



## FACULTY OF SCIENCE

### TRAINEE HANDBOOK 2018

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## ANATOMICAL PATHOLOGY

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It is essential to read this Handbook in conjunction with the ***Trainee Handbook – Administrative Requirements*** which is relevant to all trainees. This has information about the College's structure and policies, together with details of requirements for registration, training and examination applications.

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## Glossary

AS ISO	Australian and International Standard
CADASIL	Cerebral Autosomal-Dominant Arteriopathy with Subcortical Infarcts and Leukoencephalopathy
CbD	Case-based Discussion
CISH	Chromogenic In-situ Hybridisation
CPDP	Continuing Professional Development Program
DOPS	Direct Observation of Practical Skills
DTC	Direct to Consumer
EBLP	Evidence Based Laboratory Practice
EDX	Energy Dispersive X-Ray
EELS	Electron Energy Loss Spectroscopy
EHR	Electronic Health Records
EM	Electron Microscopy
FISH	Fluorescence in situ Hybridisation
FNA	Fine Needle Aspiration
FSc	Faculty of Science
IHC	Immunohistochemistry
ISH	In-situ hybridisation
LDT	Laboratory Development Testing
MALDI	Matrix Assisted LASER Desorption/Ionisation
MSc	Master of Science
NATA	National Association of Testing Authorities
NPAAC	National Pathology Accreditation Advisory Council
PCR	Polymerase Chain Reaction
PhD	Doctorate of Philosophy
QA	Quality Assurance
QC	Quality Control
RCPA	Royal College of Pathologists of Australasia
SEM	Scanning Electron Microscopy
SISH	Silver In-situ Hybridisation
SNP	Single Nucleotide Polymorphism

## SECTION I

### Introduction

The Faculty of Science provides a structured Fellowship program to enable scientists to demonstrate competence in the following areas to a standard specified by the RCPA.

1. Use professional judgement in advising clinicians on the requirements for investigations and in carrying out these investigations for patients as a member of the team providing clinical care.
2. Maintenance of safe and effective service through the use of relevant quality assurance and audit tools, to appropriate national standards.
3. Undertake scientific research, including the evaluation of scientific literature, to introduce new scientific procedures or solve diagnostic or therapeutic problems within their field.
4. Apply the principles of evidence-based laboratory practice to inform health care decisions.
5. Provide innovative and strategic direction to the operation of the laboratory.

The scientist will complete the training requirements specified in the curriculum, and will demonstrate competence and attainment of learning outcomes by satisfying all assessment requirements to the standards set by the Faculty of Science, as defined in the curriculum.

## General aims & structure of the training program

The general aims of the training program are to provide a structured pathway for scientists working in a Pathology context to meet the standards defined by the RCPA of a leading Scientist in their field.

These general aims of the training program relate to three areas of professional activity of a leading scientist, ie,

- Discipline specific clinical laboratory functions
- Research
- Innovation, Development and Leadership

The Faculty of Science curriculum in Anatomical Pathology comprises standards in these three areas as follows:

### 1. Research standards

- Demonstrate highly developed skills in research, management of time and resources and communication of outcomes and data, whilst independently developing theoretical concepts, acquiring new knowledge and testing hypotheses in the field of Anatomical Pathology.

### 2. Clinical laboratory standards

- Demonstrate competence in applying the techniques, technology and reporting associated with an Anatomical Pathology laboratory with a broad case-mix of patients.
- Apply the theoretical and technical expertise in laboratory techniques required to lead the activities of an Anatomical Pathology laboratory.

### 3. Innovation, development and leadership standards

- Apply, implement and evaluate strategies that guarantee quality assurance, compliance, safety and efficient use of resources fundamental to the operation of an Anatomical Pathology laboratory.
- Demonstrate a commitment to the continual improvement and advancement of Anatomical Pathology.
- Apply the principles of Evidence Based Laboratory Practice (EBLP) to inform health care decisions.

These standards are elaborated as content areas and specific training outcomes in Section 2 of this handbook. In the Clinical Laboratory Standards there are specific content areas and training outcomes for Part I and II. Competence in outcomes achieved by Part I of training should be maintained throughout. It is expected that trainees should achieve the outcomes in the Research Standards and Innovation, Development and Leadership Standards gradually throughout their training.

Trainees, with the assistance of their supervisor, should ensure that they engage in appropriate learning activities to achieve each of the outcomes, and therefore the standard. The indicators are statements which guide the assessment process, and describe how the trainee will demonstrate they have met the standard. Specific assessment requirements are detailed in Section 3 of this handbook.

The total time to complete the training program is normally a minimum of 5 years, except when time credits have been granted by the Chief Examiner on the advice of the Principal Examiner for previous experience through a Training Determination. Part I assessment criteria can normally be met and assessed during the third year of training, Part II requirements following another 2 years training.

## **Administrative Requirements**

This handbook should be read in conjunction with the ***RCPA Trainee Handbook Administrative Requirements*** document on the College website.

### **Entry requirements**

Trainees should be graduates of a university in Australia or New Zealand with a degree at Australian Qualifications Framework level 7 (minimum) with subjects relevant to the field of pathology. If such a degree is awarded by an overseas tertiary education institution the qualifications should be approved by the College. To enter the program, trainees are ordinarily required to have five (5) years post graduate experience working as scientists in a Pathology related field.

### **Training requirements**

Training must take place in an RCPA accredited laboratory and is limited to the time period for which that laboratory is accredited in each discipline. Details of RCPA accredited laboratories are available through the College website.

Please note that ordinarily, a maximum of 4 years is to be spent in any one laboratory over the course of the 5-year training program. Trainees and their supervisors should organise for the trainee to spend up to one year in one or more other accredited laboratories. Although the regular training position of the trainee may be in one sub-discipline (the major sub-discipline) trainees should spend sufficient time in their two selected minor sub-disciplines and be certified as competent through the relevant workplace-based assessments. Such a trainee should spend at least one month Full Time Equivalent in each of the two minor sub-disciplines by the end of the third year of training. Individuals should contact the College Registrar if a deviation from this requirement is sought.

Trainees are responsible to ensure that all forms are submitted by the due dates indicated in the Handbook and the College website.

## Supervision

### References

- Supervision of Training and Accreditation of Supervisors Policy
- Resource Manual for Supervisors

All training must be supervised. More than one supervisor can be nominated if Trainees divide the year between two or more unrelated laboratories. The College recommends that any one supervisor be responsible for no more than two Trainees.

### Who can be a supervisor?

The supervisor will normally be a Fellow of the RCPA; however non-Fellows may be approved by the Principal Examiner in the discipline if no Fellow is available. If the Trainee spends significant periods working in an area where the supervisor has no personal involvement, the supervisor must certify that suitable supervision is being provided. The supervisor must also ensure that adequate supervision is arranged in their absence.

In some circumstances shared supervision may be necessary, but there must be a nominated primary supervisor with overall responsibility. Trainees working towards higher academic degrees (e.g. PhD), who find that their research supervisor is not suitable to be the RCPA training supervisor, should nominate an RCPA Fellow as co-supervisor.

Day-to-day supervision should primarily be the responsibility of a Fellow of the Faculty of Science, however it is appropriate for senior pathology staff with relevant experience to sign off on some workplace-based assessments.

### The role of the supervisor

Supervisors will devise a prospective training (or research) program, on initial registration and annually. This should be devised in collaboration with the Trainee and submitted to the RCPA. Supervisors should also ensure that the Trainee has sufficient time and opportunities to carry out the required training activities.

Supervisors, and others to whom aspects of training have been delegated, are expected to monitor and provide regular feedback on the development of the Trainee's competence. In addition to the formal meetings with the Trainee that should occur every three months, they should meet regularly with the Trainee; observe their laboratory performance and interaction with pathologists, peers and clinicians; and review result reporting. This may be delegated to other trainers where appropriate, e.g. when the Trainee is on secondment to another laboratory for a segment of training.

The formal duties of supervisors, such as requirements to report the Trainee's progress to the Board of Education and Assessment, are described in the RCPA Resource Manual for Supervisors and the RCPA policy on Supervision of training and the Accreditation of Supervisors ([hyperlinked above](#)).

Supervisors and Trainees should contact the **RCPA Education Advisor** for assistance with supervision and training issues.

## Resources

The resources listed below are not compulsory nor do they necessarily cover all the anatomical pathology that a trainee should know and information for examination may come from books, especially in the sub-specialty regions of anatomical pathology, and journals outside this list.

### ***Suggested text books***

#### **Surgical pathology**

- Rosai J (2011) Rosai and Ackerman's Surgical Pathology (10th ed) Mosby.
- Silverberg S, DeLellis R, Frable W, LiVolsi V and Wick M (2005) Silverberg's Principles and Practice of Surgical Pathology and Cytopathology. Churchill Livingstone.
- Burton JL and Ruttly G (2010) The hospital autopsy (3rd ed).

#### **Ultrastructural Pathology**

- Jenette JC, Olson JL, Schwartz MM, Silva FG. (Eds.) (2007) Heptinstall's Pathology of the Kidney. Lippincott Williams and Wilkins, Philadelphia.
- Ghadially FN (1988) Ultrastructural pathology of the cell and matrix: a text and atlas of physiological and pathological alterations in the fine structure of cellular and extracellular components (3<sup>rd</sup> Edn). Butterworth-Heinemann
- Stirling JW, Curry A, Eyden B. (2012) Diagnostic Electron Microscopy: A Practical Guide to Interpretation and Technique. John Wiley and Sons Inc. New York.
- Papadimitriou JM, Henderson DW, Spagnolo DV. (1992) Diagnostic Ultrastructure of Non-neoplastic Diseases. Churchill Livingstone.
- Henderson DW, Papadimitriou JM, Coleman M. (1986) Ultrastructural Appearances of Tumours: diagnosis and classification of human neoplasia by electron microscopy. Churchill Livingstone.

#### **Immunohistochemistry**

- Lin F, Prichard J (Eds.) (2015) Handbook of Practical Immunohistochemistry: Frequently Asked Questions. Springer.
- Dabbs DJ (2013) Diagnostic Immunohistochemistry. Elsevier Health Sciences.
- Delves PJ, Martin SJ, Burton DR, Roitt IM. (2011) Roitt's Essential Immunology. John Wiley and Sons Inc. New York.

