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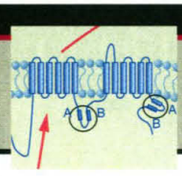
NASA's budget takes a hit



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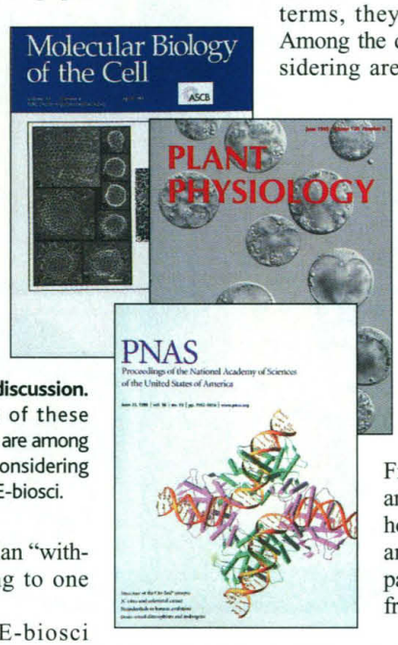
SCIENTIFIC PUBLISHING

E-biomed Morphs to E-biosci, Focus Shifts to Reviewed Papers

Controversial plans for a Web-based repository of biomedical literature, to be hosted by the National Institutes of Health (NIH), have undergone another shift in the past few weeks. After the proposal drew fire from several scientific societies, NIH has dropped the notion of a "preprint" server containing mostly unreviewed scientific papers. Instead, it is putting together a model more like a "reprint" server, providing researchers access to publications that have mostly already gone through peer review by journals. Even the proposed name, "E-biomed," has changed. To avoid infringing a title already held by New York–based publisher of biomedical journals Mary Ann Liebert, the service is being renamed "E-biosci." NIH is now discussing the proposal with scientific publishers, and it could unveil its new plan "within a few weeks," according to one government official.



Under discussion. Editors of these journals are among those considering joining E-biosci.

In the revised form, E-biosci would serve as host to scientific groups and journal publishers. After certification, these groups would be free to post on E-biosci virtually any material they chose—reviewed or not. NIH director Harold Varmus, who conceived the E-biomed project earlier this year with several colleagues, is hoping that journals will post the full text of the articles they are publishing. It would be up to the groups to decide whether to post unreviewed e-prints as well. Varmus has also made it clear that he is ceding another important point: NIH will not get involved in debates over who should own copyright to articles on E-biosci. In his original E-biomed proposal, he suggested authors would retain copyright, but in an "addendum" released on the NIH Web site on 21 June, he said this issue should be handled on a case-by-case basis (*Science*, 25 June, p. 2062). Journals that wish to retain copyright would do so.

For many publishers, the advantages of participating in this clearinghouse of biological literature are not yet clear. Several are now talking with Varmus and other NIH officials to determine whether, and under what terms, they might participate. Among the questions they're considering are whether to provide short abstracts, full-text articles, or just digital links to their own Web pages. Those who agree to provide full-text articles must also decide whether to delay releasing articles to E-biosci until some time after the material is available to their own subscribers. Finally, the publishers are trying to figure out how to pay for editing and peer review if the papers they publish are free on the server.

Among journal chiefs, perhaps the most enthusiastic backer of E-biosci is Nicholas Cozzarelli, editor of the *Proceedings of the National Academy of Sciences* (*PNAS*). Although he personally likes the idea of a biology preprint server—like the successful archives for physics and astronomy hosted by the Los Alamos National Laboratory—Cozzarelli says the notion that NIH might create one is now "out." David Lipman, director of NIH's National Center for Biotechnology Information and a co-conceiver of E-biosci, agrees. Cozzarelli has embraced Varmus's new concept, and he says he would like to begin putting *PNAS* articles out through E-biosci as soon as possible. He's trying to persuade his board and other editors and publishers to go along.

