

LF205-12 Genetics and Genomics

20/21

Department

Life Sciences

Level

Undergraduate Level 2

Module leader

Guy Barker

Credit value

12

Module duration

5 weeks

Assessment

100% exam

Study location

University of Warwick main campus, Coventry

Description

Introductory description

The ability to sequence whole genomes at increasingly affordable costs has dramatically improved our ability to explore the molecular genetic basis of complex variation. This provides enormous potential for advances in food security, human and animal health, and adaptation to climate change including sustainable energy sources. This module will introduce and reinforce the concepts and techniques in genetics and genomics that can be used to understand and manipulate complex traits, including hands-on workshops in several of the topics.

[Module web page](#)

Module aims

The ability to sequence whole genomes at increasingly affordable costs has dramatically improved our ability to explore the molecular genetic basis of complex variation. This provides enormous potential for advances in food security, human and animal health, and adaptation to climate change including sustainable energy sources. This module will introduce the concepts and techniques in genetics and genomics that can be used to understand and manipulate complex traits, including an introduction to practical skills.

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.

Introduction to computational biology
Conservation Genetics
Pedigree analysis and linkage mapping
Genetics and Ageing
Personalised nutrition
Gene therapy
Ethical issues
"The End Game" finding a causal gene
Genome-Wide Association Mapping
The Extended Genome

Learning outcomes

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

- show a practical understanding of molecular genetic methods that will include advanced pedigree analysis, recombination (linkage) mapping of quantitative variation, and genome-wide association mapping
- Show an understanding of how molecular genetics can increasingly play an important role in our everyday lives
- link their understanding of sub-cellular biology with modern genetics to appreciate how the phenotype of whole organism is determined.

Indicative reading list

The module will use a combination of recent review articles and refereed papers exemplifying the techniques and their implementation.

Subject specific skills

show a practical understanding of molecular genetic methods that will include advanced pedigree analysis, recombination (linkage) mapping of quantitative variation, and genome-wide association mapping.

Show an understanding of how molecular genetics can increasingly play an important role in our everyday lives.

link their understanding of sub-cellular biology with modern genetics to appreciate how the phenotype of whole organism is determined.

Transferable skills

Self directed learning
Adult learning
Activity based learning

Study

Study time

Type	Required
Lectures	12 sessions of 1 hour (10%)
Seminars	4 sessions of 1 hour (3%)
Private study	104 hours (87%)
Total	120 hours

Private study description

Self directed learning and revision for the end of year exam

Costs

No further costs have been identified for this module.

Assessment

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

Assessment group B1

	Weighting	Study time
In-person Examination	100%	
<ul style="list-style-type: none">Answerbook Green (8 page)		

Feedback on assessment

Post board cohort level feedback

[Past exam papers for LF205](#)

Availability

Courses

This module is Optional for:

- Year 2 of UIPA-C1L8 Undergraduate Life Sciences and Global Sustainable Development