

# The Medical Educator's Resource Guide

John R. Cotter, Ph.D.

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During the preparation of this edition of the Resource Guide, I was reminded that many of us encounter delays downloading web pages when using a home computer. In my experience, it is the reason that is most often cited by students for not using the web outside of the confines of our school's computer facility. So, why is it that downloading from the World Wide Web can be slow, so slow that it might deter one from using the Internet for instructional purposes?

Michael Barclay is one of a number of specialists at our school who is responsible for keeping our computer facility in working order. Barclay explained that the speed with which information is transmitted to your computer is dependent on a number of factors including the type of modem, properties of the connecting line and the design of the website that is contacted.

At our school, the speed with which information is downloaded over the Internet is usually fast because the phone line that is used is capable of carrying information at a rapid rate. In contrast, residential telephone lines are much slower. According to Barclay, phone lines were not meant to carry a digital signal and are the slowest way of sending information over the Internet. In effect, using a standard phone line creates a bottleneck that slows the transfer of information.

The inherent design of the site is another factor that affects download speed. A web browser, such as Netscape Communicator, builds a web page on the computer screen from information in files at the target site. The files contain computer language called HyperText Markup Language (HTML) and the manner in which the program code is written can affect the speed with which a page is recreated. Digitized images that are transmitted over the Internet pose another problem. The size of the image file may significantly affect the speed with which the image is reconstituted. The files of images that download slowly are likely to be large; therefore they take longer to download onto the hard drive of the computer.

The sites recommended in the MERG should download efficiently when working from a location that utilizes high-speed phone lines. If you do work online with a standard phone line and are looking to improve performance, Barclay recommends using at least a 56 Kbits modem, or upgrading to a cable modem or a DSL (Digital Subscriber Line) for faster speeds. "HowStuffWorks" is another source of information that I found useful in learning about the Internet. For more background on how computers, modems and phone lines work, the reader should consult <http://www.howstuffworks.com/web-server1.htm>.

If you are aware of a site that has the potential for being used by educators and students of the basic sciences, please consider contributing to the Guide. Once published by the journal, the sites and their reviews will be posted in hyperlink form on the IAMSE web site under our "Educational Resource" branch.

Send all submissions to [jrcotter@buffalo.edu](mailto:jrcotter@buffalo.edu) or use the IAMSE web page at [http://www.iamse.org/pub/bse\\_resource.htm](http://www.iamse.org/pub/bse_resource.htm). Please include the URL and a short critique of between 100 and 200 words.

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## All the Virology on the WWW. David M. Sander.

<http://www.virology.net/garryfavweb.html>

This site "seeks to be the best single site for virology on the internet." The site is a major internet resource for professional virologists and anyone seeking to learn more about viruses. Contents (in part) include links to virology research and data sites, specific virus sites, other virology sites, and educational resources in the form of virology departments/institutes, graduate programs, and on-line virology course notes and tutorials. The site features (a) "The Big Picture Book of Viruses" consisting of an extensive collection of electron micrograph images or computer-assisted graphics; and (b) "The Virology Bookshop" which lacked specific titles and was more historical than current. The site is comprehensive, clearly organized, easy to navigate, and lives up to its name.

*(Reviewed by Kenneth D. Somers, Ph.D., Eastern Virginia Medical School.)*

## Dr. B's Histo Review. Bruce S. Babiarz. Rutgers University. The State University of New Jersey.

<http://www.lifesci.rutgers.edu/~babiarz/DrBsRev.htm>

This site was designed as a review site for students of an undergraduate college course in histology. It is well illustrated and organized around the concept of an electronic histology atlas. Each topic begins with a review of key morphological features. Using comparable images, this is followed, with one exception (cytology), by questions that test the user's ability to identify tissues, organs and basic structures. In addition, there are three large practical examinations. In all, there are over 800 identification type questions. Students taking a comparable level course who wish to review and test themselves with additional

specimens will find that the site is useful but should understand that the content and style of questioning is course specific. (Reviewed by John R. Cotter, Ph.D., University at Buffalo.)

