



Faculty of Medicine  
School of Medical Sciences

# PATH3205

## Molecular Basis of Disease

COURSE OUTLINE

SEMESTER I, 2018

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Please read this outline in conjunction with the following pages on the [School of Medical Sciences website](#):

- [Advice for Students](#)
- [Learning Resources](#)

(or see "STUDENTS" tab at [medicalsciences.med.unsw.edu.au](http://medicalsciences.med.unsw.edu.au))

## Course objectives

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PATH3205 Molecular Basis of Disease builds on fundamental principles of human disease taught in PATH2201 Processes in Disease. This is achieved in PATH3205 by focusing on the underlying molecular basis or 'molecular mechanisms' of the disease process in humans. Core topics and Research challenges in Pathology are presented as themed '*Modules*'. Practicals will use examples of 'state-of-the-art' research techniques that address molecular mechanisms presented in lectures, primarily in the context of inflammation and immunopathology. Students will have opportunities for interactive learning and engagement in tutorial, practical and research laboratory settings. Upon course completion, students should have a better understanding of molecular mechanisms that underlie chronic human disease and research topics in the areas of inflammation and immunopathology.

## Course staff

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### Department of Pathology, School of Medical Sciences

#### Course Convenor

A/Prof P Polly, [patsie.polly@unsw.edu.au](mailto:patsie.polly@unsw.edu.au)

Room 420, Level 4, Wallace Wurth EAST Building; (ph) 9385 2924

Consultation time: Monday 2-3pm

#### Co-Convenor

Dr Chaturaka Rodrigo, [c.rodrico@unsw.edu.au](mailto:c.rodrico@unsw.edu.au)

Prof G Velan (Head of Teaching in Pathology, Medicine)

Prof D Wakefield

A/Prof N Tedla

A/Prof S Thomas (Head of Teaching in Pathology, Science)

Prof K A Rye

Prof P Barter

Dr M Weber

Dr B Cochran

Dr C Herbert

#### Guest Lecturers

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A/Prof P Phillips     Adult Cancer Program, Lowy Cancer Centre, UNSW

A/Prof W Sewell     St Vincent's Hospital

Dr S Ghaly           St Vincent's Hospital

Dr G Sharbeen      Adult Cancer Program, Lowy Cancer Centre, UNSW

Ms G Jones          Learning Centre UNSW Australia

Dr A Luo             Western Sydney University

## Course details

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This course is offered during semester I and counts for six units of credit (6OC). PATH2201/PATH2202 (Processes in Disease/Processes in Disease for Health and Exercise Science) are prerequisites for the course. It is also advantageous for students to have undertaken previous or concurrent study in BABS3041 Immunology I, BABS3121 Molecular Biology of Nucleic Acids, BIOC3111 Molecular Biology of Proteins, BIOC3261 Human Biochemistry and BIOC3271 Molecular Cell Biology 2.

## Course administration

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Administrative and general problems related to your attendance, or the content and conduct of the course, can in the first instance be addressed by consulting A/Prof. Patsie Polly ([patsie.polly@unsw.edu.au](mailto:patsie.polly@unsw.edu.au)) by e-mail. Students wishing to see other members of staff should make an appointment via e-mail. If students have difficulties of a personal nature, or with the course, they should contact the School's Grievance Officer, Prof Nick Di Girolamo ([n.digirolamo@unsw.edu.au](mailto:n.digirolamo@unsw.edu.au)) or the Student Conduct and Appeals Officer (SCAO) within the Office of the Pro-Vice-Chancellor (Students) and Registrar. ([studentcomplaints@unsw.edu.au](mailto:studentcomplaints@unsw.edu.au)).

Should you feel that there are particular circumstances that have affected your performance in the course; you should lodge an application for special consideration. The procedures involved in this are outlined in the UNSW Student Guide, and special forms are widely available on campus e.g. Student Health Centre, Student Centre.

Information on the different research units in the Department of Pathology and the research interests of each staff member is available at Department of Pathology's home page at <https://medicalsciences.med.unsw.edu.au/>

## Continual course improvement

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Periodically student feedback on the course is gathered, using UNSW's My Experience and in-house course evaluation questionnaires. Student feedback is taken seriously, and continual improvements are made to the course based in part on such feedback. A volunteer student representative group will meet regularly with the course convening team throughout the course to feedback on various aspects of the course.

## Course aims

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The course **PATH3205 Molecular Basis of Disease** aims to:

1. Promote and apply an understanding of the molecular basis of systemic inflammation for example on cardiovascular, gastrointestinal and respiratory systems and immune responses to infection, allergy, autoimmunity. These concepts are introduced in the context of examples of common human diseases or disease processes and are fortified with recent developments in medical research.
2. Relate and integrate the above disease themes and concepts as molecular processes in human disease with medical research within 'Modules'. Modules will typically inter-relate Lectures, Practical lessons and Tutorials.
  - a. **Lectures** will be sequenced as an overview of the disease topic and associated concepts, followed by research challenges and topic integration/feedback sessions.
  - b. **Practical lessons** designed in a workshop format, will introduce students to state-of-the-art areas of medical research that link theoretical to technical laboratory learning.
  - c. **Tutorials** will further integrate theoretical concepts and will provide a forum for collaborative learning.
3. Further develop and integrate oral and written communication skills, which underpin dissemination of discoveries in human disease and the relevance of medical research with assessment tasks and practical or tutorial lessons.
4. Identify and develop professional skills and graduate attributes for future real-world application such as teamwork, critical thinking and reflective practice via assessment tasks and practical or tutorial lessons.