#### **Cytopathology**

- Atkinson B (2003) Atlas of Diagnostic Cytopathology. 2nd Edition. WB Saunders, Philadelphia.
- Cibas ES and Ducatman BS (2009) Cytology: Diagnostic Principles and Clinical Correlates (3rd ed) Saunders
- DeMay RM (ed) Practical Principles of Cytopathology Revised. American Society for Clinical Pathology Press, Chicago.
- DeMay RM (ed): The Art & Science of Cytopathology, American Society for Clinical Pathology Press, Chicago.
- Ramzy I (ed): Clinical Cytopathology & Aspiration Biopsy: Fundamental Principles & Practice. Appleton & Lange.
- Orell S, Sterrett G, Whitaker D. Fine Needle Aspiration Cytology. Elsevier.
- Solomon and Nayar (eds) The Bethesda System for Reporting Cervical Cytology (2nd Edn). Springer-Verlag.



### **Molecular genetics**

- Cheng L, Eble JN. (Eds.) (2012) Molecular Surgical Pathology. Springer Science and Business Media
- Vasef M, Auerbach A. (2015) Diagnostic Pathology: Molecular Oncology. Elsevier.
- Caliendo AM, Deerlin VM, & Kaul KL.(Eds.) (2007) Molecular Pathology in Clinical Practice. Springer.

### **Mortuary science**

- Saukko P, Knight B (2004) Knight's Forensic Pathology. Arnold Publishing.
- Finkbeiner WE, Connolly A, Ursell PC, Davis RL. (2009) Autopsy pathology A Manual and atlas. Elsevier Health Sciences.

### **Journals**

#### **Pathology/Cytopathology**

- Acta Cytologica
- American Journal of Surgical Pathology
- Human Pathology
- Journal of Pathology
- Journal of Clinical Pathology
- Pathology
- Pathology Case Reviews
- Seminars in Diagnostic Pathology
- Ultrastructural Pathology
- EMBO Journal (Molecular Genetics/ Molecular Biology)
- Academic Forensic Pathology
- Journal of Forensic Science, Medicine and Pathology

#### **Other Learning Resources**

- AFIP Series of Fascicles/Tumour Atlases
- WHO Tumour Atlases
- National Pathology Accreditation Advisory Council (NPAAC) Guidelines found at [www.health.gov.au](http://www.health.gov.au)
- NPAAC Requirements for Gynaecological (Cervical) Cytology, 2004
- NPAAC Performance Measures for Australian Laboratories Reporting Cervical Cytology
- Guidelines for the Facilities and Operation of Hospital and Forensic Mortuaries. NPAAC. Commonwealth of Australia.
- Guidelines on Autopsy Practice. Report of a working group of The Royal College of Pathologists

If you have ideas about additional resources, please inform RCPA:  
(email [rcpa@rcpa.edu.au](mailto:rcpa@rcpa.edu.au)) so these can be added to future editions of this handbook.

## SECTION 2 – CURRICULUM

### Research standards

Standard
<p>Fellows of the Faculty of Science will:</p> <p><b>Demonstrate highly developed skills in research, management of time and resources and communication of outcomes and data, whilst independently developing theoretical concepts, acquiring new knowledge and testing hypotheses in the field of Anatomical Pathology.</b></p>

Content	Outcomes	Indicator
<b>R 1 – Research</b>	<p><b>R 1 – Demonstrated ability in carrying out effective research</b></p> <p>1.1 Comment on recent advances and relevant literature in their field of study</p> <p>1.2 Employ analytical and critical thinking to develop, refine or critique theoretical concepts, and to recognise problems</p> <p>1.3 Develop research proposals and protocols towards testing current hypotheses/ investigating or validating contemporary problems/ acquiring new knowledge in the discipline</p> <p>1.4 Apply statistical and epidemiological concepts and interpret epidemiological/ laboratory data</p> <p>1.5 Critically evaluate own findings and the findings of others</p> <p>1.6 Demonstrate an understanding of ethical/ professionalism issues relating to research including but not limited to consent, ethical treatment of humans and animals, confidentiality and privacy, attribution of credit (including authorship), intellectual property and copyright, malpractice and misconduct</p> <p>1.7 Participate in effective and ethical peer review processes as researchers and peer reviewers</p>	<p>R 1 will be evidenced through</p> <ul style="list-style-type: none"> <li>6 original research articles published in journals of a standard approved by the principal examiner within the last ten years in addition to a discussion that explains the background, interrelatedness and significance of the research. These could be presented as a dissertation</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>A PhD related to the area of expertise in Pathology, conferred by a university recognised by the College</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>MSc(Research) conferred by a university recognised by the College plus at least 2 original research articles published within the last ten years in journals of standard approved by the principal examiner</li> </ul> <p>AND</p> <ul style="list-style-type: none"> <li>Answering questions in a viva voce examination to the standard approved by the principal examiner</li> </ul>
<b>R 2 – Management</b>	<p><b>R 2 – Demonstrated ability in the management of research and research administration</b></p> <p>2.1 Prioritise outcomes, meet goals and work productively with key stakeholders using effective project management skills</p> <p>2.2 Participate in processes for obtaining funding including applying for grants and other external funding</p> <p>2.3 Use information systems and appropriate resources or technologies to collect research data and communicate research findings</p> <p>2.4 Determine the most cost effective methods to achieve a research goal</p> <p>2.5 Demonstrate flexibility, adaptability, and innovation in management of research</p>	<p>All R 2 outcomes will be assessed through</p> <ul style="list-style-type: none"> <li>A report, to be submitted in the candidate's portfolio as detailed in Part II assessment policy</li> </ul> <p>AND</p> <ul style="list-style-type: none"> <li>Answering questions in a viva voce examination to the standard approved by the principal examiner</li> </ul>

Content	Outcomes	Indicator
<p><b>R 3 – Communication</b></p>	<p><b>R 3 – Demonstrated ability in research communication</b></p> <p>3.1 Clearly articulate ideas, construct cohesive arguments, and translate and convey technical concepts and information to a variety of stakeholders in a style appropriate to the context</p> <p>3.2 Prepare reports and papers for peer review/ publication that comply with the conventions and guidelines for reporting biomedical research</p> <p>3.3 Defend research methods and findings in peer review and/or viva voce examination</p> <p>3.4 Achieve a significant number of articles in peer-reviewed publications</p> <p>3.5 Support the development of research capacity of others in teaching, mentoring or demonstrating</p>	<p><b>R 3</b></p> <ul style="list-style-type: none"> <li>• Document material presented at weekly laboratory meetings</li> <li>• Document the planning and progress of research towards a higher degree through Annual or 6 monthly report</li> <li>• Publications, presentations and poster abstracts</li> <li>• Develop end-of-year reports for own laboratory</li> <li>• Document the contribution to training programs or assisting other scientists/registrars in conducting research</li> </ul> <p>AND</p> <ul style="list-style-type: none"> <li>• Answer questions in a viva voce examination to the standard approved by the principal examiner</li> </ul>

## Clinical Laboratory Standards – Part I

Standard
<p>Fellows of the Faculty of Science will:</p> <ul style="list-style-type: none"> <li>• <b>Demonstrate competence in applying the techniques, technology and reporting associated with an Anatomical Pathology laboratory with a broad case-mix of patients.</b></li> </ul>

Content	Outcomes	Indicator
<p><b>AC 1 – Foundation knowledge</b></p> <p>Principles of pathophysiology and disease pathogenesis</p> <p>Common diseases and their diagnostic features</p>	<p><b>AC 1.1 – Mechanisms of disease</b></p> <p>AC 1.1.1 – Describe aspects of pathophysiology relevant to Anatomical Pathology including morphological and functional changes in cells and tissue associated with injury, infection, neoplasia, inflammation, genetic disorders and ageing and how these changes relate to the pathogenesis of major diseases.</p> <p><b>1.1.2</b> – Describe genetic aberrations and biochemical pathways associated with major disease entities</p> <p><b>1.1.3</b> – Explain the principles of Mendelian genetics</p> <p><b>AC 1.2 – Basic systemic pathology</b></p> <p>Describe in detail the clinical characteristics of specific common diseases and the macroscopic and microscopic features that are used by Anatomical Pathologists to make a diagnosis</p>	<p>All of AC 1 will be evidenced through:</p> <p>Answering examination questions that require description, explanation and analysis of basic anatomy and physiology, pathophysiology and disease pathogenesis</p>
<p><b>AC 2 – Laboratory techniques</b></p> <p>Apply and evaluate the techniques and technology routinely used in the laboratory.</p>	<p><b>AC 2.1 – Histology</b></p> <p><b>AC 2.1.1</b> – Describe the fixation of routine surgical specimens including</p> <ul style="list-style-type: none"> <li>• The role of formalin in fixation</li> <li>• The action of a buffer</li> <li>• The pH of a reagent</li> <li>• The osmolarity of a reagent</li> </ul> <p><b>AC 2.1.2</b> – Explain the collection, handling and processing of tissue specimens including detail on:</p> <ul style="list-style-type: none"> <li>• Routine and specialised fixation of surgical tissue</li> <li>• Embedding of tissue in paraffin</li> <li>• Fresh tissue including renal, nerve, skin punch and muscle biopsy</li> <li>• Decalcification</li> <li>• Specimen tracking systems</li> <li>• Dealing with an incompletely labelled specimen</li> <li>• Specimen retention protocols</li> </ul>	<p>All of AC 2.1 will be evidenced through:</p> <ul style="list-style-type: none"> <li>• Answering examination questions that require description, explanation and evaluation of sample preparation</li> <li>• Completing workplace based assessment scaffolds that assess the candidate's ability to suitably prepare samples and slides, in addition to operating equipment, in Histology, to the satisfaction of the supervisor</li> </ul>

