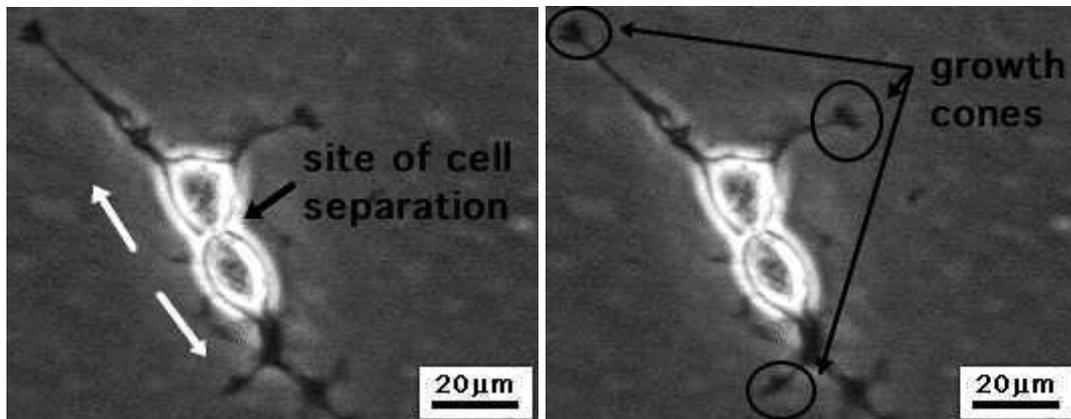




THE UNIVERSITY OF  
NEW SOUTH WALES

School of Medical Sciences

# ANAT3231 CELL BIOLOGY



Two cells (neurons) which have recently divided.

## Session 1, 2012

## Course Overview

### Dr Mark Hill

Office: room G20, ground floor, Wallace Wurth Building

Phone: +612 9385 2477

Email: [m.hill@unsw.edu.au](mailto:m.hill@unsw.edu.au)

[http://php.med.unsw.edu.au/cellbiology/index.php?title=ANAT3231\\_Cell\\_Biology](http://php.med.unsw.edu.au/cellbiology/index.php?title=ANAT3231_Cell_Biology)

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Dr Mark Hill  
(course coordinator)

**Welcome** to Cell Biology in 2012 and thank you for choosing this course! Cell Biology is at the core of basic scientific investigations and current medical research. The course this year will benefit from the growth in new researchers in Cell Biology within the School. Dr Thomas Fath will be providing a number of the lectures and supervise a laboratory. Professor Peter Gunning, Professor Edna Hardeman, Dr Anthony Kee and Dr Steve Palmer will also be contributing to the course. Skills and knowledge from this current course will be a great advantage in your own future career. Take the opportunity to discuss potential future Honours projects with these researchers. Students who have completed this course have enjoyed both the pace, content and structure of the course.

Note that this year for the first time there will also be an Advanced Cell Biology course running in second semester.

**UNSW Cell Biology** is an online resource developed to aid your own independent learning, please explore its content. It has lecture slides, podcast broadcasts, lab project support, online external resources (included Cell Biology textbooks), access and searching of the current literature (both research and reviews) and much more.

[http://php.med.unsw.edu.au/cellbiology/index.php?title=ANAT3231\\_Cell\\_Biology](http://php.med.unsw.edu.au/cellbiology/index.php?title=ANAT3231_Cell_Biology)

In **Lectures and Labs** I clearly identify any examinable material. A key component of course structure is the revision final lecture, an opportunity to review course material and ask questions about difficult concepts. As part of the course I also encourage you to develop the general scientific skills of critical thinking, analysis and scientific writing. These are important life skills applicable and required for any future (scientific) career.

This **handout** contains information designed to help you get started and plan for this semester, please take the time to read through it and contact me if you have any difficulties. I am also continually assessing student feedback in the updating, design and presentation of the course. Also feel free to contact me with questions and course feedback by email at any time.

Dr Mark Hill (February 2012)

## **COURSE OUTLINE CONTENT DETAILS**

### **Course Coordinator**

- Dr Mark Hill
- Office: room G20 ground floor, Wallace Wurth Building
- Email: [m.hill@unsw.edu.au](mailto:m.hill@unsw.edu.au)
- Consultation Thursday 11-12pm or by email appointment

### **Student Contact**

- Consultation Thursday 11-12pm or by email appointment or through the SOMS office (Room G27, Biosciences Building).
- University policy concerning student contact:

”When a student is enrolled into University of New South Wales, he or she will be automatically issued with a University email account. The School will use that email account as the official electronic channel to communicate with each student.”

