Liverpool John Moores University

Title:	MECHANISMS OF MUSCLE ADAPTATION
Status:	Definitive
Code:	**7122SPOSCI** (124285)
Version Start Date:	01-08-2018
Owning School/Faculty:	Sport and Exercise Sciences
Teaching School/Faculty:	Sport and Exercise Sciences

Team	Leader
Jatin Burniston	Y
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Academic Level:	FHEQ7	**Credit Value:**	20	**Total Delivered Hours:**	60
Total Learning Hours:	200	**Private Study:**	140		

Delivery Options
Course typically offered: Semester 1

Component	Contact Hours
Practical	48
Seminar	12

Grading Basis: 50 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Report	Lab report	Write up/ report of laboratory practical	30	
Essay	Exp design	Written proposal for an experiment	70	

Aims

Nowadays, cutting-edge research in exercise physiology seeks mechanistic

understanding and so relies heavily on molecular techniques. This module is aimed at providing students with the knowledge and practical skills to contribute to this exciting area of research. Work within the Research Institute for Sport and Exercise Sciences pioneered the application of proteomic techniques in exercise physiology, and this module principally provides training in traditional and contemporary protein analysis. The module is delivered through problem-based discussions and laboratory practicals conducted in small groups.

Learning Outcomes

After completing the module the student should be able to:

1	Demonstrate fundamental laboratory competencies, including risk assessment (COSHH), formulating molar solutions and manual pipetting
2	Critically appraise literature regarding the signal transduction hypothesis of adaptation
3	Construct an experiment employing molecular techniques to test a hypothesis relevant to exercise physiology

Learning Outcomes of Assessments

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

Lab report	1	
Experimental design	2	3

Outline Syllabus

Signal transduction hypothesis of adaptation
Risk assessment (COSHH; control of substances hazardous to health)
Fundamental 'Wet lab' techniques and bench skills
Protein extraction and quantitation
RNA extraction and quantitation
Immunohistochemistry
Protein identification (western blotting/ mass spectrometry)

Learning Activities

This module is timetabled as either 2 h discussion sessions or 1 day (8 h) laboratory practicals. The discussion sessions employ problem-based learning to develop a working understanding of the signal transduction hypothesis of exercise-induced adaptation. The subsequent practical sessions conducted in the biochemistry laboratory are aimed at providing fundamental 'bench skills', training in sample processing methods and an introduction to key analytical techniques. Each session typically encompasses a lead-lecture, demonstration or discussion covering the essential theoretical underpinnings of the assay followed by practical training and data collection in groups of approximately 4-5 students. A detailed protocol is

provided for each assay, in addition to supervision by academic and technical support staff.

Notes

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