These aims will be achieved by specialist teaching of core concepts and research techniques by academic pathologists and specialist guests who are scientifically and/or clinically trained. This will involve integration of many resources which will be presented both face-to-face and online which will ideally support and promote student learning and understanding of pathology core concepts, research and practice as well as address UNSW graduate attributes.

The course aims to integrate molecular aspects of chronic human disease into the context of histopathology and macroscopic specimens for each above disease topics outlined in the timetable and in Moodle. Furthermore, course aims mesh well with other disciplines including Anatomy, Biochemistry, Molecular Biology, Immunology, Microbiology, Pharmacology and Physiology.

## Student learning outcomes

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At the completion of this course, you should be able to:

1. Describe and distinguish between the causes, pathogenic molecular mechanisms, macroscopic and microscopic appearances and clinical consequences of inflammation, immune responses to infection, allergy, autoimmunity, and effects of systemic inflammation on cardiovascular, gastrointestinal and respiratory systems.
2. Demonstrate capabilities in teamwork and communication within collaborative teams.
3. Discuss and debate state-of-the-art research and concepts of disease.
4. Engage in research integrated learning and work integrated learning via mentorship by a research scientist.
5. Understand and explain the relevance of laboratory techniques and analysing outcomes in the diagnosis of human disease.
6. Demonstrate and engage in teamwork, communication and reflective practice to evidence professional skills development within ePortfolios/reflective blogs.

## Graduate Attributes Developed in this Course<sup>1</sup>

| Science Graduate Attributes*                        | Level of FOCUS<br>0 = NO FOCUS<br>1 = MINIMAL<br>2 = MINOR<br>3 = MAJOR | Activities / Assessment  |
|---|---|--|
| Information acquisition, evaluation and synthesis   | 3   | <ul style="list-style-type: none"> <li>• Lectures (online and face-to-face), tutorials and practicals</li> <li>• Museum Study Sessions</li> <li>• Tutorial Quizzes</li> <li>• Research Impact Symposium</li> <li>• ePortfolio</li> </ul> |
| Research, inquiry and analytical thinking abilities | 3   | <ul style="list-style-type: none"> <li>• Research Impact Symposium</li> <li>• ePortfolio</li> </ul>  |
| Communication                                       | 3   | <ul style="list-style-type: none"> <li>• Research Impact Symposium</li> <li>• Tutorials</li> <li>• Tutorial Quizzes</li> <li>• ePortfolio</li> </ul>   |
| Teamwork, collaborative and management skills       | 3   | <ul style="list-style-type: none"> <li>• Research Impact Symposium</li> <li>• Team-based learning in tutorials and tutorial Quizzes</li> <li>• Museum Study Sessions</li> </ul>  |

<sup>1</sup> [Contextualised Science Graduate Attributes](#)

## Learning and teaching rationale

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The intended learning outcomes are achieved through study of the common patterns of inflammatory and immune responses to chronic disease, which are often referred to as pathological processes. To understand these processes, you will draw on your knowledge of normal anatomy, histology, biochemistry, molecular biology and physiology. PATH2201 Processes in Disease has introduced the fundamental concepts for the diseases to be addressed in PATH3205. This will involve more detailed discussion and integration of your understanding of recent advances in knowledge pertaining to the molecular basis of inflammation and immune responses in lectures, museum study sessions and tutorials, as well as research techniques and analysis of experimental findings demonstrated in practical lessons.

## Course Evaluation and Development

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Student feedback is gathered periodically by various means. Such feedback is considered carefully with a view to acting on it constructively wherever possible. This course outline conveys how feedback has helped to shape and develop this course. This course has been collaboratively re-designed and developed as part of the Inspired Learning Initiative and Course Design Tool Pilot. The team included: *Educational Developers, Office of the PVC(E)*, (Dr Lincoln Gomes, Fiona Nicolson, John Vulic) and the *Department of Pathology* (A/Prof Patsie Polly (course convenor), Dr Annie Luo (2016 course co-convenor); A/Prof Fabio Luciani (2015/2016 course co-convenor), Prof Gary Velan (Head of Pathology) and Annabel Paul (2016 student).

| Course Review<br>PATH3205 | Review Date           | Changes from review to be implemented to the resources / activities / support / assessment of the course that will align with each of the 4 pillars of the Scientia Education Model  |
|---------------------------|-----------------------|--|
|                           | Dec 2016-<br>Feb 2017 | Areas of improvement include: <ul style="list-style-type: none"><li>• Content will be delivered using a blended learning approach which entails a combination of face-to-face and online.</li><li>• Development of a consistent narrative throughout the course to explain similarities and differences between topics and the rationale behind the topic sequence.</li><li>• Five themed Modules that have been restructured and sequenced to link disease themes and topics.</li><li>• Modules generally consist of a combination of the following types of lessons: overview, examples, research and clinical challenges lectures, museum study sessions, tutorials and practicals. These lessons have been coherently structured.</li><li>• Increasing tutorial times to allow for more discussion.</li><li>• Increasing the tutorials from 4 to 5 and reducing topics per tutorial</li><li>• Using video to allow students to 'meet the mentor' for their team assignment which is the <i>Research Impact Symposium</i></li><li>• Early Career Researcher (ECR) mentoring for student teams</li></ul> |

|  |   |
|--|---|
|  | <p>Assessment Tasks have been streamlined into 4 key areas:</p> <ul style="list-style-type: none"> <li>• Mid-Semester examination 15%</li> <li>• Final Examination 40%</li> <li>• Individual and team performance tutorial quizzes 15%</li> <li>• Research Impact Symposium Presentation 30%</li> </ul> |
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## Future directions

