RCPA
The Royal College of Pathologists of Australasia

FACULTY OF SCIENCE

TRAINEE HANDBOOK 2018

IMMUNOPATHOLOGY

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

AP50	Alternate Pathway
AS ISO	Australian and International Standard
CbD	Case-based Discussion
CD4	Cluster of Differentiation 4
CD8	Cluster of Differentiation 8
CH50	50% Haemolytic Component
CPDP	Continuing Professional Development Program
CTL	Cytotoxic T cell
DNA	DeoxyriboNucleic Acid
DOPS	Direct Observation of Practical Skills
EBLP	Evidence Based Laboratory Practice
FcR	Fc Receptor
FSc	Faculty of Science
HIV	Human Immunodeficiency Virus
IgA	Immunoglobulin A
IgE	Immunoglobulin E
IPEX	Immunodysregulation Polyendocrinopathy Enteropathy X-linked Syndrome
MHC	Major Histocompatability Complex
MSc	Master of Science
NATA	National Association of Testing Authorities
NKT	Natural Killer T
NPAAC	National Pathology Accreditation Advisory Council
PhD	Doctorate of Philosophy
ROP	Receiver Operating Characteristic
TLR	Toll-like Receptor
QA	Quality Assurance
QC	Quality Control
RCPA	Royal College of Pathologists of Australasia
Th1/2/17	T helper 1/2/17 cell
WHO	World Health Organisation

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 and 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 Immunopathology 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 Immunopathology.

2. Clinical Laboratory Standards

- Demonstrate competence in applying the techniques, technology and reporting associated with an Immunopathology laboratory with a broad case-mix of patients.
- Apply the theoretical and technical expertise in laboratory techniques required to lead the activities of an Immunopathology 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 Immunopathology laboratory.
- Demonstrate a commitment to the continual improvement and advancement of Immunopathology.
- 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 section 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. 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 (including hyperlinks)

- RCPA policy on supervision
- Supervisor resources

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 Board of Education and Assessment 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 should 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 which 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, eg, 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 Induction Manual for Supervisors and the RCPA policy on the Role of the Supervisor.

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

Resources

The resources listed below are not compulsory nor do they necessarily cover all the immunopathology that a trainee should know. Information for examination may come from books and journals outside this list.

Texts

Janeway CA, Travers P, Walport M and Shlomchik M (2011) Immunobiology: The Immune System in Health and Disease (8th Ed) Churchill Livingstone
Abbas AK, Lichtman AH and Pillai S (2014) Cellular and Molecular Immunology (8th Ed) Saunders
Detrick B (2016). Manual of Molecular and Clinical Laboratory Immunology, (8th Ed) ISBN: 1-55581-871-4 ASM Press
Littman DR, Yokoyama WM. Annual Reviews of Immunology. Published annually by Annual Reviews, Palo Alto, California

Journals

Current Opinion in Immunology
Journal of Allergy and Clinical Immunology
Nature Reviews Immunology
Journal of immunology
Nature Immunology
Clinical and Experimental Immunology
Arthritis and Rheumatism
Immunology
Journal of Clinical Immunology
Immunity
Allergy
Pediatric Allergy and Immunology

Websites

Australasian Society of Clinical Immunology and Allergy (ASCIA) http://www.allergy.org.au/
Federation of Clinical Immunology Societies http://www.focisnet.org/FOCIS/
American Academy of Allery Asthma and Immunology http://www.aaaai.org/home.aspx
Westgard QC http://www.westgard.com/index.php
National Pathology Accreditation Advisory Council (NPAAC) http://www.health.gov.au/npaac
National Association of Testing Authorities, Australia (NATA) http://www.nata.com.au/nata/
ISO15189 standards http://www.iso.org/iso/home.html

Conferences and Meetings

Trainees are encouraged to attend ***Pathology Update,*** the annual scientific meeting of the RCPA. A discipline stream for Immunopathology runs concurrently and in association with the other pathology disciplines covering topical and novel aspects of practice.

