nature
cell biology

Cloning terror

The hitherto rather tranquil and research-focused cell biology community is at the receiving end of a number of wakeup calls that hammer home an important message with increasing urgency: you as cell biologist are called upon to go out and participate in the debate on issues such as ethics and national security.

Take cloning. The media frenzy around cloning has peaked now with the still unconfirmed claim of a North American sect to have cloned one or more humans. Although this particular claim remains unverified, several others have joined the press release race proclaiming similar 'achievements'. There is a real cause for concern that this will result in an indiscriminate public backlash against biology research, as well as in a political backlash in the form of over-restrictive cloning laws. This is especially pertinent in the US, which has seen high-level backing for extremely restrictive laws on stem cell research that may culminate in legislation to flat out ban any form of human cloning, including cloning for derivation of stem cells.

Alternatively, take bioterrorism. Bioweapons are undoubtedly a real concern. However, the debate has all too often been derailed by unbalanced media attention. The parallels to nuclear physics favoured by some observers are only partially relevant when analysing the bioterrorist threat. Among the many differences is the fact that we are surrounded by extremely pathogenic agents and sensitive materials will always be readily available, so that restrictions on a subset of agents will probably be ineffective. Take castor oil, the source of the ricin traces recently detected in London. It seems as insufficient to ban castor seed sales as it is to restrict airport searches largely to shoes after the attempted bombing of a US airliner late last year. Similarly, much of what is published by cell biologists may indirectly aid in the generation of bioweapons, as well as to further the cause of medicine. Aside from the real danger of blocking vital medical advances, a rush into restrictive legislation might well backfire for the simple reason that research can uncover solutions to bioweapons just as much as it can generate them. Blanket exclusion of scientists of certain nationalities or religious beliefs from the research community would be as unfair as it would be ineffective.

Although two very different challenges, these are both issues that need to be discussed intelligently and exhaustively before things are set into legislative stone. One thing is clear: there is a communication gap between scientists and both the public and politicians. Tired Frankensteinian visions are all too often resurrected, fed by the general reluctance of scientists to devote sufficient energies to fostering a real public understanding for the research they are involved in. It is essential that the rationale, the process and the results of research are explained at every opportunity, be it in the media, museums or public lectures. It is in every scientist's interest to show the world that they are thinking, rational individuals who represent responsible citizens at the centre of their communities. At present, the public voice of science runs the risk of being represented disproportionally by some of the more marginalized members of the community. The public rightly expects publicly funded science to be transparent and it has a right to be informed.

Things are being done: the American Society for Cell Biology played host to two eloquent keynote speakers (R. Alta Charo, University of Wisconsin and Steven Block of Stanford University) at their annual meeting in San Francisco in December, who called for increased audience participation on the subjects of bioethics and bioterrorism. Journals are actively analysing what should and what should not be done about the publication of potentially sensitive information: editors exchanged ideas at a meeting hosted by the US National Academy of Sciences (NAS) in January with scientists, politicians, lawyers and security specialists. It is clear that further intensive debate will be required to see if it is possible to find a set of criteria for what the head of the Office of Science and Technology Policy (OSTP), John Marburger, calls "dual-use" research; that is, research that may aid in the generation of bioweapons. The meeting will result in an initial joint statement of editors later this month.

Several institutions have taken leads in these areas. In the US, the centre of disease control and NAS, for example, have generated exemplary websites with information on bioterrorism (http://www.cdc.gov and http://search.nap.edu/firstresponders, respectively). JASON represents a group of academicians that consults for the US Government and its agencies on technical matters related to national security. Furthermore, the British Royal Society and the American Society for Microbiology have been actively involved in debates on stem cells, cloning and bioterrorism. However, what is generally missing is well publicized, authoritative and approachable bodies that should serve to inform the public as well as to aid in self regulation of the research community. We suggest that a number of proactive committees are set up by learned societies and universities, which should be populated by a broad and international range of authoritative and eloquent researchers. We also suggest that only an international approach will be truly effective given the globalized scientific landscape. These groups should monitor and debate what research may be sensitive to national/global security or ethically compromized in consultation with lawyers, politicians and indeed the public. Such committees should serve as authoritative resources of information and advice for all interested parties. They should guide research aimed at defusing bioweapons threats, they should be points of independent consultation for grant giving bodies and journals about sensitive research and they should inform the public and journalists on research activity. We hope that the Royal Society's recent call for a scientific code of conduct will not fall on deaf ears.

One key point is to try and achieve a global consensus. Science is an international enterprise and country restricted rules will remain inadequate, as restricted research may simply move to countries where it is still legal. NAS president Bruce Alberts is planning to take the debate to Europe this month.

The hope is that this approach can result in the setting down of internationally applicable standards and that this system will result in effective self-regulation of the scientific community. To quote Alberts, "if we don't set our own rules and standards on how researchers operate, others may come in and do it for us".

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