<p><b>AC 2 – Laboratory techniques (Cont.)</b></p>	<p><b>AC 2.1.3 – Microtomy</b></p> <ul style="list-style-type: none"> <li>Describe the main functions of a routine rotary microtome</li> <li>Describe the components and application of a rotary microtome</li> <li>Describe sectioning routine paraffin embedded tissue</li> <li>Describe sectioning frozen tissue</li> <li>Describe the components and application of a cryostat</li> </ul> <p><b>AC 2.1.4 – Routine staining</b></p> <ul style="list-style-type: none"> <li>Describe the purpose of the H&amp;E stain</li> <li>Describe the origin of the haematoxylin and eosin stain</li> <li>Describe automation of the staining process</li> <li>Recognise incompletely fixed tissue, explain the significance of this problem and state what actions are required to correct it</li> </ul> <p><b>AC 2.1.5 – Special staining</b></p> <ul style="list-style-type: none"> <li>Explain the underlying histochemistry of the major special stains used in Histology such as the PAS stain, methenamine silver stain, trichrome stain and Congo red stain</li> </ul> <p><b>AC 2.1.6 – Microscopy</b></p> <ul style="list-style-type: none"> <li>List the key components and operation of the light microscope</li> <li>Describe the process of setting up Kohler illumination</li> <li>Describe parfocality of an imaging system</li> <li>Describe the role of the condenser</li> <li>Explain the significance of objective numerical aperture</li> </ul> <p><b>AC 2.1.7 – Describe the theoretical considerations of these emerging technologies and their possible application in Histology:</b></p> <ul style="list-style-type: none"> <li>Freeze fixation</li> <li>Alternative tissue processing technologies</li> <li>Microwave radiation</li> <li>Solvent recycling</li> </ul>	<p>All of AC 2.1 will be evidenced through:</p> <ul style="list-style-type: none"> <li>Answering examination questions that require description, explanation and evaluation of sample preparation</li> <li>Completing workplace based assessment scaffolds that assess the candidate's ability to suitably prepare samples and slides, in addition to operating equipment, in Histology, to the satisfaction of the supervisor</li> </ul>
<p><b>AC 2 – Laboratory techniques (Cont.)</b></p>	<p><b>AC 2.2 – Cytology</b></p> <p><b>AC 2.2.1 – Specimen preparation</b></p> <ul style="list-style-type: none"> <li>Explain the requirements for adequate specimen fixation</li> <li>Describe the process of macroscopic description of specimens using standard nomenclature (eg. chylous fluid) and explain its importance</li> <li>Describe various methods of specimen preparation including for gynaecological cytology, non-gynaecological cytology and fine needle aspiration (FNA) cytology</li> <li>Explain the rationale for determining FNA specimen adequacy and triaging</li> <li>Describe how to make a cell block</li> </ul>	<p>All of AC 2.2 will be evidenced through:</p> <ul style="list-style-type: none"> <li>Answering examination questions that require description, explanation and evaluation of sample preparation</li> <li>Completing workplace-based assessment scaffolds that assess the candidate's ability to suitably prepare samples and slides, in addition to operating equipment, in Cytology, to the satisfaction of the supervisor</li> </ul>

<p><b>AC 2 – Laboratory techniques (Cont.)</b></p>	<ul style="list-style-type: none"> <li>• Describe the protocol of the Papanicolaou stain and explain its significance</li> <li>• Describe the protocol of the Diff-Quik stain and explain its significance</li> <li>• Describe the protocol of the following special stains and explain their significance:             <ul style="list-style-type: none"> <li>○ Perls' Prussian blue, haematoxylin eosin, PAS, PAS diastase</li> </ul> </li> </ul> <p><b>AC 2.2.2 – Screening practices</b></p> <ul style="list-style-type: none"> <li>• Explain the role of screening in the diagnostic process</li> <li>• Describe an approach for screening gynaecological specimens</li> <li>• Describe an approach for screening non-gynaecological specimens</li> <li>• Describe an approach for screening FNA specimens</li> </ul> <p><b>AC 2.2.3 – Microscopy</b></p> <ul style="list-style-type: none"> <li>• Explain the use of light microscopy objectives in the screening process</li> <li>• Describe how to view thick cellular material in cytology preparations through adjustment of a light microscope</li> <li>• Describe how to acquire images of thick cellular material in cytology preparations through adjustment of a digital camera system.</li> </ul> <p><b>AC 2.2.4 – Quantification methods</b></p> <ul style="list-style-type: none"> <li>• Describe methods of cell enumeration</li> <li>• Describe how to perform a differential cell count</li> <li>• Describe how to perform cell counts on bronchioloalveolar lavage specimens with a Neubauer chamber and explain its use</li> </ul>	
<p><b>AC 2 – Laboratory techniques (Cont.)</b></p>	<p><b>AC 2.3 – Immunohistochemistry (IHC)</b></p> <p><b>AC 2.3.1 – Fixation for retention of antigens and antigen retrieval processes</b></p> <ul style="list-style-type: none"> <li>• List the main fixatives used for IHC and explain why they are important</li> <li>• Explain the main specimen processing methods for IHC</li> <li>• Describe the antigen retrieval process</li> </ul> <p><b>AC 2.3.2 – Antibody production</b></p> <ul style="list-style-type: none"> <li>• Explain the different types of antibodies commonly used (eg monoclonal and polyclonal)</li> <li>• Explain why animal species are used for antibody production</li> <li>• Describe the process of antibody test validation</li> </ul> <p><b>AC 2.3.3 – Immunostaining</b></p> <ul style="list-style-type: none"> <li>• Describe a protocol for immunofluorescence staining</li> <li>• Describe a protocol for routine immunoperoxidase staining</li> <li>• Describe a protocol for double immunostaining with two chromogens</li> <li>• Explain how to prepare dilutions of single and mixed reagents</li> </ul>	<p>All of AC 2.3 will be evidenced through:</p> <ul style="list-style-type: none"> <li>• Answering examination questions that require description, explanation and evaluation of sample preparation</li> <li>• Completing workplace-based assessment scaffolds that assess the candidate's ability to suitably prepare samples and slides, in addition to operating equipment, in Immunohistochemistry, to the satisfaction of the supervisor</li> </ul>

<p><b>AC 2 – Laboratory techniques (Cont.)</b></p>	<ul style="list-style-type: none"> <li>• List the common specific antibody panels</li> </ul> <p><b>AC 2.3.4 – Immunorecognition theory</b></p> <ul style="list-style-type: none"> <li>• Describe antibody and other affinity-based labelling approaches and their application in IHC</li> <li>• List and describe the common chromogens and fluorophores used</li> <li>• Describe new developments in antibody link reagents and detection systems</li> <li>• Describe the CD classification system, and intermediate filament protein classification.</li> <li>• Describe the role of breast tissue markers in diagnosing breast carcinoma</li> </ul> <p><b>AC 2.3.5 – In-situ hybridisation</b></p> <ul style="list-style-type: none"> <li>• Describe the in-situ hybridisation (ISH) process</li> <li>• Describe the relationship of ISH to IHC testing with examples of this relationship</li> <li>• Explain the benefits of automation to ISH</li> <li>• Explain the benefits and rationale of CISH, FISH and SISH</li> </ul> <p><b>AC 2.3.6 – Microscopy</b></p> <ul style="list-style-type: none"> <li>• Explain the fundamentals of widefield epifluorescence microscopy</li> <li>• Explain the microscopy and imaging set up for evaluation of multiple FISH probes</li> </ul>	
<p><b>AC 2 – Laboratory techniques (Cont.)</b></p>	<p><b>AC 2.4 – Electron microscopy (EM)</b></p> <p><b>AC 2.4.1 – Fixation for transmission electron microscopy</b></p> <ul style="list-style-type: none"> <li>• Explain the role of pH and osmolarity in fixatives and buffers</li> <li>• List the fixatives commonly used for transmission electron microscopy and explain why they are used</li> <li>• Define the time period for which an EM fixative be kept</li> <li>• Describe the effect of post-mortem delay in fixation</li> </ul> <p><b>AC 2.4.2 – Specimen collection, handling and processing</b></p> <ul style="list-style-type: none"> <li>• Describe tissue crush artefact and how it is recognised</li> <li>• Discuss considerations in dealing with large tissue specimens</li> <li>• List the benefits and drawbacks of paraffin retrieval processing</li> <li>• Explain each step in a routine processing protocol</li> </ul> <p><b>AC 2.4.3 – Ultramicrotomy</b></p> <ul style="list-style-type: none"> <li>• Describe the components and application of an ultramicrotome</li> <li>• Explain the relationship of section thickness to ultrastructure</li> <li>• Discuss the role of knife angle in routine work</li> <li>• Describe the purpose of the “cutting window”</li> <li>• Compare a glass knife with a diamond knife</li> <li>• Explain the action of a common semithin section stain</li> </ul>	<p>All of AC 2.4 will be evidenced through:</p> <ul style="list-style-type: none"> <li>• Answering examination questions that require description, explanation and evaluation of electron microscopy techniques</li> <li>• Completing workplace-based assessment scaffolds that assess the candidate’s ability to suitably prepare samples, grids and slides as well as operate equipment to the satisfaction of the supervisor</li> </ul>

<p><b>AC 2 – Laboratory techniques (Cont.)</b></p>	<p><b>AC 2.4.4 – Routine staining</b></p> <ul style="list-style-type: none"> <li>• Explain routine staining of ultrathin sections</li> <li>• Describe the cellular components stained by each of the major electron microscopy stains</li> <li>• Describe the safety aspects of the staining process</li> </ul> <p><b>AC 2.4.5 – Ultrastructure</b></p> <ul style="list-style-type: none"> <li>• Describe the main organelles of mammalian cells</li> </ul> <p><b>AC 2.4.6 – Special staining techniques</b></p> <ul style="list-style-type: none"> <li>• Explain a staining protocol to demonstrate glycogen</li> </ul> <p><b>AC 2.4.7 – Electron microscopy</b></p> <ul style="list-style-type: none"> <li>• Describe the normal vacuum and high-tension parameters</li> <li>• Explain the alignment procedure</li> <li>• Explain lens astigmatism correction procedure</li> <li>• Describe how to carry out a calibration procedure and maintain comprehensive calibration records</li> </ul> <p>Describe the process of morphometry</p>	
<p><b>AC 2 – Laboratory techniques (Cont.)</b></p>	<p><b>AC 2.5 – Molecular Genetics</b></p> <p><b>AC 2.5.1 – Molecular genetics theory</b></p> <ul style="list-style-type: none"> <li>• Discuss the molecular basis of cancer</li> <li>• Describe the clinical utility of molecular techniques for the diagnosis, prognosis and prediction (targeted therapies) in cancer</li> <li>• Discuss the clinical impact of new technologies on current clinical practice</li> <li>• Discuss data storage and security for arrays and sequencing on electronic health records (EHR)</li> <li>• Discuss direct to consumer molecular testing (DTC)</li> <li>• Discuss DNA-based tissue identity testing</li> </ul> <p><b>AC 2.5.2 – Technical requirements</b></p> <ul style="list-style-type: none"> <li>• Describe the requirements to establish a molecular test</li> <li>• Discuss in-situ hybridisation (ISH) including fluorescence and chromogenic techniques, including the identification of the types of probes used and their clinical utility</li> <li>• Discuss the rationale for using internal controls for each assay with respect to the technical difficulties of ISH</li> <li>• Discuss the techniques of PCR, sequencing and arrays (CVN, SNP, and expression), including a comparison of the different platforms in use for each</li> <li>• Discuss automation in molecular testing, including a comparison of laboratory developed testing (LDT) to regulated CE or FDA kit system</li> </ul> <p>Explain the principles, performance and limitations of the instrumentation listed to support the interpretation of laboratory test results</p>	<p>All of AC 2.5 will be evidenced through answering examination questions and preparing case reports and workplace-based assessments to be submitted as part of a portfolio of work on molecular genetics theory, technical requirements and application in targeted therapies</p>



