

The role of biotechnology in the formation of scientific and technical progress

*Aslanbek Khasuev**¹, and *Albina Tskhovrebova*²

¹Kadyrov Chechen State University, Grozny, Russia

²North Ossetian State University named after. K.L. Khetagurova, Vladikavkaz, Republic North Ossetia-Alania, Russia

Abstract. All of humanity is in a state of deep and irreversible civilization, the symptoms that are not only global economic problems but also an unprecedented decline in value consciousness. Intercivilizational conflicts are brewing. The greatest intercivilizational conflicts are brewing. The rules of exchange between economically strong and weak subjects are hopelessly outdated. Unfair mechanisms of exchange between economically strong and weak subjects are hopelessly outdated. An expanding Colonial politics is occurring in new, more complex forms on the planet. A "consumer society" as an alternative and non-alternative model of development seems unshakable. The idea of a "consumer" social system as the only non-alternative and progressive model of development seems unshakable. Which race will this run with the planet's limited resources lead to? All people want to exchange spiritual wealth and freedom for material well-being?

1 Introduction

At present, technology and organization are acquiring paramount importance in the development of social progress (fig.1). Experts [2] said that the need to use modern technology (innovation) is due to its fact that at present technology, along with organization, has acquired paramount importance in the development of social progress (fig.1). Technology is a part of production technology, and it is inseparable from production technology. I.e It exists only in conjunction with a specific technology and manifestes itself through its application, that is. The technology is the force of scientific and technological progress. It has an active role in relation to tools, it plays an active role in relations with them. Biotechnology has become an important engine of progress, penetrating all aspects of modern human life. In our time, biotechnology has become an indispensable engine of technological progress, penetrating all aspects of modern world. Today's innovations in science and technology are rewriting the rules of the game in many different sectors, with impacts that range from medical research to industry or even food production. It is possible for this new development to change the rules on several frontlines, such as medicine to industry, from agriculture to the environment. The key role that biotechnology plays in technological development of the world is deeply explored by this article. Biotechnology

*Corresponding author: alarih95@gmail.com

has opened up new frontiers in treating disease, creating sustainable systems for food production, and development of biologically-based materials. We'll look at how biotechnology is opening up new frontiers in treating disease, creating safe agricultural systems, and developing biologically based materials. Biotechnology has a positive effect on the energy sector, including biofuels and alternative energy sources. We will also look at the impact of biotechnology on the energy sector, including the development of biofuels and alternative energy sources. They will be assessed in the context of addressing global environmental issues and promoting sustainable consumer lifestyles. The article will analyze how biotechnology has become a driver of economic growth and job development. This is the final point, and we will illuminate the future, and how biotechnology will continue to change our world in the coming decades.

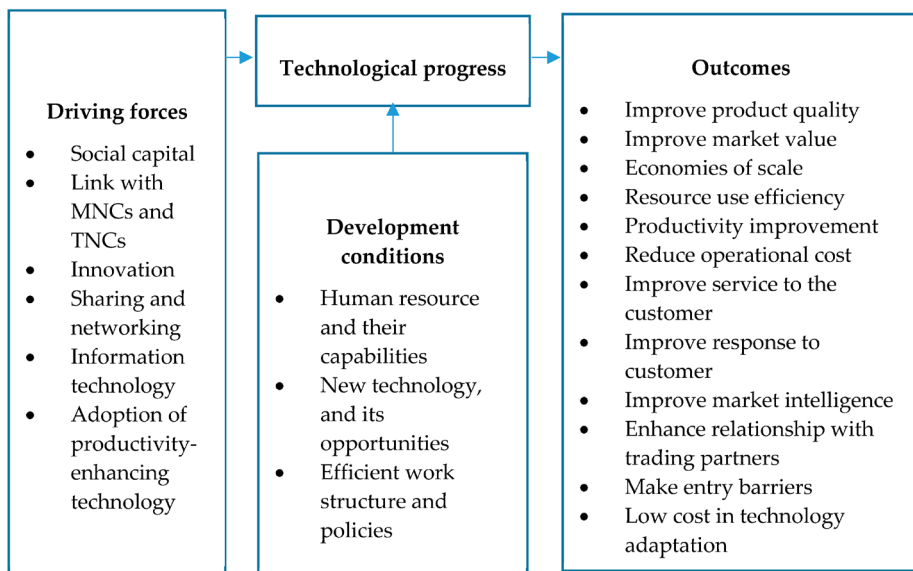


Fig. 1. Framework for technological progress in the small and medium enterprises (SMEs) in the competition.

