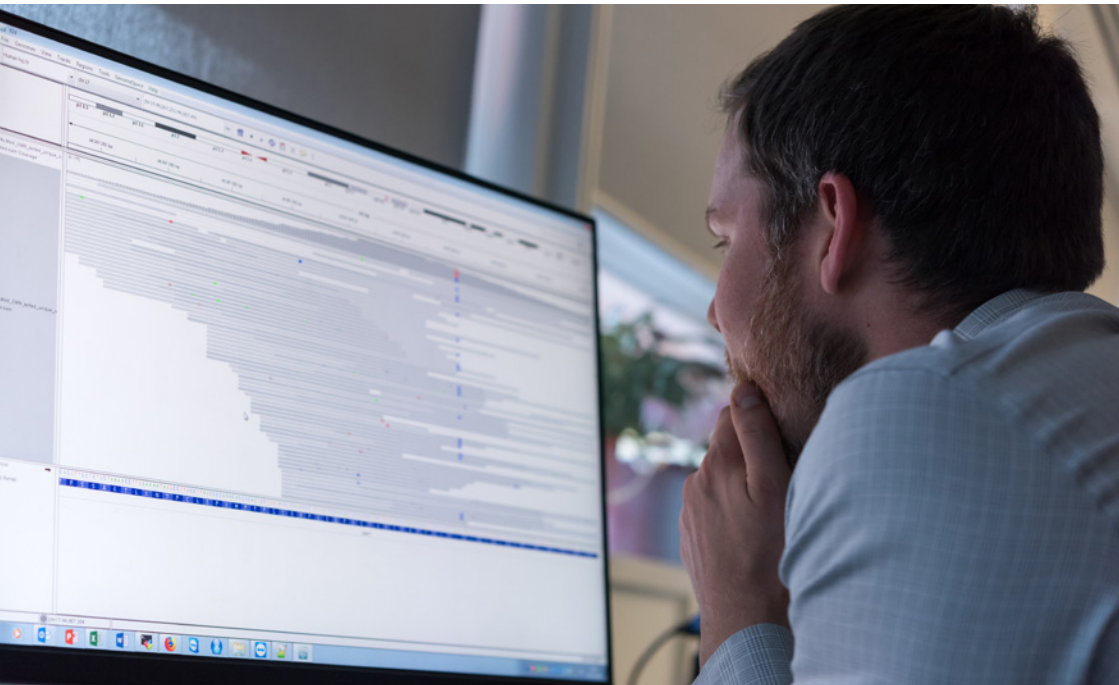


ADVANCED BIOINFORMATICS: PRACTICAL BIOINFORMATICS SKILLS

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 Dr Anders Eriksson – King's College London Department of Medical and Molecular Genetics
Location:	King's College London (Waterloo campus)



This module builds upon and extends the module ‘Bioinformatics, interpretation, statistics and data quality assurance’ (a pre-requisite for the module). You will further explore state-of-the-art bioinformatics pipelines for interpretation of genetic data in a clinical context, suitable for studying genetic variants underlying Mendelian diseases, cancer genetics, and RNA expression data using Galaxy, and also be introduced to basic bioinformatic data skills using the command line, R/RStudio and Bioconductor.

AIMS

- Understand the differences between different genetic data from a bioinformatics perspective
- Pick the appropriate bioinformatics pipelines for different genomics analysis
- Learn basic NGS Bioinformatic data handling skills using the command line, R/RStudio, Bioconductor and online tools

LEARNING OUTCOMES

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

- Comprehend how different mapping tools (bwa, star) are suitable for different types of genetic data and analysis
- Set up bioinformatics pipelines suitable for a given analysis using Galaxy and the command line
- Perform variant calling and annotation for cancer genomics
- Use family and trio data to prioritise variants
- Perform bioinformatics and analysis of RNA expression data
- Use Genome Browsers and creating custom data tracks for genome-wide association analysis
- Create simple scripts to manipulate large genomic datasets using command line tools
- Use R/RStudio and Bioconductor to analyse gene expression data and produce simple visualisations

ENTRY REQUIREMENTS

Applicants should have a minimum of a lower second class degree (2:2) in a subject that offers an appropriate grounding in science, genetics or healthcare. Alternative professional qualifications may be considered. Candidates for this module must already have completed the ‘Bioinformatics, interpretation, statistics and data quality assurance’ module.

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