

## **BBSRC statement on misuse of bioscience research**

### **Introduction**

1. The Biotechnology and Biological Sciences Research Council (BBSRC) is a major funder of bioscience research in UK universities and research institutes. It invests around £300M per annum on research and research training that covers systems from the level of molecules and cells to populations in the managed and natural environments; and includes research on plants, animals and microbes. Increasingly, BBSRC-funded research is multidisciplinary, drawing upon insights and technologies from the mathematical, physical sciences and computational sciences; and supports emerging new sciences and technologies at the interfaces between traditional disciplines, for example in nanotechnology and in chemical genetics.

2. Research funded by BBSRC increases fundamental understanding of how living systems function. It also addresses areas of strategic economic importance to the UK and to the quality of life by underpinning advances in:

- i. Medical and pharmaceutical areas such as new foundations for cell-and tissue-based therapies, safer drugs, and improved diagnostics and vaccines
- ii. Agricultural and food areas such as crop breeding for reduced environmental impact and adaptation to climate change, enhanced animal welfare, and food safety and healthy eating
- iii. New tools and technologies which will further the understanding of the biosciences

3. Advances in basic and strategic bioscience research have the potential to be misused in applications in bio-terrorism. This risk is not new, nor is it restricted to high-tech areas of science or those directly related to human health. For example, well known, naturally occurring disease-causing agents in crops and livestock have potential for use as economic weapons; and it is almost axiomatic that research designed to alleviate a problem, might provide information that can be misused to exacerbate it.

4. BBSRC has re-assessed its procedures for identifying potential social concerns arising from the research it funds to help ensure that these provide a proportionate and responsible response to current global events and concerns that bioscience research might be especially vulnerable to malicious misuse. It has made more explicit the need for the BBSRC Executive, its Boards and Committees, and scientists supported by the BBSRC in universities and institutes to reflect on the potential for the research and its outcomes to be misused in bioweaponry, and to identify and report any concerns.

5. BBSRC is paying particular attention to areas of research that are not already covered by regulations such as those governing the use of dangerous pathogens, genetic modification, animals and human patients, where stringent checks and balances already exist. It has highlighted several areas that deserve careful consideration. These include:

- Development of new technological tools, that have generic applications, for example, in the area of bio-processing or bio-fermentation scale-up
- Projects that individually carry very little potential for misuse, but for which risk would be very greatly increased by emerging data or methodologies from other disciplines, for example, studies on a toxin that cannot currently be introduced easily to humans, but which might be deliverable by advances in materials science or aerosol physics
- Procedures that clarify and coordinate the responsibilities of funders, research institutions and scientists, for example to ensure that researchers working in potentially dangerous areas adhere strictly to the objectives and methodologies described in their grant application and do not use materials for additional experiments, unless approval of the appropriate body as been obtained

## **Procedures**

6. BBSRC requires its Research Committees to identify and report to BBSRC any potential ethical and social issues arising from grant applications that the Committees select for funding. This covers issues associated with the motivation, conduct and outputs of the research, and is in addition to the standard peer review process that addresses scientific quality and cost/benefit issues. Applications so referred are considered by BBSRC Office and may be referred for expert consideration through BBSRC's Bioscience for Society Strategy Panel, the membership of which includes individuals with expertise in bioethics, animal welfare and environmental and consumer issues.

7. All successful applicants are required to complete a short form confirming that they have considered the broader social and ethical context of their research, and indicating issues of potential public concern. BBSRC may forward these details to the Bioscience for Society Strategy Panel in the first instance, or to the Council of BBSRC, for advice; and may require additional information and assurance from the researchers.

8. BBSRC is working with its sponsored institutes to ensure that similar procedures monitor their research, and, that processes for dealing with potential malicious misuse are integrated with other biosecurity measures at the institutes.

9. BBSRC's requirements about the conduct of research that it funds are published in "Safeguarding Good Scientific Practice". Quality Assurance procedures at BBSRC-sponsored institutes guarantee the appropriate use and monitoring of materials and equipment. BBSRC works closely with other funders of research to ensure that awareness and high standards of behaviour are observed throughout the UK research community. BBSRC is considering the merits of developing a "code of conduct" for researchers.

## **Dissemination of research**

10. Peer-reviewed publication of research findings is essential for scientific progress. BBSRC would be very concerned by any measures that threatened communication of research results through publication. It endorses the position of the US National Academy of Sciences Committee that the dissemination of research results in the context of scientific publication should be based on voluntary self-governance by the scientific community. For example, BBSRC shares with the Medical Research Council (MRC) and the Wellcome Trust the view that pre-publication release of fundamental genomic information in public domain resources provides benefits through scientists sharing resources, including reducing the need to use animals in experiments, that greatly outweigh any potential risk of misuse.

12. The international nature of science requires that issues such as the potential misuse of research in bioterrorism must ultimately be addressed internationally. BBSRC would welcome opportunities to contribute to building a consensus approach. It would be concerned, however, by any extension of existing regulations that would disproportionately restrict the international exchange of materials and the ability of overseas scientists to work in the UK, or for UK researchers to collaborate with researchers overseas.

13. BBSRC is committed to facilitating public engagement about the objectives and outputs of research, and its wider social implications, including potential risks. It is working with the MRC and other organisations to enhance the effectiveness of public engagement.

14. BBSRC considers that its position closely parallels those of the MRC and the Wellcome Trust. These three major funders of bioscience research in the UK work closely together in monitoring and responding to issues associated with the threat of bioterrorism.