The RCPA also supports the ***ICPMR Immunopathology Course***, an annual program in the principles and practice of Immunopathology at which Immunopathologists from laboratories in Australia give interactive tutorials and lectures on current topics in basic and applied Immunology and Immunopathology, and provides opportunity for participation in a trial practical examination. The meeting is organised by the Department of Immunology at the Institute for Clinical Pathology and Medical Research (ICPMR) and is held at Westmead Hospital, Sydney.

The **Annual Scientific meeting of the Australasian Society for Clinical Immunology and Allergy** (ASCIA) is held usually in September at different venues around Australia and New Zealand and often includes a satellite meeting devoted to Immunopathology. The **Annual Scientific meeting of the Australasian Society for Immunology** (ASI) is held in December at different venues around Australia and New Zealand.

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

SECTION 2 – CURRICULUM
Research Standards

Standard
Fellows of the Faculty of Science will: **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 Immunopathology.**

Content	Outcomes	Indicator
R 1 Research	**R 1 Demonstrated ability in carrying out effective research** 1.1 Comment on recent advances and relevant literature in their field of study 1.2 Employ analytical and critical thinking to develop, refine or critique theoretical concepts, and to recognise problems 1.3 Develop research proposals and protocols towards testing current hypotheses/ investigating or validating contemporary problems/ acquiring new knowledge in the discipline 1.4 Apply statistical and epidemiological concepts and interpret epidemiological/ laboratory data 1.5 Critically evaluate own findings and findings of others 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, intellectual property, malpractice and misconduct 1.7 Participate in effective and ethical peer review processes as researchers and peer reviewers	R 1 will be evidenced through: • 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 OR • A PhD related to the area of expertise in Pathology, conferred by a university recognised by the College OR • 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 AND • Answers questions in a viva voce examination to the standard approved by the principal examiner
R 2 Management	**R 2 Demonstrated ability in the management of research and research administration** 2.1 Prioritise outcomes, meet goals and work productively with key stakeholders using effective project management skills 2.2 Participate in processes for obtaining funding including applying for grants and other external funding 2.3 Use information systems and appropriate resources or technologies to record and communicate research findings 2.4 Determine the most cost effective methods to achieve a research goal 2.5 Demonstrate flexibility, adaptability, and innovation in management of research	All R 2 outcomes could be assessed through: • A report, to be submitted in the candidate's portfolio as detailed in Part II assessment policy AND • Answering questions in a viva voce examination to the standard approved by the principal examiners

Content	Outcomes	Indicator
R 3 Communication	**R 3 Demonstrated ability in research communication** 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 3.2 Prepare reports and papers for peer review/ publication that comply with the conventions and guidelines for reporting biomedical research 3.3 Defend research methods and findings in peer review and/or viva voce examination 3.4 Achieve a significant number of articles in peer-reviewed publications 3.5 Support the development of research capacity of others in teaching, mentoring or demonstrating	R 3 will be evidenced through: • Documenting material presented at weekly laboratory meetings • Documenting the planning and progress of research towards a higher degree through Annual or 6 monthly report • Publications, presentations and poster abstracts • Developing end-of-year reports for own laboratory where appropriate • Documenting the contribution to training programs or assisting other scientists/registrars in conducting research AND Answering questions in a viva voce examination to the standard approved by the principal examiner

Clinical Laboratory Standards: Part I

Standard
Fellows of the Faculty of Science will: **Demonstrate competence in applying the techniques, technology and reporting associated with an Immunopathology laboratory with a broad case-mix of patients.**