Other publications that might contribute to E-biosci, according to participants in these discussions, are *Molecular Biology of the Cell*, published by the American Society for Cell Biology; the *British Medical Journal*, published by the British Medical Association; *Plant Physiology* and *The Plant Cell*, published by the American Society of Plant Physiologists; and possibly a group of journals under the aegis of the European Molecular Biology Organization. EMBO chief Frank Gannon reports that a dozen European journal editors met in Heidelberg on 21 July and agreed, among other things, that they would be willing to "transfer full text to the free E-biosci after a lag period of up to 6 months." The terms might be different in each case, and many organizations are now consulting their boards on how to proceed.

Cozzarelli has already conducted an e-mail survey of *PNAS*'s editorial board. He reports that the overwhelming majority of respondents (33 of 37 thus far) favor releasing material to E-biosci with no more than a couple of weeks' delay. He concedes, however, that "a lot of [other] people have reservations" about such a plan. He is taking a proposal to a meeting of the Council of the National Academy of Sciences, which owns *PNAS*, for review. The council will meet on 9 August to vote yea or nay. The board of the American Society for Cell Biology, meanwhile, plans to meet this week on whether *Molecular Biology of the Cell* should be placed in E-biosci with a 2-month delay between release to subscribers and release to the public, says executive director Elizabeth Marincola. She anticipates the board will support the proposal.

Other publishers are reacting cautiously. *Science*, according to managing editor Monica Bradford, is discussing a scheme that would provide electronic links between E-biosci and the magazine's own Web site, offering access to text for a fee, or at a reduced rate after a postpublication delay. Editor-in-Chief Floyd Bloom says that *Science* has demonstrated with the online features it has implemented in the past 4 years "that we are committed to the core concept of making the scientific literature more accessible … to the scholarly community at the least cost." But he notes that a decision to transfer *Science*'s articles to E-biosci would require approval of its publisher, the American Association for the Advancement of Science, and "I have no such proposal ready to present at this time."

Maarten Chrispeels, editor of *Plant Physiology*, says that leaders of the American So-

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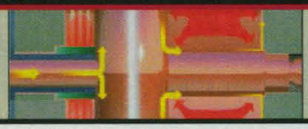
LEAD STORY 820 New cohesion in U.S. fusion



825 Long march for biodiversity

ciety of Plant Physiologists recently voted to talk to Varmus about adding this journal and *The Plant Cell* to E-biosci. "We are very interested," Chrispeels told *Science* in an e-mail, "but also worried" about the potential loss of revenue and need to charge authors for publication in E-biosci to offset potential losses in subscription revenues. Chrispeels calculates that the overhead charge for minimal review and editing would run to $1500 per article. This is "a hefty sum," he notes, and "prohibitive" for scientists in poorer countries. He worries also that it would drive authors into the arms of commercial publishers, which don't charge page fees. On the positive side, says Chrispeels, "we see a chance of integrating plant biology with the rest of the biological sciences" in one database. "Our stand," he adds, is to "see what the bigger players are going to do."

Like many editors and publishers, Chrispeels says his colleagues like E-biosci as a concept, but "an awful lot of details need to be worked out" before any final decision is made. **–ELIOT MARSHALL**

SCIENTIFIC PUBLISHING

DOE Builds a Web Site For the Physical Sciences

By October, if a plan under development at the Department of Energy (DOE) works out, the public will be able to tap into a comprehensive new database of scientific papers in the physical sciences called PubSCIENCE. It will offer Internet access to titles, authors, and abstracts from hundreds of journals, according to Martha Krebs, director of DOE's Office of Science, the project's sponsor. The goal, according to her staff, is to index just about every scientific journal that isn't already indexed in PubMED—the online collection of medical information based at the National Institutes of Health (NIH)—and to link abstracts back to each publisher's Web site. Unlike the E-biosci proposal being discussed by NIH (see previous story), DOE is not asking publishers for free access to the full text of articles.

DOE has already signed up a few major publishers willing to help test the system. The initial participants include the American Association for the Advancement of Science (*Science*'s publisher), The American Physical Society, Elsevier Science, and the Institute for Scientific Information. By October, DOE hopes to make available current information from 400 journals. It aims to increase its coverage to 2000 later.