### **School of Medical Sciences Student Advisor**

- The SOMS student advisor is Carmen Robinson (Room G27, Biosciences Building, UNSW).
  - Telephone: (+612) 9385 2464
  - Fax: (+612) 9385 2866
  - Email: [c.robinson@unsw.edu.au](mailto:c.robinson@unsw.edu.au)

### **Course information**

- 6 Units of credit, Science/Anatomy program.
- Prerequisite: ANAT2200 or ANAT2241

### **Course structure**

- Two lectures and a single 2 hours tutorial/laboratory per week.
  - Lectures: Mon 12pm ASBus 216, Thu 5pm Biomed F
  - Laboratory: Thu 2 - 4 pm Wallace Wurth G2

### **Grievance procedure**

- Problems or a grievance with the course, first attempt to resolve with the course organizer (Dr Mark Hill, room G20). If the grievance cannot be resolved in this way, please contact to the school's grievance officer (Dr Priti Pandey).

### **Course Aims**

- To present the current theories and applications of cell biology.
- To describe internal and external cellular structures.
- To examine dynamic changes within the cell.
- To cover emerging cell biology research technologies.

## Assessment

- There will be three parts to the course assessment:
  1. Independent Learning - Assessment throughout semester. 20%
  2. Group Project – An online project. 20%
  3. Theory - A written test held during the examination period. 60%
- **Assessment Design** has been structured to develop and examine the following graduate attributes and specific learning skills:
  - Student independent learning/research abilities
  - Student scientific writing and referencing skills
  - Student teamwork in small groups
  - Student group work contribution
  - Student ability to plan time and meet assessment deadlines
  - Student acquired knowledge from lecture/lab presentations
  - Student application of knowledge to problem solving
- For more information see also UNSW Guidelines on Learning
  - <http://www.guidelinesonlearning.unsw.edu.au/guidelinesHome.cfm>
- **Student learning Outcomes** By the end of this course you will have learned the current understanding of both cell structure and function and how this is dynamically organized. You will also understand the major methods used to study cells and their application to medical research. This information can then be integrated with other program subjects to give a cellular basis for Anatomy. Importantly the teaching methods and content are designed to encourage your own self-motivated scientific enquiry.
- **Examiner** The course organizer (Dr Mark Hill) will be the examiner. The course assessor is Prof Edna Hardeman.
- **Theory examination** will be an exam within the session 1 exam period and will conform to University examination guidelines. Students absent through illness or misadventure should immediately contact UNSW Student Central.

<https://my.unsw.edu.au/student/atoz/SpecialConsideration.html>
- **Supplementary examinations** will only be offered if the student is unable to attend the final examination for medical or misadventure reasons. Special considerations sought outside the 3 day time period WILL NOT be accepted except in TRULY exceptional circumstances.
- **Individual Assessment** (independent learning) brief questions based upon lecture and laboratory content given in the laboratory time and submitted online by the end of laboratory time throughout semester.
- **Group Project** an online project prepared by small groups of students throughout semester. The project will have a final assessment by student peers and by the course organizer in week 12 of the semester.

## Academic honesty and plagiarism

Please Read - Plagiarism & Academic Integrity [www.lc.unsw.edu.au/plagiarism](http://www.lc.unsw.edu.au/plagiarism)

### What is Plagiarism?

Plagiarism is the presentation of the thoughts or work of another as one's own.\*

Examples include:

- direct duplication of the thoughts or work of another, including by copying material, ideas or concepts from a book, article, report or other written document (whether published or unpublished), composition, artwork, design, drawing, circuitry, computer program or software, web site, Internet, other electronic resource, or another person's assignment without appropriate acknowledgement;
- paraphrasing another person's work with very minor changes keeping the meaning, form and/or progression of ideas of the original;
- piecing together sections of the work of others into a new whole;
- presenting an assessment item as independent work when it has been produced in whole or part in collusion with other people, for example, another student or a tutor; and
- claiming credit for a proportion a work contributed to a group assessment item that is greater than that actually contributed.†

For the purposes of this policy, submitting an assessment item that has already been submitted for academic credit elsewhere may be considered plagiarism. Knowingly permitting your work to be copied by another student may also be considered to be plagiarism. Note that an assessment item produced in oral, not written, form, or involving live presentation, may similarly contain plagiarised material.

