International Journal of Scientific Research in Science and Technology
Available online at : www.ijsrst.com
OPEN ACCESS
Print ISSN: 2395-6011 | Online ISSN: 2395-602X
doi : https://doi.org/10.32628/IJSRST

Bioethics and Biotechnology

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ARTICLEINFO

Article History:

Accepted: 10 Oct 2023
Published: 30 Oct 2023

Publication Issue
Volume 10, Issue 5
September-October-2023
Page Number
702-706

ABSTRACT

Bioethics is a word which generally is used in technological developments relating to biology. Especially as the topic suggests, the ethical issues raised in the changes brought about by the Biotechnological advancements. It deals with the study of ethical issues arising from advances in the field of medicine, science and technology. It proposes the discussion about moral discernment in society and it is often related to medical policy and practice, but also to broader questions as environment, well-being and public health. Bioethics is concerned with the ethical questions that arise in the relationships among life sciences, biotechnology, medicine, politics, law, and philosophy, being an in-separable part of today's innovations and advancements. Bioethics word was first coined by a Pastor Mr. Fritz Zahr in 1927. Biotechnology is the application of biological science and engineering to produce new products and services. It has the potential to revolutionize many aspects of our lives, from the way we get food to the way we treat diseases. However, it also raises several ethical concerns, which need to be carefully considered as biotechnology develops. With so much development and change in the new world relating to biotechnology there are always pressable bioethics issues anticipated. As biotechnology has advanced it has given many useful products and promises for a better and sustainable future but has also raised many unanswered questions with it. In this topic we are going to discuss the ethical issues relating to Biotechnology, the benefits of it and specific ways in which biotechnology is likely to shape the future of society. Further we will discuss the ethical principles which are likely to impact the future of Biotechnology.

Keywords : Bioethics, Bioethics and Biotechnology, Technological Ethics.

INTRODUCTION

Bioethics is a word which generally is used in technological developments relating to biology. Especially as the topic suggests, the ethical issues raised in the changes brought about by the Biotechnological advancements. It deals with the

study of ethical issues arising from advances in the field of medicine, science and technology.

The first documented use of the word *bioethics* dates to 1927, when Fritz Jahr, a protestant pastor and theologian from Halle, gave the title "*Bio-Ethik: Eine Umschau über die ethischen Beziehungen des Menschen zu Tier und Pflanze*" to an article published in the journal *Kosmos*. (Jahr, 1927). This in English means Bioethics: A Panorama of the Human Being's Ethical Relations with Animals and Plants.

In 1970, the American biochemist, and oncologist Van Rensselaer Potter used the term to describe the relationship between the biosphere and a growing human population. Potter's work laid the foundation for global ethics, a discipline centred around the link between biology, ecology, medicine, and human values.

In India, The All-India Bioethics Association (AIBA) was founded in 1996, and the Founding President was the late Professor Dr. Jayapaul Azariah. He served as President until January 2012. AIBA is the oldest association of scholars of bioethics in India and coordinated a series of nation-wide education programmes and workshops in the 1990s across the nation, in coordination with Eubios Ethics Institute, a non-profit organisation.

ICMR is the regulatory authority of bioethics is India and has been on the forefront to set the standards for ethics in biomedical and health research.

Ethics is an inherent and inseparable part of the technological advancement.

The word "Biotechnology" simply means using living organisms, for the development and modification of the existing resources, and providing better and modified products and goods. It is generally considered to have benefits for the future society and coming generations, but it may have a darker side as it involves the human population and other living beings.

The discipline of bioethics has addressed a wide swathe of human inquiry; ranging from debates over the abortion, euthanasia, surrogacy, the allocation of scarce health care resources, organ donation, health care rationing, to the right to refuse medical care for religious or cultural reasons.

Biotechnology and simply all technological developments are and can produce certain unimagined and unpredictable consequences that can cause general harm to humans and as such to all living beings. This is because of the lack of proper structure of the ethical laws and rules and unpredictability of the changes in the resulting technology.

Technological advancements and developments are refined by ethical vision and the final control is given by the ethical structure.

As generally now all living beings are involved in the biotechnology advancements including humans as test subjects it certainly raises a requirement for different approach towards the ethical framework. Human experimentation was one of the first areas addressed by modern bioethicists.

Biotechnology is the application of biological science and engineering to produce new products and services. It has the potential to revolutionize many aspects of our lives, from the way we get food to the way we treat diseases. However, it also raises a number of ethical issues and concerns, which need to be carefully considered as biotechnology develops.

Some basics how biotechnology is likely to shape the future of society:

1. Healthcare: The modern era of health care ethics is often traced to Henry Beecher's influential, 1966 article on ethical problems in clinical research, with particular attention (through a series of actual examples) to the failure to inform patients of the actual risks involved in experimental treatments. Beecher was a professor of anaesthesiology at Harvard Medical School. Biotechnology is already being used to develop new drugs and therapies for a variety of diseases. In the future, it is likely to be used to create even more effective treatments, as well as to develop new ways to prevent disease. For example, gene

therapy is a promising new technology that could be used to correct genetic defects that cause disease.

2. Agriculture: Biotechnology is being used to develop new crops that are resistant to pests and diseases, and that produce higher and sustainable yields. In the future, it is likely to be used to create even more nutritious and resilient crops. This could help to improve food security and reduce hunger around the world.

3. Environment protection: Biotechnology can be used to clean up pollution and to develop new ways to recycle and reuse resources. For example, bacteria can be used to break down pollutants in soil and water. In the future, biotechnology is likely to play an increasingly important role in environmental protection. The term Bioremediation is used for the remedies mentioned.

