Module Details

Module Title	Genomics and Personalised Medicine
Module Code	CLS6012-B
Academic Year	2024/5
Credits	20
School	School of Pharmacy and Medical Sciences
FHEQ Level	FHEQ Level 6

Contact Hours

Type	Hours
Lectures	12
Practical Classes or Workshops	10
Directed Study	178

Availability

Occurrence	Location / Period
BDA	University of Bradford / Semester 1

Module Aims

The module aims to develop knowledge and understanding of advanced concepts related to genomics and personalized medicine, including an understanding of the underlying science and technologies employed in the field. It further aims to apply these concepts in a medical, clinical and social context, including their relevance to the identification of biomarkers and the application of precision medicine. The module also aims to provide an understanding and critical appraisal of novel therapies and diagnostic advancements in personalized medicine, including strategies to stratify and manage patients. It will also promote enquiries into the ethical and social implications of applied genomics and related technologies and to understand their commercial applications.

Outline Syllabus

The module will cover the underlying theories of genes, genomes and epigenetics relevant to human disease. It will then survey the technologies that detect and analyse these changes, including genomics, proteomics, metabolomics, whole genome and RNA sequencing in research and health care settings. These topics will be related to the diagnosis, monitoring and treatment of human disease. The role of genomics and related technologies will be further explored in common and rare inherited diseases, cancer, as well as infectious diseases. A specific focus will be on the development of novel treatment strategies such as gene editing and the stratification of patients using genome-based personalized medicine. The module will also cover the ethical and social implications of applied genomics as well as its commercial potential.

Learning Outcomes

Outcome Number	Description
O1	Demonstrate a systematic understanding of genes, genomes and epigenetics relevant to human health and disease and have an appreciation of the validity and limits of this knowledge.
O2	Critically assess different methodologies related to genomics and personalised medicine.
O3	Apply the principles of genomics and related research fields to the diagnosis and treatment of disease.
O4	Apply knowledge and understanding to allow effective critical appraisal of research literature.
O5	Critically assess the ethical, societal, and economic implications of genomics and personalised medicine.

Learning, Teaching and Assessment Strategy

The knowledge and understanding required for this module is delivered via a combination of lectures, seminars and workshops incorporating case- and team-based learning. The lectures will provide the students with the essential background knowledge in Genomics and Personalized Medicine. Seminars and workshops will support the students in refining and practicing their knowledge using examples from the scientific literature and case-based scenarios. In addition, students will undertake practical workshops, where they will explore principles of analysing genomics-based data and the effective use of online databases for the analysis of genomic data. Students will also be assigned directed reading to support and develop the concepts covered in these sessions. The assessment strategy is based around coursework to provide students with the opportunity to demonstrate the application of knowledge and understanding. It will consist of a critical report and a presentation, including an oral delivery. The assessments will require the students to show a critical appraisal of both background theory and quality research literature.

Mode of Assessment

Type	Method	Description	Weighting
Summative	Presentation	Oral presentation (15 minutes)	30%
Summative	Coursework - Written	Critical report (3500 words)	70%

Reading List

To access the reading list for this module, please visit https://bradford.rl.talis.com/index.html

Please note:
This module descriptor has been published in advance of the academic year to which it applies. Every effort has been made to ensure that the information is accurate at the time of publication, but minor changes may occur given the interval between publishing and commencement of teaching. Upon commencement of the module, students will receive a handbook with further detail about the module and any changes will be discussed and/or communicated at this point.