The inclusion of the thoughts or work of another with attribution appropriate to the academic discipline does *not* amount to plagiarism. The Learning Centre website is main repository for resources for staff and students on plagiarism and academic honesty. These resources can be located via: [www.lc.unsw.edu.au/plagiarism](http://www.lc.unsw.edu.au/plagiarism)

The Learning Centre also provides substantial educational written materials, workshops, and tutorials to aid students, for example, in:

- correct referencing practices;
- paraphrasing, summarising, essay writing, and time management;
- appropriate use of, and attribution for, a range of materials including text, images, formulae and concepts.

Individual assistance is available on request from The Learning Centre.

Students are also reminded that careful time management is an important part of study and one of the identified causes of plagiarism is poor time management. Students should allow sufficient time for research, drafting, and the proper referencing of sources in preparing all assessment items.

\* Based on that proposed to the University of Newcastle by the St James Ethics Centre. Used with kind permission from the University of Newcastle † Adapted with kind permission from the University of Melbourne.

**Course Schedule Cell Biology** (Timetable 2012 S1 guide only, subject to change)

[http://php.med.unsw.edu.au/cellbiology/index.php?title=Course\\_Timetable](http://php.med.unsw.edu.au/cellbiology/index.php?title=Course_Timetable)

<b>Week</b>	<b>Date (Mon)</b>	<b>Lecture 1 Mon 12 - 1 pm ASBus 216</b>	<b>Lecture 2 Thu 5 - 6 pm Biomed F</b>	<b>Laboratory Thu 2 -4 pm Wallace Wurth G2</b>
1	05 Mar	<a href="#">Cell Biology Introduction</a>	<a href="#">Cells Eukaryotes and Prokaryotes</a>	<a href="#">Introduction to Lab</a>
2	12 Mar	<a href="#">Cell Membranes Compartments</a>	<a href="#">Cell Nucleus</a>	<a href="#">Microscopy Methods</a>
3	19 Mar	<a href="#">Cell Export - Exocytosis</a>	<a href="#">Cell Import - Endocytosis</a>	<a href="#">Preparation/Fixation</a>
4	26 Mar	<a href="#">Cell Mitochondria</a>	<a href="#">Cell Junctions</a>	<a href="#">Immunochemistry</a>
5	4 Apr	<a href="#">Cytoskeleton Introduction</a>	<a href="#">Cytoskeleton 1 Intermediate Filaments</a>	<a href="#">Cell Knockout Methods</a>
	6 Apr – 15 Apr		Mid Semester Break	
6	16 Apr	<a href="#">Cytoskeleton 2 Microtubules</a>	<a href="#">Cytoskeleton 3 Microfilaments</a>	<a href="#">Cytoskeleton Exercise</a>
7	23 Apr	<a href="#">Extracellular Matrix 1</a>	<a href="#">Extracellular Matrix 2</a>	<a href="#">Confocal Microscopy</a>
9	30 Apr	<a href="#">Cell Death 1</a>	<a href="#">Cell Death 2</a>	<a href="#">Tissue Culture 1</a>
10	07 May	<a href="#">Signal 1</a>	<a href="#">Signal 2</a>	<a href="#">Tissue Culture 2</a>
11	14 May	<a href="#">Stem Cells 1</a>	<a href="#">Stem Cells 2</a>	<a href="#">Stem Cells Lab</a>
12	21 May	<a href="#">Revision</a>	<a href="#">Development</a>	<a href="#">Stem Cells Analysis</a>
	06 Jun		Study Week	
	13 Jun – 25 Jun		* Examination Period	

\* Theory exam will be within this period. It is intended that supplementary exams for the School of Medical Sciences in Semester 1, 2012 will be held in the week commencing Monday TBA.

**Public Holidays**

- Good Friday            6 April
- Easter Monday        9 April
- Anzac Day              25 April
- Queen's Birthday    11 June