Content	Outcomes	Indicator
IM1 - Explain the principles of the structure and physiology of the immune system	**IM 1.1 – Describe the organisation of the Immune System** • lymphoid tissues and organs: anatomy and function • cells and molecules that participate in the immune response Describe the ontogeny, characteristics and functions of molecules of relevance to the immune response: • MHC, cytokines, chemokines, receptors, signalling pathways, vasoactive mediators, prostaglandins, leukotrienes, genes of relevance to the immune response, including genes for above molecules and MHC, gene rearrangement in generation of antigen receptors • Structure and function relationships between the organs, tissues and cells that participate in the immune responses	All of IM 1.1 will be evidenced by answering examination questions describing the organisation of the immune system, the structure and function of organs of the immune system, the cells and molecules of the system and their relationships.
	IM1.2 – Immunological functions Describe the functions of the cells of the immune system: **1.2.1** – Innate immunity: • NK cells • Activation and inhibition • Cytotoxicity mechanisms • Cytokines relevant in NK cell development and function. • Granulocytes • Oxidative/non-oxidative microbicidal mechanisms • chaemotaxis, adherence and phagocytosis. • Eosinophils • Basophils • Pattern recognition molecules (e.g. TLRs,) pathogen-associated molecular patterns • FcR: structure and function Proteins • Complement • Acute phase proteins • Mannose-binding lectin • Anti-microbial peptides **1.2.2** – Specific immunity: • MHC - Molecular structure and Function	All of IM 1.2 will be evidenced by answering examination questions describing the organisation of the immune system, the structure and function of organs of the immune system, the cells and molecules of the system and their relationships.

Content	Outcomes	Indicator
	1.2.3 – Antigen-presenting cells • Dendritic cells • Macrophages • Antigen processing and presentation • Superantigens **1.2.4** – T cell mediated immunity • T cells (αβ & γδ) and subsets (CD4/CD8, Helper, CTL, Th1/Th2, memory T cells, regulatory T cells, Th17, NKT cells, T Follicular helper (TFh),T follicular regulatory (TFr) cells) • T cell receptor epitope recognition (αβ & γ6), activation and co-stimulation • Cytokines relevant in T cell development and function • Cytotoxicity mechanisms • Activation-induced cell death **1.2.5** – B cell mediated immunity • Antibodies: structure, function (neutralisation, opsonization, complement fixation, antibody dependent cell mediated cytotoxicity) • T cell-dependent and T cell-independent B cell responses • B cells and subsets (transitional B cells, memory B cells) • Plasma cell differentiation • Immunoglobulin production • B-cell receptor epitope recognition, activation and co-stimulation • Cytokines relevant in B-cell development and function • Isotype switching and affinity maturation	
IM 2 – Explain the functions of the immune system that impact upon testing	**IM 2.1 – Allergic responses** Describe: • Cells of the allergic reaction (mast cells, basophils, eosinophils) Generation of Th2 responses • Cytokines / chemokines relevant in allergic responses • IgE and receptor interactions • IgE-mediated acute-phase and late-phase reactions **IM2.2 – Immunological responses (types II — IV) and Cellular and Molecular mechanisms of immunity** Describe • Antibody-mediated cytotoxicity responses • Immune complexes - immunologic properties and mechanisms of clearance • Cell-mediated immunity Explain Immunoregulatory mechanisms • Tolerance and autoimmunity • Idiotypic networks • Apoptosis	All of IM 2 will be evidenced by answering examination questions or providing work samples in a portfolio of work that describe the relationship between the pathophysiology of disease and the impact on testing

