

Liverpool John Moores University

Title: RECOMBINANT DNA AND GENOMICS
Status: Definitive
Code: **7007BTBMOL** (101534)
Version Start Date: 01-08-2012

Owning School/Faculty: Pharmacy & Biomolecular Sciences
Teaching School/Faculty: Pharmacy & Biomolecular Sciences

Team	Leader
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Academic Level: FHEQ7 **Credit Value:** 30.00 **Total Delivered Hours:** 78.00
Total Learning Hours: 300 **Private Study:** 222

Delivery Options

Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	25.000
Practical	30.000
Tutorial	2.000
Workshop	18.000

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	AS1	3 essay-type/interpretive questions from 6	60.0	3.00
Essay	AS2	Assignment	20.0	
Report	AS3	Mini-project	20.0	

Aims

To provide in-depth knowledge of current concepts and techniques in gene manipulation, emphasizing the developments and applications of genomics.

Learning Outcomes

After completing the module the student should be able to:

- 1 discuss in depth the underlying principles of recombinant DNA technology and be aware of emerging techniques and applications;
- 2 critically assess and modify existing molecular methodologies as applied to specific problems in gene technology;
- 3 appreciate the role of genomics in molecular biological research;
- 4 discuss the development of transgenic plants/animals using molecular techniques, and assess the future impact of such research;
- 5 evaluate critically and use different methods for communicating scientific information;
- 6 manipulate, interpret and analyse data critically and discuss implications for gene technology.

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

EXAM	1	3	5	6
ESSAY	1	4		
RPT	2	3	5	6

Outline Syllabus

Review of the development of gene technology including vector design and transformation/transfection methods.

Gene expression: e.g. yeast cloning; yeast two-hybrid system; RNA interference, qPCR, expression microarrays

Genomics: e.g. gene cloning; restriction mapping; genome sequencing; Polymerase Chain Reaction and related techniques; site-directed mutagenesis; nucleic acid hybridisation; DNA array technology; DNA profiling; applications of genomics to medicine. Bioinformatics.

Transgenics: e.g. development of genetically-modified plants. animals, detection of GMO

Learning Activities

Lectures, practicals, workshops, tutorials, student-centred activities.

References

Course Material	Book
Author	Brown, T.A.
Publishing Year	2007
Title	Genomes 3.
Subtitle	
Edition	3rd
Publisher	Garland Science UK.
ISBN	0-815341385.

Course Material	Book
Author	Lewin, B.
Publishing Year	2007
Title	Genes IX.
Subtitle	
Edition	9th ed.
Publisher	Jones & Bartlett Publishers UK.
ISBN	0-7637-4063-2.

Course Material	Book
Author	Primrose, S.B., Twyman, R.
Publishing Year	2006
Title	Principles of Gene Manipulation and Genomics
Subtitle	
Edition	7th ed.
Publisher	Blackwell Publishing, Oxford.
ISBN	1-4051-3544-1.

Course Material	Book
Author	Strachan, T., Read, A.P.
Publishing Year	2011
Title	Human Molecular Genetics
Subtitle	
Edition	4th ed.
Publisher	Bios Publishers, Oxford.
ISBN	1-872748964.

Course Material	Book
Author	Additional references will be provided in the module reading list.
Publishing Year	0
Title	
Subtitle	
Edition	
Publisher	
ISBN	

Notes

This module provides in-depth coverage of developments in recombinant DNA technology and genomics, using examples from both prokaryotic and eukaryotic systems. Principles, techniques and applications of gene technology are critically reviewed, with emphasis on the implications of genomics for molecular biological research.

The module provides the opportunity to develop core skills such as: analysing and solving problems, written and oral communication, initiative, creativity, numeracy, personal planning and organisation, time management, flexible thinking and IT, as well as subject-specific and technical skills.