

Life science research and global health security

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WHO programmes

- Department of Epidemic and Pandemic Alert and Response
- Department of Ethics, Equity, Trade and Human Rights
- Department of Research Policy and Cooperation
- Special Programme for Research and Training in Tropical Diseases (TDR)



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Natural infection

Accidental release

Deliberate use

Biorisk Reduction

- Security of valuable biological materials
- Safety of staff and environment
- **Responsible life science research**
- Operational links for response to deliberate events

- Emerging and dangerous pathogens expertise
- Outbreak response capacity
- Laboratory resource mapping
- Preparedness and surge capacity



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Overview

1. The public health perspective
2. The issue
 - What is it?
 - Elements at risk?
 - What can be done?
3. The WHO project



1. A public health perspective

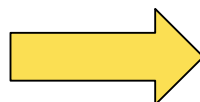
Importance of health research

- Globalization of life science research and technologies
 - Global dispersion
 - Pace of discovery
- 10/90 gap in health research
 - Link with development
 - Lack of investments, inappropriate priorities, capacity development and retention



Benefits of life science research

Outstanding
advances in life
science research
in the past few
decades



Knowledge and
techniques gained
hold great potential for
improving public
health and welfare



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2. The issue – What is it?

- E.g. of research that triggered concerns
 - chemical synthesis of poliovirus cDNA (2002)
 - reconstruction of the 1918 flu virus (2005)

EDITORIAL

1918 Flu and Responsible Science

The influenza pandemic of 1918 is estimated to have caused 50 million deaths worldwide; 675,000 in the United States. The reconstruction of the 1918 virus by the synthesis of all eight subunits and the generation of infectious virus are described on p. 77 of this issue,* and the sequences of the final three gene segments of the virus are described in a concurrent *Nature* paper.† Predictably, but alarmingly, this virus is more lethal to mice than are other influenza strains, suggesting that this property of the 1918 virus has been recovered in the published sequence. The good news is that we now have the sequence of this virus, perhaps



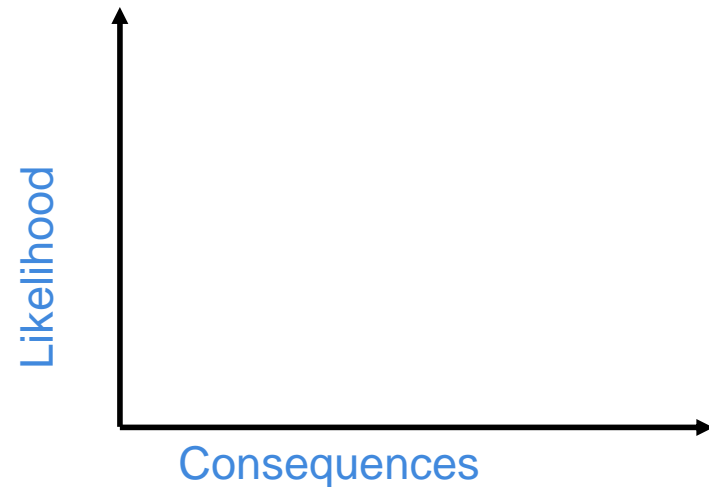
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Risks

Risks posed by life science research – whether accidental or deliberate misapplication



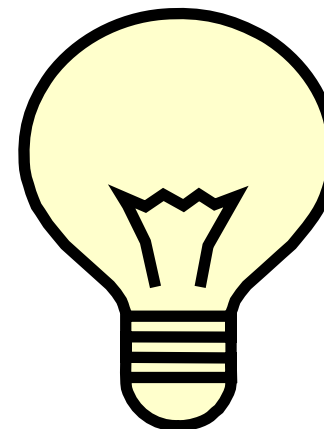
Important legal, ethical, public health implications



Elements at risk?

