

Information Sharing for Science and Security: the Path Forward

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The **Center for Biosecurity** is an independent, non-profit organization of the University of Pittsburgh Medical Center (UPMC). The Center works to prevent the development and use of biological weapons, to catalyze advances in science and governance that diminish the power of biological weapons as agents of mass lethality, and to lessen the illness, death and civil disruption that would result if prevention efforts fail.

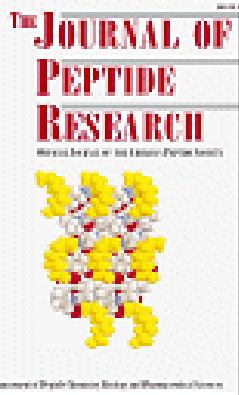
www.upmc-biosecurity.org

Intentional release of Bioagents

- Largely ignored threat until 1995
- Too difficult to grow organisms?
- Technologically difficult to disseminate?
- Not used because of a moral barrier?

What has changed?

- Advances in biotechnology
 - Knowledge base
 - Numbers of laboratories
 - Numbers of trained microbiologists
 - Information access – e.g. internet
 - Aerosolization devices
- Growth of independent terrorist groups



*H.L. Ball
D.S. King
F.E. Cohen
S.B. Prusiner
M.A. Baldwin*

Engineering the prion protein
using chemical synthesis

PNAS

Variola virus immune evasion design: Expression of a highly efficient inhibitor of human complement

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Communicated by Peter C. Nowell, University of Pennsylvania School of Medicine, Philadelphia, PA, April 11, 2002 (received for review March 8, 2002)

Perspective

Delivery of Biological Agents by Aerosols

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The problem for legitimate science:

- The growing power of science increases the destructive potential of a biological attack or a laboratory accident.
- Thinking enemy can outdo nature – genetic manipulation to create new pathogens, enhance weaponization, and dissemination
- Novel pathogens far easier to create than new countermeasures
- In some ways, biology is not powerful enough

A web of approaches are needed in order to increase biodefense/medical understanding as well as constrain malignant applications.

Actions taken thus far:

- Journal Editors' Scientific Statement on Scientific Publication and Security:
 - “We recognize that on occasion an editor may conclude that the potential harm of publication outweighs the potential societal benefits. Under such circumstances, the paper should be modified or not be published.”
- National Science Advisory Board for Biosecurity
- Interest in a code of conduct

Rely on Scientists for Security

- Moral obligation
- Best position to understand the potential for misuse
- Best position to tie early warnings to strategy.
- Key actor in responding to a biological weapons attack, or a natural epidemic.
- Strong identification with the profession
- Longstanding ethics framework on judging what is “good science”— the challenge is to incorporate new concerns about security.

Scientists are not lawyers, doctors, ethicists, or sociologists— and their work is very different.

Keep it real, keep it technical

- Realistic situations for training: even ‘clear-cut’ examples of dangerous science aren’t clear-cut, and there is a diversity of views, particularly about the risk of misuse.
- “Do no harm” is unrealistic – scientists are explorers, and can’t *know* the consequences of an experiment.
 - Validity, safety, record-keeping, security of pathogens, what is done with results, “good science.”

No amount of prevention will be enough— scientists have to prepare to respond.

- March 15, WHO issued emergency travel advice, set up network
- March 23, found coronavirus
- April 9, Koch's postulates proven
- April 16, announced the causative agent of SARS

Importance of lessons learned in research response...goal is to get therapy/diagnostic/vaccine as soon as possible

Report from the International Conference on Biosafety and Biorisks, March 2-3, 2005



- **Scientific communication**
 - Use of press conferences to communicate in a hurry, Klaus Stöhr: “...Many groups are working on SARS, but do not know what the others are doing except by reading Chinese newspaper accounts, and many accounts do not provide the necessary scientific information.”
 - Peer review gets in the way: Normile & Enserink: “Researchers who have seen Guan’s data say that they are convinced.”
- **Scientific Collaboration** (access to samples)
- **Biosafety**

Thank you!

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