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The course complements PATH3206 *Cancer Pathology*, ANAT3212, BABS3041, PATH3207 *Musculoskeletal Diseases* and PATH3208 *Cancer Sciences: Research Design, Measurement and Evaluation*, which also run in the same academic year. For those wishing to pursue a career in research or hospital based laboratory work, PATH3205 will not only develop your basic knowledge of molecular processes, but also provide a framework for understanding how these processes link to the modern practice of medicine and medical research. Similarly, for those who may wish to pursue a career in the health sciences, the course will provide an understanding of the cellular and molecular processes underlying the clinical manifestations of disease. Furthermore, development of ePortfolios/reflective blogs will assist students in reflecting on their learning and development of professional skills and in understanding potential career pathways in medical research, medicine and beyond.

## Teaching strategies

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The course comprises lectures, tutorials, practical classes, museum study sessions, integration/feedback sessions and assignments, which cover general and specialist aspects of the molecular basis of disease.

The course employs a variety of teaching modes in order to facilitate your learning:

- 1) A **collaborative, team-based approach** to learning. It is anticipated that using team quizzes, peer teaching and the research impact symposium team assessment task will enhance students' learning experience. Students are encouraged to study with your allocated teams and to maintain individual reflective blogs.
- 2) A series of **lectures** introduce you to the molecular basis of common and critical diseases. The overview lectures focus on diseases such as asthma and diabetes. The examples and research challenges lectures focus on the latest advances in medical research associated with each of those diseases. The integration/feedback sessions provide opportunities for students to test their understanding and to remediate any misconceptions. A list of aims and objectives is included for each



lecture and tutorial, along with points for discussion and a list of suggested additional resources available via the internet.

- 3) Small group **tutorials** are intended to extend and amplify your understanding of material presented in lectures in an interactive format, where you are encouraged to clarify any difficulties regarding the concepts discussed. Students will be allocated into teams and will complete individual and team quizzes and work collaboratively on interpretation of disease processes. Pre-tutorial learning objectives and reading will be assigned for each tutorial.
- 4) **Practical classes** employ computer-based virtual microscopy and virtual laboratories to facilitate correlation between abnormalities at the molecular and microscopic levels and the manifestations of disease. Practical classes will reinforce the molecular basis and disease effects for each topic. Practical lessons will demonstrate 'state-of-the-art' molecular techniques that are key in diagnosis of disease. Museum study sessions are intended to help you recognize the macroscopic and microscopic features of abnormal tissues and to relate the pathology to the molecular basis of disease and clinical manifestations. Macroscopic specimens ("pots") will be generally used in conjunction with projected microscopic slides and other materials.
- 5) The course also provides the opportunity to be mentored by a research scientist. The innovative **Research Mentoring Experience** component of the course introduces the 'world of medical research' to undergraduate students. We hope it will provide you with an exciting and inspiring glimpse of current challenges and approaches in medical research.

## **Research experience**

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Opportunities exist for all students wishing to undertake undergraduate and postgraduate research study within the School of Medical Sciences. Information can be accessed via the directory for the School of Medical Sciences at: <http://medicallsciences.med.unsw.edu.au/research>

## Assessment

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### **Quizzes      Individual and Team performance      15%**

Students attempt this assessment as individuals and as teams. This forms the basis of collaborative learning for understanding complex molecular mechanisms and disease processes. Students will be required to complete pre-reading and tutorial objectives prior to the tutorial. Therefore, quizzes in the tutorials will form the basis of the tutorial itself, thus encouraging a flipped classroom approach.

Verbal feedback is given once the quiz has been marked by the Tutor. Marks are given to students at the time of quiz completion

*Quizzes will take place within tutorial timeslots (see course timetable).*

### **Mid-semester exam      Individual performance      15%**

The focus will be on pathological process questions (theory and practical).

Verbal feedback is given once the exam has been marked by the Tutor.

*Assessment outcomes will be posted on Moodle*

### **Research Impact Symposium      Team Presentation      30%**

Students will design a collaborative presentation to pitch a 'research problem or issue' from the last 15 years. The style of presentation will be a **panel discussion**. The mode of delivery will be determined by the team and every member of the team will be given the opportunity to speak. This task addresses research integrated learning and to a lesser extent work integrated learning. Research on a disease topic with supporting medical research literature is required. Students will be mentored throughout the course by researchers in the areas of immunology, infection and inflammation. Mentors should ideally be early career research (ECR) scientists who can guide and advise students on their research thinking and practice. This builds community by building working relationships between students and staff and addresses ECR development within SoMS. Students will be required to reflect and blog on these experiences.

The marks for the assessment task (total worth = 30%) will be broken down in the following way:

- Assessment/Evaluation (of content) by academics and peers      **20%**
- Team Peer and Self Evaluation on Team Roles and Contribution      **5%**
- ePortfolio / Research Experience blog      **5%**

*Graduate attributes in teamwork, research enquiry, critical thinking (reflective practice) and communication will be addressed.*

Feedback on assessment progress will be given to each group by the mentor for research thinking and practice and by consultation with Ms Gwyn Jones (Learning Centre, UNSW) for academic skills development.

*Assessment outcomes will be posted on Moodle.*

Feedback on assessment outcomes will be given in week 12 in a 1hr interactive session between students, the mentors, Ms Gwyn Jones and A/Prof Patsie Polly.

