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SCIENCE PUBLISHING

The UPSIDE of Good Behavior: Make Your Data Freely Available

Prompted by what one biologist calls “an erosion of traditional standards”—and, in particular, the public dispute over access to data on the human genome—leaders in the life sciences have prescribed rules for the sharing of data and research materials. Their report, issued last week by the National Academy of Sciences (NAS),* decrees that the authors of published papers must support their claims by quickly and freely releasing data such as DNA sequences. The NAS group also came up with a snappy acronym for this ethic, UPSIDE (Universal Principle of Sharing Integral Data Expediently). Their goal, they say, is to get “universal adherence, without exception,” to the idea that any scientist should have ready access to the data and materials needed to “verify or replicate” a published claim.

Thomas Cech, president of the Howard Hughes Medical Institute in Chevy Chase, Maryland, and chair of the NAS panel, calls the UPSIDE rules “a stake in the ground” for good behavior. He hopes that everyone in the community will feel “attached by various tethers, ... and if they wander away, they will feel a tug” of public opinion pulling them back.

The report lays out detailed procedures as well as broad principles. For example, it says that any group that claims to have sequenced a genome should put the entire data set in the public repository, GenBank, “by the time of publication” to guarantee free access. More generally, it says, any time a repository is widely used in a research community, authors should deposit relevant results in it. They must share materials pertinent to their

* *Sharing Publication-Related Data and Materials: Responsibilities of Authorship in the Life Sciences*, books.nap.edu/books/0309088593/html/R1.html#pagetop

findings, including source code for software, and they must explain how materials—even those under patent—can be obtained. Authors must be willing to share all this with investigators “on similar, if not identical, terms.”

This means, according to UPSIDE, that company scientists should get the same access as academics do. Finally, the report says that journals and institutions should help enforce the rules.

Cech notes that the academy asked the panel to undertake this review partly because of concerns about increasing commercial ties in aca-

Anchor. Tom Cech wants people to feel “tethered” by the rules.

Leaders of the genome community objected, including Francis Collins, director of the U.S. National Human Genome Research Institute in Bethesda, Maryland, which co-funded a competing public genome project. Collins was concerned, he says, that “standards were slipping” and that it “could be damaging to the progress of science.”

When the Celera controversy erupted, *Science* had no fixed rules on handling DNA-sequencing submissions, says Donald Kennedy, *Science*'s editor-in-chief. As editor, he made special allowances twice to obtain proprietary data from commercial groups that he says wouldn't otherwise have seen daylight: the Celera sequence in 2001 and a draft sequence of the rice genome from the Swiss agribusiness firm, Syngenta, last year (*Science*, 5 April 2002, p. 92). In both cases, the authors released data from private Web sites. But now that the NAS panel has established community rules, Kennedy says, “we're going to ask [that all DNA sequences] go to GenBank” or a sister site.

“It is very valuable to set out these understandings,” says Kennedy. “It's going to let everyone know what [the standards] are.” He adds that there are still some “interesting questions” about how to enforce the rules—such as whether a funding agency, an em-

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Authorship Policies of 56 Journals

Type of policy	All journals	Society or association publishers	Commercial publishers	Life sciences journals	Clinical medical journals
Sharing materials	39%	30%	58%	47%	22%
Sharing software	2%	0%	5%	3%	0%
Depositing data	41%	35%	58%	53%	17%
Statement of consequences	2%	3%	0%	0%	6%
Whom to contact	4%	3%	5%	3%	6%
No policy	45%	49%	42%	32%	72%

dem life. But the main impetus, he and others say, was *Science*'s decision 2 years ago to publish a report on the sequencing of a draft human genome by the company Celera Genomics of Rockville, Maryland. Celera made the data available but didn't deposit them in GenBank. Instead, the company released information on its own Web site, requiring users to sign agreements promising not to distribute or commercialize the data. Celera also set different terms of access for academic and commercial users.

ployer, or an editor might have the best leverage in a specific case.

Philip Campbell, editor of *Nature*, commented in an e-mail that he agrees with the UPSIDE rules and with the idea that editors should enforce them. “We do,” Campbell says. “A phone call is often enough, but we can contemplate banning consideration of future submissions, reporting people to their employers or funding agencies, or highlighting [misbehavior] in our pages.”

—ELIOT MARSHALL

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