

Welcome to PHSI3009/3909
Frontiers in Cellular
Physiology

Cellular Physiology

Cellular Physiology is the scientific study of the function of cells and the role of biomolecules that carry out these physiological functions.

Study of Cellular Physiology is essential for us to better understand how human body systems work and interact, and is essential to our investigation of the pathogenesis of human diseases.

PHSI3009/3909

Learning Modes

- Lectures
- **C**hallenge-**B**ased **L**earning
- Practicals

Information can be found in the **PHSI3009/3909 Course Guide 2017** available via Blackboard eLearning

PHSI3009/3909

Course Guide

Frontiers in Cellular Physiology
PHSI3009 / PHSI3909 (Advanced)



THE UNIVERSITY OF
SYDNEY

School of Medical Sciences

Discipline of Physiology

Semester 1, 2017
Course Guide

Themes

- Signal transduction
- Cellular trafficking
- Membrane transport and channelopathies

Lectures

Tuesday 12:00-1:00 pm

[Sydney Nanoscience Hub Lecture Theatre 4002](#)

Friday 12:00-1:00 pm

[New Law School Lecture Theatre 101](#)

- All students are expected to attend all lectures, practical classes & CBL sessions.
- Notes, handouts, data sheets, lecture recordings and information, etc., provided throughout this course are intended to support and supplement the lectures, practical classes and CBLs, not to substitute for them.

Lectures



- Function and regulation of K⁺ channels
- Ca²⁺ channels
- Organic ion transporters and diseases

A/Professor Margot Day



- G protein-coupled receptors
- Intracellular Ca²⁺ signalling
- CFTR and cystic fibrosis
- Cl⁻ channels and fluid secretion
- Maximizing transport efficiency

Professor Phil Poronnik



- Principles of cell communication
- Signalling via small G-proteins
- Epithelial Na⁺ channels

A/Professor Anuwat Dinudom



- Intracellular trafficking
- Endocytosis and Exocytosis
- Mechanisms for insulin secretion

Professor Peter Thorn



- Signalling via growth factors
- Anion transporters in health and disease

A/Professor Stuart Fraser

Challenge-Based Learning (CBL)

Aim: To develop innovative solutions to complex challenges in biomedical science.

- You will work in groups and use the knowledge that you gain from the lectures and practicals together with **literature searches** to address each challenge.
- These tasks will help you develop skills in problem solving, reasoning, and interpretation of current research papers, critical reflection, team/group work and communication across a number of modes.

CBL

**There are two CBL topics for PHSI3009.
(PHSI3909 students will not attend the second CBL topic.)**

Each CBL topic will consist of a 2 hour session per week for 3 weeks.

CBL sessions:

Monday 2:00-4:00 pm or 4:00-6:00 pm (weeks 5, 6 & 8 and weeks 10, 11 & 12) **OR**

Tuesday 2:00-4:00 pm or 4:00-6:00 pm (weeks 5, 6 & 8 and weeks 10, 11 & 12)

CBL times and locations will be printed on your personal timetable.

You must attend your assigned CBL group.

CBL

CBL topics:

- Insulin Secretion
- Cystic Fibrosis (PHSI3009 only)

Read the introductory paper(s) prior to the beginning of each CBL scenario.

You will work as a research team (4-6 per group). Groups will be allocated before the first session of each CBL.

Engaging in discussion with your group members and assisting with the preparation of the final group presentations are compulsory activities.

Practical Classes

There are three practical class topics for PHSI3009/3909

- Tissue Culture and Aseptic Technique
- Cell Signalling
- Epithelial Transport

All PHSI3009 and PHSI3909 students are to attend and engage in all practical classes. **Attendance is compulsory and will be recorded. Failure to attend without the granting of special consideration will adversely affect your mark.**

Check Blackboard for information regarding each practical class.

Assessments PHSI3009

See PHSI3009/3909 Course Guide

Assessment	Assessment type	Due Dates	Weight of whole semester
CBL 1	Group Presentation	3 rd session (oral) OR 12 May 2017 (video)	10% 15%
CBL 2	Group Presentation	3 rd session (oral) OR 9 June 2017 (video)	10% 15%
CBL	Individual video critique	26 May 2017	5%
Practical 1 Tissue Culture and Aseptic Technique	MCQ	Mid-semester Exam 28 April 2017	5%
Practical 2 Cell Signalling	Individual report	24 April 2017	5%
Practical 3 Epithelial Transport	MCQ	Final Exam	5%
Lectures 1-10	MCQ	Mid-semester Exam 28 April 2017	15%
Lectures 1-22	MCQ	Final Exam	40%

Administration

- Blackboard
- [FAQ page](#)
- PHSI3009.questions@sydney.edu.au
 - enquiries relating to submission of reports, CBL and practical group/schedules and marks



Dr Craig Campbell

Administration



- Applications for Special Consideration and Special Arrangements are to be submitted through [Special Consideration](#) page. Further detail is described in [Coursework Policy](#) and [Assessment Procedures](#).
- If you have any personal or health issues that might affect your study, please go to sydney.edu.au/students. This includes requesting special consideration for assessments, etc.
- Plagiarism: In writing essays and reports you must be aware of The University of Sydney's policy relating to [Academic Honesty in Coursework 2015](#).