### **ePortfolio Submissions**

Students are required to post their ePortfolio reflection entries to OU Blog and submit the same blog to Turnitin for originality checks and marking. Instructions on how to submit blog entries to OU Blog and Turnitin are available within the PATH3205 Moodle site.

Any late submissions will attract a penalty of 10% of the total mark per day or part thereof. Keeping to a deadline is part of the assessment. In exceptional circumstances, (where a student has missed at least 3.5 weeks of university during the period of the assignment AND have documents to this effect AND have notified the Course Convenor (A/Prof Polly) in writing at least 2 weeks before the deadline), some concession may be offered and is provided on a case-by-case basis.

### **Final examination**

**40%**

Examination assessing theoretical and practical content knowledge. It is proposed that the examination will consist of 4 Short answer questions, 20 MCQs (both assessing theoretical content) and 2 images that are retrieved from the practical course content (assessing practical aspects of the course).

Students attempt this assessment as individuals in 2hrs during the end of semester examination period.

Examines understanding disease processes and their relevance to an underlying example of disease that has been covered throughout the course. Feedback can be provided on an individual basis if students seek it.

### **Expectations of Students**

Tutorial attendance is mandatory. Students are required to attend a minimum of 80% of the Tutorials in order to sit the end of course examination. A courtesy email will alert students who are absent for 1 tutorial. Students missing more than 1 tutorial will be required to contact the course convenor (A/Prof Polly) to discuss their eligibility to sit the exam.

### ***Supplementary examination***

If required, it is **intended** that supplementary exams for the School of Medical Sciences in Semester 1, 2018 will be held Saturday 14 July - Saturday 21 July 2018. Special considerations sought outside the 3 day time period WILL NOT be accepted except in TRULY exceptional circumstances.

Students who believe that they are eligible for further assessment must contact A/Prof Polly to seek further information.

## PATH3205 Course Timetable

NOTE: Changes in the timetable will be announced on Moodle.

| Week  | Date         | Time                   | Location                             | Lecturer   | Title   |
|---|--------------|------------------------|--------------------------------------|--|---|
| 1<br>Introduction   | 26/2<br>Mon  | 3-4pm                  | LG03                                 | Polly  | <b>Introduction:</b> Molecular Basis of Disease<br><br><b>Overview:</b> Key Principles in Disease: Inflammation and Immune Responses<br><i>**Research Impact Symposium topics announced**</i> |
|   |              |                        |                                      | Polly  |   |
| <b>Module 1: Systemic Inflammation: Cardiovascular Disease (CVD) Examples and Effects</b> |              |                        |                                      |  |   |
| 1<br>Cardiovascular Disease   | 26/2<br>Mon  | 4-5pm                  | LG03                                 | Weber  | <b>Cardiovascular Disease Overview:</b> Unanswered questions in atherosclerosis   |
|   | 27/2<br>Tues | 12-1pm                 | Mathews Theatre C                    | Thomas   | <b>Research Challenges:</b> Inflammation and Cardiovascular Dysfunction   |
| 1-3pm   |              | Teaching lab: G06/G07  | Thomas                               | <b>Practical:</b> Inflammation and Cardiovascular Disease Research Lab |   |
| 2<br>Diabetes   | 5/3<br>Mon   | 3-4pm                  | LG03                                 | Weber  | <b>Cardiovascular Disease Examples:</b> Heart disease, strokes and more   |
|   |              | 4-5pm                  | Online                               | Rye  | <b>Examples and Research Challenges:</b> Lipid Dysregulation, Diabetes, Treatment and Prevention  |
|   | 6/3<br>Tues  | 12-1pm                 | Mathews Theatre C                    | Cochran  | <b>Research Challenges:</b> Diabetes, Lipoproteins and Lipid Dysregulation  |
| 1-3pm   |              | Teaching Labs: G06/G07 | Cochran                              | <b>Practical:</b> Diabetes, Lipid Dysregulation and Insulin Resistance |   |
| 3<br>Research and Clinical applications   | 12/3<br>Mon  | 3-4pm                  | LG03                                 | Weber  | <b>Integration/Feedback Session</b>   |
|   |              | 4-5pm                  | Online                               | Barter   | <b>Research and Clinical Challenges:</b> Cardiovascular Disease and Clinical trials   |
|   |              | Online                 | Moodle                               | Jones/Polly  | <b>Science communication I:</b> Presentation and collaborative learning skills  |
|   | 13/3<br>Tues | 12-1:30pm              | Teaching Labs rooms: G06/G07         | Weber  | <b>Museum Study Session 1: CVD</b>  |
|   |              | 1:30-3pm               | Teaching Labs rooms: G06/G07 G16/G17 | See allocation on Moodle<br><b>TBA-Tutors</b>                          | <b>Tutorial 1:</b> Cardiovascular disease and Diabetes<br><b>QUIZ 1:</b> Cardiovascular and Diabetes  |
| <b>Module 2: Systemic Inflammation and Cancer : Examples and Effects</b>                  |              |                        |                                      |  |   |
| 4<br>Cancer Cachexia  | 19/3<br>Mon  | 3-4pm                  | LG03                                 | Polly  | <b>Overview:</b> Inflammation and Cancer  |
|   |              | 4-5pm                  | LG03                                 | Polly  | <b>Examples and Research Challenges:</b> Cancer Cachexia, Therapeutic Strategies  |
|   | 20/3<br>Tues | 12-1pm                 | Mathews Theatre C                    | Polly  | <b>Research Challenges:</b> Cancer Cachexia - Inflammation and Muscle Effects   |
|   |              | 1-3pm                  | Teaching Labs: G06/G07               | Polly  | <b>Practical:</b> Muscle Wasting in Cancer Cachexia Research Lab  |
| 5<br>Inflammation and Cancer  | 26/3<br>Mon  | 3-4pm                  | LG03                                 | Phillips   | <b>Overview:</b> Inflammation and Pancreatic Cancer   |
|   |              | 4-5pm                  | LG03                                 | Rodrigo  | <b>Overview:</b> Hepatitis and Hepatocellular Carcinoma   |

