Module Definition Form (MDF)

Module code: MOD002875	**Version:** 11 **Date Amended:** 06/Dec/2023

1. Module Title
Molecular Cell Biology (BMS)

2a. Module Leader
Linda King

2b. School
School of Life Sciences

2c. Faculty
Faculty of Science and Engineering

3a. Level
6

3b. Module Type
Standard (fine graded)

4a. Credits
15

4b. Study Hours
150

5. Restrictions

Type	Module Code	Module Name	Condition
Pre-requisites:	None		
Co-requisites:	None		
Exclusions:	None		
Courses to which this module is restricted:	Biomedical Science, Bioscience, Bioinformatics degree courses, Life Sciences framework		

LEARNING, TEACHING AND ASSESSMENT INFORMATION

6a. Module Description

Molecular cell biology is at the cutting edge of modern biological and biomedical science. We will be building on your knowledge and understanding of cell structure and function at the molecular level, questioning evidence from experiments that have contributed to our modern understanding of concepts and models of cell function. You will explore techniques such as fluorescence microscopy, viral transfection and recombinant DNA technology, bioinformatics, and the range of methods for isolating proteins and DNA. You will investigate the molecular structure and biological function of cell organelles, looking in detail at processes such as regulation of gene expression, signal transduction, protein trafficking, endocytosis, and cytoskeletal changes. We will look throughout at examples of diseases where cell biology is altered, concluding in a focus on cancer.

Throughout this module we will encourage you to question how we know what we know. A focus on problem-solving will help you to develop essential scientific employability skills including the ability to question experimental evidence, apply experimental logic, and devise, sustain and present scientific arguments. You will also develop practical and bioinformatics skills, key to being a successful modern molecular cell biologist.

6b. Outline Content

- review of molecular cell biology techniques such as visualising cells, and manipulating proteins and DNA

- presentation of experimental evidence which has contributed to our current knowledge and understanding of molecular cell biology

- applications of bioinformatics in determination of cell and molecular function

- structure and functions of the nucleus, mitochondria, plasma membrane and endomembrane system

- processes of membrane transport, cell signalling, protein targeting, endocytosis, and cytoskeletal changes

- subversion of cell processes by pathogens, with a focus on viral transfection mechanisms and their applications in cell biology

- the cellular and molecular basis of cancer

6c. Key Texts/Literature

The reading list to support this module is available at: https://readinglists.aru.ac.uk/

6d. Specialist Learning Resources

None

7. Learning Outcomes (threshold standards)		
No.	**Type**	**On successful completion of this module the student will be expected to be able to:**
1	Knowledge and Understanding	With reference to key experimental evidence, discuss our current understanding of the structure and function of components and processes in eukaryotic cells.
2	Knowledge and Understanding	With reference to a toolkit of molecular cell biology techniques, apply this knowledge to designing experimental approaches to investigate cell function.
3	Intellectual, practical, affective and transferrable skills	Demonstrate competence in key practical skills, such as visualising proteins to understand their function.
4	Intellectual, practical, affective and transferrable skills	Develop effective transferable skills including problem solving, teamwork and scientific written and online communication

8a. Module Occurrence to which this MDF Refers				
Year	**Occurrence**	**Period**	**Location**	**Mode of Delivery**
2025/6	ZZF	Template For Face To Face Learning Delivery		Face to Face

8b. Learning Activities for the above Module Occurrence			
Learning Activities	**Hours**	**Learning Outcomes**	**Details of Duration, frequency and other comments**
Lectures	30	1-4	10 x 3 hr interactive lectures with case studies
Other teacher managed learning	6	1-4	3 hr computer workshop + 3 hr revision
Student managed learning	114	1-4	Background reading, online activities, preparation for lectures and practicals, and completion of assessments
TOTAL:	150		

9. Assessment for the above Module Occurrence					
Assessment No.	**Assessment Method**	**Learning Outcomes**	**Weighting (%)**	**Fine Grade or Pass/Fail**	**Qualifying Mark (%)**
010	Coursework	1-4	60 (%)	Fine Grade	40 (%)
Coursework; 2000 words equivalent (40% Qualifying Mark as stipulated by the IBMS)					
Assessment No.	**Assessment Method**	**Learning Outcomes**	**Weighting (%)**	**Fine Grade or Pass/Fail**	**Qualifying Mark (%)**
011	Examination Cambridge	1-3	40 (%)	Fine Grade	40 (%)
Examination; 1 hour (40% Qualifying Mark as stipulated by the IBMS)					

In order to pass this module, students are required to achieve an overall mark of 40% (for modules at levels 3, 4, 5 and 6) or 50% (for modules at level 7*).

In addition, students are required to:
(a) achieve the qualifying mark for each element of fine graded assessment as specified above
(b) pass any pass/fail elements

[* the pass mark of 50% applies for all module occurrences from the academic year 2024/25 – see Section 3a of this MDF to check the level of the module and Section 8a of this MDF to check the academic year]