4. Energy production: Biotechnology can be used to produce biofuels, which are renewable sources of energy that can help to reduce our reliance on fossil fuels. In the future, it is likely to be used to develop even more efficient and cost-effective ways to produce biofuels.

5. Military applications: Biotechnology is being used to develop new weapons and to improve the performance of soldiers. In the future, it is likely to be used to create even more powerful and sophisticated weapons. This raises concerns about the potential for biotechnology to be used for destructive purposes.

THE MAIN ISSUES:

1. MODIFICATION: One of the most pressing ethical issues in biotechnology is the use of genetic engineering to modify organisms. This technology could be used to create crops that are resistant to pests or diseases, or to develop new drugs or therapies for human diseases. However, it could also be used to create organisms that are harmful to the environment or to human health. The use of genetically modified crops could have unintended consequences for the ecosystem. Additionally, the production of biofuels could lead to deforestation and other environmental problems.

2. DISCRIMINATION: Another ethical issue is the use of biotechnology is genetic discrimination. This could involve selecting embryos for certain genetic traits, such as intelligence or athletic ability this is in other words referred to as human enhancement. Human enhancement refers to the use of biotechnology to improve human capabilities. While some people believe that human enhancement could be used to create a better future for humanity, others are concerned about the potential for unintended consequences, such as creating a society where the wealthy can afford to enhance themselves and the poor are left behind. It could also lead to discrimination against people who are not born with the desired traits. Genetic discrimination is the unfair or discriminatory treatment of an individual based on their genetic makeup. This could happen in a number of ways, such as employers refusing to hire someone because they have a gene that is associated with a certain disease, or insurance companies charging higher premiums to people with certain genetic mutations.

3. OWNERSHIP: Biotechnology also raises questions about the ownership of genetic material. Who owns the genes of a plant or animal that has been genetically modified? And who should benefit from the profits that are generated from biotechnology? Can a gene modification be patented?

4. SYNTHETIC DEVELOPMENT: Synthetic biology is a new field of biotechnology that is focused on creating new biological systems from scratch. This could lead to the development of new medicines, foods, and materials. Some synthetic foods are harmful, what will be the resulting future and

changes in the future generations cannot be predicted today.

These are just some of the ethical issues that need to be addressed as biotechnology develops. It is important to have a thoughtful and informed discussion about these issues so that we can ensure that biotechnology is used for good and not for harm.

Here are some of the ethical principles that can guide the development and use of biotechnology:

- **Respect for human dignity:** Biotechnology should not be used to exploit or harm individuals, rich are treated fair, and poor are only experimental subjects.
- **Informed consent:** The modern era of health care ethics is often traced to Henry Beecher's influential, 1966 article on ethical problems in clinical research, with particular attention (through a series of actual examples) to the failure to inform patients of the actual risks involved in experimental treatments. Beecher was a professor of anaesthesiology at Harvard Medical School. Individuals should be given the opportunity to give informed consent before they are subjected to biotechnology experiments. Capable of understanding the risks, a full disclosure and acts voluntarily.
- **Primum non Nocere (Non-maleficence):** Nonmaleficence is the obligation of a health care provider not to harm the patient. This simply stated principle supports several moral rules – do not kill, do not cause pain or suffering, do not incapacitate, do not cause offense, and do not deprive others of the goods of life. The main principal here is for the healthcare provider to consider all pros and cons and weigh the burdens and benefits before acting or actual treatment.
- **Beneficence:** The principal of beneficence is to act for the benefit of the living beings and support a number of moral and ethical rules such as to protect and defend the rights of others, rescue persons in danger, help disables and create such condition which remove the harm.
- **Justice:** The benefits and risks of biotechnology should be distributed fairly. The population which can pay gets more and poor are left behind. Biotechnology could be used to benefit some people at the expense of others. It is important to ensure that the benefits of biotechnology are distributed evenly.
- **Privacy:** Biotechnology could be used to collect and store a vast amount of personal genetic information. This information could be used to discriminate against people or to track their movements. It is important to develop safeguards to protect people's privacy.
- **Safety:** Biotechnology could be used to create new diseases or to modify the human genome in ways that are harmful. Multiplication of the humans or cloning is one of the examples. It is important to develop rigorous safety testing procedures for new biotechnology products.
- **Sustainability:** Biotechnology could be used to harm the environment. It is important to develop biotechnology in a way that is sustainable and environmentally friendly.
- **Deliberation:** Careful discussions and considerations is the key.

CONCLUSION:

The above principles should be used to guide the development and use of biotechnology in a way that is ethical and responsible. By carefully considering the ethical implications of biotechnology, we can help to ensure that it is used to improve the lives of all people, reduce and eliminate harm and provide a sustainable future to our coming generations. Competence and compassion are required to put Bioethics in its justified place. Bioethics plays a crucial role in guiding the responsible development and application of biotechnology. By carefully considering

the ethical, legal, and social implications of these technologies, we can ensure that they are used for the benefit of humanity and the environment. As biotechnology continues to advance, the dialogue between scientists, ethicists, policymakers, and the public will be essential for navigating the complex ethical challenges that lie ahead.

REFERENCES

[1] Bioethics and biotechnology-Dónal P. O'Mathúna
[2] Bioethics and animal research-F. Lolas
[3] Rethinking Health Care Ethics Scher S, Kozlowska K.Singapore: Palgrave Pivot; 2018.
[4] Principles of Clinical Ethics and Their Application to Practice-Basil Varkey* Med Princ Pract. 2021 Feb; 30(1): 17–28.
[5] https://plato.stanford.edu/entries/principle-beneficence/#ConcBeneBene.
[6] Two kinds of globality: a comparison of Fritz Jahr and Van Rensselaer Potter's bioethics- A. Muzur and I. Rinčić