APPLICATION OF GENOMICS IN INFECTIOUS DISEASE

Duration	5 days of face-to-face teaching plus self-directed learning
Cost:	£1250. If you are an NHS employee, full funding is available through Health Education England
Tutors:	Prof Philip Butcher – St George's University of London Institute of Infection and Immunity, Prof of Molecular Medical Microbiology
	Dr Ken Laing – St George's University of London Institute of Infection and Immunity, Reader in Genomics and Bioinformatics
	Dr Adam Witney - St George's University of London Institute of Infection and Immunity, Reader in Bioinformatics
Location:	St George's University of London

This module will span the genomic structure of infectious agents, implication of acquisition or loss of nucleotides, genes and plasmids on pathogenicity, sensitivity of a pathogen to drug treatment and response to the host.

AIMS

To describe how genomics can be used to:

- Provide more accurate diagnosis of infectious diseases
- Define the genetic basis of antimicrobial resistance and its spread
- Predict which antimicrobials are likely to be more effective clinically
- Provide surveillance and control of infectious disease in populations
- Investigate mechanisms of infectious disease pathogenesis
- Define genetic heterogeneity in pathogens
- Explain host susceptibility to infections

LEARNING OUTCOMES

On successful completion of the module, students should be able to:

- Explain the differences between the genomes of prokaryote and eukaryote pathogens.
- Discuss and appraise how the genome sequence of pathogens can be used to track cross-infection and outbreaks of infections in hospitals and the community.
- Critically evaluate how genomics can facilitate the use of drugs in controlling infection
- Critically evaluate the molecular basis of drug resistance in some infections
- Explain how genomics facilitates drug research
- Evaluate how sequencing of the genome of infective organisms can be used in infectious disease for assessing: diagnosis, sub-classification and strain identity, pathogenicity, drug resistance and drug selection; public health surveillance and epidemic control.
- Evaluate the clinical impact of infectious diseases genomics
- Develop a clear vision of the possible future implementation of infectious disease genomics into medical practice.

ENTRY REQUIREMENTS

Applicants should have a minimum of a lower second class degree (2:2) in a subject that offers an appropriate grounding in genetics and infectious disease. Alternative professional qualifications may be considered.

PREREQUISITES

We offer Massive Open Online Courses (MOOCs) which you can study online to deepen your understanding.

We suggest the following courses:

The Genomics Era: the Future of Genetics in Medicine

Genomic Technologies in Clinical Diagnostics: Molecular Techniques

Genomic Technologies in Clinical Diagnostics: Next Generation Sequencing

These courses are available at: www.futurelearn.com/partners/sgul

More information at kcl.ac.uk/genomicmedicine
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