The content of the innovative search for biology, until the second half of the 19th century, was an “empty phrase.” A breakthrough was made by Charles Darwin’s book “The Origin of Species,” published in 1859. At the same time, such masters of their field as C. Bernard - physiology, L. Pasteur, R. Koch and I.I. Mechnikov - microbiology and immunology, G. Mendel - genetics, and I.M. Sechenov and subsequently I.P. Pavlov - the doctrine of the higher nervous system. All these “revolutionary discoveries” gave impetus to the development of practical medicine. From that moment on, dramatic changes took place in the economic life of society: new medications appeared, and a “green revolution” took place. Moreover, until now it has become possible to look “deep into the cell” and try to identify processes at the molecular level. The category “biotechnology” emerges, which acts as a concept of convergence (bringing together several sciences to solve problems). Accordingly, in various sciences this concept has several definitions. Thus, the authors of the textbook “Technology Market” give the following definitions [4]: 1. All biological processes are divided into two groups: traditional biotechnology, which is based on fermentation processes (lactic acid, acetic acid, alcohol), and modern (microbiological synthesis, genetic and cellular engineering, etc.). 2. Biotechnology is a collection of industrial techniques that use living organisms and biological processes to produce various products. Similar processes have been known since ancient times: bread baking;

preparation of wine, beer, cheese, vinegar, dairy products; methods of processing leather, plant fibers, etc. 3. Modern biotechnology produces feed and food proteins, amino acids, enzymes, vitamins, antibiotics, ethanol, organic acids (citric, isocitric, acetic, etc.), plant growth regulators, many pesticides, medicinal and immune drugs for humans and animals. Human use of biotechnologies in national and global production of primary products, healthcare and industry forms a bioeconomy and biosociety and is reflected in the formation of a modern innovative technological civilization. The bioeconomy plays a huge role in shaping national and global GDP. Thus, if we talk about the contribution of biotechnologies to the global economy, then, according to researchers [3], by 2030 their share in global GDP could reach about 2.7%. This trend will be most strongly accompanied by the convergence and synergy of biotechnologies with nano, ICT and cognitive sciences and technologies with an overall increase in global GDP. In principle, today there is already a process of integration and convergence of differentiated areas of use and application of biotechnologies, which actually creates the foundation for the formation of a biosociety of the 21st century, innovative biotechnology, biopsychology of people, as well as biosocial psychology of society.

2 Research Methodology

In order to improve the efficiency and sustainability of agricultural production, it is important to improve the efficiency and sustainability of agricultural production, which is critical for food security. The development of cleaner energy sources and biodegradable materials will be contributed to the development of clean energy sources. Contributed to the research and conservation of biodiversity, as well as the environment. New biomaterials that have applications ranging from medicine to engineering are contributed by the development of new biomaterials. The biological mechanisms of life, a deeper knowledge about nature and the human body will help to improve your understanding. Biotechnology contributes to scientific progress by improving our ability to explore, innovate and solve complex scientific problems. In this way, biotechnology contributes to scientific progress by increasing our ability to explore, innovate and solve complex scientific problems.

In the case of socio-humanitarian and sociological technologies.

The problem of this kind has already been solved, both in the scope and methodological support. The creation and development of social and humanitarian technologies in the seventh order is also necessary for philosophical knowledge.

-Creating new products and technologies that improve people's comfort, quality of life: creating New Products And Technologies That Improves People'S Comfort And Quality Of Life.

-The most opportunities and applications of biotechnology are not included. -Almost all opportunities and applications of biotechnology are not included. In fact, the objectives do not cover all possible and applications of biotechnology. The purposes are not only about the possibilities for use in biotechnology, but also reflect different regions in which biotechnology can benefit society and the environment.

3 Results and Discussions

The flow of carbon through various stages of product development and life cycle is a critical aspect of understanding the environmental impact and sustainability of bioproducts. From the initial sourcing of feedstock to the product's end-of-life management, carbon plays a central role in determining the overall carbon footprint and environmental implications. As the world grapples with the challenges of climate change and seeks

sustainable alternatives, it becomes increasingly important to comprehensively analyze and manage these carbon flows.

This introduction sets the stage for a deeper exploration of how carbon moves through the life cycle of bioproducts, encompassing feedstock selection, biomanufacturing processes, utilization, and end-of-life considerations. By gaining insights into these carbon flows, we can make informed decisions about the development and use of bioproducts, aligning them with sustainability goals and contributing to the broader efforts to combat climate change. This topic is of utmost relevance as we seek more sustainable solutions in a world striving for a greener and carbon-conscious future

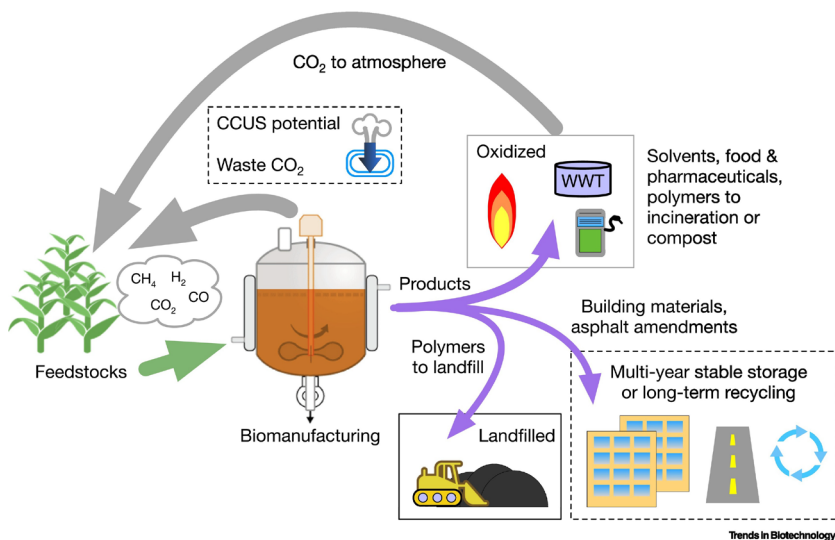


Fig. 2. Carbon flows from feedstock through biomanufacturing and product end of life.

