LIVERPOOL JOHN MOORES UNIVERSITY

Diagnostics and Therapeutics

Module Information

2022.01, Approved

Summary Information

Module Code	7105BSBMOL
Formal Module Title	Diagnostics and Therapeutics
Owning School	Pharmacy & Biomolecular Sciences
Career	Postgraduate Taught
Credits	20
Academic level	FHEQ Level 7
Grading Schema	50

Teaching Responsibility

LJMU Schools involved in Delivery
Pharmacy & Biomolecular Sciences

Learning Methods

Learning Method Type	Hours
Lecture	20
Practical	15
Workshop	3

Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
JAN-CTY	CTY	January	12 Weeks

Aims and Outcomes

Aims	To provide an overview of the application of techniques to disease diagnosis and therapeutic modulation.

After completing the module the student should be able to:

Learning Outcomes

Code	Number	Description
MLO1	1	Demonstrate a reflective understanding of molecular and imaging techniques to aid disease diagnosis.
MLO2	2	Interpret and evaluate practical data.
MLO3	3	Critically evaluate the literature on 'omics' technologies and research techniques.
MLO4	4	Develop an appreciation of improving outcomes through a personalised medicine approach via targeted and personalised interventions.

Module Content

Outline Syllabus	Lectures:The module provides a critical appreciation of the techniques used to help identify and monitor disease and therapeutics. Topics to include: • Translational mass spectrometry – using extreme deep phenotyping (proteomics, metabolomics and lipidomics) for the elucidation of disease mechanisms, novel biomarker discovery, the discovery of novel drug targets, evaluation of new therapeutics and to develop new test e.g. development of anti-diabetic medicines derived by proteomics.• Molecular diagnosis and treatment stratification for clinically important diseases such as cancer and HIV.• Molecular diagnostics for therapeutic drug monitoring (Warfarin, Abacavir etc.).Practicals:Characterisation of novel biomarkers by protein analyses.The practical sessions will involve the use of proteomics technologies (western blot analyses and mass spectrometry data) to identify and characterise novel biomarkers. These studies will explore how changes in protein expression related to disease diagnosis and progression can identify possible areas for therapeutic intervention and novel drug-targets. Students will be expected to research the literature and analyse global shotgun proteomic data to identify potential novel biomarkers, which they will further validate through gel electrophoresis.Determination of drug metabolising gene expression.The practical sessions will involve the use of RNA analyses (QRTPCR) to characterise cytochrome P450 gene expression to determine if the student is a poor or rapid metaboliser. These studies will explore how expression of different drug metabolising enzymes impacts therapeutic drug use and how this can be used to prevent adverse drug reactions. Students will be expected to research the literature, isolate and quantify RNA and analyse gene expression data.WorkshopsThe workshops will focus on group discussions involving data interpretation/analysis and scientific communication.
Module Overview	This module aims to provide an overview of the application of techniques to disease diagnosis and therapeutic modulation. To appreciate that a personalised medicine approach can improve patient outcomes via targeted and personalised interventions.
Additional Information	This module aims to give students an appreciation of current advances in disease diagnosis and therapeutics, including a personalised medicine approach.

Assessments

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

Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings
Laura Randle	Yes	N/A

Partner Module Team

Contact Name	Applies to all offerings	Offerings