

Summary Information

Module Code	7103BTBMOL
Formal Module Title	Advanced Biotechniques
Owning School	Pharmacy & Biomolecular Sciences
Career	Postgraduate Taught
Credits	20
Academic level	FHEQ Level 7
Grading Schema	50

Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings
Pattanathu Rahman	Yes	N/A

Module Team Member

Contact Name	Applies to all offerings	Offerings
Jason Birkett	Yes	N/A
Amanda Reid	Yes	N/A
Laura Randle	Yes	N/A
Kate Evans	Yes	N/A
Jari Louhelainen	Yes	N/A

Partner Module Team

Contact Name	Applies to all offerings	Offerings
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Teaching Responsibility

LJMU Schools involved in Delivery
Pharmacy & Biomolecular Sciences

Learning Methods

Learning Method Type	Hours
Lecture	28
Tutorial	10

Module Offering(s)

Offering Code	Location	Start Month	Duration
SEP-CTY	CTY	September	12 Weeks

Aims and Outcomes

Aims	The module will provide students with the principles of diverse techniques and their applications as they are currently utilised in the fields of biotechnology/biomedical sciences. It will also provide a platform for gaining an advanced understanding of these techniques and novel disruptive technologies that may replace them through facilitated and independent assessment of the recent research literature. Assessment of the literature will also allow students to develop and demonstrate their ability to conduct independent research and present information on specific principles and applications of biotechnology using a range of presentation media. Through the assessments the module will further hone the writing and presentation skills of the students and their ability to assimilate and critique scientific literature at a postgraduate level.
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Learning Outcomes

After completing the module the student should be able to:

Code	Description
MLO1	Display an advanced understanding of the principles of a range of techniques employed in the fields of biotechnology and biomedical sciences.
MLO2	Critically review the applications of biotechniques used in commercial and research settings.
MLO3	Critically discuss the development of novel single cell technologies and their application in biotechnology and biomedical sciences
MLO4	Assimilate and communicate complex information clearly to specialist and non-specialist audiences.

Module Content

Outline Syllabus

This module will cover aspects of the following techniques: 1. Molecular Biology - Electrophoresis, PCR, Protein purification/separation, Next Generation sequencing, microarray technology 2. Analytical Techniques - Flow Cytometry, Plate Reader technologies, Immunomagnetic Technologies, Chromatography, Mass Spectrometry, 3. Imaging Technology - Scanning Probe Microscopy, Electron microscopy, Fluorescence microscopy 4. Single Cell Technology - Flow cytometry, imaging and laser micro-dissection, Mass Cytometry, Cell separation techniques, Intro to single cell genomics.

Module Overview

Additional Information

This module will provide students with an understanding of some of the cutting edge biotechniques and their applications currently used in the field of biotechnology and biomedical sciences. This module will link to topics covered in other modules on the programmes and will focus on four broad themes, molecular techniques, analytical techniques, imaging technology and single cell technologies. All lectures will be covered by experts in their respective fields who will introduce the basic principles of the techniques and how these techniques are employed throughout biotechnology and biomedical settings, both in industry and academia. Students will be expected to advance their knowledge of the topics covered in lectures throughout the programme by independent research. **Employability:** The content in this module is based upon the work undertaken by scientists working in the biotechnology and Biomedical industry sector and those pursuing research career in the life sciences. They will give the student the necessary skills and experience to meet the workplace needs of biotechnology and Biomedical companies. They have been developed in consultation with employers of biotechnology and Biomedical Sciences graduates who have confirmed that the practical sessions are suitable and applicable to the industrial and biomedical workplace. **Inclusivity:** A conscious effort will be made to elevate the contributions of scientists from underrepresented groups, incorporating their research papers into the lecture material, showing photographs of diverse researchers, exploiting the EDIpedia database and highlighting good practice.

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Learning Outcome Mapping
Presentation	Presentation	50	0	MLO1, MLO2, MLO3, MLO4
Centralised Exam	Exam	50	2	MLO1, MLO2, MLO3