Content	Outcomes	Indicator
	IM2.3 – Regional Immunology/Specific immune reactions Describe Mucosal immunity • Mucosal epithelium and specialised cells • IgA biology and transport • Oral tolerance • Role in vaccine responses Describe Transplantation Immunopathology • Allograft rejection • Graft versus host reactions (GVHR) • Maintenance of tolerance Describe Tumour Immunopathology • Tumour specific and tumour associated antigens • Immune surveillance Describe Immune response to infections: • Parasites • Helminths • Extracellular and intracellular bacteria • Protozoa • Fungi and viruses Describe HIV biology • HIV life cycle (entry, latency, mechanisms of replication) • Pathogenesis of immunodeficiency Describe autoimmunity • Involved tissues • Mechanisms	
IM3 – Describe the pathophysiology of these conditions in order to guide laboratory and clinical diagnosis	**IM 3.0 – Immune-mediated Diseases** **IM 3.1** – Describe Inflammation **IM 3.2** – Describe Primary immunodeficiency diseases • Combined immunodeficiencies • Predominantly antibody deficiencies • Other well defined immunodeficiency syndromes • Complement deficiencies • Congenital defects of phagocytic number and/or function • Molecular basis of Immunodeficiency disorders **IM 3.3** – Describe the physiological immunodeficiency of immaturity **IM 3.4** – Describe Acquired immunodeficiency disorders: • HIV-related nutrition and metabolic related associated with malignancy and cancer therapies **IM 3.5** – Describe the pathophysiology, including the molecular basis, of autoimmune/rheumatic diseases	All of IM 3 will be evidenced by answering examination questions and providing work samples in a portfolio of work that demonstrate an understanding of the disease to guide decisions and further testing

Content	Outcomes	Indicator
Cont.	**IM 3.6** – Describe the pathophysiology, including the molecular basis, of inherited disorders of immune regulation including • IPEX syndrome • Autoimmune lymphoproliferative syndrome (ALPS) • Familial haemophagocytic lymphohistiocytosis syndromes. **IM 3.7** – Describe the pathophysiology, including the molecular basis, of autoimmune diseases including organ-specific and systemic autoimmune conditions. **IM 3.8** – Describe Immune-mediated organ-specific disorders including • Endocrinopathies • Autoimmune • Liver diseases • Coeliac disease • Inflammatory bowel disease **IM 3.9** – Describe Immune-mediated neuromuscular diseases **IM 3.10** – Describe Immuno-haematologic diseases **IM 3.11** – Describe Immune-mediated ocular diseases. **IM 3.12** – Describe the pathophysiology, including the molecular basis, of vasculitis including: small medium and large vessel diseases, pulmonary and renal immune disease. **IM 3.13** – Describe the pathological effects of allergic and other immunologic diseases on airway physiology and pathophysiology, including the molecular basis, of allergic diseases, asthma and related disorders, exercise-induced allergic manifestations, bronchopulmonary aspergillosis and other causes of airway inflammation. **IM 3.14** – Describe the pathophysiology, including the molecular basis, of upper airway diseases including: rhinitis, sinusitis, nasal polyposis, otitis	

Content	Outcomes	Indicator
IM 4 – Explain the principles, performance and limitations of the following techniques, including technical and clinical aspects to support the interpretation of results	**IM 4 – Explain the principles, performance and limitations of Immunological, Immunogenetic and Immunochemical techniques, including but not limited to** • Immunoassay • Turbidimetry and nephelometry • Electrophoresis • Isoelectric focussing • Western blotting • Flow cytometry • Analysis of cell phenotype and function • Fluorescent-activated cell sorting • Addressable-bead assays (Luminex) • Chromatography • Molecular genetic testing including polymerase chain reaction, DNA sequencing and other nucleic acid specific technologies. • Separation of molecules by gel filtration • Cell proliferation and cell cycle analysis • Cell-separation techniques **IM 4.2 Explain the principles and application of general laboratory procedures** including; • Centrifugation • Preparation of buffers • Units of measurement • Calibration procedures • Use of pipettes • Water quality • Waste disposal • Use and applications of fluorochromes • Cellular techniques • Use of automated instruments • Radioactivity and isotopes • Production of antibodies • Microscopy	All of IM 4 will be evidenced by answering examination questions and/or completing workplace based assessment scaffolds that give examples of identifying appropriate tests for a particular circumstance and offering advice on the interpretation of results
IM5 – Explain the principles, performance and limitations of the following assays, including technical and clinical aspects to support the interpretation of results, assessment of alternative methods for test performance, test usage and clinical utility	**IM5.1 – Explain the principles performance and limitations of the following assays,** including technical and clinical aspects to support the interpretation of results, assessment of alternative methods for test performance, test usage and clinical utility • Electrophoresis of proteins and DNA • Measurement of immunoglobulins • Measurement of complement proteins and function • Measurement of other specific proteins • Detection of autoantibodies • Detection of IgE-specific antibodies • Lymphocyte analysis • Lymphocyte function • Demonstration of monoclonality • Granulocyte function tests	5.1 will be evidenced by answering examination questions or providing work samples in a portfolio of work that explain the scientific principles that underpin each assay, considerations in applying each assay and factors that may affect data and its interpretation.

