

From *Anabaena* to zoonoses: electronic microbial education resources at your fingertips

Yolande Knight

Yolande Knight of the LTSN describes some useful websites for microbiology teaching.

Whether we like it or not, the internet and web are revolutionizing information exchange, with enormous implications for the academic community in the arenas of research and education. The sheer scale of this information mountain can overwhelm even the most enthusiastic of surfers. In December 1997 it was estimated that at least 320 million pages of information existed on the web. If you are a teacher interested in incorporating electronic resources into your module material, the time required to search out decent material can be frustrating and may result in a dented monitor and some fancy explaining to your department's computing service.

At LTSN Bioscience we aim to ease this process, providing information and links to useful websites and inviting reviews from users. Some examples of microbiologically relevant websites for learning and teaching are described below (see Table 1). An expanded list of resources relevant to this article can be found in *Resource News* on our website.

● Websites

As a first port of call for the microbiological surfer, we would recommend three major websites, all of which provide reviewed links. BIOME is a gateway which provides a searchable catalogue of internet sites and resources covering the health and life sciences and is a great way for cutting down your search time. The American Society for Microbiology's 'MicrobeLibrary', is a peer-reviewed, web-based collection of academic resources for microbiology educators. Its contents include images, curriculum activities and the society's new journal *Microbiology Education*. Email discussion lists are also available and extremely active! Merlot Biology (Multimedia Educational Resource for Learning & Online Teaching) is a free and open resource designed for teachers and students in higher education.

Thousands of subject-specific websites can also be found by the determined. The links mentioned previously provide gateways to a number of these sites. For example, within the pages of All Virology on the

web you will find educational resources, including on-line course notes and tutorials, links to specific virus sites and the *Big Picture Book of Viruses* which contains an extensive collection of searchable virus pictures. The Digital Learning Centre for Microbial Ecology aims to use computers and network technologies to provide students and teachers interested in microbiology and microbial ecology with resources that may aid their learning and teaching. This includes the *Microbe Zoo* (with guests able to visit 'Poo Corner' and 'Redox Mine Shaft' to name but two) and *Microbe of the Month*.

Generic learning and teaching sites are often hard to access through subject-specific gateways, but it is worth persevering, as with imagination they are every bit as valuable to the inventive teacher. The Castle Project provides a free toolkit for the development of on-line interactive multiple choice questions, with tips on good practice in test and question design. The Resource Discovery Network (RDN), which links to BIOME, also provides free 'teach yourself' tutorials such as 'Internet Medic'. These tutorials are aimed at providing both students and teachers with the skills to not only search the web, but decide on the quality of the information found. 'Internet Bioresearcher' will be available from May 2001.

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Table 1. Useful websites (referred to in this article)

■ LTSN Centre for Bioscience	http://bio.ltsn.ac.uk
■ BIOME	http://www.biome.ac.uk
■ American Society for Microbiology Microbelibrary	http://www.microbelibrary.org/
■ Merlot Biology	http://biology.merlot.org:9100/Home.po
■ All Virology	http://www.virology.net/garryfavweb.html
■ Digital Learning Centre for Microbial Ecology	http://commtechlab.msu.edu/sites/dlc-me
■ Castle Project	http://www.leicester.ac.uk/cc/ltg/castle/
■ RDN	http://www.rdn.ac.uk

Video teaching aids

Joanna Verran

A further aid to teaching from the electronic resource stable is that of videos and video-streaming. A number of projects are underway to provide video material for use in learning and teaching of the biosciences. Shotlist Video Resources for Higher Education provide subject-specific teaching video materials available at minimal cost to all UK educational establishments. The LIFESIGN project aims to identify and develop a collection of video resources in the life sciences and deliver these across the internet to users. The project seeks active teaching academics in the life sciences keen to use streaming video within their courses and has set up a demonstration site to illustrate examples of what is possible and to seek input into what individuals require for their teaching.

Certain videos have also been produced specifically for the microbiology educators' market. For example, *An Introduction to Practical Microbiology* (priced £28.50, available from Joanna Verran) has been recommended as support for Curriculum 2000. Another video, *Microbiology Laboratory Procedure* covers topics such as aseptic techniques, safety and using a microscope. It is available from A. Vilkins, AVS, Medical Sciences Building, University of Leicester, University Road, Leicester LE1 9HN (price £30, incl. VAT + p&p). Following this microbiological theme, a set of videos entitled *Intimate Strangers* has been produced by the American Society for Microbiology based on a US television series. Designed to support microbiology education in schools and colleges, it uses information and footage supplemented with further academic learning resources. A group of staff at the Manchester Metropolitan University is currently evaluating both the TV series and the teaching package with a view to incorporation into their undergraduate curriculum. Dissemination of the findings through the SGM is likely.

Please contact Dr Joanna Verran (j.verran@mmu.ac.uk) for further information on the *Intimate Strangers* videos.

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SGM funding support for microbiology education

The Society runs a wide range of schemes which support education in its widest sense, as listed below. Details of all these grants and awards, together with application forms where appropriate, are available on the website: www.sgm.ac.uk

Schemes for Students

Undergraduate Microbiology Prizes – awarded annually to the undergraduate student in each qualifying university who performs best in microbiology in their penultimate year of a BSc course.

Postgraduate Student Meetings Grants – cover travel, accommodation and some subsistence expenses for attendance at one SGM meeting each year.

President's Fund – makes limited grants to enable young microbiologists to make short research visits, attend courses, or present their work at scientific meetings.

Student Society Sponsored Lectures – small grants to cover the expenses of up to two speakers on microbiological topics each year at student society meetings.

Vacation Studentships – small awards to enable undergraduates to work on microbiological research projects in the summer vacation before their final year.

Overseas Schemes

International Development Fund – small grants to members to help microbiologists in developing countries and Eastern Europe, often for training courses.

Watanabe Book Fund – provides funding to members permanently resident in a developing country for the purchase of microbiology books.

International Research Fellowships – grants to facilitate overseas visits to carry out a defined piece of work in any area of microbiology.

Other Schemes

Education Development Fund – grants to members for developments likely to lead to an improvement in the teaching of any aspect of microbiology or towards science promotion/public understanding of science activities.

Retired Member Conference Grants – cover accommodation at one SGM meeting each year to enable retired members to interact with practising scientists.

Seminar Speakers Fund – makes small grants to cover the expenses of up to two speakers on microbiological topics in annual departmental seminar programmes.

Year of Science



The Government has declared a *Year of Science* running from September 2001. The activities, aimed mainly at the 11–16 age group, are being collated by NESTA. SGM will be helping to promote this initiative by a range of special activities (as well as those listed on p. 93), including:

- Competition for primary schools – poster on *Microbes: Friend or Foe?*
- Assembly pack for primary schools – *Microbes Make the World Go Round*
- Poster pack for KS4 & post-16 – *Microbes and the Human Body*
- Practical investigation for Key Stage 3 – *Naturally Good for You?: the antimicrobial effects of health products*
- General participation in events and initiatives organized by the UKLSC Education Group