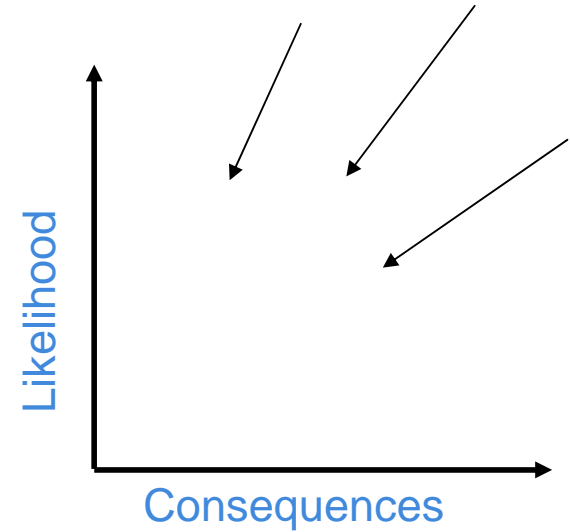
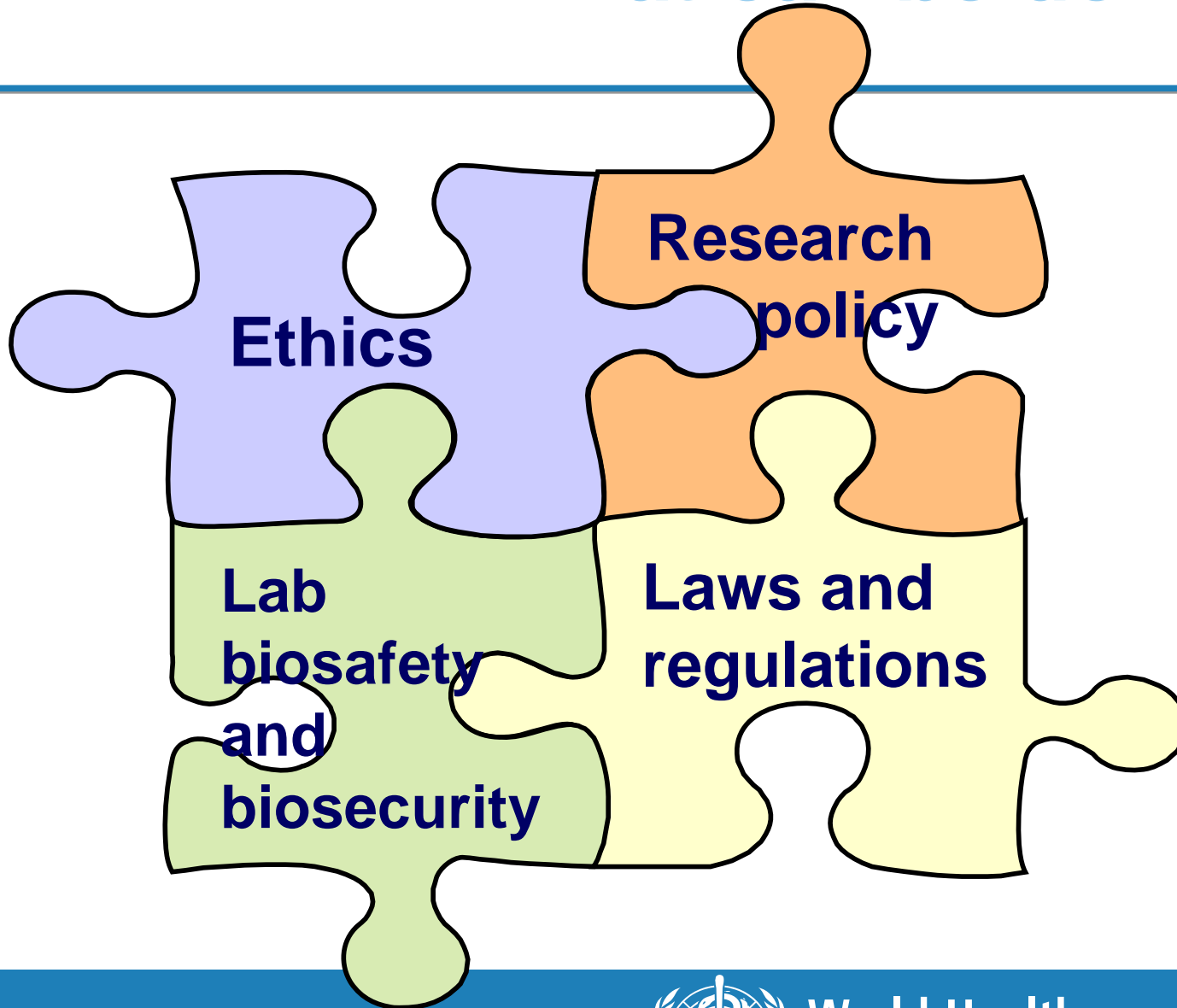
Examples:

