Module Specification

Molecular Cell Biology

Version: 2025-26, v4.0, Approved

Contents

Part 1: Information

Module title: Molecular Cell Biology

Module code: USSJXR-15-2

Level: Level 5

For implementation from: 2025-26

UWE credit rating: 15

ECTS credit rating: 7.5

College: College of Health, Science & Society

School: CHSS School of Applied Sciences

Partner institutions: None

Field: Applied Sciences

Module type: Module

Pre-requisites: Cells, Biochemistry and Genetics 2024-25, Cells, Biochemistry and Genetics 2025-26

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: This module complements the optional level two modules and provides adequate foundation knowledge of key concepts, which will be vital for level three studies.

Pre-requisites: Students must have passed Cells, Biochemistry and Genetics USSKA4-30-1 before starting this module.

Features: Not applicable

Educational aims: The module will also equip students with essential laboratory techniques such as cell culture, key molecular techniques such as DNA isolation from mammalian cells, endpoint PCR, and DNA sequencing, followed by cutting-edge genomic analysis and their application to the study and diagnosis of disease. Also, genomic, transcriptomic and proteomic methods used to analyse and study human chromosomes and DNA, thereby, enhancing the repertoire of practical skills of UWE graduates.

Outline syllabus: Molecular Cell Biology examines the molecular basis of genetic disease; from altered genotype to diseased phenotype.

Molecular and Cell Biology will uncover:

The nature of DNA mutations and their effects on protein structure and function

How altered protein structure and function affects cellular biology including cell signalling, metabolism and tissue homeostasis

The subsequent pathological consequences of altered cellular biology

Bioinformatics and systems biology: the computation of high volumes of biological data and the properties of a network of interacting components in a system, as well as the components themselves, including an appreciation of the algorithms to decipher biological relationships.

Part 3: Teaching and learning methods

Teaching and learning methods: The module will be delivered as a series of lectures and laboratory practical classes with hands on experience of laboratory techniques and computational data analysis.

Module Learning outcomes: On successful completion of this module students will achieve the following learning outcomes.

MO1 Understand how genetic mutations affects protein structure and function, cellular physiology and tissue homeostasis in the pathology of disease.

MO2 Develop skills in molecular techniques, data analysis and interpretation in the context of research and diagnosis of disease.

Hours to be allocated: 150

Contact hours:

Independent study/self-guided study = 114 hours

Face-to-face learning = 36 hours

Reading list: The reading list for this module can be accessed at readinglists.uwe.ac.uk via the following link https://uwe.rl.talis.com/modules/ussjxr-15-2.html

Part 4: Assessment

Assessment strategy: Assessment: Set Exercise
Interpretation of laboratory techniques and data .
An online quiz, after each practical session, which reviews the content of each practical session and examines the students ability to recognise and perform molecular techniques and interpret the data generated. There will be a series of six online quizzes to be completed after each practical session, and they will last approximately 10 minutes each.

Formative assessment opportunities will be presented following each practical.

Assessment tasks:

Set Exercise (First Sit)
Description: Interpretation of laboratory techniques and data (6 x 10 minutes).
Weighting: 100 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO1, MO2

Set Exercise (Resit)
Description: Interpretation of laboratory techniques and data (6 x 10 minutes).
Weighting: 100 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO1, MO2

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Biomedical Science [Frenchay] BSc (Hons) 2023-24

Biomedical Science {Foundation} [Frenchay] BSc (Hons) 2023-24

Biomedical Science [Frenchay] MSci 2023-24

Biomedical Science {Foundation} [Frenchay] MSci 2023-24

Biomedical Science [Frenchay] - WITHDRAWN MSci 2024-25

Biomedical Science [Frenchay] BSc (Hons) 2024-25

Biomedical Science [Frenchay] BSc (Hons) 2024-25

Biomedical Science [Frenchay] BSc (Hons) 2022-23

Biomedical Science [Frenchay] MSci 2022-23