Because it is related to humanity's lifetime and the development of innovative technology civilization for the 21st century, studying about this problem can be particularly important today. It is this, as a result of increased intensity and high level of agriculture, industrialization and transport. This is the reason for this, as a result of increased intensity and high level of agriculture, industrialization and transport. There are reasons for this as a result of increased anthropogenic impact on the biosphere, due to an increased anthropogenic impact on the biosphere. Agriculture can also provoke natural phenomena and create new conditions in the biosphere, as well. Agricultural biotechnology is used to change the biosphere and provoke natural phenomena. This can also cause the use of modern biotechnology in agriculture, as well as provoke biospheric transformations. The application of new technology in agriculture is not only important for change and transformation of biosphere but also to create changes in the biosphere. This can also lead to changes in the biosphere and provoke natural pollution. The use of modern biotechnology for agriculture is not only harmful, but also provokes change in the biosphere. The use of new biotechnologies in agriculture can also provoke some natural disasters. The use of new biotechnologies in agriculture can also cause changes in the biosphere and provoke some natural disasters. For humanity and the biosphere, it is urgently necessary to find economical and environmentally sound biotechnological solutions for humanity and humans. This suggests that the urgent need to find biotechnological ways to improve the relationship of man with nature for the purpose of its environmentally safe, economic and socially sustainable development. All this suggests that the problem of finding biotechnological ways to improve the relationship between humans and biosphere is urgent for mankind. This makes it possible to find biotechnological ways

to develop environmentally safe, economically and socially sustainable relations of man with nature. In addition, complex NBIC-systems can make a significant help to solve this problem. The biotechnology in combination with Biotechnology and complex Biotechnology technology will be able to provide an important contribution to the solution of this problem. According to the expert, modern biotechnology with its huge potential and prospects is considered one of the most reliable ways to achieve new developments. Biotechnology with its huge potential and prospects is considered to be one of the most reliable methods for achieving high level of development. Today biotechnology with its huge potential and prospects is considered to be one of the most reliable ways to achieve a high level of development. This research is not only about scientific studies based on plant, animal and human cell systems. It is also important to develop innovations in the development of new products and their commercialization. The sector of this industry is already an important sector of the economic development in countries with developed economies, and has begun to surpass computer technology both in terms of turnover and capitalization.

4 Conclusions

The role of biotechnology in the formation of scientific and technical progress is substantial and continually growing. Biotechnology has revolutionized various industries and significantly contributed to scientific advancements. Some key conclusions about its role include:

Cross-disciplinary Innovation: Biotechnology fosters cross-disciplinary collaboration by merging biology, chemistry, physics, and engineering, leading to innovative solutions for complex global challenges.

Healthcare Advancements: Biotechnology plays a crucial role in the development of new drugs, vaccines, and therapies. It has revolutionized personalized medicine, providing tailored treatments for individuals.

Agricultural Revolution: Biotechnological methods have transformed agriculture through genetically modified crops, which are more resilient, nutritious, and productive. This aids in global food security.

Environmental Conservation: Biotechnology contributes to environmental conservation by enabling the development of biodegradable materials, pollution control, and sustainable practices.

Energy Solutions: Biotechnology research is key to the production of biofuels, which offer sustainable alternatives to fossil fuels, reducing greenhouse gas emissions.

Biopharmaceutical Industry: The biopharmaceutical sector has seen remarkable growth, producing a wide range of biologics, including monoclonal antibodies and gene therapies, which are vital in the treatment of various diseases.

Genomic Research: Biotechnology has accelerated genomics research, enhancing our understanding of human genetics and promoting advancements in gene editing techniques.

Economic Growth: Biotechnology has significant economic implications, driving growth in various sectors, creating job opportunities, and contributing to GDP.

Ethical and Regulatory Challenges: The rapid development of biotechnology has raised ethical questions concerning issues like genetic engineering, cloning, and privacy. Effective regulations are necessary to address these concerns.

Education and Workforce: Biotechnology has created a demand for a skilled workforce with expertise in life sciences, genetics, and related fields. Education systems must adapt to meet this demand.

Global Collaboration: Scientific advancements in biotechnology are often a result of international collaboration, emphasizing the importance of shared knowledge and resources.

In conclusion, biotechnology's role in scientific and technical progress is undeniable. It has expanded the horizons of scientific research, contributed to breakthroughs in healthcare, agriculture, and the environment, and presents enormous potential for addressing future challenges. However, its continued growth must be accompanied by ethical considerations and regulatory frameworks to ensure responsible and beneficial innovation.

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