

# Impact of Cybernetics on the Biotechnology Industry

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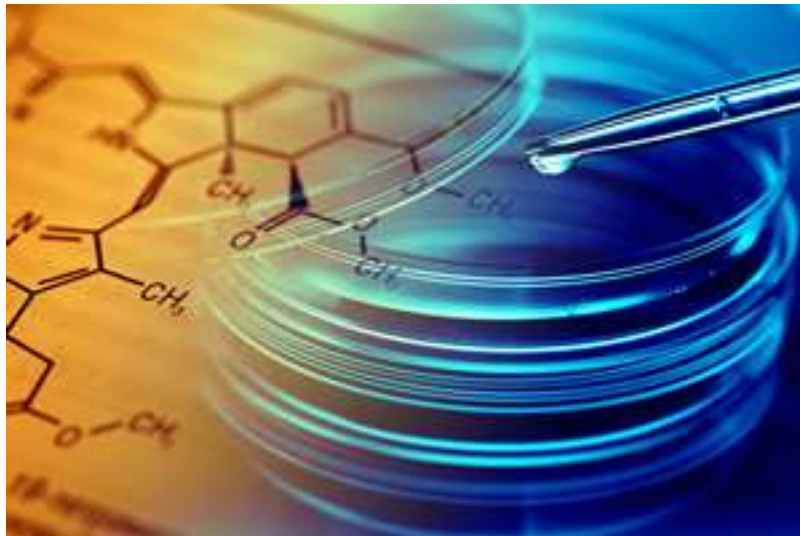
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Internet and cybernetics had begun a revolution. Every field and professional paths nowadays are one way or the other influenced by it. Biotechnology is no special; rather these IT techniques have sparked the initiations of new aspects in the field. Since, these environments provide a platform for the wholesome development of the programs they support, which in turn improves the project overall. Various aspects of programming and the internet are being worked upon, which would increase the efficiency of the developments and innovations that biotechnologists work upon. But, some loopholes for the same pose some danger to the integrity of the work we do. So, we have to be careful while we rely on our machines.

**Keywords :** Cyber | Biotechnology | Data Security

## Introduction:



Biotechnology is an uprising field which concerns and connects various industries like economics, life-sciences, information technology, etc. Biotechnology is of crucial interest to us because of its system, approach and logic utilized behind discoveries and changes that save both humanity

and environment. It has contributed to significant revolutions in health and agriculture industry, meanwhile saving billions of units of energy every year.

Several formulations, patents, and crucial data which earlier was handled

manually is now being handled with the help of computers and cybernetics. This has not only reduced the hassle but now handling the data is a lot easier and efficient. Data is much more organized and coherent which enables uncomplicated error handling. Various computer coding languages help biologists to maintain their data through codes. We can achieve easy outputs in no time, with maximum accuracy by the aid of programming languages and their features. Python being one of the easier coding languages to understand and implement, is widely popular amongst biologists and geneticists. Python enables them to code DNA sequences into their mutable and non-mutable data types like lists, tuples, strings etc. Many scientific names and their classifications can also be maintained for a specific character through dictionaries in them. Functions help them to find out the results which

require mathematical calculations, like contents of nitrogenous bases (like Adenine, Guanine, Thymine and Cytosine) in DNA and RNA, percentage of amino acid residues in them etc. just in a click.

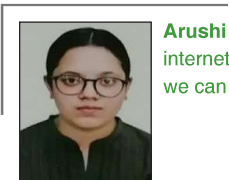
A Database benefits them by maintaining data in files and records electronically. Coding techniques along with management systems (DBMS) helps them to retrieve and manipulate data a lot easier from their databases. Such provisions make working on a project simpler. Teamwork can be done effectively, since multiple users can access the data and work on it simultaneously. This increases the productivity and hence granting a better perspective of the work and it's needed improvements.

Any biotechnology company's greatest asset would be it's information and data. Since this information might

be the building bricks of any new formulations or a completed new product or any patent rights stored. As much as technologizing data in this field is instrumental, it's misuse is equally minacious. In order to gain benefit from the industrialization and modernization, we underestimate the challenges it offers. Today, invading the privacy of systems is not that difficult, if intended to. This can lead to access of devices, their services, data, applications illegitimately, thus increasing the risk of leaking private information and secret formulas. Hence, a huge loss could turn out for the company. A single record or file gone from the system and so will their market value accompanied by a huge financial loss. Data breaches like this, also weakens both business and software system. That being the case, successive breaches is easier to occur if security is not increased timely.



Once a breach occurs, it for the time being can also limit our access to our systems and data, so amplifying the risk of further losses. Therefore, security measures emphasized by the companies nowadays to secure their data from any security breach have to be strong enough to evade the viruses or any other factor causing the breach. However, this does demand quite some money from the company, although solutions provided are not permanent and effective much. Subsequent security updates and checks of the systems are required. These measures, if correctly implemented, can help in keeping our businesses and data safe.



**Arushi Verma** a student, currently pursuing B.tech in Biotechnology (Amity University). I believe that cybernetics and internet is like a ball of strings which acts like a mediator, and connects several disciplines of our society. As a result, we can all relate to each other better and help different people through our own knowledge.

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### Annexure I

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### Reviewers Comment

**Reviewer Comment 1:** The above article describe the study on CYBERNETICS, as per the definition of cybernetics Science concerned with the study of systems of any nature which are capable of receiving, storing and processing information so as to use it for control.

**Reviewer Comment 2:** Cybernetics has always been a hard field to pin down. Wiener presented it a synthesis of work in digital computing, information theory, and feedback control.

**Reviewer Comment 3:** The Cybernetics is applicable when a system being analyzed incorporates a closed signaling loop—originally referred to as a “circular causal” relationship—that is, where action by the system generates some change in its environment and that change is reflected in the system in some manner that triggers a system change.



### Editorial Excerpt

Article has 0% plagiarism, which is accepted as per the standards of publications for the magazine. The article deals with the “**Impact of Cybernetics on the Biotechnology Industry**”. The author considers the relevance of CYBERNETICS in the apparent future in Biotechnology Industry. Section five brings us to the heart of our discussion: an estimation of the likely impacts of better understanding of organizational cybernetics upon management value systems and the manuscript had been earmarked and finalized to be Published under “**Experiential Research Paper**” Category.



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