|  |               |                           |   |  |   |
|--|---------------|---------------------------|---|--|---|
|  |               | Online                    | Moodle  | Jones/Polly  | <b>Science communication II:</b><br>Presentation and collaborative learning skills  |
|  | 27/3<br>Tues  | 12-1:30pm<br><br>1:30-3pm | G06/G07<br><br>Teaching Labs:<br>G06/G07<br>G16/G17 | Sharbeen<br><br><i>See allocation on Moodle</i><br><b>TBA-Tutors</b> | <b>Research Challenges and Practical:</b><br>Pancreatic Cancer and Nanoparticles Lab<br><br><b>Tutorial 2:</b> Systemic Inflammation and Cancer<br><b>QUIZ 2:</b> Cancer Cachexia/Inflammation and Cancer |
| <b>Mid semester break 2-8 Apr</b>  |               |                           |   |  |   |
| <b>Module 3: Immune Dysregulation : Examples and Effects</b>             |               |                           |   |  |   |
| <b>6</b><br><b>Viral Infection and Immunopathology</b>                   | 9/4<br>Mon    | 3-4pm                     | LG03  | Bull   | <b>Overview:</b> Viral infection: Hepatitis C Virus   |
|  |               | 4-5pm                     | LG03  | Rodrigo  | <b>Overview:</b> Viruses, Chronic Liver Disease and Clinical Consequences   |
|  | 10/4<br>Tues  | 12-1pm<br><br>1-3pm       | Mathews Theatre C<br><br>Teaching Labs:<br>G06/G07  | Polly/Rodrigo<br><br>Bull/Rodrigo                                    | <b>Mid-semester exam</b><br><br><b>Research Challenges and Practical:</b><br>Eradicating Hepatitis C Virus; Hepatitis Research Lab  |
| <b>7</b><br><b>Disturbances in Immunity</b>                              | 16/4<br>Mon   | 3-4pm                     | LG03  | Ghaly  | <b>Overview:</b> Intestinal Immune Responses  |
|  |               | 4-5pm                     | LG03  | Ghaly  | <b>Examples:</b> Inflammatory Bowel Diseases (IBD)  |
|  | 17/4<br>Tues  | 12-1:30pm<br><br>1:30-3pm | G06/G07<br><br>Teaching Labs:<br>G06/G07            | Luo<br><br><i>See allocation on Moodle</i><br><b>TBA-Tutors</b>      | <b>Research Challenges and Practical:</b><br>IBD<br><br><b>Tutorial 3:</b> Immune Dysregulation<br><b>QUIZ 3:</b> HCV/IBD immunopathology   |
| <b>Research Impact Symposium : Team Presentations</b>                    |               |                           |   |  |   |
| <b>8</b>   | 23/4<br>Mon   | 3-4pm                     | LG03  | Polly  | Research Impact Symposium   |
|  |               | 4-5pm                     | LG03  | Polly  | Research Impact Symposium   |
|  | 24/4<br>Tues  | 12-1pm                    | Mathews Theatre C                                   | Polly  | Research Impact Symposium   |
| 1-3pm  |               | LG02                      | Polly<br>Polly                                      | Research Impact Symposium<br>Research Impact Symposium               |   |
|  | 26/4<br>Thurs | 3-4pm                     | CLB4  | Polly  | Research Impact Symposium   |
| 4-5pm  |               | CLB4                      | Polly   | Research Impact Symposium  |   |
| 5-6pm  |               | CLB4                      | Polly   | Research Impact Symposium  |   |
| <b>Module 4: Allergy and Hypersensitivity</b>                            |               |                           |   |  |   |
| <b>9</b>   | 30/4<br>Mon   | 3-4pm                     | LG03  | Sewell   | <b>Overview:</b> Molecular basis of Allergy   |
|  |               | 4-5pm                     | LG03  | Herbert  | <b>Overview:</b> Molecular basis of Asthma  |
|  | 1/5<br>Tues   | 12-1pm<br><br>1-3pm       | Mathews Theatre C<br><br>Teaching Labs:<br>G06/G07  | Herbert<br><br>Herbert   | <b>Overview:</b> Lung Disease/Smoking and the Lung<br><br><b>Museum Study Session 2:</b> Respiratory  |
| <b>4/5/18 **Research Experience Reflections due** by 5pm in Turnitin</b> |               |                           |   |  |   |
| <b>10</b>  | 7/5<br>Mon    | 3-4pm                     | LG03  | Herbert  | <b>Examples and Research Challenges:</b><br>Asthma  |
|  |               | 4-5pm                     | LG03  | Herbert  | <b>Integration/Feedback Session</b>   |

