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# Encyclopedia of MICROBIOLOGY



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Editor-in-Chief

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## Preface

The scientific literature at large is believed to double about every 12 years. Though less than a decade has elapsed since the initiation of the first edition of this encyclopedia, it is a fair bet that the microbiology literature has more than doubled in the interval, though one might also say it has fissioned in the interval, with parasitology, virology, infectious disease, and immunology assuming more and more independent stature as disciplines.

According to the *Encyclopaedia Britannica*, the encyclopedias of classic and medieval times could be expected to contain “a compendium of all available knowledge.” There is still an expectation of the “essence of all that is known.” With the exponential growth and accumulation of scientific knowledge, this has become an elusive goal, hardly one that could be embraced in a mere two or three thousand pages of text. The encyclopedia’s function has moved to becoming the first word, the initial introduction to knowledge of a comprehensive range of subjects, with pointers on where to find more as may be needed. One can hardly think of the last word, as this is an ever-moving target at the cutting edge of novel discovery, changing literally day by day.

For the renovation of an encyclopedia, these issues have then entailed a number of pragmatic compromises, designed to maximize its utility to an audience of initial look-uppers over a range of coherently linked interests. The core remains the biology of that group of organisms we think of as microbes. Though this constitutes a rather disparate set, crossing several taxonomic kingdoms, the more important principle is the unifying role of DNA and the genetic code and the shared ensemble of primary pathways of gene

expression. Also shared is access to a “world wide web” of genetic information through the traffic of plasmids and other genetic elements right across the taxa. It is pathognomonic that the American Society for Microbiology has altered the name of *Microbiological Reviews* to *Microbiology and Molecular Biology Reviews*. At academic institutions, microbiology will be practiced in any or all of a dozen different departments, and these may be located at schools of arts and sciences, medicine, agriculture, engineering, marine sciences, and others.

Much of human physiology, pathology, or genetics is now practiced with cell culture, which involves a methodology indistinguishable from microbiology: it is hard to define a boundary that would demarcate microbiology from cell biology. Nor do we spend much energy on these niceties except when we have the burden of deciding the scope of an enterprise such as this one.

Probably more important has been the explosion of the Internet and the online availability of many sources of information. Whereas we spoke last decade of CDs, now the focus is the Web, and the anticipation is that we are not many years from the general availability of the entire scientific literature via this medium. The utility of the encyclopedia is no longer so much “how do I begin to get information on Topic X” as how to filter a surfeit of claimed information with some degree of dependability. The intervention of editors and of a peer-review process (in selection of authors even more important than in overseeing their papers) is the only foreseeable solution. We have then sought in each article to provide a digest of information with perspective and

provided by responsible authors who can be proud of, and will then strive to maintain, reputations for knowledge and fairmindedness.

The further reach of more detailed information is endless. When available, many specific topics are elaborated in greater depth in the ASM (American Society of Microbiology) reviews and in *Annual Review of Microbiology*. These are indexed online. Medline, Biosis, and the Science Citation Index are further online bibliographic resources, which can be focused for the recovery of review articles.

The reputation of the authors and of the particular journals can further aid readers' assessments. Citation searches can be of further assistance in locating critical discussions, the dialectic which is far more important than "authority" in establishing authenticity in science.

Then there are the open-ended resources of the Web itself. It is not a fair test for recovery on a specialized topic, but my favorite browser, google.com, returned 15,000 hits for "microbiology"; netscape.com gave 46,000; excite.com a few score structured headings. These might be most useful in identifying other Web sites with specialized resources. Google's 641 hits for "luminescent bacteria" offer a more proximate indicator of the difficulty of coping with the massive returns of unfiltered ver-

biage that this wonderful new medium affords: how to extract the nuggets from the slag.

A great many academic libraries and departments of microbiology have posted extensive considered listings of secondary sources. One of my favorites is maintained at San Diego State University:

<http://libweb.sdsu.edu/scidiv/microbiologyblr.html>

I am sure I have not begun to tap all that would be available.

The best strategy is a parallel attack: to use the encyclopedia and the major review journals as a secure starting point and then to try to filter Web-worked material for the most up-to-date or disparate detail. In many cases, direct enquiry to the experts, until they saturate, may be the best (or last) recourse. E-mail is best, and society or academic institutional directories can be found online. Some listservers will entertain questions from outsiders, if the questions are particularly difficult or challenging.

All publishers, Academic Press included, are updating their policies and practices by the week as to how they will integrate their traditional book offerings with new media. Updated information on electronic editions of this and cognate encyclopedias can be found by consulting [www.academicpress.com/](http://www.academicpress.com/).

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