

Molecular Genetics

Module Code:	BIS5014-B
Academic Year:	2018-19
Credit Rating:	20
School:	School of Chemistry and Biosciences
Subject Area:	Biomedical Science
FHEQ Level:	FHEQ Level 5
Module Leader:	Dr Steven Picksley

Additional Tutors:
Dr Mark Sutherland

Pre-requisites:	Human Genetics and Developmental Biology 2017-18,
Co-requisites:	

Contact Hours

Type	Hours
Lectures	5
Tutorials	18
Laboratory	6
Directed Study	171

Availability Periods

Occurrence	Location/Period
BDA	University of Bradford / Semester 2 (Feb - May)

Module Aims

To extend knowledge of molecular genetics and recombinant DNA technology building on knowledge acquired at level 4.

Outline Syllabus

The bacterial genome, DNA replication and fidelity of replication in bacteria. Mutagenesis, gene exchange between bacteria, control of gene expression in prokaryotic systems.

Concepts of gene cloning and clone identification. Impact of recombinant DNA technology on research and biotechnology. Introduction to DNA manipulation techniques, cloning vehicles, gene libraries, PCR technology and DNA hybridization techniques, Eukaryotic genome organization, regulation and mechanisms of eukaryotic gene expression, regulatory RNA, model organisms.

Genetics based problems; prepare data in a suitable format for interpretation; use correct biomedical and medical language and terminology; use the correct scientific units and be able to interconvert units; analyse and evaluate the data collected. Demonstrate practical skills in: electrophoretic techniques, molecular biology techniques and quantification of microorganisms; work in accordance with laboratory safety protocols (HCPC standards 3, 8, 14, 10, 11/12, 15).

Module Learning Outcomes

On successful completion of this module, students will be able to...

- 1 Discuss the fundamental principles and techniques of recombinant DNA technology in prokaryotic and eukaryotic systems and explain their applications.
- 2 Discuss the structure of prokaryotic and eukaryotic genomes, the regulation of gene expression and evaluate the associated investigative techniques in genetics disorders (HCPC standard 13).
- 3 Demonstrate proficiency in the HCPC standards as outlined in the syllabus.
- 4 Recognise the need for effective self-management of workload and resources and practise accordingly; demonstrate personal responsibility for self-directed learning; use research, reasoning and problem solving; maintain records appropriately (HCPC standards 1, 14, 10).
- 5 Work as part of a team to interpret data, plan experimental work and work to deadlines.

Learning, Teaching and Assessment Strategy

Students will develop the knowledge, understanding and skills necessary to meet the learning outcomes of the module through team- based learning. Students will study the core knowledge-based content of the module out of class; this is then assessed through a series of individual readiness assurance tests (i-RAT), which are MCQ assessments for learning taken at regular intervals throughout the academic year. Students discuss the i-RAT assessment in teams of 5-7 and retake the assessment as a team (t-RAT). In class sessions, students will apply their new knowledge to a number of formative and summative team application exercises during the semester.

Attainment of learning outcomes will be assessed through a summative module exam at the end of the stage. To pass the module, students will need to demonstrate a pass standard of 40% in the module overall.

Supplementary Assessment for the module is as original, the only exception is for the Peer Review of Team performance component where the supplementary will be a reflection

exercise.

Mode of Assessment

Type	Method	Description	Length	Weighting	Final Assess'
Summative	Examination - closed book	Includes an MCQ section and a synoptic essay (LO 1-5)	1.5 hours	60%	Yes
Summative	Coursework	On-going auditive assessment (i-RAT 5%, t-RAT 15%, Team Application Exercise 15%, & Peer review of performance in Team 5% (LO1-5)	ongoing	40%	No

Legacy Code (if applicable)

BM-5122D

Reading List

To view Reading List, please go to [rebus:list](#).