



General Assembly 1 (GA1)

Regulating the military use of biotechnology and genetic engineering

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Forum: General Assembly 1 (GA1)

Issue: Regulating the military use of biotechnology and genetic engineering

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Introduction:

Biotechnology and genetic engineering are fields that are rapidly progressing. Advancements in science and our understanding of life allows for many possibilities in the biological field, especially in the military. However, with opportunities comes risks. The problems arising from the regulation of military use of biotechnology and genetic engineering is a result of rapid scientific progress, which laws and policies cannot keep up with. Technologies such as CRISPR-CAS9 have made new opportunities arise, since never before has it been easier, more precise, or more affordable to modify living organisms. This research report seeks to create international guidelines and regulations for the use of biotechnology and genetic engineering, in the hopes that scientific research can advance in a safe and ethical way.

Definition of key terms:

Biological Weapons

Microorganisms like virus, bacteria, or fungi originating from living organisms that are produced and released intentionally to cause disease and death in humans, animals, or plants.

Biosafety

The protection of human health and the environment from possible adverse effects of products of biotechnology.

Biotechnology

The exploitation of biological processes to develop products and technologies for various applications.

Confidence-building measures



Voluntary actions by states to increase transparency and address uncertainties in between states in order to build trust.

Genetic Engineering

The deliberate modification of an organism's genes using technology.

Pathogens

Organisms that have the potential to cause infectious diseases to the host.

General Overview:

CRISPR-CAS9

CRISPR-CAS9 is a genome editing tool which allows scientists to edit parts of the genome through removing, adding and altering sections of DNA. It is massively popular as it is simple to use. While this amazing medical tool has great potential in medical treatments, the potential use in the military could have big consequences. In recent years, there has been growing interest in using it in the military, in applications such as enhancing soldiers physical (accelerated wound healing, reduced vulnerability to infections, etc.) and mental abilities (enhanced memory, problem-solving skills, decision making, etc.), and increasing resilience to environmental stressors such as radiation and extreme temperatures. Besides human enhancement (and the ethical considerations that come with it), CRISPR-CAS9 raises concerns about its potential to create biological weapons, like to engineer pathogens resistant to existing treatments, and the rapid development of CRISPR-CAS9 makes it a difficult technology to monitor and put regulations into place.

Biological Weapons Convention (BWC)

The BWC is a legally binding treaty which prohibits development, production, etc., of biological and toxin weapons. The convention has almost universal membership with 188 States Parties and four Signatory States. Entering into force in March 1975, it required state parties to destroy bioweapons and means of delivery of those bioweapons within nine months of the convention's entry into force. The



BWC has led to the dismantling of more than 20 offensive bioweapons programmes, however despite these successes, the BWC does not keep pace with scientific developments, which could lead to significant loopholes in which advanced biotechnologies could be used for the military. Furthermore, there have previously been breaches of the BWC, such as in the Soviet Union's Biopreparat biological weapons programme, which was a clear violation of the 1972 BWC, only discovered in the 1990s. The reason for such violations is because the BWC lacks compliance measures, and focuses rather on confidence-building measures, and while compliance measures have been attempted to be put in place, the US has opposed it.

Cartagena Protocol on Biosafety:

The Cartagena Protocol on Biosafety is an international agreement under the Convention on Biological Diversity (CBD) which aims to prevent any harm to biological diversity when living modified organisms (LMOs) are transferred or used especially across state borders. The protocol entered into force in September 2003 and consists of 173 parties. The protocol also involves the “advance informed agreement” procedure, which requires countries receiving the LMOs to be provided with information in order to assess the risks before deciding whether or not to allow the import of LMOs. The protocol has a precautionary approach to the regulations, which is important when dealing with biosafety, as things such as LMOs are high risk, high reward.

Dual-use Dilemma

The dual-use dilemma arises in fields of scientific research when pieces of information have the potential to do both harm and good. This is an ethical dilemma, not only for researchers, but also for governments, who have control over the work of researchers. Even though the researcher may be intending to use the knowledge for good, the ethical dilemma arises from the potential actions of others when discovering the information. In general, the dual-use dilemma, especially for projects with potential military applications, makes it hard to regulate and oversee them, as governments and other bodies must be careful which hands the knowledge falls into. In addition, different countries have different rules and regulations, so finding



loopholes, when people have bad intentions, is relatively simpler by moving items across borders to states with weaker regulations.

