



# LIFE SCIENCES MINI LECTURES

## BIOMEDICAL SCIENCES

### **Pain, the brain, and a good excuse to electrocute people**

In this session, students will learn about the science behind pain and how it is processed in the brain. We explore the concept of neurons and nociceptors, and the gate control theory of pain, which suggests that non-painful signals can inhibit pain signals. We also discuss spinal cord stimulation, a technique that can reduce chronic pain by applying electrical current to the spinal cord.

### **Good brain, bad brain**

The good brain, bad brain lecture is an opportunity to explore the most important and fascinating organ in the body – the brain. This lecture looks at how the brain functions in health and disease and will explore how the brain can be easily fooled. We also challenge popular myths such as you only use 10% of your brain. Join us in a voyage through the brain and some of its fabulous functions.

### **Jurassic Park: fact or fiction?**

In this lecture, students learn about the science behind de-extinction, the ethical implications of bringing back extinct species, the feasibility of de-extinction, the potential benefits and drawbacks, and the future of de-extinction. This is a thought provoking and engaging session.



## **The use of genetics in conservation, and in combatting illegal wildlife trade**

In this lecture, students learn about how genetics is used in conservation and to combat illegal wildlife trade. Genetic analysis can help to identify whole organisms and artefacts, providing valuable insights into species conservation efforts. The lecture emphasises the importance of genetic technologies in identifying and prosecuting wildlife traffickers and poachers. It also covers how genetic technologies can be used to track the movement of wildlife products in the market. This lecture is a must-attend for anyone interested in conservation and the protection of endangered species.

## **Fraud in science**

Join us for an insightful discussion on the issue of fraud in science! Despite being considered an honourable profession, fraud has been uncovered across various scientific disciplines. In this talk, we examine examples of scientific fraud to gain a better understanding of how science works. We discuss how fraud is identified, the consequences of scientific fraud and the measures in place to prevent it in scientific research. This discussion is suitable for readers aged 16 and above who are interested in understanding the ethical and professional issues related to scientific research.

## **Food authenticity: what's in our food?**

This talk discusses food authenticity and what is in our food. Ten years ago, it was discovered that products labelled as containing beef actually contained a high percentage of horsemeat. The talk focuses on how genetics was used in this case and in others to uncover fraud in the food industry. The talk provides insights into how genetic technologies can be used to identify the contents of our food and ensure that consumers are not being misled.



## **Ancient DNA**

In this lecture, we explore the field of ancient DNA, which involves isolating and sequencing DNA from extinct animals and humans. This cutting-edge research is providing new insights into the evolution of life on Earth. We discuss how scientists are using ancient DNA to study both extinct animals and hominids, shedding light on their evolutionary relationships and the environmental factors that shaped their evolution.

## **Treating genetic diseases**

Discover the exciting potential of gene therapy and genome editing in treating genetic diseases in this thought-provoking lecture. With the latest advances in technology, it's now possible to manipulate DNA directly, offering new hope for people suffering from a range of genetic disorders. Join us as we explore the different approaches to gene therapy and genome editing, from viral vectors to CRISPR-Cas9, and the potential applications of these technologies in treating inherited metabolic disorders, genetic forms of blindness, and other conditions. Learn about the ethical and safety concerns surrounding these technologies and the need for careful regulation and oversight. Whether you're a scientist, medical professional, or simply curious about the latest advances in medicine, this lecture is not to be missed.

## **Assisted Reproduction Technologies (ART)**

Are you curious about the latest advances in reproductive technology? Join us for this enlightening lecture on Assisted Reproduction Technologies (ART), where we explore the history and uses of different techniques such as in vitro fertilization (IVF), intracytoplasmic sperm injection (ICSI), and gamete intrafallopian transfer (GIFT). We examine the reasons why people turn to ART, from medical conditions to same-sex couples, and the ethical and legal implications of these emerging technologies. Furthermore, we delve into the future possibilities of ART, including gene editing and the use of artificial wombs, and the impact they could have on society.



## BIOMEDICAL ENGINEERING

### **Introduction to biomedical engineering**

This lecture is an overview of biomedical engineering and its branches of specialisation. This session also introduces students to careers in the biomedical engineering field, including designing prosthetics, research and development in healthcare technology industry and clinical engineering opportunities in the NHS.

### **Biomedical signal and image analysis**

This lecture introduces the field of biomedical signal and image processing. It focuses on different biomedical signals, biomedical images and data analysis to extract parameters useful for healthcare professionals to make decisions on patient care pathways. Students will be introduced to different career prospects in the biomedical engineering field.

### **Biomechanics, prosthetics and Paralympics**

This lecture focuses on biomechanics and its applications in prosthetics. Students will also be introduced to different career prospects in the biomedical engineering field.

### **Wearable sensors and health monitoring**

This lecture introduces wearable sensors which are used to monitor physiological measurements unobtrusively for various healthcare applications. Students will also be introduced to different career prospects in the biomedical engineering field.

## SPORT

### **Studying sport at BCU**

In 2022, the Commonwealth Games were held in Birmingham. Students on Sports Courses at BCU will benefit directly from the legacy of this mega-event. This talk covers the sport programmes on offer at BCU as well as highlight some of the amazing career opportunities that graduates can aim for.



Session dates are negotiable. For further information or to book, please get in touch [here](#)