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Growing need of skilled pharmaceutical biotech engineers

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Pharmaceutical biotechnology or medical biotechnology is a relatively new and growing field

We have entered in an age of discovery in biology that is unprecedented in the history of humankind. During the last few decades, researchers developed cell biology techniques or tools to analyze genomics, proteomics or metabolomics data, which are launching us forward into deeper understanding of the fundamental processes of life on Earth.

Biotechnology, an interdisciplinary approach, combines various disciplines such as computer science, pharmacy, genetics, microbiology, virology, etc. and offer tremendous opportunities in different sectors such as health, agriculture, industry and environment. One of the key areas where biotechnology join hands with pharmacy is the preparation of new vaccines and medicine.

Pharmaceutical biotechnology or medical biotechnology is a relatively new and growing field targeted for production of medicines and pharmaceutical products for treating and diagnosing disorders, designing of organisms to manufacture antibiotics and vaccines, engineering of genetic defects through genomic manipulation, or use in forensics through DNA profiling.

A recent product of pharma biotech 0is mRNA COVID-19 vaccines against coronavirus that elicited immune response against infectious disease and saved millions of life. Over the last few years, number of approved new molecular entities (NME) and new biologic license application (BLA) from emerging biopharma companies has increased.

Pharmaceutical biotech is the study of pharmaceuticals from conception to delivery stage and hence jobs are available for both professional and production workers. Some of the top giants in pharmaceutical sectors are Pfizer, AstraZeneca, Eli Lilly,

GSK, J&J, Merck, Novartis, etc. Majority of scientific job offer an average salary of $75,000 to 110,000 per year and considered as top paying industry for medical scientists in India as well as abroad.

Indian biologics economy is valued at $7 billion and expected to reach $12 billion by 2025. Some of the government initiative encouraging biotechnology research include increase in participation between educational research and industry through BIRAC (Biotech Industry Research Assistance Council), fund early stage research with Small Business Innovative Research Initiative (SBIRI), Biotech Industry Partnership Programme focused on IP creation with ownership retained by Indian industry, etc.

Collaboration of academic institutions with biopharma industries can provide adequate exposure and hands-on experience to undergraduates about the specific need of their upcoming roles as manager, scientist or engineers.

Top recruiters in public and private sectors include Healthcare consultancies, Hospitals and clinics, Pharmacies, Medical College and Universities, Research agencies, Genetic-engineering firms, Sales companies, etc.

An aspiring pharmaceutical biotech engineer has variety of options such as Drug Inspector, Medical writer, Quality Control Programme Executive, Clinical Research Associate, Pharmaceutical Biotech Scientists, etc. Here are a few interesting options that students can look out:

Project Manager: Responsible for determining the project scope, timeline, budget, procurement, and look for overall process development for new medicines and drugs a, medical equipment, risk and capability assessment at all stages of technology transfer.

Researcher: They perform research related to drug discovery, drug targeting, development and testing and conduct research in a variety of areas under pharmaceutical biotechnology

Research Analyst: He is responsible for market research in pharmaceutical, biotechnology and healthcare industry worldwide and gain quantitative and qualitative insights to forecast the future growth and understand the client requirements

Formulation Development Associate: They are involved in production and execution of new processes, products, and drug formulation and provide technical assistance to the team

Drug Safety Associate: Test, evaluate, and confirm the safety of the drugs and ensure that no adverse conditions occur in patients by performing risk and benefit analysis.

Eligibility Criteria

(UG): 10+2 level from a recognized educational board. Some colleges conduct entrance examination and test student knowledge about science subjects

(PG): Bachelor degree such as B.Pharm or similar with 50% aggregate.

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