

2020

**MEDICINE
VIRTUAL
SUMMER
SERIES**

MEDICAL

**MINDS
UNDERGROUND™**



2020

SUMMER SERIES OVERVIEW

Our Virtual Summer Series aim to widen your knowledge over the summer period, under the expert guidance of our team of Oxbridge graduates, giving you the opportunity to acquire or develop skills and expertise relevant to your subject interests, in preparation for future university entrance, including personal statement writing and potential interviews.

Each class is hosted by a specialist in the field, with an emphasis placed on deepening subject knowledge and inspiring you in your independent preparation. Come armed with questions, notebooks, a readiness to engage in critical discussion and ensure you keep a file with notes on each session to refer back to when it comes to applications.

- All classes will take place over Zoom. Ensure you have Zoom downloaded, with the latest updates installed and test your internet connection to avoid any problems
- Zoom links will be sent out prior to the Summer School commencing
- Mentors may set some light pre-reading/ tasks prior to classes. You will be notified if this is the case and no work will be compulsory
- Post-session reading lists will be issued for you to engage in further independent exploration where applicable

LOGISTICAL DETAILS

2020

MEDICINE SUMMER SERIES

MEDICAL ETHICS & THE END OF LIFE CARE

This session will focus on the four pillars of medical ethics and popular ethical philosophies, which can be applied to any ethical scenario. The focus on this session will be on end of life care – an often contentious topic and one asked about in medical school interviews. Those with little knowledge of the ethical pillars will be sent some short pre-reading to ensure they are up to speed.



HOST: SÍLE (PHD BIOMEDICAL SCIENCES, GLASGOW & MEDICINE, UNIVERSITY OF OXFORD)

Síle is a graduate medical researcher at Oxford University with a PhD in Biomedical Sciences (in cancer immunology), carried out within a mucosal immunology group. She has published numerous medical research papers in respected scientific journals, specialising in Molecular Functions in Disease and Immunology. Síle has acted as a university tutor and supervisor for both Medicine and Biology undergraduate students.

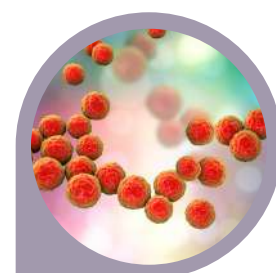
INTRODUCTION TO SCIENTIFIC RESEARCH STUDIES

Being a doctor means you also have to be a bit of a scientist. This characteristic is often examined at medical school interviews, but also in personal statements and aptitude tests. Therefore, here we will discuss some of the common types of research studies carried out, debate the advantages and disadvantages of each and introduce you to the statistics which govern the significance of the results found in these studies.

HOST: SÍLE (MEDICINE, UNIVERSITY OF OXFORD)

SOLVING ANTIBIOTIC RESISTANCE

Since their introduction in the 1930's, antibiotics have saved millions of lives worldwide. However, we now see resistance to almost all antibiotics ever produced. This class will discuss how antibiotic resistance occurs, and the methods being used across the world to combat this problem, from ACT's in malaria to bacteriophages – viruses which naturally attack specific bacteria.

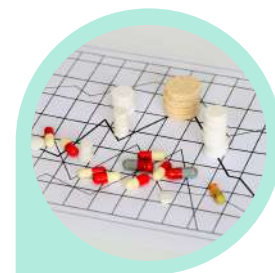


HOST: RHIANNON (BACHELOR OF MEDICINE AND SURGERY, UNIVERSITY OF WARWICK AND EXPERIMENTAL PSYCHOLOGY, UNIVERSITY OF OXFORD)

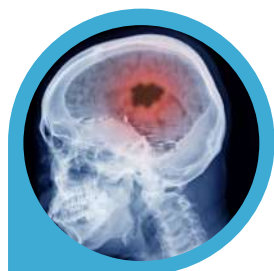
Rhiannon has a range of experience in both a psychological and medical capacity, including work in the Oxford Perception Lab on Stargardt disease and with mental health charity, Restore. She is the recipient of numerous awards including the Proxime Accessit for the Weiskrantz Prize in Psychological Studies and Domus Scholarship from the University of Oxford.

DISSECT THE DIAGRAM: INTERPRETATION EXERCISES

Diagrammatic information – schematics, medical imaging and test results can often make up a portion of a medical school interview. Here, we will discuss approaches to dealing with such diagrams on the basis of first principles for individual modalities.



HOST: SÍLE (MEDICINE, UNIVERSITY OF OXFORD)



STRIPPING BACK THE SKULL: AN INTRODUCTION TO THE STRUCTURE AND FUNCTION OF THE BRAIN

The human brain is an immense mass of worm-like tissue. Incredibly, this defines us as humans, and is almost surprisingly structured in a fairly ordered manner. This masterclass is an introduction to neuroanatomy; it highlights how different parts of the brain have segregated functions, and begins to explore how this is relevant to clinical practice.

HOST: HARRY (MEDICINE, UNIVERSITY OF CAMBRIDGE)

Harry transferred to a study of Medicine following a First Class degree in Neuroscience. He is recipient of the Trinity College, Cambridge "Rashbass prize" for Medical Sciences and Physiology.

