later. The *Zoom Tool* feature enlarges graphics, the *Labels* feature will attach vocabulary words to some structures, and the *Microscope* feature will show actual photos of cell structures on specific topics. I had a couple of my students run through the *Interactive Workshop* feature—(selective permeability, translation, base-pairing), and each found the program useful and informative.

The effectiveness of the overall graphics presentation was bit of a mixed bag. I found some to be superb at demonstrating and visualizing a concept, while others were weak in their presentation. For example, the *Transcription* graphics were mediocre but I found the *Translation* graphics and explanation vastly superior. I found the animations and content on transport across membranes (*Phospholipids*, *Selective Permeability*, *Osmosis*, *Diffusion*, *Solute Pumps*) very effective. All had good animations that clearly showed what is occurring on the molecular level. The animations on *Endocytosis* were very good. I was disappointed with the molecular animations of the *Glycolysis* and *Krebs Cycle* and *Electron Transport*. First, the *Krebs Cycle* animations didn't visually demonstrate that it was a biochemical cycle. Second, the space-filling models of molecules were neat but unless you are familiar with space-filling structures, you didn't get a sense that carbon atoms were being added to the

intermediate molecules in the cycle. This is an important distinction to make when teaching about *Glycolysis* and *Krebs Cycle*. For *Electron Transport*, the electrons and protons move too rapidly to get a sense of what is actually occurring within the membrane. Perhaps if they had been labeled or used e⁻ and H⁺ instead of round dots it could have been more effective. The *DNA Replication* animation moved through its sequence too fast to allow any additional comments by a teacher during class. There is a pause button but when I hit it, the whole screen would go black. Also, I had problems with the *Chromosome* animation and pause feature again. The animation simply stopped and started over again, it never paused and allowed you to continue. These are lengthy, involved concepts and a pause feature is useful for allowing teachers time to ask for feedback and answer questions before moving forward.

I confess that I rarely look at user's guides before I launch a CD-ROM. I want CD-ROMs that are easy to run and easy to navigate. After running the CD-ROM, I did look at the user's guide. The user's guide was short (a real plus with my busy schedule) but well written and easy to follow. After some initial navigating problems, I got the hang of the CD-ROM and could jump to any aspect of cell functions I wanted.

The *Virtual Tutor* was a straightforward series of multiple-choice questions that students could work through to see if they were getting the concepts presented. It's a nice feature if the students were told to use it each time they worked through a topic. The questions were fairly simple so the student success rate should be high. Other tutorials I've used are really difficult and discouraging to the student.

I've used CD-ROMs with better graphics (ADAM software-Interactive Physiology) but for an introductory high school biology class, this CD-ROM represents an inexpensive way to begin using computers and CD-ROMs as teaching tools. The content is very good and the graphics for the most part get across the concepts. The

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CD-ROM is loaded with content and all the graphics work, but I found some more effective than others. Perhaps Version 2.0 will address some of the shortcomings but overall this is a useful CD-ROM for teachers wishing to present information to students via LCD projector or to have students work on at computer stations.

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Recently Updated Interactive Biology Multimedia Courseware (CD-ROM). Cyber Ed Inc. (PO Box 3037, Paradise, CA 95967); (530) 872-2432; e-mail: info@cyber-ed.com; web: www.cyber-ed.com. Price: Depending on the CD-ROM selected, the prices vary from \$89.95 to \$139.95.

System Requirements

Windows

486/66 or Pentium processor
S-VGA graphics card w/compatible monitor and 640×480 resolution at 256 colors
Windows 95, 98, or NT 3.51 or 4.0
16 MB of available memory (RAM) required (32MB recommended);
2MB hard disk space
mouse
sound card
CD-ROM drive (4× or better preferred)

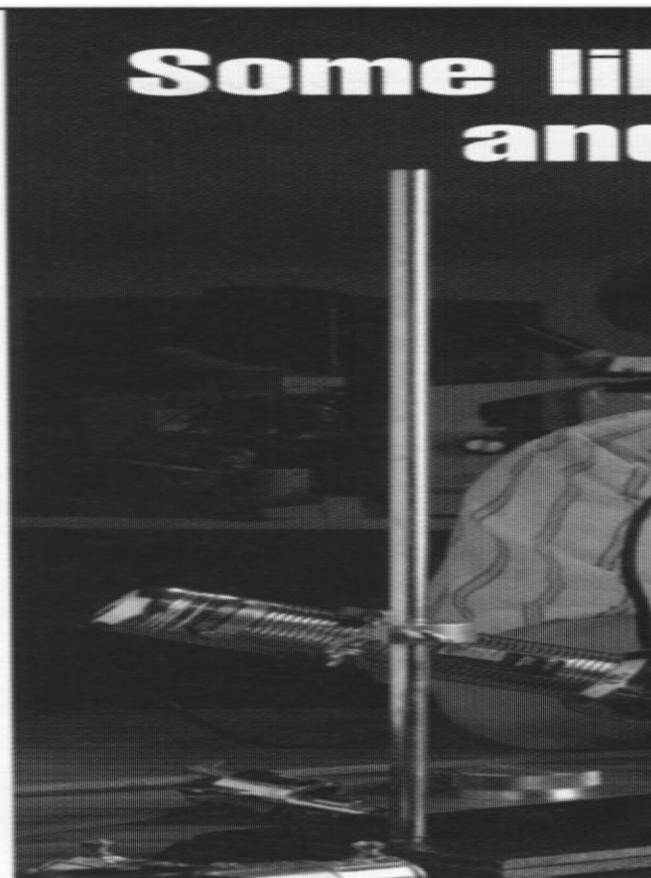
Macintosh

68040 processor or higher, including Power Macintosh; System 7 or later; 12MB of available memory (RAM) required (16 MB recommended); 2 MB hard disk space; mouse; thousands of colors; CD-ROM drive (4× or better preferred).



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The CD-ROMs take on the role of the teacher with their distinct narratives, often interspersed with thoughtful questions. Different narrators present the details and the vocal tone is appealing. The upgraded versions display more vivid colors, sharper diagrams; they now include clever new animations, clearer labeling and also have



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