Defense Advanced Research Projects Agency (DARPA):

DARPA is an independent research and development agency within the US Department of Defense (DOD). It focuses on increasing national security and includes the fields of biotechnology and genetic engineering. DARPA has created precision weapons, nerve implants that returns sensation to soldiers who have lost limbs, etc. The establishment of this agency also had the intention of obtaining world leadership in military technology. Recently, DARPA has been increasingly investing in bioengineering and similar research fields. In addition, DARPA has played a key roll over the years in many fundamental technologies, and they try to push the boundaries of technology and science, however that means they often do fund projects which are quite risky, often too risky for smaller organizations and companies to attempt.

Global Partnership Against the Spread of Weapons and Materials of Mass Destruction (GPWMD):

The GPWMD is a G7-led international initiative, consisting of 31 members, which aims to prevent the expansion of biological, chemical, etc. weapons and related materials. The GPWMD meets twice every year and works to detect and respond to the acquisition and use of weapons of mass destruction by not only States, but also terrorist groups. It was established in 2008 and was created in response to increasing concerns on the increase of weapons of mass destruction (WMDs), including bioweapons. It has also focused particularly on eliminating WMDs from the former Soviet Union, and todays Russia.

Key Events Timeline

February 7, 1958 DARPA was established

March 26, 1975 BWC entered into force

Aprill 11, 1992 Biopreparat was officially ordered to end



June 27, 2002 GPWMD was established

September 11, 2003 Cartagena Protocol on Biosafety enters into force

November 18 – December 16, 2022 9th review of the BWC

Principal Stakeholders

The People's Republic of China

Recently, Chinese government policies have been emphasizing domestic biotechnology innovation. This sector has grown quickly, and several factors are spurring the growth, including subsidies, financial incentives, talent-recruitment schemes, public-private partnerships, etc. While the US remains the global leader in biotechnology, however China's competition threatens that position. However, the People's Liberation Army (PLA) has shown increasing interest in biotechnology and its implications for the military capabilities of China.

United States of America

Through agencies like DARPA, the US has been focusing heavily on research and experiments like gene editing and biodefense. In addition, the US is also currently the world leader in biotechnology. Concerns relating to DARPA and other scientific research arise, especially when the US has opposed adding verification measures to the BWC, pushing for confidence-building measures instead.

The Russian Federation

Evidence has suggested that Russia maintained and modernized the surviving parts of the Soviet biological weapons programme, Biopreparat. However, Russia remains highly secretive with regard to its biological research leading to no definite proof of currently existing bioweapons programmes.

Potential Avenues for Resolution

Improving the BWC



Countries and NGOs are encouraged to look over the BWC and strengthen it in order to prevent any loopholes made by scientific development.

Strengthening Confidence-Building Measures (in the BWC)

Current confidence-building measures include data exchange on laboratory work; however, this should be expanded to address things such as dual-use concerns, overseeing emerging biotechnologies, etc.

Urge membership of partnerships

Urge the membership of GPWMD and other partnerships, especially to expand geographical coverage, in order to be more effective globally.

Increase oversight on biotechnology

Establish agreements on the regulation of the military use of biotechnology, especially significant ones such as CRISPR-CAS9, which holds great opportunities but also risks.

Regulations on human enhancements

Discuss regulations and possibly bans on human enhancements in the military situation, taking into account the question of ethicality, not only on a broader scale but also the individual people.

Suggested Resources

<https://tdhj.org/blog/post/gene-editing-soldiers-crispr/> - This page discusses applications and concerns of using biotechnology such as CRISPR-CAS9 in the military. It is a good source to understand risks and issues relating the topic.

<https://bch.cbd.int/protocol/text> - This includes all articles in the Cartagena Protocol on Biosafety.

<https://treaties.unoda.org/t/bwc> - This is the official text of the Biological Weapons Convention.

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