<p><b>AC 2 – Laboratory techniques (Cont.)</b></p>	<p><b>AC 2.6 Mortuary Practice</b></p> <p><b>AC 2.6.1 - Basic principles of a Mortuary Practice</b></p> <ul style="list-style-type: none"> <li>• Principles of consent and authority for autopsy</li> <li>• Rationale for autopsy in different settings and circumstances</li> <li>• Aims of the autopsy</li> <li>• Principles of operation of the mortuary</li> <li>• Expected outcomes of autopsy</li> <li>• Basic process followed in autopsy</li> </ul> <p><b>AC 2.6.2 – Knowledge of relevant law relating to</b></p> <ul style="list-style-type: none"> <li>• consent and authority for autopsy</li> <li>• death certification</li> <li>• organ and tissue donation and transplantation</li> <li>• diagnosis of death</li> <li>• retention of tissue for diagnosis/ research</li> </ul> <p><b>AC 2.6.3– Advanced principles of Mortuary Practice</b></p> <ul style="list-style-type: none"> <li>• The theoretical mortuary and pathology science in regards to types of cases, different manners of death, reasons for examination, expected findings and unexpected findings of significance</li> <li>• The range of techniques currently used in hospital mortuaries including photography, evisceration and other special investigations</li> <li>• Principles of specimen management</li> </ul> <p><b>AC 2.6.4 – Elements and complexities of managing a hospital mortuary:</b></p> <ul style="list-style-type: none"> <li>• Occupational Health and safety issues including:             <ul style="list-style-type: none"> <li>○ Infection Control</li> <li>○ Handling of high risk and infections cases</li> <li>○ Manual handling</li> <li>○ Personal Protective Equipment</li> <li>○ Injuries</li> <li>○ Hazards eg. asbestos &amp; other contaminants</li> </ul> </li> <li>• Body admission</li> <li>• Identification</li> <li>• Handling of clothing and personal effects</li> <li>• Processing of exhibits</li> <li>• Care and maintenance of equipment</li> <li>• Theatre cleaning</li> <li>• Care of bodies while in storage</li> <li>• Documentation &amp; Records management</li> <li>• Body transport and conveyancing</li> <li>• Body release</li> <li>• Organ retention and release</li> </ul> <p><b>AC 2.6.5 – Knowledge and technical proficiency in:</b></p> <ul style="list-style-type: none"> <li>• Adult post-mortem examination</li> <li>• Specimen collection</li> <li>• Restoration</li> </ul>	<p>All of AC 2.6 will be evidenced through:</p> <ul style="list-style-type: none"> <li>• Answering examination questions that require description, explanation and evaluation of mortuary techniques</li> <li>• Completing workplace-based assessment scaffolds that assess the candidate’s ability to suitably manage specimens and operate equipment in the mortuary, and perform post-mortem examination as appropriate to the satisfaction of the supervisor</li> </ul>
<p><b>AC 3 – Instrumentation</b></p>	<p><b>AC 3.0 – The microscope</b></p> <p><b>AC 3.1 – Coverslipping system</b></p> <ul style="list-style-type: none"> <li>• Describe the components and use of an automatic coverslip machine</li> </ul> <p><b>AC 3.2 – Slide writer and cassette writer technology</b></p>	<p>All of AC 3.1 will be evidenced through:</p> <ul style="list-style-type: none"> <li>• Answering examination questions that require description, explanation and evaluation of microscopy and</li> </ul>

	<ul style="list-style-type: none"> <li>Describe the components and use of a slide writer and a cassette writer</li> </ul> <p><b>AC 3.3 – Autostainer</b></p> <ul style="list-style-type: none"> <li>Describe the components and use of an autostainer</li> </ul> <p><b>AC 3.4 – Immunoautostainer</b></p> <ul style="list-style-type: none"> <li>Describe the components and use of an immunoautostainer</li> </ul> <p><b>AC 3.5 – Glass knife maker</b></p> <ul style="list-style-type: none"> <li>Describe the components and use of a glass knife breaker</li> </ul> <p><b>AC 3.6 – Digital imaging and imaging software for microscopy</b></p> <ul style="list-style-type: none"> <li>Describe the components and use of a digital imaging system and the control of functions by software</li> <li>Digital imaging in respect to HER testing</li> </ul>	<p>associated preparation and techniques</p> <ul style="list-style-type: none"> <li>Complete workplace based assessment scaffolds that assess the candidate's ability to apply their knowledge of these techniques to the satisfaction of the supervisor</li> </ul> <p>These workplace-based assessments should demonstrate the candidate's expertise in using the instruments relevant to their selected major and minor sub-disciplines</p>
<p><b>AC 4 – Quality control</b></p> <p>Apply pathophysiological aspects of specific clinical situations to support the interpretation of results</p>	<p>Describe the features and characteristics of the following laboratory test preparations:</p> <p><b>AC 4.1 – A high quality histological slide</b></p> <p><b>AC 4.2 – A high quality fine needle aspiration (FNA) slide</b></p> <p><b>AC 4.3 – A high quality electron micrograph or image</b></p> <p><b>AC 4.4 – A high quality in-situ hybridisation slide</b></p> <p><b>AC 4.5 – A high quality autopsy</b></p> <p><b>AC 4.6 – Identify the causes of the following artefacts:</b></p> <ul style="list-style-type: none"> <li>Thick paraffin section</li> <li>Dark haematoxylin and eosin section</li> <li>Poor membrane contrast in an electron micrograph</li> <li>Background staining in an immunohistochemistry section</li> <li>Cell debris in a cytology specimen</li> <li>High background staining and autofluorescence issue in FISH</li> </ul>	<p>AC 4.1-4.5 will be evidenced through:</p> <ul style="list-style-type: none"> <li>Answering examination questions on characteristics of high quality slides, FNA, electron microscopy, in-situ hybridisation and autopsy to the satisfaction of the supervisor</li> <li>Completing work place based assessment scaffolds on slide preparation and autopsy procedures to the satisfaction of the supervisor</li> </ul> <p>AC 4.6 will be evidenced through answering examination questions on artefacts in various techniques, including those in histology, electron microscopy, immunohistochemistry, cytology, and mortuary practice</p>
<p><b>AC 5 – Knowledge of complex diseases</b></p> <p>Pathophysiology of complex disease entities and their testing</p>	<p>AC 5.1 – Complex disease entities</p> <p>Identify appropriate technologies and techniques to diagnose</p> <ul style="list-style-type: none"> <li>Carcinoma from mesothelioma</li> <li>Renal amyloidosis</li> <li>Melanoma</li> <li>Tuberculosis</li> <li>CADASIL/solar elastotic material</li> <li>Breast carcinoma</li> <li>Lymphoma</li> <li>Lung neoplasms</li> <li>Brain tumours</li> </ul>	<p>AC 5.1 will be evidenced through case study discussions/reports that form part of a portfolio of work, along with examination questions</p>

<p><b>AC 6 – Introduction to Advanced laboratory techniques</b></p> <p>Apply and evaluate the techniques and technology used in the comprehensive investigation of cellular and tissue disorders</p>	<p><b>AC 6.1</b> – Explain the principles, performance and limitations of these techniques associated with the detection, diagnosis, classification and monitoring of cellular and tissue disorders</p> <ul style="list-style-type: none"> <li>• Immunofluorescence and immunohistochemistry</li> <li>• Molecular genetics including automated image capture, ISH, quantitative PCR, sequencing and array technologies</li> <li>• CT guided FNA</li> <li>• Energy dispersive x-ray microanalysis (EDX) and (EELS)</li> <li>• MALDI imaging and metabolic mapping</li> <li>• Proteomics</li> <li>• Clinical Informatics</li> <li>• Autopsy</li> </ul>	<p>All of AC 6.1 will be evidenced through:</p> <ul style="list-style-type: none"> <li>• Answering examination questions on these techniques and aspects of Anatomical Pathology</li> </ul>
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## Clinical Laboratory Standards – Part II

Standard
<p>Fellows of the Faculty of Science will:</p> <ul style="list-style-type: none"> <li>• <b>Demonstrate exceptional skill in applying the techniques, technology and reporting required to lead the activities of a specialised area of Anatomical Pathology</b></li> </ul>

Content	Outcomes	Indicator
<p><b>AC 7 – Advanced laboratory techniques in Histology</b></p>	<p><b>AC 7.1</b> – Detail your experience and contribution with an advanced laboratory technique used in Histology. Appropriate techniques may include:</p> <ul style="list-style-type: none"> <li>• Use of special histological stains</li> <li>• Buffer and fixation chemistry</li> <li>• Microwave processing</li> <li>• Tissue banking and archiving</li> <li>• Tissue micro array</li> <li>• Section microdissection</li> <li>• Complex specimen assessment</li> <li>• Microscopy and imaging</li> <li>• Maldi imaging or biochemical mapping</li> <li>• Correlation studies</li> </ul> <p><b>AC 7.2</b> – Describe the development of an advanced technique used in your field of expertise and its application to the analysis of a pathological disorder. Evaluate the science or technology underpinning the technique and discuss the contribution of some key authors associated with the development of this technique</p>	<p>All <b>Part II</b> outcomes will be evidenced by Faculty of Science Reports and viva voce questions to the satisfaction of the principal examiners appointed by the college</p>
<p><b>OR</b> <b>AC 8 – Advanced laboratory techniques in Cytology</b></p>	<p><b>AC 8.1</b> – Detail your experience and contribution with an advanced laboratory technique used in Cytology. Appropriate techniques may include:</p> <ul style="list-style-type: none"> <li>• Liquid based cytology applications</li> <li>• Automation in gynaecological cytology</li> <li>• Non-gynaecological cytology</li> <li>• Fine needle aspiration biopsy</li> <li>• Microscopy and imaging</li> <li>• Correlation studies</li> <li>• Adjunct procedures for diagnosis and prognosis</li> <li>• Other</li> </ul> <p><b>AC 8.2</b> – Describe the development of an advanced technique used in your field of expertise and its application to the analysis of a pathological disorder. Evaluate the science or technology underpinning the technique and discuss the contribution of some key authors associated with the development of this technique</p>	