CBL



- Attend the tutorial at 2 pm on Monday (week 2)
 - A/Prof Day will talk about analysing scientific publications
 - Prof Poronnik will talk about how to do CBLs and how to prepare your presentations
- Group participation
 - Attendance and contribution is compulsory
- Assessment
 - Oral presentation
 - Video
 - Video Critique

Practical Class Streams

- Week 3: Cell Culture and Aseptic Technique

Monday		2:00-4:00 pm
Tuesday		4:00-6:00 pm

- Week 4: Cell Signalling

Monday		2:00-3:20 pm
		3:20-4:40 pm
Tuesday		4:40-6:00 pm

CPC X-Lab

- Practicals use Kuracloud. You will receive an email invitation from Kuracloud.com. Please accept the invitation and create an account.
- Only students that complete **the induction and comply with the X-Lab dress code** will be allowed to enter the CPC X-lab.

Laboratory coat must be worn



Shoes must be enclosed, no toes are exposed



Not appropriate for work in a laboratory setting.



These shoes do not protect the top of the foot.



Liquids can penetrate these shoes. They should not be worn in a laboratory setting.



These shoes do not meet the requirement for enclosed footwear.



These shoes provide adequate cover and are considered to be fully enclosed.



These shoes provide adequate cover and are considered to be fully enclosed.



Leather shoes are ideal. They are impermeable and fully enclosed.



Leather shoes are ideal. They are impermeable and fully enclosed.

your safety glasses:

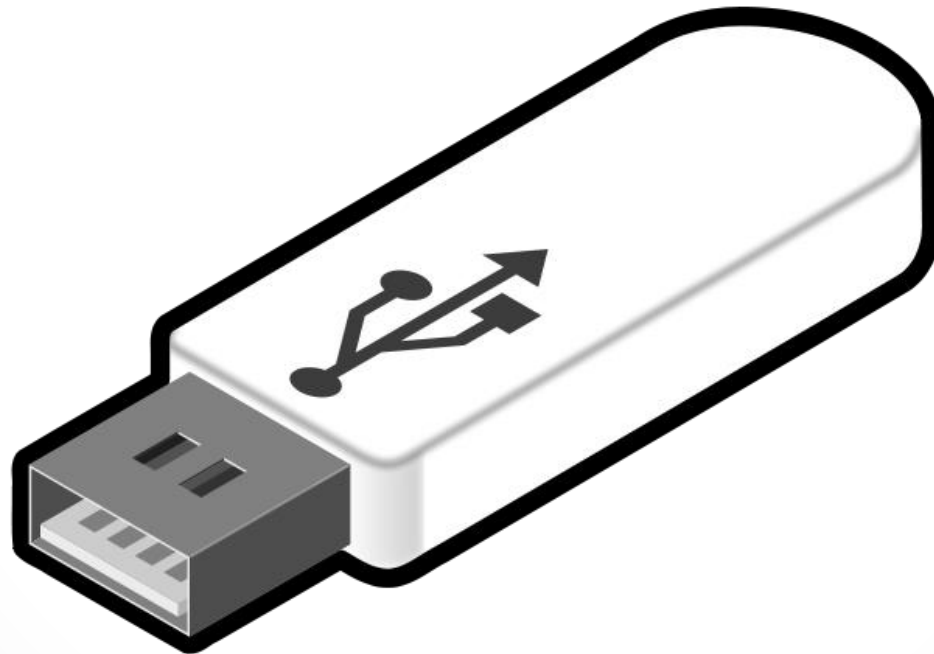


wear them.

PHOTO BY IAN TONKS (@IANATONKS), WHO IS MIGHTY GLAD HE HAD THEM ON.

hopejahrensurecanwrite.com

USB Stick



No eating, drinking or
smoking allowed
in the X-Lab



SD card



Do not remove from the X-Lab

Enjoy your study



PHSI3909 (Advanced)

- Attend all lectures and practical classes
- CBL: CBL1 “Insulin secretion”
- Advanced research project

Assessments PHSI3009

Assessment	Assessment type	Due Dates	Weight of whole semester
CBL 1	Pre-CBL assessment	CBL 1 st session	Formative assessment
	Group Presentation	12 May 2017 (video)	15%
	Individual video critique	26 May 2017	5%
Practical 1 Tissue Culture and Aseptic Technique	MCQ	Mid-semester Exam 28 April 2017	Formative assessment
Practical 2 Cell Signalling	Individual report	24 April 2017	Formative assessment
Practical 3 Epithelial Transport	MCQ	Final Exam	Formative assessment
Lectures 1-10	MCQ	Mid-semester Exam 28 April 2017	15%
Research report	Individual essay	9 June 2017	25%
Lectures 1-22	MCQ	Final Exam	40%

PHSI3909 Research project

- Objective: To develop your skills in scientific investigation and presentation of research topics in cellular physiology.
- Your project may be a library-based topic or a research-based topic.
- The report is worth 25% of your final mark, due date Friday 9 June 2017.
- **You are required to identify an appropriate research topic** and submit a 2,000 word (or equivalent) research report.

How to choose your research topic?

- Visit the [Google doc](#) to learn more about research topics available.
- Choose up to 3 projects which interest you in the [poll](#) before the end of Week 1. Do not contact academic mentors at this stage.
- We will allocate students to projects on a first-in basis and let you know to which project you have been allocated in Week 2.
- After receiving this email, you must contact academic mentors and discuss projects by Week 3.
- If you have trouble, contact phsi3009.questions@sydney.edu.au

Enjoy your study

