

Sharing research tools is a tradition worth defending

Increasingly tough conditions being attached to the transfer of experimental tools between researchers are threatening science's tradition of open communication. Agreement on optimal terms would help all sides.

Isaac Newton neatly encapsulated the cumulative and communal nature of the scientific enterprise when he claimed to have seen further by standing on the shoulders of giants — building on ideas and mathematical tools that had been described in his colleagues' letters or publications. For today's theorists, not much has changed: a published paper typically contains all the information necessary for others to reproduce and extend the author's work. But modern experimental science can also depend on research tools that may have taken months or years to develop — the atom traps that enable Bose–Einstein condensation, for example, or the huge and intricate detectors that capture data at particle accelerators.

In most areas of physical science, research tools that have been painstakingly developed cannot be easily reproduced; thus the scientist who has developed such a tool has a significant head-start on potential competitors. But in much of biology, thanks to techniques such as cloning and the polymerase chain reaction, tools that are difficult to produce can be trivial to replicate. Such is the case with the bacterial DNA molecules known as plasmids, which are used to create genetically engineered cells and organisms.

The existence of such unique but easily propagatable research tools has meant that sharing materials has become the norm among biologists. The National Institutes of Health (NIH) includes among the terms and conditions of its awards a statement that unique research resources should be made available when their existence has been reported in the literature. Many journals, including *Nature*, require authors to promise to share materials for academic use.

So far, so good. But there is increasing concern in the biomedical community that some researchers are prepared to share their materials only when doing so does not threaten their competitive advantage. And in cases — ever more frequent — where there is a prospect of commercialization, the terms dictated for sharing can

be unreasonably difficult to meet (see *Nature* 393, 499; 1998).

Journals have an interest in ensuring that the research they publish can be reproduced; this — and a broader interest in promoting the rapid progress of scientific enquiry — is why *Nature* requires authors to share materials. But neither of these aims is served by requiring a vulnerable postdoc to give materials to a large, well-funded competitor who intends to race the postdoc to the next obvious result.

One end of the spectrum of opinion on this question has been enunciated by the Society for Neuroscience, whose council has just approved 35 pages of guidelines for “responsible conduct” in scientific communication (see <http://www.sfn.org/guidelines/>). These advise that materials should be provided “without restrictions” — and allow for a delay only in cases of compounds being developed as therapeutic agents. The ‘teeth’ are provided by the editors of *The Journal of Neuroscience*, who are in a position to reject papers by those who do not comply, and by the society's ability to bar malefactors from presenting results at its annual meeting. It remains to be seen whether these teeth will be sharp enough to change behaviour.

The society is to be applauded for enunciating a clear policy with accompanying sanctions. But its bold stance against any restrictions on transferred materials seems wishful thinking, given the growing use of highly restrictive materials transfer agreements (MTAs) by companies and universities alike. Too often, the negotiation of these agreements is the rate-limiting step in sharing materials. One *Nature* reader has been waiting six months to receive an MTA — and fears that when it finally arrives, his funding agency will not allow him to sign it.

The NIH's working group on research tools (see *Nature* 393, 505; 1998) has recommended the widespread adoption of a uniform MTA. If universities, companies and funding agencies were to agree on such a form, journal editors could require that it be used by their authors. No one need lose but the lawyers. □

Time to lift embryo research ban

Last week's announcement on human embryo stem cells requires a change in the US law on embryo research.

One of the consistent complaints about modern science is that it often progresses faster than society's ability to ensure that its potential applications are properly regulated. Frequently it is the scientific community and its industrial counterparts who are seen as responsible for this state of affairs. But in the case of last week's dramatic announcement of a major breakthrough in the culture of human embryonic stem cells (see page 104), political authorities — and in this case, the US Congress — have only themselves to blame. Maintaining a ban on such research with federal funds, while leaving the private sector totally unregulated, has ended up with the worst of both worlds.

Geron, the company that has negotiated licences to the research results in question, has made it clear that the use of the technology will be regulated — but, given the political vacuum, by them, not by any democratically representative body. Strict conditions — as are increas-

ingly required in other areas of biomedical research (see above) — will have to be met by anyone seeking to use the stem cells for research. Some of these ethical requirements will be desirable, but they should not be left in the hands of a commercial company.

If there was ever a good time to reopen the congressional debate on the ban on federally funded research on embryos, it must surely be now. It is important that the arguments of those in favour of such a ban are given due respect — and, furthermore, are not trampled into the dust as the public clamours for the therapeutic dividends that Geron's new techniques offer. But it is also important that the conditions under which the research and its applications develop are subject to the broadest public scrutiny and consistent regulation. In the current circumstances, that cannot happen. Changing the law to make this possible is the only sensible — and responsible — way forward. □