Content	Outcomes	Indicator
<p><b>OR</b> <b>AC 9 – Advanced laboratory techniques in Immunohistochemistry</b></p>	<p><b>AC 9.1</b> – Detail your experience and contribution with an advanced laboratory technique used in Immunohistochemistry. Appropriate techniques may include:</p> <ul style="list-style-type: none"> <li>• Multiple labelling studies</li> <li>• In-situ hybridisation</li> <li>• Microscopy and imaging</li> <li>• Correlation studies</li> </ul> <p><b>AC 9.2</b> – Describe the development of an advanced technique used in your field of expertise and its application to the analysis of a pathological disorder. Evaluate the science or technology underpinning the technique and discuss the contribution of some key authors associated with the development of this technique</p>	<p>All <b>Part II</b> outcomes will be evidenced by Faculty of Science Reports and viva voce questions to the satisfaction of the principal examiners appointed by the college</p>
<p><b>OR</b> <b>AC 10 – Advanced laboratory techniques in Molecular Genetics</b></p>	<p><b>AC 10.1</b> – Detail your experience and contribution with an advanced laboratory technique used in Molecular Genetics. Appropriate techniques may include:</p> <ul style="list-style-type: none"> <li>• Gene sequencing</li> <li>• PCR</li> <li>• Proteomics</li> <li>• Correlation studies</li> </ul> <p><b>AC 10.2</b> – Describe the development of an advanced technique used in your field of expertise and its application to the analysis of a pathological disorder. Evaluate the science or technology underpinning the technique and discuss the contribution of some key authors associated with the development of this technique</p>	
<p><b>OR</b> <b>AC 11 – Advanced laboratory techniques in Electron Microscopy</b></p>	<p><b>AC 11.1</b> – Detail your experience and contribution with an advanced laboratory technique used in Electron Microscopy. Appropriate techniques may include:</p> <ul style="list-style-type: none"> <li>• Energy dispersive x-ray microanalysis (EDX)</li> <li>• Electron energy loss spectrometry (EELS)</li> <li>• Elemental mapping</li> <li>• Immunocytochemistry</li> <li>• Advanced specimen preparation methods</li> <li>• 3-D tomography</li> <li>• Diffraction analysis</li> <li>• Aberration corrected high resolution microscopy (subA)</li> <li>• Correlation microscopy</li> <li>• Backscattered electron SEM imaging</li> <li>• Ion beam block face sectioning</li> </ul> <p><b>AC 11.2</b> – Describe the development of an advanced technique used in your field of expertise and its application to the analysis of a pathological disorder. Evaluate the science or technology underpinning the technique and discuss the contribution of some key authors associated with the development of this technique</p>	

Content	Outcomes	Indicator
<p><b>OR</b>  <b>AC 12 – Advanced laboratory techniques in Mortuary Practice</b></p>	<p><b>AC 12.1</b> – Detail your experience and contribution with an advanced laboratory technique used in Mortuary practice. Appropriate techniques may include:</p> <ul style="list-style-type: none"> <li>• Complex autopsy</li> <li>• Fetal and infant autopsy</li> <li>• Coronial case</li> <li>• Special techniques (eg. in-situ neck dissection, spinal cord examination, exposure of joints, examination ffo bone marrow, removal of eyes, dissection of soft tissue, exposure of middle ear)</li> <li>• Other</li> </ul> <p><b>AC 12.2</b> – Describe the development of an advanced technique used in your field of expertise and its application to the analysis of a pathological disorder. Evaluate the science or technology underpinning the technique and discuss the contribution of some key authors associated with the development of this technique</p>	<p>AC 11 will be evidenced by Faculty of Science Reports and answering viva voce questions to the satisfaction of the principal examiners appointed by the college</p>
<p><b>PLUS</b>  <b>AC 13 – Instrumentation</b></p>	<p><b>AC 13.1</b> – Describe the principles of operation of an advanced system or apparatus in your field of expertise</p> <p><b>AC 13.2</b> – Explain the significance of this instrument to a specialised area of Anatomical Pathology</p>	<p>Answer viva voce questions in addition to providing samples as part of a portfolio of work that show:</p> <ul style="list-style-type: none"> <li>• Capacity to operate the advanced system or apparatus independently, including troubleshooting.</li> </ul>

## Innovation, development and leadership standards

Standard
<p>Fellows of the Faculty of Science will:</p> <ul style="list-style-type: none"> <li>• <b>Apply, implement and evaluate strategies that guarantee quality assurance, compliance, safety and efficient use of resources fundamental to the operation of an Anatomical Pathology laboratory.</b></li> <li>• <b>Demonstrate a commitment to the continual improvement and advancement of Anatomical Pathology.</b></li> <li>• <b>Apply the principles of Evidence Based Laboratory Practice (EBLP) to inform health care decisions.</b></li> </ul>

Content	Outcomes	Indicator
<b>I 1 – Evaluate laboratory policies and practices to meet quality management, compliance and safety standards</b>	I 1.1 Maintain and evaluate a quality assurance system under ISO 15189	Answer written examination and viva voce questions that demonstrate competence in these aspects of management required to lead a laboratory  PLUS  Complete the RCPA Laboratory Management modules (online), found on the RCPA Education website
	I 1.2 Evaluate current practices to ensure compliance with NPAAC standards or international equivalent	
	I 1.3 Adopt a combination of quality assurance, quality control and safety, and Total Quality Management policies to meet NATA accreditation or international equivalent	
	I 1.4 Act with responsibility and accountability to facilitate workflow, teams, decision making, and communication in management and planning of services and/or departments	
	I 1.5 Evaluate and improve workplace safety through proactive management practices, employing laboratory information systems and reporting mechanisms where appropriate	
	I 1.6 Develop or review the processes of validation and verification of methodology used in the laboratory	
<b>I 2 – Demonstrate leadership and innovation in developing the practice of Anatomical Pathology</b>	I 2.1 Maintain an evidence base to support advice provided to clinicians	Answer viva voce questions and document activities in the portfolio that demonstrate leadership and innovation in these aspects of laboratory practice, supported by specific personal contributions  Review or develop educational materials for non-scientists e.g. Lab Tests Online Australasia  Complete the RCPA Ethics and Confidentiality modules (online), found on the RCPA Education website
	I 2.2 Design, adapt and implement analytically valid and traceable routine tests, underpinned by reference materials and documented methods	
	I 2.3 Evaluate new methods as fit for use	
	I 2.4 Assess business opportunities for validity where appropriate	
	I 2.5 Provide strategic direction for laboratory including management of change	
	I 2.6 Support and promote the education of colleagues, co-workers, students and the public through a variety of strategies including formal/ informal teaching, educational material development, and mentoring	
	I 2.7 Reflect on your engagement in Continuing Professional Development (CPD), and personal benefits	
	I 2.8 Define and model ethical practices in handling/ reporting patient information, interacting with others and seeking opinion, conflict of interest, financial probity, and managing errors	
	I 2.9 Identify your role in professional societies/ colleges and contribute to its activities	

Content	Outcomes	Indicator
<p><b>I 3 – Demonstrate the ability to make informed decisions by accessing and integrating the most current, relevant, valid and reliable evidence available</b></p>	<p>I 3.1 Identify knowledge gaps during practice and construct focussed, answerable questions to address these gaps</p> <p>I 3.2 Use an appropriate search strategy to answer identified questions through existing evidence</p> <p>I 3.3 Critically evaluate the relevance, currency, authority and validity of all retrieved evidence including scientific information and innovations</p> <p>I 3.4 Apply the appraised evidence appropriately to practice by informing decisions in the given context</p> <p>I 3.5 Use reflective and consultative strategies to evaluate the EBLP process</p>	<p>Faculty of Science Reports submitted by the candidate should demonstrate principles of EBLP</p> <p>AND</p> <p>Answer written examination and viva voce questions</p>



## SECTION 3 – ASSESSMENT POLICY

This section explains the specific requirements and assessment policy for the Faculty of Science Chemical Pathology program. It should be read in conjunction with the **RCPA Trainee handbook Administrative requirements**, found on the College website.

### Part I – Requirements

Assessment in **Part I** is by:

1. Formal examinations
2. Portfolio of evidence indicating completion of a sufficient number and type of workplace-based activities and assessments
3. Satisfactory progress (Supervisor Reports)

See Assessment Matrix in **Appendix 7**

The aim of the **Part I** assessments is to ensure that Trainees have spent time in the laboratory, acquired requisite knowledge and skills and participated in a community of practice, such that they can appropriately mix the laboratory/scientific and clinical elements of Anatomical Pathology.

#### 1. Formal examinations

There will be a written examination, held in designated examination centres on dates specified by the College.

The written examination may require short answer and/or extended responses to questions from the Clinical Laboratory and Innovation, Development and Leadership components of the curriculum. The research component is assessed separately at Part II level.

There will also be a practically oriented structured 'oral' examination, consisting of multiple stations of 10-15 minutes duration. The focus of this examination will be evaluation of more specific practical aspects of Anatomical Pathology Laboratory Standards (Part I) and Laboratory Innovation, Development and Leadership such as the interpretation of test results, measurements and calculations, problem solving and reporting, quality control and laboratory management although the discussion will often be much broader. The examination will normally pose similar questions for all candidates. Differences will arise according to the major and minor sub-disciplines of each candidate. Responses will be marked against model answers. Where relevant all candidates will be given reading material to evaluate in the 5-10 minutes before entering the exam room.

#### 2. Portfolio requirements

In addition to various formal examinations, portfolios include assessments carried out in the workplace and other activities providing evidence that the Trainee is developing technical skills and professional values, attitudes and behaviours that are not readily assessed by formal examinations. Trainees should start accumulating evidence for the portfolio as early as possible in training. It is the Trainee's responsibility to keep the logbook up to date and meet the additional portfolio requirements.

**Appendix 1** details the Anatomical Pathology Portfolio Requirements for both Part I and Part II.

## Logbook

**Appendix 2** is a sample page of what will become a large logbook for recording workplace activities. Every formal learning activity should be recorded here. Only those outlined below should be documented in more detail.

The supervisor must review and sign off completed portfolio forms and logbook on the annual, rotation and pre-exam Supervisor Report.

## Short case reports

Trainees must complete a total of three or more short case reports (~1000 words). The trainee should discuss with their supervisor before selecting a case/topic for the report. The focus of the case report could be on a specific technical aspect covering any of the content areas specified in the Part I Laboratory Standards, including laboratory issues of diagnosis and testing. The discussion should include a focussed review of the relevant literature.

The Trainee should select a suitable assessor, who should be an RCPA Fellow but does not need to be the listed supervisor. The assessor could note this as a quality activity in their annual Continuing Professional Development Program (CPDP) submission. Short case reports will be evidenced by the assessor completing the assessment form, included as **Appendix 3**. Please include the completed assessment form and the report in the portfolio. Trainees are encouraged to present their completed case reports at scientific meetings of relevant colleges or societies.

## Case-based discussions (CbD)

Trainees must complete a total of five or more Case-based discussions (CbD). CbDs will be evidenced by the supervisor completing the CbD form, included as **Appendix 4**.