|  |              |                           |  |  |   |
|--|--------------|---------------------------|--|--|---|
|  | 8/5<br>Tues  | 12-1:30pm<br><br>1:30-3pm | Teaching Labs:<br>G06/G07<br><br>Tutorial rooms:<br>G06/G07<br>G16/G17 | Herbert<br><br><i>See allocation on Moodle</i><br><b>TBA-Tutors</b>            | <b>Practical:</b> Asthma Research Lab<br><br><b>Tutorial 4:</b> Allergy and Asthma<br><b>QUIZ 4:</b> Asthma and Allergy   |
| <b>Module 5: Autoimmunity and Immune Deficiencies</b>  |              |                           |  |  |   |
| 11<br><b>Autoimmune Disease</b>  | 14/5<br>Mon  | 3-4pm<br><br>4-5pm        | LG03<br><br>LG03   | Wakefield<br><br>Wakefield   | <b>Overview:</b> Autoimmune Disease<br><br><b>Examples and Research:</b> Autoimmune Disease   |
| <b>Autoimmune Disease Mechanisms</b>   | 15/5<br>Tues | 12-1pm<br><br>1-3pm       | Mathews Theatre C<br><br>Teaching Labs:<br>G06/G07                     | Tedla<br><br>Rodrigo   | <b>Overview and Examples:</b> Terminating immune responses: an essential component of host immunity<br><br><b>Museum Study Session 3:</b> Examples of Chronic Disease       |
| 12   | 21/5<br>Mon  | 3-4pm<br><br>4-5pm        | LG03<br><br>LG03   | Rodrigo<br><br>Polly/Jones/Rodrigo/<br>Mentors                                 | <b>Integration/Feedback Session</b><br><br><b>Feedback – Research Impact Symposium</b>  |
|  | 22/5<br>Tues | 12-1:30pm<br><br>1:30-3pm | Teaching Labs:<br>G06/G07<br><br>Tutorial rooms:<br>G06/G07<br>G16/G17 | Rodrigo/Richardson<br><br><i>See allocation on Moodle</i><br><b>TBA-Tutors</b> | <b>Practical class:</b> Autoimmune Disease Mechanisms<br><br><b>Tutorial 5:</b> Autoimmunity and Immune deficiencies<br><b>QUIZ 5:</b> Autoimmunity and Immune deficiencies |
| <b>Reminder: **independent ePortfolio / Reflective blogs may be transferred to your Master site at this time**</b> |              |                           |  |  |   |

**KEY:**

|           |                        |   |
|-----------|------------------------|---|
| Barter    | Prof Philip Barter     | Mechanisms of Disease and Translational Research; Department of Pathology, UNSW |
| Bull      | Dr Rowena Bull         | Kirby Institute and Department of Pathology, UNSW                               |
| Cochran   | Dr Blake Cochran       | Mechanisms of Disease and Translational Research; Department of Pathology, UNSW |
| Ghaly     | Dr Simon Ghaly         | St Vincent's Hospital   |
| Herbert   | Dr Cristan Herbert     | Mechanisms of Disease and Translational Research; Department of Pathology, UNSW |
| Luo       | Dr Annie Luo           | Western Sydney University   |
| Polly     | A/Prof Patsie Polly    | Mechanisms of Disease and Translational Research; Department of Pathology, UNSW |
| Phillips  | A/Prof Phoebe Phillips | Adult Cancer Program, Lowy Cancer Centre, UNSW                                  |
| Rye       | Prof Kerry-Anne Rye    | Mechanisms of Disease and Translational Research; Department of Pathology, UNSW |
| Rodrigo   | Dr Chaturaka Rodrigo   | Kirby Institute and Department of Pathology, UNSW                               |
| Sewell    | A/Prof William Sewell  | St Vincent's Hospital   |
| Sharbeen  | Dr George Sharbeen     | Adult Cancer Program, Lowy Cancer Centre, UNSW                                  |
| Tedla     | A/Prof Nicodemus Tedla | Mechanisms of Disease and Translational Research; Department of Pathology, UNSW |
| Thomas    | A/Prof Shane Thomas    | Mechanisms of Disease and Translational Research; Department of Pathology, UNSW |
| Wakefield | Prof Denis Wakefield   | Mechanisms of Disease and Translational Research; Department of Pathology, UNSW |

## Recommended Text

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You are expected to acquire the following text:

*Robbins. Basic Pathology*, 10th Ed. V. Kumar, RA.K. Abbas & J. Aster (2017). Saunders & Co. Philadelphia PA; Elsevier Saunders (eBook available via UNSW Library website).

## Reference

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Students wishing to study the molecular biology or clinical features of diseases in greater depth might consider the following texts:

*Robbins and Cotran Pathologic Basis of Disease*. 9<sup>th</sup> edition. Eds. V. Kumar, A.K. Abbas, N. Fausto and J. Aster. (2015) Elsevier Saunders (eBook available via UNSW Library website).

Janeway's Immunobiology 8th Edition. Kenneth Murphy. 2012. Garland Science, Taylor & Francis Group, LLC.  
<http://www.ncbi.nlm.nih.gov/books/NBK10757/>

See also: [Learning Resources](#)

## PATH3205 Student Manual

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The PATH3205 Student Manual clearly outlines the learning objectives for each tutorial topic and practical class. Although these learning objectives may not all be covered within a particular class it is imperative that you address each of these issues during your own period of study and revision.

The Pathology Manual contains a large amount of valuable information that will facilitate your study. In particular, you should become familiar with the Glossary of Terms and the Table of Reference Ranges in Pathology.

In addition, there are many resources available on the web, which vary from simple patient information brochures to on-line pathology courses to information on the latest research. Some general sites you may find useful are:

1. Centre for Disease Control (see especially 'health topics A-Z')  
<https://www.cdc.gov/>
2. University of Utah (tutorials and images on many of the topics covered)  
<https://library.med.utah.edu/WebPath/>
3. Medline Plus ('health topics' index of diseases with information)  
<http://www.nlm.nih.gov/medlineplus/healthtopics.html>

Other resources are indicated for some lectures in the PATH3205 Student Manual.



