

The Federation of American Societies for Experimental Biology (FASEB) believes that scientists working in the life sciences have an obligation to be aware of the potential dual use nature of their research. Although biological research has provided and continues to provide tremendous benefits to human and animal health, agriculture, energy, and our quality of life, there is also the potential for misuse of research findings to cause harm. Surveys conducted by FASEB and other stakeholders in the scientific community indicate that awareness of dual use life science is very low among research scientists. While raising awareness of dual use nature of life sciences research will not completely eliminate the possibility of misuse of biological sciences, nor should it be expected to protect entirely against individuals intent on doing harm, we do support the idea that education about dual use research and biosecurity will help reduce risk. FASEB believes that scientists who are educated about the potential dual use nature of their research will be more mindful of the necessary security controls which strike the balance between preserving public trust and allowing highly beneficial research to continue. As such, we support the following principles of dual use research and biosecurity education:

1. Dual use research and biosecurity education must be an integral part of the training scientists receive in the responsible conduct of research. Scientists and laboratory personnel at any level of training or career development who are engaged in research at the laboratory bench or clinic should be aware of the risks associated with the potential misuse of life sciences research.
2. Effective education requires performance based assessment and content appropriate to the role of the individual. Institutions should have flexibility in developing and implementing education or awareness raising programs within the context of ongoing professional development or compliance programs.
3. Although institutions must have ultimate responsibility for deciding the shape of any biosecurity curriculum, it must be acknowledged that for complex issues like dual use research, a simple web-based module may or may not be adequate. Institutions might consider the use of a more interactive format in addition to or in place of web-based tutorials, and may also consider the use of continuing education, as science and regulations evolve.
4. The federal government, through the National Science Advisory Board on Biosecurity (NSABB), should provide guidance to institutions on the nature of biosecurity and/or dual use research concerns and curricula that effectively addresses these concerns. The NSABB should also provide access to existing resources that institutions may use as models for their own activities. Stakeholder input, including that of the scientific community, is critical in developing this guidance.
5. Existing resources on dual use research education should not be ignored. Research institutions, nonprofit organizations, and individuals have spent time and resources developing excellent tools and curricula on dual use research and biosecurity education, including evaluation efforts. Such resources should form the foundation of any subsequent development of educational material.
6. Educational efforts are not without cost and should not become unfunded mandates that burden research institutions. Funding entities should acknowledge the importance of raising awareness about dual use research and support

educational activities. Again, a balance must be struck between reducing risk and protecting research progress, so such support should not come at the expense of ongoing research funding.

7. Implementing educational efforts as part of responsible conduct of research training should not replace, but rather should enhance, ongoing outreach efforts by NSABB, professional societies, and other organizations and individuals.
8. Professional societies and groups like the National Academies should continue to play a role in assessing the effectiveness of dual use research educational activities. Periodic surveys of the life sciences community to evaluate awareness would be an example of a way to assess whether education efforts are working. Data from these and other evaluation activities should be used to inform or improve ongoing awareness raising and education programs.