Content	Outcomes	Indicator
	IM 5.2 – Assess the accuracy, reliability and validity of test results using the following statistical and evaluative methods • General statistics • Theory of reference intervals • Method evaluation • Functional sensitivity/detection limits • Sensitivity, specificity and predictive value, ROC analysis • Bayes theorem • Non parametric statistics • Discuss the relative use of hypothesis and non-hypothesis based research • Use of controls and calibrators • Quality assurance methods and programs • Analysis of laboratory performance	IM 5.2 Answer examination questions and provide work samples in a portfolio of work including calculations to explain the significance and impact of each on the interpretation of results.
	IM 5.3 – Describe the effect of the following factors on laboratory results • Age • Sex • Circadian variation (Biological variables) • Nutritional status • Stress • Posture • Medications • Pregnancy • Exercise • Ethnic variation	
	IM 5.4 – Evaluate specimen preparation • Evaluate methods for the selection, collection and transport of specimens • Describe sample acceptance criteria • Suggest new strategies for the selection, collection and transport of specimens to optimize diagnostic yield • Evaluate samples rejected as “not for testing”	

Clinical Laboratory Standards: Part II

Standard
Fellows of the Faculty of Science will: **Apply the theoretical and technical expertise in laboratory techniques required to lead the activities of an Immunopathology laboratory.**

Content	Outcomes	Indicator
IM6 – Laboratory techniques in Immunopathology	**IM 6.1** – Detail your experience and contribution with a laboratory technique or new marker of Immunological disease that is used in reporting on **one** of the following • Markers of Transplantation • Immunogenetics • Autoimmunity • Immunodeficiency-Primary or acquired • Haematomalignancy • Allergy **IM 6.2** – Describe the development of this technique used in Immunopathology and its application to the analysis of a pathological disorder. Evaluate the science or technology underpinning the technique and describe the contributions of some key authors who contributed to the development of this technique	IM6 will be evidenced by a portfolio of work, publications and Faculty of Science Reports that show how tests have been developed or introduced in a new context, their benefits and the underlying scientific principles, in addition to a viva voce examination, to the satisfaction of the principal examiner
AND/OR **IM 7 – Laboratory techniques in Immunoassays**	**IM 7.1** – Describe the principles of operation of an system or apparatus in your field of expertise **IM 7.2** – Explain the significance of this instrument to a specialised area of Immunopathology	IM7 and IM8 will be evidenced by a portfolio of work, publications and Faculty of Science Reports that show how tests have been developed or introduced in a new context, their benefits and the underlying scientific principles, in addition to a viva voce examination, to the satisfaction of the principal examiner
AND/OR **IM 8 – Laboratory techniques in Immunogenetic or genetic analysis**	**IM 8.1** – Describe the pathogenesis of a condition or diagnosis, with particular reference to its genetic basis and laboratory analysis **IM 8.2** – Describe the molecular pathways identified in this pathogenesis	
AND/OR **IM 9 – Laboratory techniques in general Immunopathology, including automation**	**IM9.1** – Describe the levels of automation that may be found in an automated core laboratory **IM9.2** – Describe the benefits and risks of an automated core laboratory. **IM9.3** – Describe the technical principles involved in the following stages of core laboratory automation. • Pre-analytical automation including sample checking, centrifugation, aliquotting, sample transport • Automated analysis including testing capacity, reagent capacity, redundancy and back up. • Analytical validation including workstation software • Clinical validation including expert systems for interpretation of core laboratory results	All of IM9 will be evidenced by a portfolio of work, publications and Faculty of Science Reports demonstrating expertise in techniques in Immunopathology and viva voce questions to the satisfaction of the principal examiners appointed by the college