<b>Lecture</b>	<b>Textbook References - Essential Cell Biology (3rd edn)</b> Alberts, etal. 2009
1	Chapter 1 Introduction to Cells pp1-38
2	Chapter 1 Introduction to Cells pp1-38
3	Chapter 11 Membrane Structure pp363-386, Chapter 12 Membrane Transport 387-424 Chapter 15 Intracellular Compartments and Transport 495-530
4	Chapter 5 DNA and Chromosomes pp171-196
5	Chapter 15 pp514-518
6	Chapter 15 pp522-529
7	Chapter 14 Energy Generation in Mitochondria and Chloroplast pp453-492
8	Chapter 20 Cellular Communities:Tissues, Stem Cells, and Cancer Epithelial Sheets and Cell Junctions pp700-705
9	Chapter 17 Cytoskeleton pp571-608
10	Chapter 17 Cytoskeleton - Intermediate Filaments pp571-576
11	Chapter 17 Cytoskeleton - Microtubules pp577-589
12	Chapter 17 Cytoskeleton - Microfilaments pp590-598
13	Chapter 20 Cellular Communities:Tissues, Stem Cells, and Cancer Extracellular Matrix and Connective Tissues pp690-699
14	Chapter 20 Cellular Communities:Tissues, Stem Cells, and Cancer Extracellular Matrix and Connective Tissues pp690-699
15	Chapter 18 The Cell Division Cycle - Overview of the Cell Cycle pp609-624
16	Chapter 18 The Cell Division Cycle - Mitosis pp625-634, Cytokinesis pp634-638
17	Chapter 18 The Cell Division Cycle - Control of Cell Number pp638-647
18	Chapter 18 The Cell Division Cycle - Control of Cell Number pp638-647
19	Chapter 16 Cell Communication pp531-570
20	Chapter 16 Cell Communication pp531-570
21	Chapter 20 Cellular Communities:Tissues, Stem Cells, and Cancer pp707-715
22	Chapter 20 Cellular Communities:Tissues, Stem Cells, and Cancer pp707-715
23	Chapter 20 Cellular Communities:Tissues, Stem Cells, and Cancer – Tissue Maintenance and Renewal pp707-709

- **Online Resources for Students**

- Additional course information and links can be found from the course homepage.

[http://php.med.unsw.edu.au/cellbiology/index.php?title=ANAT3231\\_Cell\\_Biology](http://php.med.unsw.edu.au/cellbiology/index.php?title=ANAT3231_Cell_Biology)

- **Students Cell Biology Online** – On the above site each student has been allocated an online page. This page is easily accessed, by logging in with your **student number** and **unipass**. This page is where your individual assessment items should be located. This will be introduced in the first laboratory.
- **Blackboard** – UNSW Blackboard 6 to Moodle. This current 2012 course does not use Blackboard or Moodle for any online component or assessment items, in future this may be subject to change.
- **School of Medical Sciences (SOMS)**  
<http://medalsciences.med.unsw.edu.au>
- **SOMS Health and Safety (H&S)**

<http://medalsciences.med.unsw.edu.au/SOMSWeb.nsf/page/Health+and+Safety>

- **Lecture Recordings** Available from both **UNSW Cell Biology** and **Lectopia**, online sound recording system making UNSW Lectures available in several formats (including Podcast). Lecture recordings are grouped by the id of the lecture, usually the course code.

[http://php.med.unsw.edu.au/cellbiology/index.php?title=2012\\_lectopia](http://php.med.unsw.edu.au/cellbiology/index.php?title=2012_lectopia)

<http://ilecture.edtec.unsw.edu.au/ilectures/ilectures.lasso?ut=90>

- **Laboratory Structure** It is important to be at this location on time, as some classes will then proceed to other locations on campus. Before participating in any research laboratory, specific OHS information will be provided to students. Time will also be made available in some laboratories for work and discussion on the Group Projects.

The current course laboratory structure is:

1. Tutorial-based classes covering current cell biology techniques.
2. Research-based exercises using cell biology analytical techniques.
3. Research facility visits demonstrating specialist cell biology tools.

## **Continual course improvement**

- Periodically student evaluative feedback on the course is gathered, using among other means, UNSW's Course and Teaching Evaluation and Improvement (CATEI) Process. Student feedback is taken seriously, and continual improvements are made to the course based in part on such feedback.

## **Administrative Matters**

### **• Attendance requirements**

- Students are required to attend each lecture and laboratory unless given special permission.
- Students seeking special consideration should be able to provide medical certificates.
- Students must wear a white lab coat and closed footwear in research laboratories and comply at all times with SOMS health and safety requirements (found on SOMS website).
- Late Assessment items will be penalized by 5% / day late.

### **• Health and Safety (H&S)**

- The University policies and expectations can be found currently at:
- [http://www.ohs.unsw.edu.au/ohs\\_students/index.html](http://www.ohs.unsw.edu.au/ohs_students/index.html)
- Please read the attached Laboratory Risk Assessment Information for G2.
- Some practical labs will have additional H&S information and requirements. Information about any additional requirements will be provided beforehand or online associated with the practical.