Doing CbD assessments is excellent preparation for the oral examinations. CbD assessments indicate the development of the ability to interpret and relate pathological results to clinical findings; to plan appropriate investigations, and to provide advice on decisions related to patient care, including decisions with ethical and legal dimensions. The purpose of the CbD assessment is also to provide feedback to Trainees about their progress by highlighting strengths and areas for improvement, thereby encouraging their professional development.

The Trainee should initiate each CbD assessment. At the time of the assessment, the Trainee should select two (2) recent cases with which s/he has been involved clinically or through laboratory tests. The assessor should select one (1) of these for the Trainee to present and discuss. The Trainee should select a suitable assessor, who should be an RCPA Fellow but does not need to be the listed supervisor. The assessor could note this as a quality activity in their annual Continuing Professional Development Program (CPDP) submission. The Trainee should request a mutually convenient time to meet for about 30 minutes. The presentation/discussion should take about 15-20 minutes. A further 5-10 minutes should be allowed for the assessor to give immediate feedback and complete the CbD form. In addition to the formal CbD assessment, supervisors are encouraged to have an informal discussion of the second case prepared by the Trainee.

Each CbD case discussion should cover one or more of the different aspects of practice indicated on the CbD form.

## Directly Observed Practical Skills (DOPS)

Trainees will be required to demonstrate competence in their day-to-day work by performing Directly Observed Practical Skills. The Faculty of Science Anatomical Pathology curriculum consists of 6 sub-disciplines:

- Histology
- Cytology
- Immunohistochemistry
- Electron Microscopy
- Molecular Genetics
- Mortuary Practice

DOPS address the practical aspects of Part 1 laboratory standards in each sub-discipline. **For the purpose of DOPS assessment and examinations, candidates should choose one major and two minor sub-disciplines.**

For DOPS assessment requirements, candidates are required to satisfactorily complete a total of eighteen (18) DOPS related to specimen preparation and other areas as specified in **Appendix 5**, comprising of **10 DOPS** from their MAJOR sub-discipline and **4 DOPS each** from their two MINOR sub-disciplines. Once proficiency is achieved in each DOPS area (to be assessed by at least one instance of observing the trainee in each DOPS and giving feedback) the Supervisor should complete a DOPS competency form included as Appendix 5. The supervisor should be guided by the outcomes in the Part I laboratory standards sections for the scope and level of proficiency required.

In addition, each DOPS procedure should be detailed on the logbook form.

## Other Evidence

Trainees should ensure that they are engaged in a variety of learning activities throughout training. These may include presentations (oral and posters), writing abstracts, staff presentations, conferences, teaching, and developing educational material. A suggestion for educational material development is the Lab Tests Online Australasia editing process, please email your details and discipline to [ltoau@acab.asn.au](mailto:ltoau@acab.asn.au) to participate.

These activities develop written and oral communication skills. Whilst each activity should be recorded in the logbook, documented evidence of a minimum of 5 per year from a variety of activity types should be made available upon request over the training period.

## 3. Supervisor Reports

The supervisor must review and sign off the *completed portfolio forms* and the *logbook* on the **Supervisor reports**. The supervisor must also rate the trainee according to their professional judgement in a range of competencies including laboratory skills, research, innovation and leadership, and professional attitudes and behaviours. The behaviours to be rated and the rating scale with anchors are provided in the supervisor report.

Trainees must submit a Supervisor Report for each year of training (and period of rotation if applicable) to the RCPA Registrar. Trainees who are sitting the Part I oral examination must submit an additional pre-examination Supervisor Report. A cumulatively updated **Portfolio Summary Sheet**, documenting the portfolio of workplace based activities and assessment, must be appended to the pre-examination Supervisor Report and sent to the RCPA Registrar prior to the Part I oral examinations at a time determined by the RCPA. Trainees are responsible for submitting the pre-examination Supervisor Report by the due date. Failure to do so may jeopardise the accreditation of training time or finalisation of examination results. The Supervisor Report form can be found at: <http://www.rcpa.edu.au/Trainees/Training-with-the-RCPA/Supervisor-Reports>

The portfolio summary sheet will be reviewed by the Registrar, Board of Education and Assessment or delegate and the Principal Examiner. The signatories and Trainee may be contacted to confirm evidence of satisfactory completion.

Note: The actual portfolio should not be sent unless requested for audit.

### Summary of assessment requirements for Part I

<i>Item</i>	<i>Completion</i>	<i>Assessed by</i>	<i>Comments</i>
Written examination: short answer and/or more extended responses	At the end of three years of training	Marked by two (2) examiners with appropriate experience	Questions set by a panel of examiners
Oral examination: Multi-stationed set of structured assessment tasks/ interviews, with practically-oriented questions	After submission of pre-exam supervisor report and portfolio summary sheet	Two (2) examiners with appropriate experience per manned station	Questions set by a panel of examiners
Portfolio items (see Appendix I) to be signed off by supervisor or delegate e.g. DOPS, CbDs, Short Case Reports	To be completed before Part I oral examination	Portfolio summary spreadsheet is checked for completeness by RCPA. If incomplete, the candidate may be required to undertake further activities.	Portfolio items are to be reviewed by the supervisor when preparing the supervisor report. (The portfolio should not be sent to the College unless requested for audit)
Supervisors' Reports with portfolio summary spreadsheet.	Annual (end of rotation if applicable) and Part I pre-exam reports	Reviewed by College registrar or delegate	Referral to Principal Examiner if necessary.

## Part II – Requirements

Assessment in **Part II** is by:

1. Formal examinations
2. Faculty of Science Reports on Clinical Laboratory Practice
3. Portfolio of evidence
4. Satisfactory progress (Supervisor Reports)
5. Research work and reports

See Assessment Matrix in **Appendix 7**.

The aim of the **Part II** assessments is to ensure that Trainees have spent time in the clinical laboratory, acquired requisite knowledge and skills and participated in a community of practice, such that they can appropriately lead the activities of an anatomical pathology laboratory in their area of expertise.

### 1. Formal examinations

There will be a structured ‘oral’ examination, consisting of approximately 3 stations of 20-30 minutes duration. The oral examination will normally pose similar questions for all Faculty of Science candidates (other than in the Laboratory Standards). There will be two examiners per station and responses will be marked against pre-determined criteria. The focus of this examination will be evaluation of specific aspects of Anatomical Pathology Clinical Laboratory Standards (Part II), Research Standards, and Innovation, Development and Leadership Standards. Where relevant, all candidates will be given reading material to evaluate before entering the exam room.

### 2. Faculty of Science Reports on Clinical Laboratory Practice

The **Part II** assessment requires four (4) Reports of 3000-5000 words, evaluating an issue in the laboratory standards – Part II curriculum in the candidate’s Major sub-discipline or Minor sub-disciplines (selected during Part I), with not more than two Reports per technique. The reports should be of a standard publishable in a journal such as *Pathology*.

The focus of the Report could range from a single patient case or case series to a large population depending on the discipline involved and the complexity of the situation under investigation. The Reports should demonstrate the candidate’s approach to analysing the clinical/ pathological problem or issue in the case(s) or the population (including a relevant review of the literature) and follow up action/discussion based on principles of Evidence-based clinical Laboratory Practice.

It is also expected that some Reports will demonstrate the candidate’s ability to be innovative, assure quality and consider management issues such as staff, instrument and reagent costs. Where applicable a Report should comment on issues such as, but not limited to, method selection, method validation, method development and trouble-shooting.

Based on the above approach, following are some suggestions appropriate as Report aims:

- The introduction or development of a new test or procedure and comparisons with current best practice
- Transference of an existing test or procedure to a new context, sample type or processing protocol and comparing it to current practice
- A study that examines the sensitivity and specificity of a test or procedure, including positive and negative predictive values in a particular population
- A detailed analysis of cumulative laboratory data (including case series)
- A study comparing specialised populations

Please note that the above list is not exhaustive. Trainees may discuss with their supervisor and determine any other aim, and inform the College administration well before planning the work involved. The Principal Examiner will confirm the appropriateness of the aim.

The Reports will be independently marked by two examiners in the relevant discipline and candidates will be provided with feedback. While these reports are considered to be Part II assessments, trainees should commence working on them as soon as possible. Candidates are encouraged to submit their Reports early in Part II, and at least 2 Reports should be submitted by the end of the fourth year of training. **It is recommended that all Clinical Laboratory Practice Reports be completed and submitted by the month following the Part II Oral Examination.**

Any publications arising from the Reports may be used to meet the requirements of the Research Standards component of the curriculum. Candidates are encouraged to publish their Reports subsequent to examination.

Please refer to **Appendix 6** – Guidelines for Faculty of Science Reports (Part II)

### **3. Portfolio requirements**

Trainees should ensure that they are engaged in a variety of learning activities as described earlier. Whilst each instance of these activities should be recorded in the logbook, documented evidence of a minimum of 5 per year should be made available upon request.

### **4. Supervisor Reports**

Similar to Part I, Trainees who are sitting the **Part II** examination must submit a pre-examination Supervisor Report with the appended copy of the Portfolio Summary Sheet to the RCPA Registrar prior to the **Part II** examinations at a time determined by the RCPA. Failure to submit by the due date may jeopardise the accreditation of training time or finalisation of examination results.

### **5. Research work and reports**

A PhD or a Masters by research as specified in the indicators for Research Standards is accepted as demonstrated ability to carry out effective research. Otherwise, the candidate needs to submit, in dissertation format, a collection of 6 original research articles published in journals of a standard approved by the principal examiners within the last ten years in addition to a discussion that explains the background, interrelatedness and significance of the research as well as their own contribution to the research.

The candidate should be the first or lead author in at least two of the six articles. A minimum of three of the six articles should be full research papers (not case studies and reviews). In each case the candidate must demonstrate a significant role in the published research. In the case of a Masters by research, two original research articles as per the above specifications are required. Any Faculty of Science reports completed and published during Part II training can be included as articles. Relevant documentation should be submitted to the College at least one month prior to the Part II oral examination.

Research management would be assessed through a report to be submitted in the portfolio, which would detail the candidate's ability in managing a research project. The report should contain evidence and discussion (~1000 words) addressing the R2 and relevant R1 outcomes. Suggestions for evidence include research proposals and ethics submissions, grant applications made and/or periodic progress/ evaluation reports of successful grants, and end-of-year reports.

