

# Governance of biology

## *Situating the future of the BW control*

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# Addressing governance of BW prevention

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- n Disarmament/arms control community:
  - n Logical point of entry: weapons and their application
  - n For BW: 1925 Geneva Protocol + 1972 BTWC
  
- n Possible alternative points of entry
  - n Prevention of disease (irrespective of origin of outbreak)
  - n Preserving biology and biotechnology for peaceful purposes (societal advancement, economic development, health security, food security, etc.)
  - n Environmental security (impact of accidental or purposeful introduction of organisms in new biotopes or of modified organisms)
  
- n How does the BTWC relate to these alternative points of entry?
  - n Prevention of *deliberate* disease (preparations + use via Geneva Protocol & Review Conference conclusions)
  - n Bargain between Articles III and X vs. natural diffusion of technology, global trade and development
    - n How relevant are they today for managing technology transfers?
    - n Some developing countries have become net exporters of biotechnology
  - n Biosecurity & biosafety, etc.
  
- n Key questions:
  - n How exclusive is the BTWC in addressing such issues?
  - n How effective is the BTWC in addressing those questions?

# A taste of who may be involved...

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- n Weapon control
  - n Multilateral agreements (Geneva protocol, BTWC, CWC)
  - n Proliferation prevention arrangements (Australia Group, PSI, Global Partnership, etc.)
  - n UN agencies: UNODA, 1540 Committee, UNEP, UNDA, etc.
- n Disease prevention
  - n WHO, FAO, OIE + their regional organisations/initiatives
- n Crime and terrorism
  - n UNSC Resolutions (1540, terrorism resolutions, etc.)
  - n Interpol, Europol, etc.
- n International transfers
  - n WTO, WCO, etc.

# Assessing the biological threat in the light of scientific developments

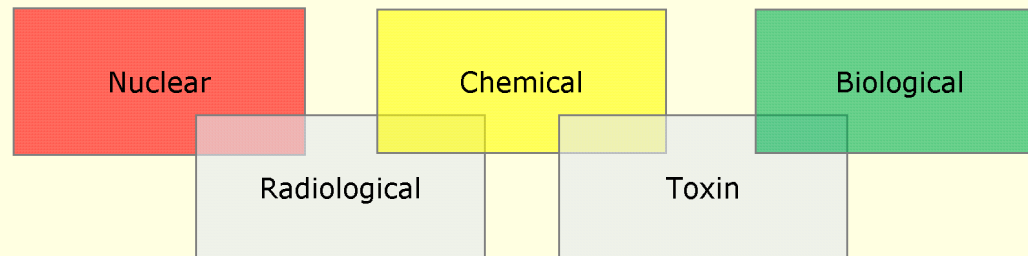
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- n Since the demonstration of recombinant DNA techniques in early 1970s:
  - n Explosion of biological research and biotechnology applications
  - n Parallel development of concern about next-generation BW
  - n Integration of several scientific disciplines
  - n Synthetic biology offers a new dimension to the debate, but not a novel challenge
- n From the perspective of terrorism/crime involving biological agents
  - n The acquisition process is complex for the potentially most destructive agents
  - n New biology add other layers of complexity
  - n Presently gravest challenge may come from (rogue) individuals with access to BSL-3/4 labs

# Incidents of terrorist/criminal use of non-conventional agents

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## n Non-conventional weapon categories



- n Most incidents are in the grey areas
- n Agents in grey areas are easier to acquire
  - n Enable incidents involving individuals; small groupings
  - n Opportunity may play a significant role in those incidents
- n Incidents with biological / toxin agents since 1970 produced fewer than 100 fatalities, despite biotechnology revolution

# General issues for consideration

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- n Commercially-driven imperatives
  - n Determines type of research and development
  - n Allows for niche research and development based on different imperatives
    - n Within own society
    - n In other countries (some of whom may be of potential concern)
  - n Standardisation of DNA strands offers huge commercial incentive
    - n Companies are already being created
  
- n Accessibility is increasing
  - n Broadening basis for biology & biotechnology
  - n Research, production & commercialisation of standardised gene sequences
  - n Access for individual 'hobbyists'

# Specific issues for consideration

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- n Proliferation of high-containment laboratories since 2001
  - n Widening base of people with knowledge & skills
  - n Certain pathogens are being artificially recreated (e.g., polio and H1N1 influenza (1918) viruses)
  - n Accidents (infections, releases) do happen
  - n Terrorism concerns: decreasing transparency and public accountability; reduced peer review opportunities
- n Bio-defence: science-based analysis of the BW threat
  - n Genetic properties of pathogens are being altered to study infectivity, virulence, etc., thus creating modified life forms
  - n Government-run programmes
    - n Insights from bio-defence programmes are useful for offensive BW development
    - n Limited transparency
    - n Questions about adequacy of vetting procedures for researchers
    - n Anthrax letters (2001) came from a government bio-defence laboratory
- n Limited knowledge among scientists about norms against BW
  - n Potential contribution to future BW development rejected out of hand
  - n Development of enabling technologies: future tangibles or end products not yet known
  - n Situation probably even worse among 'hobbyists'

# Specific governance challenges

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## n New biology $\approx$ data

- n Hacking into laboratory computers and databases
- n Digitising of (synthetic) gene sequences
  - n Digital transfer via communications systems (e.g., internet)
  - n Ease of carrying digital data media out of laboratory
- n Critical infrastructure protection becomes element of biological governance

## n Hobbyists ('bio-hackers')

- n Literally work from home (compare with chemistry kits)
- n Laboratory equipment available from sites such as eBay
- n Dedicated bio-hacker forums
- n Standardised DNA strands easily available via Internet
  - n Synthetic biology gave big boost to the movement
- n Currently known work is harmless, but oversight responsibility is unclear



# Conclusion: Questions remain

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- n Is there clarity about the goals relating to governance of biology?
  - n Complex set of factors to be taken into consideration
  - n Competing institutional imperatives and interests
  - n Competing levels of policy action?
- n How does one deal with new security actors?
  - n Threats by terrorist and criminal entities
  - n Integration of new actors in the disarmament / arms control regimes (e.g., industry, scientific communities)
- n Is it possible to reconcile security and economic imperatives?
  - n What are their consequences for cooperation under disarmament and arms control treaties?
  - n Is there still a (clear) linkage between disarmament and development?
  - n Economic crisis
    - n What resources are states willing to commit to complex disarmament and arms control treaties?
    - n Which challenges does this pose for adapting or strengthening existing treaties?
- n In the end key questions remain:
  - n How exclusive is the BTWC in addressing such issues?
  - n How effective is the BTWC in addressing those questions?

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