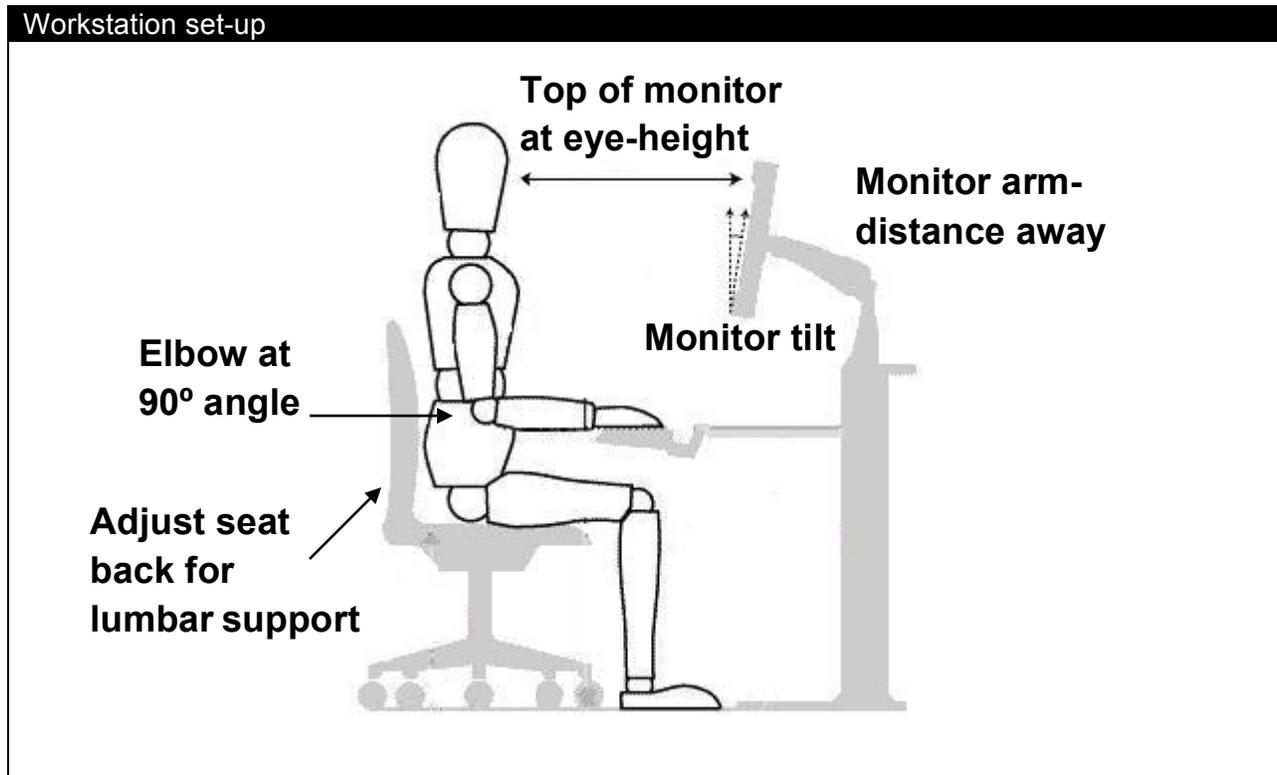
### **• Equity and Diversity**

- Those students who have a disability that requires some adjustment in their teaching or learning environment are encouraged to discuss their study needs with the course coordinator prior to, or at the commencement of, their course, or with the Equity Officer (Disability) in the Equity and Diversity Unit (9385 4734) or on the web:

<http://www.studentequity.unsw.edu.au/>

- Issues to be discussed may include access to materials, signers or note-takers, the provision of services and additional exam and assessment arrangements.
- Early notification is essential to enable any necessary adjustments to be made.

Hazards	Risks	Controls
Ergonomics	Musculoskeletal pain.	Correct workstation set-up.
Electrical	Shock/fire	Check electrical equipment in good condition before use. All portable electrical equipment tested and tagged.



**Personal Protective Equipment**  
Not necessary in these computer practicals. May be required for guest or external practicals.

**Emergency Procedures**  
In the event of an alarm, follow the instructions of the demonstrator. The initial sound is advising you to prepare for evacuation and during this time start packing up your things. The second sound gives instruction to leave. The Wallace Wurth assembly point is the lawn in front of the Chancellery. In the event of an injury, inform the demonstrator. First aiders and contact details are on display by the lifts. There is a first aid kit in the laboratory and the Wallace Wurth security office.

**Clean up and waste disposal**  
No apparatus or chemicals used in computer practicals.

**Declaration**  
I have read and understand the safety requirements for these practical classes and I will observe these requirements.

Signature:.....Date:.....  
Student Number:.....