

## Editorial

# Applications of Biotechnology

M. Ruili\*

*Department of Environmental Science and Technology, Huazhong University of Science and Technology, Wuhan, China*

### Corresponding Author

M. Ruili  
Mariaruili@yahoo.com

### Dates

Received: 29-Mar-2022,  
Manuscript No.  
OAJOST-22-58914; Editor  
assigned: 31-Mar-2022,  
PreQC No.  
OAJOST-22-58914 (PQ);  
Reviewed: 14-Apr-2022, QC  
No. OAJOST-22-58914;  
Revised: 26-Sep-2022,  
Manuscript No.  
OAJOST-22-58914 (R);  
Published: 03-Oct-2022,  
DOI: 10.11131/  
OAJOST.2022.10.004

Copyright © 2022 M. Ruili. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

## 1. Editorial

Biotechnology is defined as a broad field of biology that uses both the technology and applications of living organisms and their components to design, modify, and manufacture products that benefit human well-being. The term “biotechnology” was coined by agricultural engineer Karoly Ereky in 1919, so he is called the father of biotechnology. Biotechnology is the technology to develop or manufacture various products using biological systems, organisms, or parts thereof. Bread brewing and baking are examples of processes that fall under the heading of biotechnology (using yeast (=organisms) to produce the desired product). While these traditional methods usually use organisms in their natural form (or evolve by reproduction), more modern forms of biotechnology are generally more of a biological system or organism with advanced changes. With the development of genetic engineering in the 1970’s, the new ability to change the genetic material (DNA) of living organisms has led to rapid development of research in related fields such as biotechnology, medicine, and biology. Biotechnology deals with the industrial production of bio pharmacy and biologics using recombinant microorganisms, fungi, plants and animals. Biotechnology applications include agriculture, processed foods, bioremediation and waste disposal, treatments for energy production, diagnostics, and genetically modified crops.

### 1.1. Applications of Biotechnology

Biotechnology is widely used in a variety of fields to modify and produce products that are useful for human benefit. These applications include:

#### Applications of Biotechnology in Agriculture

The application of biotechnology in agriculture is known as green biotechnology or green revolution. Biotechnology has made significant contributions to the field of agriculture, including:

- Organic agriculture.
- Agro chemical based agriculture.
- Genetically engineered crop based agriculture.

The application of biotechnology has tripled yields and food supplies. In addition to normal crop production, pest-resistant and genetically modified crops have been introduced to increase food production and feed an increasing population.

In genetically modified plants, the gene is modified by inserting a gene with the desired characteristics. Bt cotton, Bt brinjal and golden rice are some examples of genetically modified crops.

#### Applications of Biotechnology in Medicine

Recombinant DNA technology has contributed to medical advances by enabling the mass production of safer and more effective therapeutic agents.

Drugs are mainly produced by genetic engineering. Humulin, genetically modified insulin used to treat diabetes, is produced through genetic engineering.



Biotechnology has developed gene therapies that help eliminate hereditary diseases of the embryo. Other applications of biotechnology in medicine and molecular diagnostics include:

- ELISA
- PCR

### **1.2. Transgenic Animals**

Transgenic animals can be defined as animals in which new or modified genes have been experimentally inserted into the genome by genetic engineering techniques. Some examples of transgenic animals include rats, rabbits, pigs, sheep, cows and fish. Among all other transgenic animals, the mouse is an existing transgenic animal.

**The main aim behind the creation of transgenic animals is:**

- For the production of Biological products.
- To study the different types of diseases.
- To study the contribution of genes in the development of the disease.
- For testing the safety of vaccines and toxicity of drugs before they are used on humans.
- To study how genes are regulated and how do they affect the normal functioning of the body and its development.

### **1.3. Applications in Aquaculture**

Biotechnology applications help improve the quality and quantity of fish. Gonadotropin releasing hormone is introduced into fish to improve reproduction. This helps promote growth and improve their genetic characteristics. It also prevents many illnesses.