What will Biological Warfare look like in the 21st Century

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Emerging threats and ethical dilemmas in future biological conflicts
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Key Insights

- From the perspective of a natural scientist, how will today's technology change biological warfare in the 21st century? Over the last two decades,

breakthroughs in synthetic biology, biological engineering and biological AI have radically changed what is possible in terms of biological weapons research. But despite potentially gaining new capabilities, the deployment of biological weapons remains unlikely given their military disadvantages and the challenges involved in acquiring them.

Definition

Dual-use technology: Scientific capabilities, equipment or biological material (e.g. a strain of bacteria) which can plausibly be used both in a civilian and military context are considered "dual-use". Essentially all biological research may be considered dual-use and large biological weapons programmes can relatively easily be concealed as civilian research projects. This complicates the regulation and monitoring of biological weapons and also poses a challenge for intelligence agencies tasked to uncover these programmes.

> *Fundamentally, there remain very few cases in which biological weapons retain a tactical edge over other weapon systems, such as chemical warfare agents.*

Documents: Full Publication (PDF)

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