UNIVERSITY of BRADFORD

Module Descriptor

Module Details	
Module Title	Medical Genetics
Module Code	BIS6011-B
Academic Year	2021/2
Credits	20
School	School of Chemistry and Biosciences
FHEQ Level	FHEQ Level 6

Contact Hours	
Type	Hours
Lectures	24
Practical Classes or Workshops	3
Directed Study	167

Availability	
Occurrence	Location / Period
BDA	University of Bradford / Semester 1

Module Aims

Develop a comprehensive understanding and detailed knowledge of how variation in the human genome contributes to disease. Deepen students' knowledge of molecular biology of the gene, linking errors in the molecular mechanisms responsible for gene expression to specific diseases. Inform student's how genetic variability can either directly lead to specific diseases, such as cystic fibrosis, or predispose individuals to complex disorders, including diabetes, heart disease and cancer.

Make students aware of how genetic diseases are inherited and how inheritance is predicted. Promote an understanding of how advances in genetics are driving forward research into novel treatments for many of the diseases described throughout the module.

Outline Syllabus

Topics such as human genome structure, next generation sequencing, bioinformatics, epigenetics, gene expression, mRNA processing, non-coding RNA and disease. The role of genetic variability either as a direct cause of, or a predisposing factor to human diseases such as cancers and hereditary disorders. The use of gene therapy and stem cells for novel treatment of disease. Single gene disorders, multifactorial disease and genetic linkage, including case studies of various related disease.

Learning Outcomes	
Outcome Number	Description
01	Discuss the detailed structure of the eukaryotic (human) genome (HCPC standard 13).
02	Review how the expression of eukaryotic genes is regulated at the level of transcription and post-transcriptionally (HCPC standard 13)
03	Critically appraise the effects of genes and genetic factors (including epigenetics) in health and disease; discuss in detail, specific examples of human disease with genetic aetiologies (HCPC standards 2, 13)
04	Evaluate the methods used to investigate genes (their function and their expression), genetic mutations and polymorphisms (HCPC standards 2, 13).
05	Observe and interpret clinical and laboratory data relating to genetic studies, engage with problem solving aspects of mutation detection and determining the relative risk of genetic inheritance via pedigree analysis (HPC standards 8, 14)
06	Demonstrate personal responsibility for self-directed learning and time management (HCPC standards 1, 3).
07	Reflect and review your practice (HCPC standard 11/12).

Learning, Teaching and Assessment Strategy

The curriculum to develop the knowledge and understanding required for this module is delivered in lectures. The core knowledge for this module is supplemented by reference to current published scientific literature which requires extensive further reading and autonomous learning by the students. Development of knowledge and understanding and other skills, such as problem solving, is also achieved using workshop sessions. In the workshops you will work individually to research information, interpret data, solve problems and develop your understanding of medical genetics. The workshop exercises will require you to work under pressure and are first formatively and then summatively assessed. During directed study hours, students are expected to undertake reading to consolidate and expand on the content of formal taught sessions; research and prepare for assessments; revise material from formal taught sessions; and undertake specific elements of reading as directed.

Mode of Assessment

Type	Method	Description	Weighting
Summative	Short-Time Limited Online Examination	Essay-vased examination of module topics (1500 words)	40%
Summative	Presentation	Presentation on a specific disease mutation (15 Mins)	60%

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.

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