## **PATH 3205 Moodle Module**

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Students enrolled in PATH3205 will be able to access the timetable, lecture notes and related information online via Moodle (login with zPass): <https://moodle.telt.unsw.edu.au/>

## **Academic Honesty and Plagiarism**

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The School of Medical Sciences will not tolerate plagiarism in submitted written work. The University regards this as academic misconduct and imposes severe penalties. Evidence of plagiarism in submitted assignments, etc. will be thoroughly investigated and may be penalized by the award of a score of zero for the assessable work. Flagrant plagiarism will be directly referred to the Division of the Registrar for disciplinary action under UNSW rules.

See [student.unsw.edu.au/plagiarism](http://student.unsw.edu.au/plagiarism)

## **The Museum of Human Disease**

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The Donald Wilhelm Museum of Human Disease is located on the ground floor of the Samuels Building (Building F25). Originally located on the 5<sup>th</sup> floor of the Wallace Wurth Building, it was established by Professor Donald Wilhelm, the Foundation Professor of Pathology at this university. Thanks to his foresight, and to the tireless efforts of Dr G. Higgins (the Museum Curator until 2004), the Museum has been meticulously maintained and updated over the years to reflect the changing patterns of disease in our society. The Museum contains over 2,700 specimens (or “pots”), which display diseased human tissue at the macroscopic level, usually preserved in formalin. Specimens are obtained both from organs removed surgically and from tissue obtained at autopsy, where the natural history of disease is in full view.

**Please take note that some specimens of diseases, which have become rare, e.g. diphtheria, are over 60 years old, and are irreplaceable.** Each specimen is numbered and is accompanied by a clinical history (when known), a macroscopic description of the abnormalities displayed, and a histopathological description of changes at the microscopic level (where relevant). That information, specific to each of thirty areas (or “bays”), can be found in the Museum catalogues located in a bracket within each bay.

All the specimens in the museum are arranged in one or other of two major groups. One group comprises collections of specimens according to pathological processes such as congenital, inflammation and healing, vascular, neoplasia etc. The second group comprises collections of specimens under organ systems, such as cardiovascular, central nervous, renal etc. As responsible adults, we expect you to maintain decorum in the Museum, behave with care and respect for the integrity of the specimens, and help to keep the Museum tidy at all times. This means no eating or drinking in the Museum, and always returning specimens and catalogues to their allocated places. **Do not shake the pots!** This activity conveys no useful information, but often damages the specimens. If you discover that a specimen is leaking or broken, follow the instructions listed in the safety notice below. **Remember that the Museum is a precious learning resource, of which you are encouraged to make full use.**

## **Security in the museum**

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**It is a crime under the Human Tissue Act to steal or mistreat material preserved in the Museum or practical class laboratories. Anyone who contravenes the Act will be prosecuted.**

In order to protect the collection of specimens, access to the Museum is restricted for students in Medicine and PATH3205 during weekdays from 8 a.m. to approximately 8 p.m. The Museum is security locked, and can only be entered by using your student card to enable the doors to be opened. Mr Williamson and the Museum Technical Officer play a supervisory role during office hours.

The Museum and practical class laboratories are under constant electronic surveillance.

## **Safety in the museum**

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- Always handle museum specimens with care and respect. All specimens consist of generously donated human tissue.
- The specimens are preserved in fixative solutions which contain a variety of toxic compounds:

| <b>Chemical</b>   | <b>Max. Percentage Composition</b> |
|-------------------|------------------------------------|
| Glycerol          | 17 (v/v)                           |
| Pyridine          | 0.8 (v/v)                          |
| Sodium Acetate    | 7 (w/v)                            |
| Formalin          | <2 (v/v)                           |
| Sodium Dithionate | 0.4 (w/v)                          |

- For reasons of hygiene, never take food or drink into the museum.
- Never leave a museum specimen on the floor, or in any precarious position.
- If a specimen is leaking, turn it upside down to prevent further leakage, then immediately inform the Museum Technical Officer or a member of academic staff.
- If a specimen is broken, do not attempt to wipe up the spillage. Use the kitty litter provided in the central cupboards to absorb the fumes, then clear the area and immediately inform the Museum Technical Officer or a member of academic staff.
- Remember that the museum is here for your benefit - your cooperation in maintaining neatness and safety at all times is appreciated.

See [safety.unsw.edu.au](http://safety.unsw.edu.au) for more Health & Safety resources

## Health and Safety

Practical labs have special and varying H&S risks and rules; these are outlined in the risk assessments below and will be communicated to you by the lecturer before the practical.