**Histology of the Periodontium. Max A. Listgarten, University of Pennsylvania and Temple University.**  
<http://www.temple.edu/dentistry/periodio/periodontology/index.html>

This site is authored by Dr. Listgarten, a well-known morphologist of oral tissues, teacher and periodontist, who has an extensive knowledge of the field and understands what students, teachers and clinicians need to know about the periodontium, i.e., the gingiva, periodontal ligament, cementum and alveolar bone. This on-line course is more than a typical textbook. It attempts to clarify the most important facts and basic information on each tooth supporting tissue using photomicrographs, legends and computer teaching technology. Each section is organized into three parts: histology, clinical considerations and a short quiz. Each section contains an adequate collection of photomicrographs and starts with a diagram or a low magnification photomicrograph that orients readers to each tissue. Although some of the illustrations could be improved by increasing the contrast of the images, most of the images are of excellent quality. Being able to view them at a higher magnification is an important feature of the application. The figures are well labeled. The information on tissue structure is up-to-date, precise and clear. The clinical considerations are very relevant, useful and informative. The quiz at the end of each section gives an opportunity to review the material after study. This on-line course provides an excellent introduction to information on the periodontium. It is highly recommended. (Reviewed by Moon-Il Cho, Ph.D, and John R. Cotter, Ph.D. University at Buffalo.)

**Internet Atlas of Histology. College of Medicine, University of Illinois at Urbana-Champaign.**  
<http://www.med.uiuc.edu/histo/medium/index.htm>

This is the web site for the histology course of the Department of Cellular and Structural Biology at University of Illinois at Urbana Champaign. The site contains a histology laboratory manual, lab quizzes for self-evaluation, an atlas and a search engine where slides can be accessed by system or histological feature. The laboratory manual is still under construction, and at the present time contains ten units: "Blood"; "Cells and Organelles"; "Connective Tissue and Epithelium"; "Lymphoid Tissue and Skin"; "Muscle and Cardiovascular System"; "Respiratory System, Bone and Cartilage"; "GI Tract, Liver, Pancreas and Gall Bladder"; "Urinary System"; "Endocrine System"; "Reproductive Systems"; and "Nervous Tissue and Special Senses". A pull down menu lists structures to be identified. These structures are highlighted and audibly identified. The lower magnifications are not particularly informative. However, the higher power views of the tissues are excellent. Highlighting of identified structures is not always obvious. The atlas includes light micrographs as well as a good

number of transmission and scanning electron micrographs. The self-evaluation quizzes are quite good and the search engine is particularly useful. Overall, this is a useful site. (Reviewed by Lois K. Laemle, Ph.D., New Jersey Medical School.)

**Promenade Round the Cochlea. Université Montpellier.**  
<http://www.iurc.montp.inserm.fr/cric51/audition/english/start.htm>

This is a highly graphic tour of the auditory system, created by Rémy Pujol, Valérie Réclar-Enjalbert, and Thierry Pujol. Its stated goal is to teach medical and biology students about the auditory system with a strong emphasis on the cochlea. The breadth and depth of the content is on the level of an introductory course on the anatomy and physiology of the auditory system. It shies away from the scientific rigor of many texts, which describe the experimental support for current theories and controversies in detail. Instead, it makes extensive use of hyperlinks, graphics and animations to illustrate current theories on how we hear. The tour begins with a primer on basic acoustics and quickly progresses through the anatomy of the outer and middle ear. In the next two sections, covering the cochlea and Organ of Corti, the authors combine photographs, SEM photomicrographs, schematic illustrations and animation to give a clear picture of how sound is transduced from a compression wave to neural impulses. The tour ends with an overview of the paths auditory information travels in the brain. A list of references and links to related Web sites accompany each section. **Promenade Round the Cochlea** gets a spot in my bookmarks as an accessible and instructive tour of the auditory system that is suitable for anyone from the curious undergraduate to interested physician. (Reviewed by Sam Reyes, B.S., University at Buffalo.)

**The Biology Project: Biochemistry. University of Arizona.**  
<http://www.biology.arizona.edu/biochemistry/biochemistry.html>

This site demonstrates a good integration of biochemistry, molecular biology and clinical correlation with optional problem sets and tutorials. It includes a basic chemistry review; sections on biology, large molecules, and acids and bases; and clinical correlates. This site is recommended for both beginner-students and students already familiar with these subject areas. For new students in the life sciences, this site and the options within, present glossaries of relevant terms, descriptive visual diagrams and comprehensive tutorials, all of which are done in a user-friendly format. For more advance students, this site will be helpful for reviewing important concepts in the aforementioned subject areas, and offers a series of problem sets in a number of different areas. What is unique is that the problem sets and clinical correlates are presented in the context of real-life applicability that will make them attractive to those directly involved in health-care professions. Both the tests and tutorials are optional, i.e., one does not have to take the test in order to move ahead. Like many other web-based

tutorials, an incorrect answer selection automatically triggers a discussion of why the selection was incorrect. This will be particularly helpful for newer students. *(Reviewed by Wendy*

*R. Sanhai, Ph.D., Department of Health and Human Services, National Institutes of Health.)*