HOW DO WE LEARN, RETAIN & RECALL INFORMATION AND HOW DOES ALZHEIMER'S DISEASE DEGRADE THIS PROCESS?

This masterclass begins with an introduction into how neurons are structured, how they function, and how they can adapt to enable us to learn. Following this, you will look at how these critical neural functions are degraded in neurodegenerative diseases such as Alzheimer's disease, and why such diseases are currently so debilitating and incurable.



HOST: HARRY (MEDICINE, UNIVERSITY OF CAMBRIDGE)

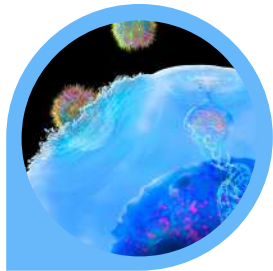


HOW DO WE FEEL PAIN?

How do we feel pain? How do we stop this process, and when & what painkillers are appropriate in clinical practice? In this masterclass, you will explore how the pathway of pain is structured - from peripheral sensation to central interpretation. Furthering this, the mechanism of action of some key painkillers is discussed, and which are appropriate to use in different forms of pain.

HOST: HARRY (MEDICINE, UNIVERSITY OF CAMBRIDGE)

GENETIC ENGINEERING IN MEDICINE



Exciting advances in genetic engineering technologies such as CRISPR-Cas9 have opened up exciting possibilities for potentially curing a range of diseases, from cancer to malaria. In this topic we will discuss how gene therapy works, explore the diverse range of applications it may have and the hurdles still to overcome to ensure it is effective and safe for use.

HOST: ESMEE (BSC BIOLOGICAL NATURAL SCIENCES & MASTERS IN BIOCHEMISTRY, UNIVERSITY OF CAMBRIDGE)

Esmee gained the highest mark across the University in her BSc degree and received multiple awards: the Richard Perham 1st Prize, OUP Achievement in Chemistry Prize & the Winifred Pollard Memorial Prize. Esmee applies her academic acumen to work experience in medical fields, for example, to produce a strategy report for the charity Deafblind UK as a Social Innovation Project, and a placement at a pharmaceutical consultancy, CBPartners.

THE FUTURE OF MEDICINE

The class explores the role of technology in medicine and health, and the changes we may expect in the coming decades.

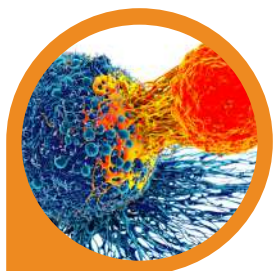
HOST: RHIANNON (BACHELOR OF MEDICINE AND SURGERY, UNIVERSITY OF WARWICK AND EXPERIMENTAL PSYCHOLOGY, UNIVERSITY OF OXFORD)



WILL WE EVER FIND A CURE FOR CANCER?

What is cancer? What are the current treatments used, and how can we look towards finding new cures?

HOST: RHIANNON (BACHELOR OF MEDICINE AND SURGERY, UNIVERSITY OF WARWICK AND EXPERIMENTAL PSYCHOLOGY, UNIVERSITY OF OXFORD)



DATA INTERPRETATION STATION: BEAT THE BAR CHART

Graphical data from scientific publications often makes up a section of medical school interviews – be these bar charts, survival curves, forest plots or more. We will discuss the fundamental approach to explaining & discussing multiple types of data as well as how to answer potential questions which can follow.

HOST: SÍLE (MEDICINE, UNIVERSITY OF OXFORD)



MASTER THE INTERVIEW

Interview prep is often one of the most stressful aspects of medical school applications. This session will cover examples of commonly asked interview questions (and answers!), and coping strategies for answering difficult questions. You will also discuss the general patter of an interview, how to best represent yourself and a handy list of 'do's' and 'don'ts'.

HOST: SÍLE (MEDICINE, UNIVERSITY OF OXFORD)



MEDICINE CALENDAR

Please find your calendar for the 12 Medicine Summer Series classes below! You will receive some light pre-reading before each session and suggestions for further independent exploration (reading, problem sheets, podcasts etc.) post-session, if applicable.



SAT 13TH JUNE Medical Ethics & The End of Life Care (Síle) 11-12pm	SAT 20TH JUNE Alzheimer's Disease (Harry) 11-12pm	SAT 27TH JUNE Solving Antibiotic Resistance (Rhiannon) 11-12pm	SAT 4TH JULY Dissect the Diagram: Interpretation Exercises (Síle) 11-12pm
SAT 11TH JULY Stripping Back the Skull (Harry) 11-12pm	SAT 18TH JULY Introduction to Scientific Research Studies (Síle) 11-12pm	SAT 25TH JULY How Do We Feel Pain? (Harry) 11-12pm	SAT 1ST AUG Genetic Engineering in Medicine (Esmee) 11-12pm
SAT 8TH AUG The Future of Medicine (Rhiannon) 11-12pm	SAT 15TH AUG Will We Ever Find a Cure For Cancer? (Rhiannon) 11-12pm	SAT 22ND AUG Data Interpretation Station: Beat the Bar Chart (Síle) 11-12pm	SAT 29TH AUG Master the Interview (Síle) 11-12pm