

# Science for everyday life

**B**IO TECHNOLOGY has played an integral part in the advancement of life for years. The United Nations Convention on Biological Diversity identifies biotechnology as any technological application that uses biological systems, living organisms or derivatives thereof to make or modify products or processes for a specific use. Simply put, it is the application of engineering techniques in life sciences to produce viable commercial goods.

In Malaysia, we see great biotechnology applications across several sectors, agriculture being one of the oldest. Today,

the country is a global player in bioeconomy as a progressive hub in the heart of Asia.

The wealth of biodiversity in the country opens up a breadth of possibilities in health care, food production and environmental sustainability.

World-class infrastructure, strategic global positioning and an abundance of potential in bioeconomy continually attract international investors. This contributes to the expansion of biotechnology in the region, sending out an important call for more innovative and scientifically inclined young minds to support this development.

## Where can I study biotechnology in Malaysia?

**Monash University Malaysia** – The Honours degree of Bachelor of Science allows students who have completed an undergraduate degree in the discipline to extend their studies by a year to specialise in biotechnology or medical bioscience, among others. The course involves coursework through seminars and a major research project.

**UCSI University** – The BSc (Hons) Biotechnology is a three-year programme aiming to equip students with the necessary knowledge and skills for a career in biotechnology. The course, which comprises 60% coursework and 40% examination, will prepare students for futures in

pharmacology, physiological sciences and metabolic biochemistry, among others.

**Universiti Putra Malaysia (UPM)** – The BSc (Biotechnology) undergraduate programme is offered under the Faculty of Biotechnology and Biomolecular Science, which offers extensive options in these fields for future scientists.

Final year students not only attend industrial training, but also choose from food, environmental, industrial, plant or molecular biotechnology to specialise in. Students will also have the opportunity to put their knowledge into practice with their final year research project.

These are the prevalent biotechnology sectors in the country, which are often classified as green, white and red biotechnology.

### Plant biotechnology (green)

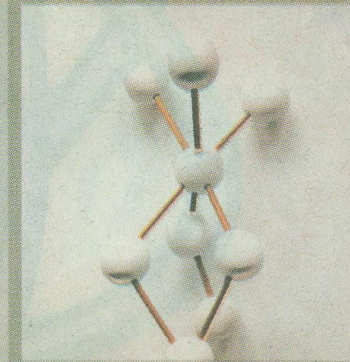
Involving genetic manipulation to develop more disease-resistant and functional varieties in agricultural processes, this is the largest biotechnology sector in Malaysia. Areas identified for further development include genetic modification of fruits to improve flavour and shelf life and biotechnological management of pests.



Green biotechnology could benefit the nation's agriculture sector.

### Industrial biotechnology (white)

Also known as biomanufacturing, this sector is responsible for designing microorganisms to produce useful chemical substances. Current developments in the local sector involve the enhancement of new treatment systems through bioaugmentation or genetic engineering, as well as creation of bio-sensors for accurate monitoring of the environment.



White biotechnology designs microorganisms to produce useful chemical substance.

### Medical biotechnology (red)

Medical processes have much to gain from this branch of biotechnology that employs genetic modification in the production of antibiotics, vaccines and the like. Research has previously generated several diagnostic tools for dengue and other infectious tropical diseases, and pharmaceutical applications in biotechnology are known for yielding greater results in a shorter time.

Red biotechnology has generated diagnostic tools for the detection of diseases.

