

## Web alert

### Chemistry and biology on the web

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To avoid wasting hours in aimless 'surfing' when you try to access the huge amount of information out on the web, and to get the most out of the net, it helps to have a simple guide to provide some starting points; this is the aim of the *Chemistry & Biology* Web alert.

Some specialist journals publish valuable articles and reviews surveying the Internet resources relevant to specific areas of chemistry or biology. Although this column will not aim to compete with those, we may sometimes feature particular subject areas that fall within chemical biology. We will not aim to provide a comprehensive review of the sites for a particular subject — we couldn't — but rather to suggest some favourite sites for the reader who wants to begin browsing. We are also planning to provide pointers towards biological and chemical web resources of general relevance, and we hope to examine some of the recurrent problems and dilemmas that crop up when chemists and biologists use the Internet.

If you are not an experienced user of the web, you may need a brief introduction to web jargon and how to navigate around the web and there are several sites that provide a simple guide (see *Chemistry and the WWW* in the list below). Several commonly used search engines (such as Infoseek) can help you find your way around the web, but often there are huge numbers of results from a search and it can be difficult

to divide them into what will be useful and what will lead you up a blind alley.

Plans are afoot for topics to be covered in future columns. We will certainly include discussion of electronic publication and the scientific uses of the web. For example, as increasing numbers of databases appear on the net, is the amount of knowledge required to get things done electronically becoming unmanageable? Can the net make it any easier for one scientist to track down another? Scientific collaborations usually operate either on a person-to-person level or as part of highly structured international projects; but the web can also allow unpublished experimental data to be shared globally via the Internet. Will this pave the way towards a new kind of co-operative science?

*Chemistry & Biology* is published via the Internet and we have just started a system of continuous electronic publication which means that articles appear electronically before the paper reaches readers. Electronic publication leads to problems of how articles can be reliably cited. Should every paper receive a unique identifying number? Should belatedly discovered typographical errors be corrected in the electronic text, or should it faithfully reflect the printed version? Should papers which have been 'retracted' remain available on the web? With the full text of several journals now available online, it is now possible to wander through a web of citations by clicking from paper to paper, for example on BioMedNet. But would other links be useful, for example, from Materials and Methods sections to product information sheets and price lists?

#### Web starting points

URLs (uniform resource locators; <http://...> etc.) can be typed directly into a web browser such as Netscape or Internet Explorer. If you are

unfamiliar with these programs, ask your local computer adviser for help. Here are some starting points and sites that may be of general interest to chemists and biologists alike.

#### 1. Infoseek.

<http://www2.infoseek.com/>

The most useful tool for navigating the Internet, offering a search covering virtually the whole web; tracking down resources can be quick and simple.

#### 2. Chemistry and the WWW

<http://www.ch.ic.ac.uk/rzepa/cib/>

Serves as a useful introduction to the web, explaining the basics. It also provides chemists with some particular sites of interest and gives some examples of the potential that the Internet has for chemists.

#### 3. WWW Virtual Library (Biosciences).

<http://golgi.harvard.edu/htbin/biopages>

A library with a browsable index, organized by subject, covering everything from anatomy to zoology and plenty in between. Each subject area is maintained independently but you can search it all at once or piece by piece.

#### 4. WWW Links for Chemists.

<http://www.liv.ac.uk/Chemistry/Links/links.html>

A very useful 'link' page that takes you on to a vast array of web pages of potential use to chemists: for example, chemistry departments and chemical companies around the world as well as links to chemistry journals and societies.

#### 5. Entrez (National Center for Biological Informatics).

<http://www3.ncbi.nlm.nih.gov/Entrez/>

Search a large, nonredundant collection of data from the most important nucleotide and protein sequence databases. Cross-links abound; sequences are pre-clustered into groups of neighbours, and three-dimensional protein similarity searching is available. Also, gain free access to PubMed, the most up-to-date Medline source on the web.

6. European Bioinformatics Institute  
<http://www.ebi.ac.uk/>

The first (European) port of call for submitting DNA sequences; also home to the Sequence Retrieval System project (SRS) which allows simultaneous searches of dozens of biological databases (the Protein Data Bank, PROSITE, PIR, MEDLINE, Flybase, and many others).

7. Pedro's BioMolecular Research Tools.  
[http://www.ipc.pku.edu.cn/Pedro/research\\_tools.html](http://www.ipc.pku.edu.cn/Pedro/research_tools.html)

A huge, well-annotated list of bioinformatics tools available on the web, particularly useful in listing tools by function. Find out how many different ways there are to predict protein secondary structure across the web, for example.

8. Notre Dame's phonebook index.  
<gopher://gopher.nd.edu/11/>

Tracking down a scientist's e-mail address electronically is part luck and part skill, but this is a good place to begin.

9. BioMedNet.  
<http://BioMedNet.com/>

A worldwide club for biologists which is free to join and offers its members services such as a library, from which you can download and read any article for a small online subscription price or per-article fee — the library contains *Chemistry & Biology* and all the Current Opinion journals, including *Current Opinion in Chemical Biology*. Other services include a job site and Evaluated Medline. BioMedNet is also home to the award winning 'internet magazine' *HMS Beagle*.

10. ChemWeb.  
<http://Chemweb.com>

ChemWeb is BioMedNet's sister online club for the chemical community. It has a library of journals and a collection of searchable chemical databases as well as an extensive conference diary, a job exchange and a shopping mall. It also features a weekly chemistry magazine, *The Alchemist*, for news, reviews and comment.