

Beyond patchwork precaution for the dual-use governance of synthetic biology

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Overview

- Precaution as guiding principle
- Governance
- 5P governance matrix
- Examples of dual-use governance measures
- From patchwork to network?

Precaution as guiding principle

- PP for dual-use life-sciences research:
“When and where serious and credible concern exists that legitimately intended biological material, technology or knowledge in the life sciences pose threats of harm to human health and security, the scientific community is obliged to develop, implement and adhere to precautionary measures to meet the concern.”

Kuhlau et.al. 2009, 8

Governance

- “Governance is an overarching concept including legal, political and ethical considerations. Since synthetic biology may result in major changes of traditional biology, governance needs to be reflected on all these levels, finally entering the legal sphere.”

European Group on Ethics, *Opinion 25*, 2010, p.36

5P governance matrix

Dual-use governance measures	Policy intervention points				
	Principal investigator	Project	Premise	Provider / Purchaser	Public
Awareness raising					
Education / training					
Codes of conduct					
Regulation					
National laws					
Internat. treaties					

Example 1: Analysing dual-use bio-security awareness



- Research question:
What is the level of bio-security awareness of SynBio practitioners in Europe?
- Key finding:
Low level of awareness of relevant milestones in bio-security discourse

Example 2: Customer and DNA Sequence Order Screening

- SB2.0 draft declaration (May 2006)
 - First attempt to establish DNA order screening
- IASB Code of Conduct (2009)
 - Defines screening of orders and customers as good business practice

“In order to contain the risks of synthetic biology and to protect the field against misuse, the undersigned have adopted this code of conduct which provides guidelines for safe, secure and responsible commercial or non-commercial DNA synthesis.”

Example 3: US Law Enforcement Activities

FBI Synthetic Biology Conference - “Building Bridges Around Building Genomes”



From patchwork to network?

- Individual level:
 - Moral obligation, yes – but needs enabling environment
- Institutional level:
 - Dual-use / biosecurity education at UG / PGT level
 - Continuous professional development
 - Research strategy / funding
- National level:
 - Curriculum design / research strategy + funding
- International level:
 - G8 statement on BWC
 - BWC RevCon mandate for dual-use education