- Researchers
- Research itself
- Community, environment and economy



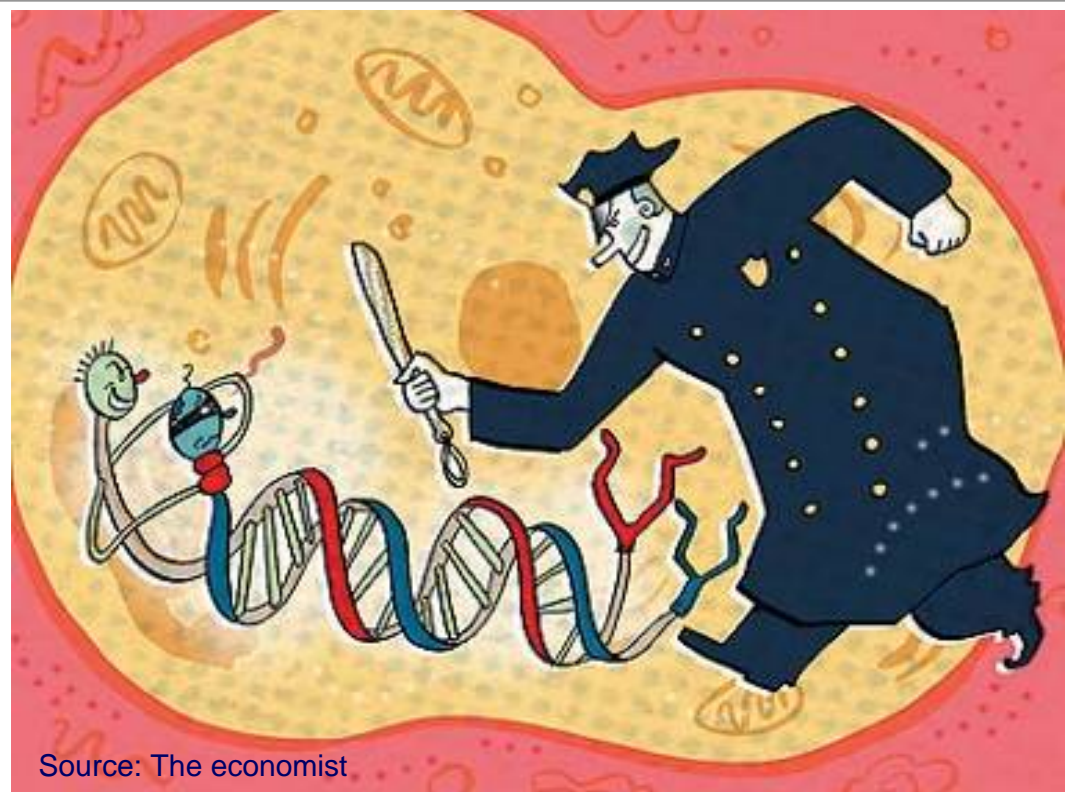
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What can be done?



By whom?