**Summary of assessment requirements for Part II**

<b>Item</b>	<b>Completion</b>	<b>Assessed by</b>	<b>Comments</b>
Oral examination: multi-station set of 25-30 min structured interviews	In the fifth year of training (Or equivalent)	Two (2) examiners with appropriate experience per station	Questions set by a panel of examiners
Faculty of Science Reports: four (4) of a publishable standard to be certified as candidate's own work and signed by supervisor or delegate	By the month following the Part II oral examination	Assessed by a panel of examiners	Candidates may be required to revise & resubmit if not satisfactory.
Other portfolio items to be signed off by supervisor or delegate	Before Part II oral examination	Portfolio summary spreadsheet is checked for completeness by RCPA. If incomplete, the candidate may be required to undertake further activities.	Portfolio items are to be reviewed by the supervisor when preparing the supervisor report. (The portfolio should not be sent to the College unless requested for audit)
Supervisors' Reports with portfolio summary spreadsheet.	Annual (end of rotation if applicable) and Part II pre-exam	Reviewed by College registrar or delegate	Referral to Principal Examiner if necessary.
Research work and reports	One month before Part II oral examination	Assessed by a panel of examiners	Referral to Principal Examiner if necessary.

## APPENDICES

### Appendix 1 - Portfolio Requirements for Anatomical Pathology

The table below sets out guidelines to assist Faculty of Science trainees to compile the portfolio, the logbook and the portfolio summary spreadsheet.

Portfolio activities are carried out in the workplace and provide evidence that the trainee is developing technical skills and professional values, attitudes and behaviours that are not readily assessed by formal examinations. Trainees should start accumulating evidence for the portfolio as early as possible in training.

Appendices contain the forms and logbook pages for recording these workplace activities. Please file the (hard copy) forms in a portfolio folder with separate sections, numbered as in the table below.

A soft copy portfolio summary (Excel spreadsheet) should also be compiled so that trainees can keep track of what they have completed. It is the trainee's responsibility to keep both hard and soft copy records up-to-date.

The supervisor should review and sign off completed portfolio forms and logbook on the annual, rotation and pre-exam supervisor report.

The portfolio summary spreadsheet should be appended to the pre-exam supervisor report and submitted to the RCPA prior to the oral examination at a time determined by the RCPA. The summary will be reviewed by the Registrar, Board of Education and Assessment or delegate and the Principal Examiner. The signatories and trainees may be contacted to confirm evidence of satisfactory completion.

**Note:** The actual portfolio should not be sent unless requested for audit.


Table: Portfolio Requirements for Anatomical Pathology.

	Item	Part I	Part II	Evidence
1	<b>Supervisor report/s</b> with brief reflection (maximum 1 page) on the supervisor's comments for each report.	Annual reports (and end of rotation reports if applicable). An additional pre-exam report is required in the year of the Part I and Part II assessments		See Supervisor Report guidelines and forms Appendix
2	<b>DOPS</b> competence	Ten (10) for one major sub-discipline and four (4) for each of two minor sub-disciplines, to be completed satisfactorily before Part I examinations		All forms signed as satisfactory by supervisor or other appropriately qualified person as agreed/delegated by Supervisor.
3	<b>CbDs</b>	A total of five or more Case-based Discussions.		All forms/ reports signed as satisfactory by supervisor or other appropriately qualified person as agreed/delegated by Supervisor.
4	<b>Short Case Reports</b> of 1000 words	A total of three or more short case reports,		




	Item	Part I	Part II	Evidence
5	<b>Clinical meetings</b> (laboratory, MDT)  Plus a list of entities presented at each meeting	A combined total of at least five (5) learning activities with a minimum of one (1) in each type per year		Each meeting logged should be signed by the supervisor or another person as agreed/delegated by the Supervisor to verify the trainee's involvement in the meeting.
6	<b>Teaching sessions</b>  Sessions conducted for students, colleagues, medical colleagues or other audiences.  Educational material development			
7	<b>Scientific forums</b>  Plus the abstracts presented at each meeting			
8	<b>RCPA Laboratory Management modules</b>	To be completed satisfactorily before part I examinations		Completion of module signed by the supervisor
9	<b>RCPA Ethics and Confidentiality modules</b>			
10	<b>Research Management Report</b> of 1000 words		to be completed satisfactorily before Part II examinations	signed as satisfactorily completed by supervisor, report to be included in portfolio.


## Appendix 2 – Logbook

	<h1>Logbook</h1>		
<b>Trainee name:</b>			
<b>Supervisor's name:</b>			
<p>Record the details of each learning activity in the table below. This will form part of your portfolio. This form should be copied as required throughout training.</p>			
Description of learning activity	Date	Comments	Initial
<b>Supervisor's signature:</b>			

### Appendix 3 – Short Case Report Assessment Form (Part I)


		<b>Anatomical Pathology Short Case Report Assessment Form</b>		
<b>Trainee name</b>		<b>Trainee ID (RCPA)</b>	<b>Stage of training</b> Y1 Y2 Y3 Y4 Y5 if > Y5 please specify	
<b>Assessor's name</b>		<b>Assessor's position</b> <input type="checkbox"/> Pathologist <input type="checkbox"/> Scientist <input type="checkbox"/> Other (pls specify)		
Please indicate (✓) if each of the following was deemed Satisfactory (S) or Unsatisfactory (U)				
<b>Aspect of Report</b>			<b>S</b>	<b>U</b>
Clear layout of text with appropriate headings and paragraphs. Figures and tables are well planned and easy to understand				
Correct, concise English without spelling or grammatical errors				
Clear introduction, that covers the background of the topic & introduces the rest of the report				
The main body of the report is well organised, easy to read and answers the question that has been set.				
A full range of appropriate sources has been used to research the case/ topic, including textbooks, journals, websites, personal communications, surveys and/or experiments				
The conclusion accurately summarises the arguments that have been presented				
References are relevant and are cited accurately in the <i>Pathology</i> journal format				
No large amounts of irrelevant material & text				
<b>Please comment on other relevant aspects, especially on aspects for improvement</b>				
Please indicate the overall standard of the report: <input type="checkbox"/> SATISFACTORY <input type="checkbox"/> UNSATISFACTORY				
<b>Signature of assessor</b>			<b>Signature of Trainee</b>	
<b>Date completed</b>				

## Appendix 4 – Case-based Discussion Assessment Form (Part I)

		<b>Anatomical Pathology Case-based Discussion Assessment Form</b>	
<b>Trainee name</b>		<b>Trainee ID (RCPA)</b>	<b>Stage of training</b> Y1 Y2 Y3 Y4 Y5 if > Y5 please specify
<b>Assessor name and position:</b>			
<b>Sub-discipline (select one)</b> <input type="checkbox"/> Histology <input type="checkbox"/> Cytology <input type="checkbox"/> Electron microscopy <input type="checkbox"/> Immunohistochemistry <input type="checkbox"/> Molecular genetics <input type="checkbox"/> Mortuary Practice			
<b>Focus of discussion (tick as many as apply)</b> <input type="checkbox"/> Principles of pathophysiology and disease pathogenesis <input type="checkbox"/> Significance to clinical management <input type="checkbox"/> Common diseases and their diagnostic features <input type="checkbox"/> Instrumentation <input type="checkbox"/> Research relevance <input type="checkbox"/> Quality control <input type="checkbox"/> <input type="checkbox"/> Advanced laboratory techniques <input type="checkbox"/> <input type="checkbox"/> Application of evidence based practice			
<b>Complexity of case:</b> <input type="checkbox"/> Low <input type="checkbox"/> Medium <input type="checkbox"/> High			
<b>Brief description of case presented, discussed and assessed</b>			
<b>Why was this case selected for discussion?</b>			
<b>Does this case broaden the trainee’s experience by being different from previous cases that have been discussed?</b> <span style="float: right;"> <input type="checkbox"/> Yes    <input type="checkbox"/> No    <input type="checkbox"/> N/A                 </span>			

<b>Please comment on whether these aspects of the Trainee's performance are Satisfactory (S) or Unsatisfactory (U)</b>	<b>S</b>	<b>U</b>	<b>N/A</b>
Ability to present case clearly and concisely			
Good understanding of clinical issues relating to the case			
Good understanding of laboratory issues relating to the case			
Depth of understanding and awareness of current literature relevant to this case			
Ability to interpret results in a balanced and rational way			
Ability to provide and clearly communicate well reasoned professional advice			
Ability to clinically correlate laboratory test results to the pathologist or physician.			
Ability to suggest further relevant or more useful tests towards the management of the patient in relation to diagnosis and monitoring including prognostication.			
Understanding of management and financial aspects of the case			
<b>Please comment on other relevant aspects, especially on aspects for improvement</b>			
<b>Final outcome (please tick)</b> <input type="checkbox"/> As expected for the stage of training <input type="checkbox"/> Below expected for the stage of training	<b>Date of Cbd</b>	<b>Time taken for Cbd</b>	<b>Time taken for feedback</b>
<b>Assessor</b>  _____ Name (please print)                      Signature		<b>Signature of Trainee</b>  _____ Signature	
<b>Laboratory</b>			

