# BIOINFORMATICS, INTERPRETATION, STATISTICS AND DATA QUALITY ASSURANCE

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| 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 Tim Hubbard – King's College London Department of Medical and Molecular Genetics, Prof of Bioinformatics and Head of Genome Analysis at Genomics England |
| | Prof Richard Dobson – King's College London, NIHR Biomedical Research Centre, Prof of Medical Informatics |
| Location: | King's College London (Waterloo campus) |

**The main challenge for the application of genomic data is in its analysis and interpretation. This module will enable you to gain the knowledge and understanding required to critically interpret existing genomic research, to develop the skills to formulate your own research questions as well as to collect, analyse and interpret your own patient data using a basic range of statistical and bioinformatics techniques.**

## AIMS

Provide you with a basic understanding and knowledge of bioinformatics related to the analysis of next generation sequencing data (NGS); including the analysis and interpretation of NGS data, assessment of NGS quality, and its application in Genomic Medicine, specifically the 100,000 Genome Project.

## LEARNING OUTCOMES

On successful completion of the module, you will have an understanding and knowledge of or be able to:

- Analyse the quality of sequencing data, align sequences to a reference genome, call and annotate sequence variants, and apply filtering strategies to identify pathogenic mutations in sequencing data.
- Interrogate of common data sources, e.g. of genomic sequence, protein sequences, variation, pathways and integration with clinical data, to assess the pathogenic and clinical significance of the genome result.
- Apply relevant basic computational skills and statistical methods to handle and analyse sequencing data for application in both diagnostic and research settings.
- Overview of the Genomics England programme.
- Justify and defend the Professional Best Practice Guidelines for the diagnosis and reporting of genomic variation.

## 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, healthcare or bioinformatics. Alternative professional qualifications may be considered. Recommended other modules from our Genomic Medicine portfolio that would form appropriate pre-learning include the Genomics of Common and Rare Disease module and the Omics Techniques and Technologies and Their Application to Genomic Medicine.

## 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**
**Apply via sgul.ac.uk/genomics**