Content	Outcomes	Indicator
Cont.	**IM9.4** – Describe quality assurance of automated core laboratories including • Discrete internal quality control of multiple analysers/analytes • Discrete external quality assurance of multiple analysers/analytes • Continuous quality control of multiple analysers/analytes.	
AND/OR **IM 10 – Analysis of instruments and results**	**IM10.1** – Describe the technical principles of one the following: • Immunoassay Devices • Flow cytometry Devices • Point of Care testing devices • Genetic testing devices **IM10.2** – Describe Quality Assurance principles for the selected devices as they apply to • Preanalytical Quality • Analytical Quality • Postanalytical Quality **IM 10.3** – Describe the process for validation of laboratory test results and their alignment with interpretations	IM 10 outcomes will be evidenced by a portfolio of work, Faculty of Science Reports and answering and viva voce questions to the satisfaction of the principal examiner
AND/OR **IM 11 – Organisation of laboratory data**	**IM11.1** – Describe the data structures used in healthcare **IM11.2** – Describe the data structures used in Laboratory Information Systems **IM11.3** – Describe the tools available for exploring the relationships that exists in databases **IM11.4** – Describe how data mining of laboratory information systems can be used to: • Investigate the physiological variations in health including reference intervals • Investigate the quality of laboratory analysis • Investigate the clinical impact and value of pathology tests **IM11.5** – Detail your experience and contribution to data mining.	IM11 will be evidenced by Publications &/or Faculty of Science Reports demonstrating expertise in Data Mining plus answering questions in a viva voce examination to the satisfaction of the principal examiners appointed by the college

Innovation, Development and Leadership Standards

Standard
Fellows of the Faculty of Science will: • **Apply, implement and evaluate strategies that guarantee quality assurance, compliance, safety and efficient use of resources fundamental to the operation of an Immunopathology laboratory.** • **Demonstrate a commitment to the continual improvement and advancement of Immunopathology.** • **Apply the principles of Evidence Based Laboratory Practice (EBLP) to inform health care decisions.**

Content	Outcomes	Indicator
I 1 – Evaluate laboratory policies and practices to meet quality management, compliance and safety standards	1.1 Maintain and evaluate a quality assurance system under ISO 15189 1.2 Evaluate current practices to ensure compliance with NPAAC standards as appropriate or international equivalent 1.3 Synthesise quality assurance, quality control and safety, and Total Quality Management policies to meet NATA accreditation or international equivalent 1.4 Act with accountability to facilitate workflow, teams, decision making, and communication in management and planning of services and/or departments 1.5 Evaluate and improve workplace safety through proactive management practices, employing laboratory information systems and reporting mechanisms where appropriate 1.6 Develop or review the processes of validation and verification of methodology used in the laboratory	Answer written examination and viva voce questions that demonstrate competence in these aspects of management required to lead a laboratory PLUS Satisfactory completion of the RCPA Laboratory Management modules (online)
I 2 – Demonstrate leadership and innovation in developing the practice of Immunopathology	2.1 Maintain an evidence base to support advice provided to clinicians 2.2 Design, adapt and implement analytically valid and traceable routine tests, underpinned by reference materials and documented methods 2.3 Evaluate new methods as fit for use 2.4 Assess business opportunities for validity where appropriate 2.5 Provide strategic direction for laboratory including management of change 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 2.7 Reflect on your engagement in Continuing Professional Development (CPD), and personal benefits 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 2.9 Identify your role in professional societies/ colleges and contribute to its activities	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

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

SECTION 3 – ASSESSMENT POLICY

This section explains the specific requirements and assessment policy for the Faculty of Science Immunopathology 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 Immunopathology.