## Appendix 5 – Directly Observed Practical Skills (DOPS) Assessment Form

		<b>Anatomical Pathology Investigations DOPS Assessment Form</b>				
<b>Trainee name</b>		<b>Trainee ID (RCPA)</b>	<b>Stage of training</b> Y1 Y2 Y3 Y4 Y5 if > Y5 please specify			
<b>Assessor's name</b>		<b>Assessor's position</b> <input type="checkbox"/> Pathologist <input type="checkbox"/> Scientist <input type="checkbox"/> Other (pls specify)				
<b>Please indicate the area of competence for this form from the options below</b>						
<b>Histology</b>	<b>Cytology</b>	<b>Immunohisto-chemistry</b>	<b>Electron Microscopy</b>	<b>Molecular Genetics</b>	<b>Mortuary Science</b>	
<input type="checkbox"/> *Specimen collection/handling <input type="checkbox"/> *Fixation and processing of routine surgical specimens <input type="checkbox"/> Specialised fixation and tissue processing <input type="checkbox"/> *Microtomy and sectioning <input type="checkbox"/> *Routine H&E staining <input type="checkbox"/> Special staining: PAS, Masson trichrome <input type="checkbox"/> Special staining: Reticulin, Perls' <input type="checkbox"/> LIS searching <input type="checkbox"/> Microscopy-Kohler illumination <input type="checkbox"/> Digital image capture/virtual slides	<input type="checkbox"/> *Specimen collection, and handling <input type="checkbox"/> *Fixation of specimens <input type="checkbox"/> *Non-gynaecological specimen preparation <input type="checkbox"/> *FNA specimen preparation <input type="checkbox"/> FNA adequacy and triaging <input type="checkbox"/> Screening – gynaecological <input type="checkbox"/> Papanicolaou and Diff-Quik staining <input type="checkbox"/> Screening– non-gynaecological <input type="checkbox"/> Quantification methods <input type="checkbox"/> OH&S or quality control activity	<input type="checkbox"/> *Fixation for antigen retention and antigen retrieval <input type="checkbox"/> *Antibody dilution and titration <input type="checkbox"/> *Immunofluorescence staining <input type="checkbox"/> *Routine immunoperoxidase staining <input type="checkbox"/> Double immunostaining <input type="checkbox"/> Use of auto-immunostainer <input type="checkbox"/> In-situ Hybridisation <input type="checkbox"/> Antibody testing validation <input type="checkbox"/> Multiple FISH probes microscopy <input type="checkbox"/> Brightfield and fluorescence digital image capture	<input type="checkbox"/> *Specimen collection, handling, fixation <input type="checkbox"/> Paraffin retrieval and special processing <input type="checkbox"/> *Routine ultramicrotomy and staining - semi/ultra <input type="checkbox"/> Special staining – glycogen, other <input type="checkbox"/> *Alignment/astigmatism correction <input type="checkbox"/> *Calibration and morphometry <input type="checkbox"/> Imaging and image analysis <input type="checkbox"/> Immuno-electron microscopy <input type="checkbox"/> EDS analysis <input type="checkbox"/> OH&S or quality control activity	<input type="checkbox"/> *Specimen collection/handling <input type="checkbox"/> *In Situ Hybridisation <input type="checkbox"/> Microscopy in genetics <input type="checkbox"/> Use of automated image capture and analysis systems <input type="checkbox"/> *PCR-based analysis <input type="checkbox"/> DNA sequencing analysis <input type="checkbox"/> *Use of appropriate assay controls <input type="checkbox"/> Arrays (CVN, SNP & expression) <input type="checkbox"/> Data storage & security on EHRs <input type="checkbox"/> Use of bioinformatics resources	<input type="checkbox"/> *Autopsy consent and authority <input type="checkbox"/> *Body collection/handling/ release <input type="checkbox"/> *Adult post-mortem – full <input type="checkbox"/> Adult post-mortem –partial and targeted to a specific anatomical site <input type="checkbox"/> Infant post-mortem <input type="checkbox"/> Fetal post-mortem <input type="checkbox"/> *Removal of organs/stitching <input type="checkbox"/> Bone sawing <input type="checkbox"/> Organ donation <input type="checkbox"/> OH&S or quality control activity	
<i>*Mandatory DOPS if selected as a minor sub-discipline</i>						
<b>Please comment on whether these aspects of the trainee's performance are as expected for the stage of training</b>				<b>Yes</b>	<b>No</b>	<b>N/A</b>
Understands the principles of the methods						
Understands and complies with the laboratory documentation, manuals, etc.						
Has completed technique successfully and produced valid results that can be reported						
Can explain the QC procedures for these methods, including internal and external QA						

Able to discuss anomalies and resolve uncertainties for the methods			
Able to explain maintenance and trouble-shooting requirements for the methods			
<b>Please comment on other relevant aspects, especially on aspects for improvement</b>			
<b>Final outcome (please tick)</b> <input type="checkbox"/> As expected for the stage of training <input type="checkbox"/> Below expected for the stage of training	<b>Time taken for DOPS</b>	<b>Number of samples</b>	<b>Time taken for feedback</b>
<b>Assessor</b>  _____ Name (please print)                      Signature		<b>Signature of Trainee</b>  _____ Signature                      Date	
<b>Laboratory</b>			

## Appendix 6 – Guidelines for Faculty of Science Reports (Part II)

The Part II assessment requires four (4) Reports of 3000-5000 words. These should be of a standard publishable in a journal such as *Pathology*.

The focus of the Report could range from a single patient case or case series to a large population depending on the discipline involved and the complexity of the situation under investigation. The Reports should demonstrate the candidate's approach to analysing the clinical/ pathological problem or issue in the case(s) or the population (including a relevant review of the literature) and follow up action/discussion based on principles of Evidence-based clinical Laboratory Practice.

It is also expected that some Reports will demonstrate the candidate's ability to be innovative, assure quality and consider management issues such as staff, instrument and reagent costs. Where applicable a Report should comment on issues such as, but not limited to, method selection, method validation, method development and trouble-shooting.

Based on the above approach, following are some suggestions appropriate as Report aims:

- The introduction or development of a new test and comparisons with current best practice
- Transference of an existing test to a new context, sample type or processing protocol and comparing it to current practice
- A study that examines the sensitivity and specificity of a test, including positive and negative predictive values in a particular population
- A detailed analysis of cumulative laboratory data (including case series)
- A study comparing specific populations

Please note that the above list is not exhaustive. Trainees may discuss with their supervisor and determine any other aim, and inform the College administration well before planning the work involved. The Principal Examiner will confirm the appropriateness of the aim.

In Anatomical Pathology the Reports should evaluate an issue in the laboratory standards – Part II curriculum in the candidate's Major sub-discipline or Minor sub-disciplines (selected during Part I), with not more than two Reports per technique.

The Reports will be independently marked by two examiners in the relevant discipline and candidates will be provided with feedback. Candidates are encouraged to submit their Reports early in Part II, and at least two Reports should be submitted by the end of the fourth year of training.

### Format

1. An electronic copy in an editable format (e.g. Microsoft Word) should be submitted.
2. The first page should have the Trainee's RCPA number and the word count (excluding references). For examination and feedback purposes page numbers should be provided for the whole document and line numbers should be provided for all text.
3. The Trainee's name should NOT be displayed anywhere in the document.
5. Any information and contributions provided by others should be clearly identified. Do NOT give personal or institutional details of the individuals concerned. The Report submitted should be primarily the candidate's own work and any attribution of authorship should take place only at the time of possible publication.
6. The manuscript and reference format should comply with the requirements for the journal *Pathology*. <http://edmqr.ovid.com/pat/accounts/ifaauth.htm>



### Marking criteria

1. The Report demonstrates one or more of the Report aims.
2. The methods are appropriate to the Report aims, and reflect an adequate amount of effort.
3. The Report demonstrates the appropriate principles of Evidence Based Laboratory Practice.
4. Where applicable the Report comments on issues such as method selection, method validation, method development and trouble-shooting.
5. Introduction covers the background of the topic and introduces the rest of the Report. The main body of the Report is well organised, easy to read and answers the question that has been set. Large amounts of irrelevant material have not been included.
6. The lessons derived from the Report are discussed adequately, and the implications are related to the candidate's own situation and in the broader context of the field. The conclusion accurately summarises the arguments that have been presented.
7. A full range of appropriate sources have been used to research the related work. This may include textbooks, journals, websites, personal communications, surveys or experiments. The appraisal of the cited literature is critical and selective.
8. References are relevant and are cited accurately and in accordance with the prescribed format. The reference list includes at least 10 and up to 30 references, including recent peer-reviewed literature.
9. Correct, concise English without spelling or grammatical errors.
10. Clear layout of text with appropriate headings and paragraphs. Figures and tables are well planned and easy to understand. Photographs and illustrations are of high quality.

Each criterion will be graded as satisfactory or unsatisfactory. If any of the criteria are unsatisfactory, the Report must be revised and re-submitted.

Any publications arising from the Reports may be used to meet the requirements of the Research Standards component of the curriculum. Candidates are encouraged to publish their Reports subsequent to examination.

### Declaration of originality

Each Report must be accompanied by a signed declaration of originality. Please use the form on the next page and do NOT incorporate the form into the Report, to preserve anonymity. The College's policy is that Trainees who submit work that is not their own will fail and the matter will be referred to the Board of Education and Assessment.

### **Submitting the report and originality declaration**

Please *email* the report and the signed declaration of originality to the College at [exams@rcpa.edu.au](mailto:exams@rcpa.edu.au). The declaration and the report will be kept on file at the College, and e-copies of the report will be sent to examiners. Please refer to RCPA website for due dates.



**Declaration for Faculty of Science Reports**

**Trainee declaration:**

I certify that this Report is my own original work and that the work documented was completed as part of my personal supervised practice during my accredited training. It has not been previously submitted for assessment and has not been used by any other trainee in this laboratory. I have read and understand RCPA Policy 10/2002 - Plagiarism and Cheating in Examinations.

**Supervisor declaration:** As the supervisor for ....., I certify that the work documented was completed personally by him/her during training. The Report is original and has not been used by any other trainee in this laboratory. I have reviewed this item and read the relevant RCPA requirements and believe it is suitable for submission to the RCPA examiners.

Trainee signature.....date.....

Supervisor name (print).....

Supervisor signature.....date.....

## Appendix 7 - Faculty of Science Anatomical Pathology Assessment Matrix

	Outcomes to be assessed  (From the Faculty of Science curriculum)	Part I		Part II				Portfolio				
		Written exam (SAQ)	Practically oriented oral exam	Structured oral exam	Research thesis	Published articles	Faculty of Science reports	CbDs	DOPS	Short Case reports	Other reports	Suggestions for portfolio evidence of activity
Clinical Laboratory – I	AC 1.1 Principles of pathophysiology and disease pathogenesis	Y										1, 2
	AC 1.2 Common diseases and their diagnostic features	Y						Y				1, 2
	AC 2.1-5 Laboratory techniques: sample collection, fixation and processing in Histology, Cytology, Electron microscopy or Immunohistochemistry; molecular genetics theory & technical requirements, 2.6 Technical requirements: Mortuary practice	Y	Y					Y	Y	Y		
	AC 3 Instrumentation	Y	Y					Y	Y	P		
	AC 4.1-5 Quality control: test preparations	Y	Y					Y	Y	P		
	AC 4.6 Quality control: artefacts	Y	Y									
	AC 5 Knowledge of complex diseases	Y						Y		Y		
	AC 6 Advanced laboratory techniques	Y	Y					Y		Y		
Clinical Laboratory – II	AC 7-12 Advanced laboratory techniques: Histology/ Cytology/ Electron microscopy/Immunohistochemistry/ Molecular genetics/Mortuary Practice			Y			Y					
	AC 13 Advanced instrumentation			Y			P					
Innovation & Leadership	I1 Quality and safety of laboratory practices	Y	P	Y			Y					4, 5, 6,7
	I2 Leadership and innovation in developing the discipline	P	P	Y	P	P	Y				P	8, 9
	I3 Knowledge of Evidence Based Laboratory Practice, and use of this in decision making	Y	P	Y		P	Y					1, 3
Research	R1 Conducting Research			Y	Y	Y	P					
	R2 Research Management & administration			Y	P						Y	
	R3 Research Communication			Y	P	Y						2

Y = Yes P = Possibly

\* Portfolio categories

1. Attendance/ presentations at laboratory/ multidisciplinary meetings
2. Attendance/ presentations at scientific forums e.g. conferences
9. Educational material development

3. Teaching sessions
4. Attendance at management meetings

5. Quality activities
6. Incident reports

7. RCPA Management module
8. RCPA Ethics module