LF909-10 Medical Diagnostics

22/23

Department
Life Sciences
Level
Taught Postgraduate Level
Module leader
Marwan Albuhtori
Credit value
10
Module duration
2 weeks
Assessment
100% coursework
Study location
University of Warwick main campus, Coventry

Description

Introductory description

This module introduces the students to the scientific principles underpinning the format and application of biotechnologically based diagnostics assays and technologies.

Module web page

Module aims

The focus is on medical diagnostics. The aim is to give the students a clear understanding of medically oriented diagnostics and the role of biotechnology in realising the clinical and commercial potential.

Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

1. Diagnostic techniques: sensitivity and specificity. Selection of analytical methods and evaluation of advantages and limitations.

2. Biotechnological techniques used in diagnosis, such as:

Nucleic acid-based techniques, including PCR based methods, microarrays and hybridisation techniques
Protein based techniques, including immunoassays.
Biological imaging techniques, including microscopy-based methods.
Mass spec methods, including biomarker detection and analysis of exhale gas or other volatile samples.

1. Application of these techniques to specific areas of medical diagnosis, for example pre-natal screening, cancer diagnosis, neurodegenerative disorders, genetic disorders, preventative medicine or personalised medicine.

2. Advantages and disadvantages of point-of-care and lab-based techniques

Learning outcomes

By the end of the module, students should be able to:

- Identify the advantages and disadvantages, issues and limitations of biotechnologically based diagnostic techniques.
- Demonstrate an understanding of the scientific principles and attendant biotechnological techniques being exploited in medical diagnostics.
- Discuss the issues and problems in the clinical application of biotechnologically based diagnostic systems.
- Interact effectively with medics and clinicians on the validation/implementation of diagnostic techniques and assays via oral, written and visual means.
- Compare and discuss the alternative approaches to biotechnologically based assay and techniques in medicine based on a critical assessment of the known data.

Indicative reading list

Comprehensive Biotechnology 2nd edition Editor: Murray Moo-Young; Editor. Elsevier (2011) ISBN 978-0-44-453352-4

Biotechnology: Applying the Genetic Revolution. D.P. Clark and N.J. Pazdernik. Elsevier (2009) ISBN 13: 978-0-12-175552-2

Biology and Biotechnology: Science, applications and issues. H. Kreuzer and A. Massey. ASM Press (2005) ISBN 1-55581-304-6

View reading list on Talis Aspire

Subject specific skills

Compare and discuss the alternative approaches to biotechnologically based assay and techniques in medicine based on a critical assessment of the known data.

Transferable skills

Interact effectively with medics and clinicians on the validation/implementation of diagnostic techniques and assays via oral, written and visual means.

Study

Study time

Type	Required
Lectures	5 sessions of 1 hour (5%)
Seminars	4 sessions of 1 hour (4%)
Practical classes	15 sessions of 1 hour (15%)
External visits	1 session of (0%)
Private study	76 hours (76%)
Total	100 hours

Private study description

Self-teaching / study / seminar preparation time.

Costs

No further costs have been identified for this module.

Assessment

You do not need to pass all assessment components to pass the module.

Students can register for this module without taking any assessment.

Assessment group A5

	Weighting	Study time	Eligible for self-certification
Seminar Presentation 20 Minutes.	40%		No
Poster	60%		Yes (extension)

Feedback on assessment

Generic oral feedback to cohort on poster and seminar assessments. Written individual feedback to each student on poster and seminar assessments. Face-to-face feedback on any assessment provided on request from the student. \r\n\r\n

Availability

Courses

This module is Core for:

- Year 1 of TLFS-J7N2 Postgraduate Medical Biotechnology and Business Management