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Freedom of information

The September 11 terrorist atrocities and the subsequent bioterrorism visited upon the US led to new rules governing the possession of select agents, a list of 36 pathogens that have potential in biowarfare. This legislation is proving burdensome to some research institutions, but it is appreciated that in the current global political climate these steps are necessary and important. However, now there is also a growing sentiment amongst US legislators that measures may be required to restrict the publication and dissemination of potentially harmful scientific information. Such actions would be a grave mistake.

The present furor has arisen in part due to the recent publication in *Science* of the reconstruction by mail-order oligonucleotides of an infectious poliovirus genome. Denounced by some scientists as an “exercise rather than an experiment”, in truth the article contains little novel information useful to anyone with malicious intentions. But it has prompted some members of Congress to file a resolution calling on scientists, journals and funding agencies to reassess the release of certain scientific information. John Marburger III, President Bush’s science adviser and director of the Office of Science and Technology Policy, has also recently indicated that he believes there may need to be a shift in the regulation of scientific information.

Other recent controversial publications have fueled the issue (see News story page 905). On page 950 of this issue, we publish a study by Webster and colleagues that elegantly pinpoints a mutation in an influenza A virus gene that may well explain the virulence seen in humans during the influenza outbreak in Hong Kong in 1997. Should this information have been restricted?

The answer is a resounding no. These findings will be of immediate use in surveillance for highly virulent influenza A viruses. And, as with the huge majority of findings pertaining to microbial virulence,

dissemination of this information will spur research efforts to uncover the underlying principles of pathogenicity and the appropriate biological mechanisms to combat it. The mutated gene is possibly a new drug target. Would the net gain be greater in suppressing information that might conceivably be used malevolently, or in disseminating that information to allow legitimate research into the underlying biological principles? The fear that the information in this publication might be abused is clearly outweighed by the benefits the knowledge provides.

Virtually all scientific advances come with potential benefits and pitfalls. It’s a question of intent. And what’s to guarantee that restricted information would remain so? If obtained by those with nefarious intent, they would then have an advantage over legitimate researchers denied that information.

Certainly some scientific research conducted on organisms with clear bioweapons potential should be restricted. But adequate mechanisms already exist to control findings that have blatant implications for bioweapons research. National Security Decision Directive 189, formulated in 1985 and upheld last November by National Security Advisor Condoleezza Rice as the current administration’s policy, is a strong and clear edict. In part it states “to the maximum extent possible, the products of fundamental research [should] remain unrestricted” and that “no restrictions may be placed upon the conduct or reporting of federally-funded fundamental research that has not received national security classification”. It establishes three very important principles: crucially, that fundamental research ought to remain unrestricted; that there is only one officially sanctioned mechanism for the control of information, classification; and that no restrictions can be placed on unclassified research. The primary emphasis is placed on openness as the default position.

There have been suggestions, even from some scientists, that research might be published but the methodology withheld. This is unacceptable, and such an arrangement would be open to obvious abuse. Research articles should be published intact or not at all; independent reproducibility is at the heart of the scientific process.

But, given recent controversies and the current political landscape, steps can be taken so that science retains the full support of the wider society. Funding agencies, which should always use full and transparent peer review, can be more vigilant in the research they fund. The controversial poliovirus study was funded by the Defense Advanced Research Projects Agency, an agency that does not conduct fully transparent peer review.

If there is to be any new oversight, it should be in a strictly advisory capacity, perhaps in the same spirit as the Recombinant DNA Advisory Committee that was established in response to public concerns and intended to offer guidance and promote public debate. Any such new advisory council should foster a heightened sense of responsibility amongst researchers, and reinforce some of the loftier ideals that motivate many scientists. It should promote open discussion of ethical considerations in research, both personal and in a broader societal context. It should also strive to close the knowledge gap that exists between scientists and non-scientists and, importantly, improve public understanding and address public concerns of scientific advances.

Scientific freedom must not be undermined for the sake of political expediency. Social responsibility, personal ethics and, in extreme scenarios, classification are the control mechanisms required. The scientific community as a whole—researchers, university authorities, funding agencies, ethics and review committees, professional societies, journal editors—must hold the line.