The project has a history that reaches all the way back to 1947, according to Walter Warnick, director of DOE's Office of Scientific and Technical Information, which is curating the database along with the Los Alamos National Laboratory in New Mexico. Half a century ago, the Atomic Energy Commission created "Nuclear Science Abstracts," a compendium of references for nuclear physicists. When DOE took over the portfolio in the 1970s, it broadened the scope and created the Energy Database. Its clients were chiefly the thousands of scientists who work at DOE research centers. Now, DOE is building on this base to create a digital index of all physical science articles in English, linked electronically to their publication sources. This should allow readers to jump from almost any citation that turns up in a literature search to the publisher's Web site.

Most DOE scientists can use this service now to access many full-text articles, either because physical science journals permit free use of archival material or because DOE has paid publishers for online access. Recently, according to DOE, the Government Printing Office expressed an interest in making PubSCIENCE available to the public as well, through the "GPO Access" Web site.

If a tentative agreement works out as planned, DOE says, anyone with access to the Internet will be able to do simple searches on PubSCIENCE records, retrieve abstracts, and jump directly into an archive. Depending on the conditions set by the publisher, the reader may get immediate access to the full text of articles, or be required to pay a fee or provide a password at an entry gate. "We're not trying to replace publishers; we're trying to make it easier to get to the published material," says Krebs.

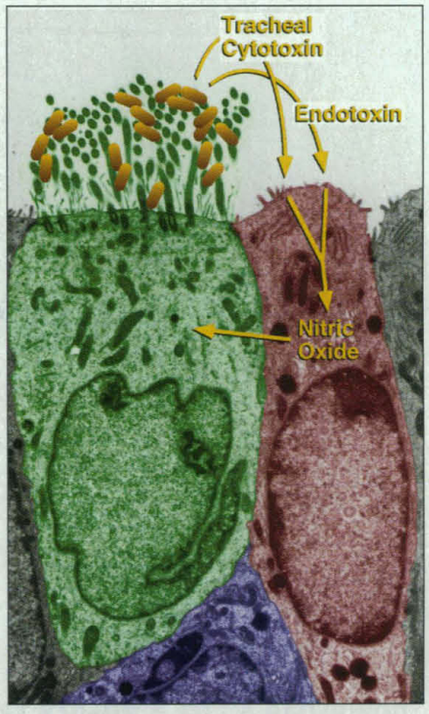
PubSCIENCE will overlap a bit with PubMED in the titles it indexes, Warnick concedes. Some topics like bioengineering will get double coverage. Publishers have responded enthusiastically, as PubSCIENCE is likely to bring customers to the door. DOE is preparing for a possible surge of interest. Warnick notes that data requests increased rapidly at PubMED when all barriers to public access were dropped in 1996. The number of searches climbed from a modest buzz of about 7.4 million per year to a torrent of 180 million this year. "We might not get that kind of usage at first," says Warnick, but the machines can handle it if it appears. **–ELIOT MARSHALL**

MICROBIOLOGY

New Clues to Whooping Cough Pathology

The whooping cough bacterium, *Bordetella pertussis*, appears to be a master tactician. According to new findings, the pathogen, after invading the respiratory tract, induces some cells to kill certain of their neighbors with toxic gas. The result likely contributes to the intense gasping cough that not only gives the disease its name but also spreads the bacterium to other victims.

Physicians and researchers have known for decades that the pathogen destroys the ciliated cells in the epithelial lining of the respiratory tract. The hairlike cilia sweep away mucus, but when they die, coughing provides the only way to clear the airway. Exactly how *B. pertussis* kills these cells has been a mystery, however. Now, results described in the July issue of *Cellular Microbiology* by microbiologist William Goldman of Washington University School of Medicine in St. Louis and Tod Flak, Goldman's former graduate student, may have revealed the mi-



Sabotage. Using tracheal cytotoxin and endotoxin, *B. pertussis* provokes secretory cells in the respiratory tract to produce nitric oxide that kills the nearby ciliated cells.

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