1. Formal examinations

There will be a written examination, held in designated examination centres on dates specified by the College. This examination will focus on outcomes IM1 to IM3, and on the theoretical basis and principles of the tests described in items IM4 – IM 11. and the Innovation, Development and Leadership components of the curriculum. The research component is assessed separately at Part II level.

There will also be a 'practical/oral' examination, consisting of approximately 6 stations of 20-30 minutes duration, which all candidates will complete in rotation. These will test, for example, the interpretation of results, problem solving and reporting of assays, quality control and laboratory management. Responses will be marked against model answers. Where possible 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, assessments carried out in the workplace (i.e. Directly Observed Practical Skills, short case reports, Case-based Discussions) and evidence of other learning activities should be recorded in a Logbook and portfolio. Together, these 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. It is the Trainee's responsibility to keep the logbook up to date and meet the additional portfolio requirements.

Appendix 1 details the Immunopathology 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 teaching activity should be recorded here including those outlined below which will be recorded in more detail separately to the logbook.

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 relevant CbD form, included as **Appendix 4.**

Doing CbD assessments is excellent preparation for the oral examinations for trainees. CbD assessments provide feedback about the trainee's ability to interpret and relate laboratory results to opinions and conclusions, including about case circumstances; to plan appropriate investigations, and to provide advice on decisions related to investigations, 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. The Trainee should select a suitable assessor. The assessor need not always be the listed supervisor. The trainee can discuss and request the supervisor to delegate another assessor, preferably but not necessarily an RCPA Fellow. The assessor could note this as a quality activity in their annual Continuing Professional Development Program (CPDP) submission.

The Trainee should select and prepare two (2) recent cases with which s/he has been involved. The assessor should select one (1) of these for the Trainee to present and discuss. 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)

In Immunopathology, the **IM 4 and IM 5** outcomes are largely assessable through DOPS activities within the workplace. The techniques and skills listed in IM 4 and IM 5 can be categorized into the following areas:

- Fluorescence
- Antigen and/or Antibody detection
- Electrophoresis
- Molecular techniques
- Flow cytometry and cellular function

Trainees will be required to demonstrate competence in each of these areas in their day-to-day work. Once proficiency in each area is achieved (to be assessed by at least one instance of observing the trainee in each technique and giving feedback) the Supervisor should complete the DOPS competence form included as **Appendix 5** for that area. The Trainee and supervisor

should be guided by the outcomes in IM 4 and IM 5 for the scope and level of proficiency required. The signed DOPS competency forms (at least 5 in total) should be included in the portfolio and noted in the Portfolio Summary spreadsheet.

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@aacb.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 from a variety of activity types per year 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 in 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

Item	***Completion***	***Assessed by***	***Comments***
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
Practical/Oral examination: Multi-stationed practical assessment tasks/ oral interviews, with practically-oriented questions	After submission of pre-exam supervisor report and portfolio summary sheet	Marked by two (2) examiners with appropriate experience. Two (2) examiners 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. (portfolio should not be sent to the College unless for audit)
Supervisors' Reports with portfolio summary spreadsheet.	Annual (and end of rotation) 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 indicating completion of a sufficient number and type of workplace-based activities and assessments
4. Research work and reports
5. Satisfactory progress (Supervisor 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 Immunopathology 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 Immunopathology Laboratory Standards (Part II), Research Standards, and Laboratory Innovation, Development and Leadership.

2. Faculty of Science Reports on Clinical Laboratory Practice

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*.

In Immunopathology, the **Part II** curriculum content is divided into six (6) sections:

- IM 6 – Laboratory techniques in Immunopathology
- IM 7 – Laboratory techniques in Immunoassays
- IM 8 – Laboratory techniques in Immunogenetic or Genetic analysis
- IM 9 – Laboratory techniques in general Immunopathology, including automation
- IM 10 – Analysis of instruments and results
- IM 11 – Organisation of laboratory data

For the purpose of the Part II assessments candidates should **choose one major and two minor sub-disciplines** (i.e. three (3) of the six (6)). The **four (4) Reports** should comprise of **two (2) from the major sub-discipline and one (1) each from the minor sub-disciplines**.