- at different levels:
international, regional,
national and institutional
levels
- with different actors: national
academies, scientists
associations, public health,
laboratories, publishers,
private sector, funders,
security communities and the
public)



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Risk management matrix

Measures	Ethical framework	Research policy framework	Laboratory biosafety and laboratory biosecurity
Actors	self-governance, legislation/regulation, standards, structures, etc.*	self-governance, legislation/regulation, standards, structures, etc.*	self-governance, legislation/regulation, standards, structures, etc.*
International			
Regional**			
National			
Institutional/ individual			
Information – Raising Awareness – Training Education – Communication – Collaboration with other stakeholders			



Why is WHO involved?

- Impact on public health
- Public confidence in science
- Information vary among Member States



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Objectives of the WHO project



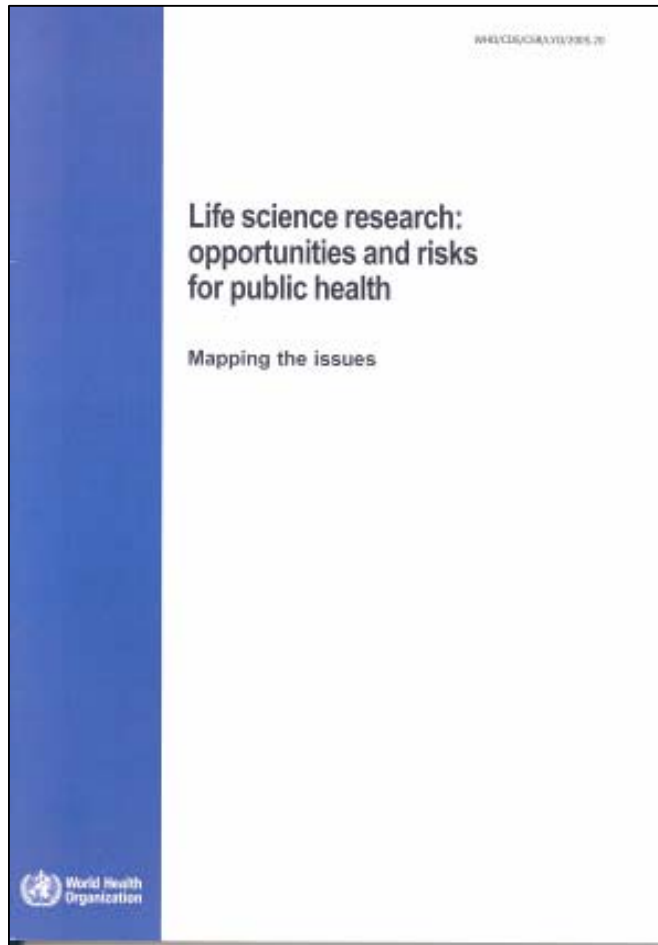
inform and provide guidance to countries on the prevention of accidental or potential misuse associated with the outputs of life science research – from expected or unexpected products (tangible products) to skills and tacit knowledge (intangible factors).

Raising awareness to develop capacity-building



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Reports



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Scientific working group report

