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All about biochemistry

Before you enrol on a degree in biochemistry, get your facts right about what biochemistry is all about. What is Biochemistry?

GENERALLY, it is a fascinating study of the chemical processes and transformations in living organisms. It is one of the academic disciplines in life science that studies the structure, function, metabolism and the mechanism of the components in the cells; such as proteins, carbohydrates, lipids, and nucleic acids, up to the molecular level.

Do biochemistry and molecular/cell biology mean the same thing?

No, they do not. However, the content of each discipline (biochemistry, molecular and cell biology) overlaps. Cell biology is the study of cells, which includes physiological properties and structure of the cells, organelles they contain, how they interact with their environment, their life cycle, division and death. Whereas molecular biology studies biological molecules, and the scope includes chemistry, genetics and biochemistry.

What will I study in a biochemistry course?

Some institutions of higher learning do offer a full degree in biochemistry; for example, Bachelor of Science (Biochemistry) and Bachelor of Biochemistry. Other institutions that offer degrees like Life Sciences, Medicine, Biomedical Sciences, or Bachelor of Biotechnology may include biochemistry as a subject in their programmes. Some even offer a degree in biochemistry together with a non-biological science course (eg. Bachelor of Biochemistry and Management, Bachelor of Biochemistry and Information Technology).

In the pursuit of a degree in biochemistry, you will learn in detail about the macromolecules (proteins, carbohydrates, lipids, and nucleic acids), their structures, properties, how they are synthesised, broken down, their transport, how they are used, and how they are interconnected with other macromolecules in living organisms.

The course will also cover topics related to enzymology such as the nomenclature, kinetics, regulation and mechanisms of the enzymes. A detailed study on cellular respiration (glycolysis, Krebs cycle and electron transport chain and oxidative phosphorylation) will also play a major part in studying biochemistry.

Hence, strong chemistry knowledge is highly beneficial. Other than that, a biochemistry degree in some institutions may also include courses on microbiology, fundamental immunology, clinical biochemistry, management, applied statistics, and computer skills.

A degree in biochemistry will definitely include laboratory sessions, where you will be exposed to and carry out the fundamental and latest techniques, and tools used in biochemistry. In addition to assignments, quizzes and tests;, laboratory work is also included in the grading system.

What is the difference between biochemistry and life science?

Life science is a more diverse branch of science which deals with the study of life, and encompasses a broad spectrum of academic fields that are often viewed as independent disciplines. This discipline is more concerned with the characteristics, classification and behaviours of organisms, how species exist, and the interactions they have with each other and with the natural environment.

What can I do with a Degree in Biochemistry?

Good results in a biochemistry degree will enable you to pursue a higher degree in biochemistry, and also in many different fields such as genetics, physiology, dietetics, microbiology, immunology, enzymology, pharmacology, organic chemistry, marine science, aquatic, plant, animal, and medical biotechnology, toxicology, bioinformatics, haematology, medical science, bioinformatics, immunobiology, nanobiotechnology, drug discovery, molecular biology, plant biochemistry, and food biochemistry.

A biochemistry degree offers a wide range of career prospects. Research institutions that foster a broad range of active research programmes like Malaysian Agricultural Research and Development Institute (MARDI), Sime Darby, Malaysian Palm Oil Board (MPOB), Institute for Medical Research (IMR), Forest Research Institute Malaysia (FRIM), and also private institutions employ biochemists to do research activities in accordance to develop products and technology, to gain and share the latest knowledge of their area of research that can benefit both the company and the country.

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Private and public institutions like hospitals, Pathlab and University of Malaya that offer diagnostic services employ biochemists to carry out tests (eg. blood, urine, and sugar analysis). The education industry welcome biochemists as teachers or lecturers, or to carry out scientific research and to publish their findings.

Contrary to popular beliefs,Biochemistry graduates can also go into sales, and marketing and management of science-related products, and management? Can also be venues that biochemistry graduates can venture into.

Does studying biochemistry involve a lot of memorising facts?

Yes. Like any other subject, you must know the facts at your fingertips in order to excel in biochemistry. However, memorising facts alone will not make you a good biochemist. A good biochemistry student must understand the principles of biochemistry, and must be able to apply the knowledge acquired to everyday life. On top of that, a hardworking and inquisitive nature can immensely take you to a higher level of comprehension. Good reading habits will also keep you updated with the latest information and technologies related to biochemistry. You can find this kind of information in scientific journals, such as Science, Journal of Biochemistry, and Biochemical Journal.

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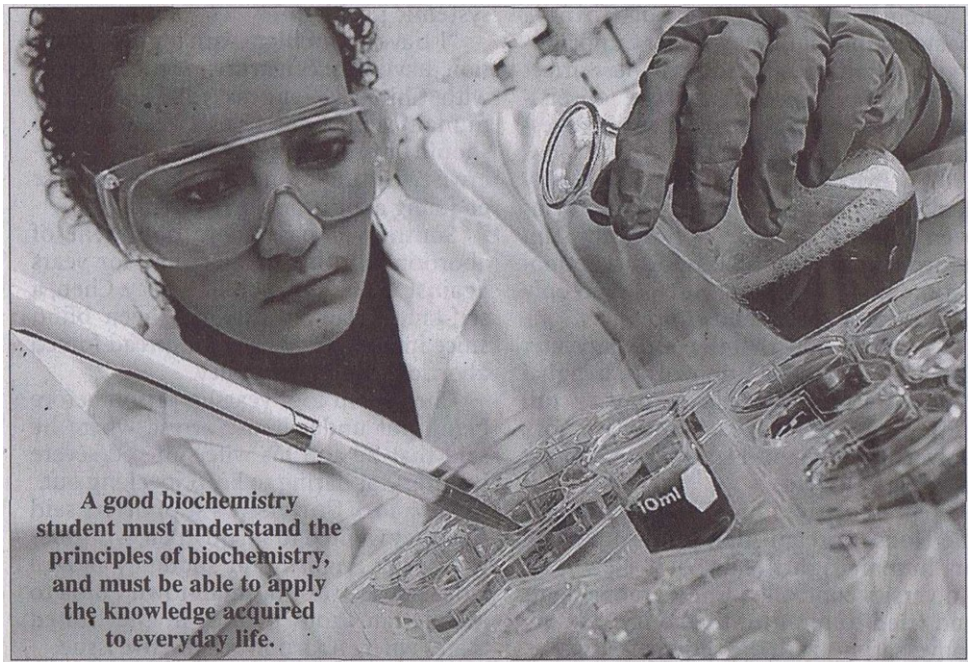

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