General Information

Module Code

BIO-6003A

Academic Year

2021/2

Module Title

CELLULAR SIGNALLING

Module type

WW

Semester / Term

SEM1

Level

6

Credit Value

20

Scheme

UG

Related Modules:

Pre-requisite

BIO-5005B

Co-requisite

Forbidden

Timetable slot

-

Is this module suitable for inbound study abroad students?

Y

Additional costs

Maximum number of students

999

Module Organiser

Professor Samuel Fountain

Module Description

What is this module about?

How do cells receive and react to information from their external environment? What is the molecular basis for how cells respond to external signalling cues and how does this relate to physiological processes?

In this module you will study cellular signalling by ion channels, G protein-coupled receptors, enzyme-linked receptors; the associated signal transduction mechanisms and relevance to human physiology and disease. The module includes aspects of the molecular basis of cellular signalling, structure-function relationships and pharmacology.

You will study the molecular basis of cellular signalling by three principle receptor families, namely ion channels, G protein-coupled receptors and enzyme-linked receptors. You will build on your knowledge of cell biology and human physiology to deepen your understanding of cellular signalling. You will learn through lectures and independent study.

Learning objectives and Outcomes

What are the Learning objectives?

The overall learning objective is to understand the molecular basis of how cellular signalling by ion channels and receptors regulates cellular, physiological and pathophysiological processes.

What are the Learning Outcomes?

Name	Details
1	Receptor structure-function relationships Understand the structure and function of ion channels, G protein-coupled receptors and enzyme-linked receptors
2	Receptor mediated signal transduction Understand second messenger generation in response to G protein-couple receptor activation, including an understanding of intracellular Ca2+ waves and their significance. Understand the downstream effects of growth factors through second messengers
3	

Signalling by ion channels
Understand the cellular signalling roles of cell surface and intracellular ion channels. Understand the roles played by ion channels during processes of pain and inflammation, vision, olfaction and taste, and regulation of cardiovascular homeostasis and disease.

4

Understand signalling by inositol lipid signalling
Understand the roles of lipids and inositol phosphates in signalling. Understand effectors/attenuators of lipid signalling and lipid metabolism

5

Appreciation of researcher contribution
Assess and evaluate primary research literature to appreciate contributions made to aspects of cell signalling by world leading scientists.

Learning activities and Effort hours

Learning activity	Total effort hours	Indicative effort hours per week
1. Class sessions (Lectures, workshops, lab sessions, seminars etc.)	24	2
2. Pre-class preparation and follow up study	96	4
3. Work-based or Placement Hours	0	0
4. Formative assessments/ activities	0	0
5. Feedback/ Feed forward sessions	0	0
6. Summative assessments (essays, dissertations, oral presentations, worksheets, lab reports etc.)	20	1
7. Background reading	60	3
8. Exams/ OSCEs	0	0
9. Course Tests	0	0
10. Tutorials (Individual or small groups)	0	0
Total Hours =	200.00	10.00

Learning Support Materials

Should this module be exempt from requiring an online reading list?

N

Link to Talis (https://uea.rl.talis.com/index.html)

Formative Assessments

Sequence	Assessment Type	Title	Deadline
FM1	Formative Assessment	Feedback on essay plan for extended essay	28/Oct/2021

Summative Assessments

Sequence	Assessment Type	Title	Deadline	Weighting	Method of submission	Method of return	Return c
001	Written Assignment	Extended Essay (4,000 words)	16/Dec/2021	40 / 100	Coursework: Bb file submission point	VIA BLACKBOARD	27/Jan/2
Further Details							
003	Exam Standard	Examination		60 / 100			
Further Details							

Attribute Development

On this module students will develop knowledge, insights and attributes that are readily transferable into future or current work settings. The attributes are articulated below to help understand how the module will help students to thrive on their course and prepare them for the world of work. These attributes are also articulated within the UEA Award.

Academic excellence

- [x] In-depth and extensive knowledge, understanding and skills in chosen discipline(s)
- [x] The ability to collect, collate, analyse and critically engage with a wide range of information sources, and evidence
- [x] The ability to analyse and critically engage with a wide range of concepts and ideas

Critical thinking & problem solving

- [x] A capacity for independent, conceptual and creative thinking
- [x] A capacity for informed argument and logical reasoning
- [ ] A capacity for problem identification and problem-solving

Learning & personal development

- [ ] A commitment to developing professional values, self-insight and capabilities
- [ ] The ability to respond positively to constructive criticism and feedback from peers, tutors and colleagues
- [ ] Self-confidence and an ability to exercise own 'voice'

Digital literacy and IT

- [ ] Confidently employ a range of digital technologies for academic and professional/ career development purposes
- [x] Use appropriate digital technologies and resources to locate diverse types of information for both academic and non-academic purposes
- [x] The ability to critically evaluate and engage with the information obtained

Self-management & professionalism

- [ ] A capacity for taking responsibilities and ownership of actions
- [ ] An ability to manage time effectively, including setting priorities, juggling competing demands and meeting deadlines
- [ ] An understanding of work cultures and practices, including work place professionalism

Team working and leadership

- [ ] An ability to co-operate and collaborate with others, including working to shared aims
- [x] An ability to take other viewpoints, have empathy for other people's position and give constructive feedback
- [ ] An ability to motivate and lead others, including taking the initiative and delegating when required

Communication

- [x] An ability to communicate in written form for different purposes, audiences and contexts
- [ ] An ability to communicate in person for different purposes, audiences and contexts

- [ ] An ability to network effectively with others for specific purposes

Applied numeracy and Technical proficiency

- [ ] An ability to perform routine calculations in daily tasks and in applied contexts
- [x] An ability to analyse and interpret data and evidence
- [x] Proficiency in skilled techniques used for academic and professional purposes

Career management

- [ ] A capacity to reflect on and articulate qualities, strengths and attributes
- [ ] The ability to research specific job and career areas
- [x] An ability to present your experience and attributes positively to graduate employers

Commercial awareness

- [ ] A knowledge of the link between academic subjects and their commercial applications
- [ ] An understanding of business priorities and the needs of graduate employers
- [ ] The ability to understand and prioritise customer needs

Innovation and enterprise

- [ ] The confidence to introduce and establish something new
- [ ] The potential to take an idea through to its practical application
- [ ] The potential to apply an enterprising mind-set to situations

Citizenship and stewardship

- [ ] An understanding of your place within local and global communities
- [ ] An awareness of the need to manage shared and finite resources, including an appreciation of moral and ethical dimensions
- [ ] An ability to improve the lives of others and lobby for positive change through community and/or political engagement