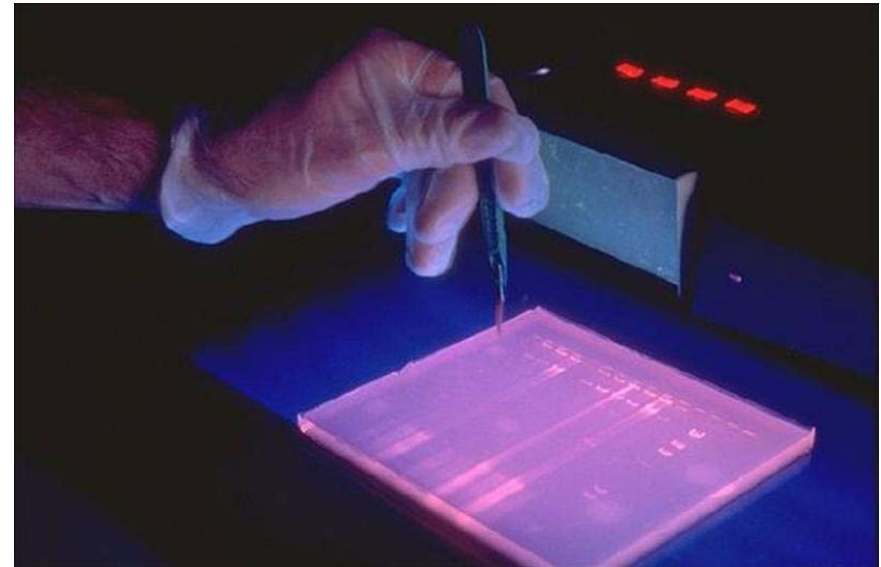
- Five areas for action

1. Education and training;
2. Preparedness for a possible major outbreak of disease;
3. Development of risk assessment methodologies;
4. Engagement of all stakeholders in the life science community and guidelines for oversight; and,
5. Capacity building at country level, including ethics, clinical practice, laboratories and research.



Project milestones

- Collaboration with other WHO departments and external stakeholders
- Online consultation in June 2007
- Regional activities
 - Thailand (Dec 2007)
- Development of guidance
- Training materials



Conclusions

- There are different risk management options – find the right mix of policies
- There are different actors – importance of collaboration between Member States, UN and other stakeholders
- Public health should be safeguarded



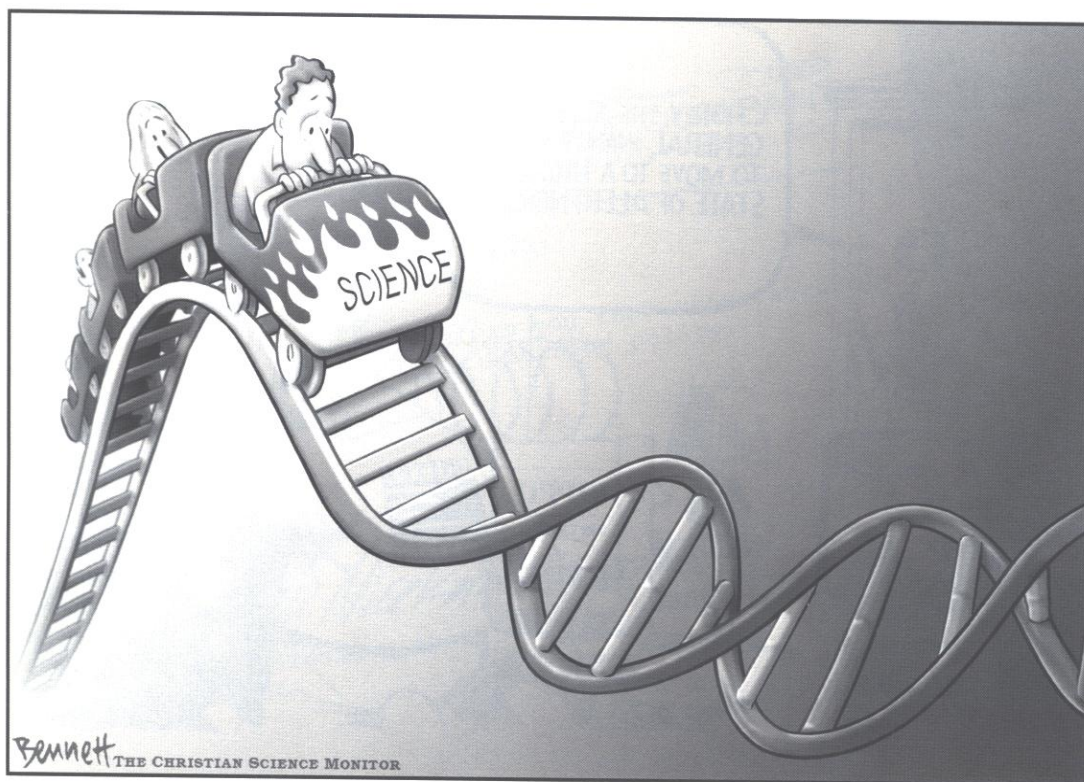
Resources

- Our reports are available on WHO website

- A question?

- A comment?

lifescience@who.int



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Thank you



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