



TEL AVIV UNIVERSITY  
INVITES YOU TO  
**A UNIQUE ONLINE  
LEARNING EXPERIENCE!**



## **THE WONDERS OF SCIENCE: BIOTECHNOLOGY**

What do bananas have to do with vaccines? How can jellyfish help us study Alzheimer's disease? Moreover, why are bacteria not always a bad thing? Humans have always aspired to understand the world around them, but modern science – and specifically the field of *biotechnology* – attempt to translate that understanding into new technologies that will benefit humankind. Our course will introduce students to the key concepts of biotechnology as well as to innovative biotechnological developments.

The courses are open for middle school students at age of 12–15 **(from Form 1 to Form 4)**.

**Courses will take place via zoom from 4:00 - 5:30 pm HKT on the following dates:**

**Sunday 10/4**

**Monday 11/4**

**Tuesday 12/4**

**Wednesday 13/4**

**Thursday 14/4**

Total teaching hours: 7.5

Students who complete the course will receive a certificate from Tel Aviv University.

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**For more information and to register please contact:** Mr Elvis Chu, Programme Director, Inspire Education Association . Tel: 9826-1852 | Email: [elvis.chu@inspire-education.org](mailto:elvis.chu@inspire-education.org). Or Mrs Michal Shtorch, Asian Representative of TAU University | Tel: 91726714 | Email: [michalms@tauex.tau.ac.il](mailto:michalms@tauex.tau.ac.il)

## COURSE SYLLABUS:



### THE WONDERS OF SCIENCE: BIOTECHNOLOGY

What do bananas have to do with vaccines? How can jellyfish help us study Alzheimer's disease? Moreover, why are bacteria not always a bad thing? Humans have always aspired to understand the world around them, but modern science – and specifically the field of biotechnology – attempt to translate that understanding into new technologies that will benefit humankind. Our course will introduce students to the key concepts of biotechnology as well as to innovative biotechnological developments.

#### 1 WHAT IS BIOTECHNOLOGY?

From agriculture, through fashion, medicine, and beyond, biotechnology is playing an increasingly important role in the world around us. In this introductory lecture, we will be acquainted with the major principles and approaches of biotechnological research and even design a study of our own.

#### 2 BIO-INSPIRED TECHNOLOGIES

You may know the story of the invention of Velcro, designed by the Swiss engineer George de Mestral who was inspired by hooked seeds that kept sticking to his dog's fur. The Velcro, however, is just one of numerous technologies that were inspired by the striking problem-solving ability of the natural world, to which we will dedicate our second lecture.

#### 3 THE MYSTERY OF OUR GENETIC MATERIAL

Perhaps one of most fascinating, as well as most controversial, application of biotechnology is the intervention in the genetic make-up of organisms. In this lecture, we will learn about the experiments that made such interventions possible.

#### 4 GENETIC ENGINEERING – HOW DOES IT WORK?

In this lecture, we will explore some remarkable genetically engineered organisms – from insulin-producing bacteria, to glowing mice and cloned sheep. We will learn about classic as well as new groundbreaking techniques for genetic engineering and discuss their potential and their implications.

#### 5 BIOTECHNOLOGY AND THE BRAIN

What has biotechnology taught us about our nervous system? Can brain-computer interfaces enhance our cognitive abilities? And is it possible to implant memories? This final lecture will be dedicated all things brain.