Medicine Teaching  
Laboratory

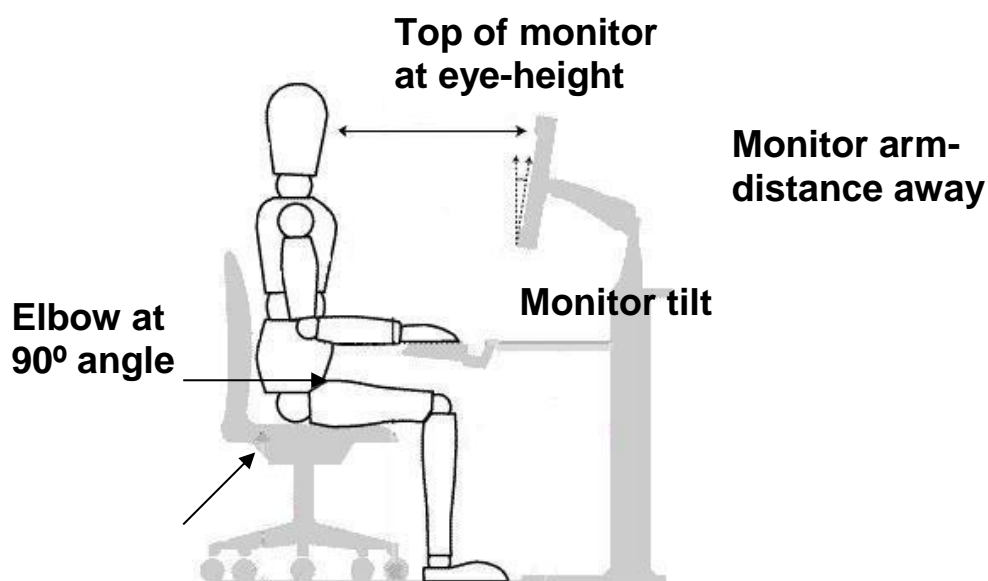
Student Risk  
Assessment



**UNSW**  
THE UNIVERSITY OF NEW SOUTH WALES

Pathology practicals in  
G6/G7 & G16/G17 in  
Wallace Wurth for  
PATH3205 MBD, 2018

### Workstation set-up



### Personal Protective Equipment Required



Closed in Footwear

#### MANUAL HANDLING OF POTS

All pots contain real human tissue that has been generously donated to medical science and **must be treated with appropriate respect and dignity.**

Specimens are preserved in Perspex and contain a range of preserving chemicals that may be harmful. Chemicals used include **formalin, pyridine, sodium dithionate**. A full list of chemicals and associated MSDS information is available in the H&S Station and on the SoMS website.

It is recommended that all students wash their hands thoroughly as they leave practical class. Chemical residues may be present on pots.

**Carry one pot at a time.** Use two hands at ALL TIMES and support the base of pot.

**Avoid rough handling and/or tilting of pots.** This can cause leaking joints or tear tissue in specimen.

**Limit the number of pots on a table at any one time.**

#### SPILLS AND LEAKAGES

If a specimen is leaking or broken, do not attempt to wipe up the spillage. Clear the area and immediately inform the Museum Manager or a member of academic staff. A spill kit will then be used to absorb the chemicals.

#### 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 in 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.

#### Clean up and waste disposal

Not necessary in these practicals.  
No open-toe shoes allowed

#### Declaration

I have read and understand the safety requirements for this practical class and I will observe these requirements.

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

Date for review: 13/2/2018

## Workplace Health and Safety

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For more information on matters related to workplace health and safety policies at UNSW, visit [safety.unsw.edu.au](http://safety.unsw.edu.au)

## Disability Support Services

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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 convenor prior to, or at the commencement of, their course, or with Disability Support Services (02 9385 4734 or [student.unsw.edu.au/disability](http://student.unsw.edu.au/disability) ).

## Computer Laboratories or Study Spaces

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Students wishing to revise macroscopic specimens (pots) can access the Museum of Human Disease, 9 am – 5 pm, Mon – Fri. Note that all students must be inducted into the Museum before access is granted.

Students wishing to review Histopathology and Macroscopic images via the BEST Network can use computers located in G06/G07 or G16/17, Wallace Wurth West Building.



| Hazards                                   | Risks   | Controls   |
|---|---|--|
| Physical<br>Sharp plastic                 | 'Stabbing' wound of hand  | <ul style="list-style-type: none"> <li>Use disposable gloves</li> </ul>  |
| Biological<br>Antibody                    | Inoculation/Irritant  | <ul style="list-style-type: none"> <li>Do not eat, drink or smoke in the teaching laboratory</li> <li>Use disposable gloves</li> </ul> |
| Chemical<br>Acrylamide<br>Azide<br>...PBS | Corrosive/Flammable<br>Irritant/neurotoxic<br>Irritant<br>Mild Irritant | <ul style="list-style-type: none"> <li>Low concentrations of chemicals used</li> <li>Use disposable gloves</li> </ul>                  |

**Pipetting ergonomics**

Pipetting is another work aspect that can cause aches and pains. Here are some handy hints:

- Adjust your chair or stool so that your elbow is at a 90° angle while pipetting.
- Adjust the height and position of sample holders, solution container, and waste receptacle so that they are all approximately the same.
- Try to work with your hands below shoulder height.
- Let go of the pipette from time to time and give the fingers/hand a break
- Do not twist or rotate your wrist while pipetting
- Use minimal pressure while pipetting
- Try to switch periodically between different types of work.

For more information on preventing repetitive strain while pipetting click on <https://www.anachem.co.uk/Protect-Yourself-from-RSI>

**Personal Protective Equipment required**

|   |  |   |   |
|---|--|---|---|
| <br>Closed in Footwear | <br>Lab. Coat<br>optional | <br>Gloves | <br>Safety Goggles<br>optional |
|---|--|---|---|

**Emergency Procedures**

In the event of an alarm sounding, stop the practical class and wait for confirmation to evacuate from demonstrators. Then wash your hands and pack up your bags. Follow the instructions of the demonstrators regarding exits and assembly points.

**Clean up and waste disposal**

- Remove your gloves and dispose in the biowaste bins provided.
- Dispose of all pipette tips in the bin provided.

**Ethics Approval**

This type of practical does not require ethics approval.

**Declaration**

I have read and understand the safety requirements for this practical class and I will observe these requirements.

Signature:.....Date:.....