The issue of Biotechnology and Bioethics.

Biotechnology offers tremendous potential for both scientific improvement and societal gain. Examples of its innovations include gene editing, synthetic biology, and the avoidance and advancement of biowarfare. But these innovations also bring up serious ethical issues that the world community needs to address. The purpose of this briefing paper is to spark discussion on prospective regulatory frameworks and norms within the Model United Nations (MUN) committee, as well as to give an outline of the ethical considerations related with biotechnological breakthroughs.

Technologies such as CRISPR-Cas9 (an enzyme that allows for editing parts of DNA), which allows for unparalleled accuracy in manipulating genetic material, have the potential to improve agricultural output and treat genetic illnesses. This can help mitigate a variety of cancers and other otherwise terminal illnesses around the world, but questions are raised about the moral limits of gene editing, especially when it comes to modifying human gametes. If changing the human genome becomes more of a desire than a need – and becomes accessible privately, it can lead to a disparity amongst the children born with or without gene editing.

Synthetic biology is the study and development of biological systems for use in the production of biofuels and medications. There have already been some successful uses of synthetic biology in the medical field, such as the development of CAR (chimeric antigen receptor) that help attack cancer cells. However, synthetic biology is often unpredictable, and a lot of unethical trials may be needed to create certain medication or fuels, even if they prove useful for the future.

Even while synthetic biology has great promise for tackling urgent global issues like the elimination of disease and environmental sustainability, ethical concerns about dual-use research (research that is beneficial and harmful) still have significant importance. Eradicating a disease via synthetic biology may also lead to eradications of certain animal population, and therefore the impacts have to be dealt with accordingly. Ensuring ethical innovation and mitigating misuse are crucial for the progress of synthetic biology.

MUN committee members are urged to support the creation of thorough ethical standards and legal structures that control the use and investigation of biotechnology. Transparency, accountability, and public involvement should be given top priority in these recommendations, with due consideration for the diversity of cultures and religions.

Points to consider:

- The disparity potential gene editing could cause between the poor and the rich, and how that would affect first and third world countries.
- The ethical boundaries needed for gene editing and how those would be implemented.
- The environmental impact of synthetic biology, and what systems have to be in place to prevent further damage to the environment.
- How to progress the science behind biotechnology, whilst also keeping the trials and experiments safe.

Useful links:
https://www.frontiersin.org/articles/10.3389/fbioe.2019.00175/full#:~:text=Advances%20in%20Synthetic%20Biology%3A%20The%20State%20of%20Play,Inspired%20by%20Nature%2C%20Improved%20by%20Synthetic%20Biology%20
https://www.britannica.com/science/gene-editing/Applications-and-controversies
https://www.un.org/technologybank/biotechnology