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 approach described earlier, 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 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

Other Evidence

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

4. 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 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.

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. The Supervisor Report form can be found at:
http://www.rcpa.edu.au/Trainees/Training-with-the-RCPA/Supervisor-Reports

Summary of assessment requirements for Part II

Item	***Completion***	***Assessed by***	***Comments***
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 e.g. DOPS	To be completed 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 Immunopathology

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 Genetic Pathology.

	Item	**Part I**	**Part II**	**Evidence**
1	**Supervisor report/s** 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	**DOPS** competence in five (5) sub-discipline: Fluorescence Antigen/ Antibody detection Electrophoresis Molecular techniques Flow cytometry/ cellular function	At least five (5) with one (1) for each sub-discipline 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	**CbDs**	Five or more Case-based discussions before the Part I examinations		All forms/ reports signed as satisfactory by supervisor or other appropriately qualified person as agreed/delegated by Supervisor. Short case reports to be included in portfolio.
4	**Short Case Reports** of 1000 words	Three or more short case reports, before the Part I examinations		

	Item	Part I	Part II	Evidence
5	**Clinical meetings** (laboratory, multidisciplinary) 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	**Teaching sessions** Sessions conducted for students, colleagues, medical colleagues or other audiences. Educational material development			
7	**Scientific forums** Plus the abstracts presented at each meeting			
8	**RCPA Laboratory Management modules**	to be completed satisfactorily before Part I examinations		signed as satisfactorily completed by supervisor
9	**RCPA Ethics and Confidentiality modules**			
10	**Research Management Report** 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

RCPA The Royal College of Pathologists of Australasia	**Logbook**
Trainee name:	
Supervisor's name:	

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.

Description of learning activity	Date	Comments	Initial
Supervisor's signature:			

Appendix 3 – Short Case Report Assessment Form

RCPA The Royal College of Pathologists of Australasia	**Immunopathology Short Case Report Assessment Form**	
Trainee name	**Trainee ID (RCPA)**	**Stage of training** Y1 Y2 Y3 Y4 Y5 if > Y5 please specify
Assessor's name	**Assessor's position** ☐ Pathologist ☐ Scientist ☐ Other (pls specify)	

Please indicate (✓) if each of the following was deemed Satisfactory (S) or Unsatisfactory (U)

Aspect of Report	S	U
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 *Pathology* journal format		
No large amounts of irrelevant material & text		

Please comment on other relevant aspects, especially on aspects for improvement

Please indicate the overall standard of the report: ☐ SATISFACTORY ☐ UNSATISFACTORY

Signature of assessor	**Signature of Trainee**

Date completed

Appendix 4 – Case-based Discussion (CbD) Assessment Form

RCPA The Royal College of Pathologists of Australasia	**Immunopathology Case based Discussion Assessment Form**	
Trainee name	**Trainee ID (RCPA)**	**Stage of training** Y1 Y2 Y3 Y4 Y5 if > Y5 please specify
Assessor name and position:		

Sub-discipline (select one)

- ☐ Fluorescence
- ☐ Antigen and/or Antibody detection
- ☐ Electrophoresis
- ☐ Molecular techniques
- ☐ Flow cytometry and cellular techniques

Focus of discussion (tick as many as apply)

- ☐ Principles of pathophysiology and disease pathogenesis
- ☐ Common diseases and their diagnostic features
- ☐ Research relevance
- ☐ Significance to clinical management
- ☐ Instrumentation
- ☐ Quality control
- ☐ Advanced laboratory techniques
- ☐ Application of evidence based practice

Complexity of case: ☐ Low ☐ Medium ☐ High

Brief description of case presented, discussed and assessed

Why was this case selected for discussion?

Does this case broaden the trainee's experience by being different from previous cases that have been discussed? ☐ Yes ☐ No ☐ N/A

Please comment on whether these aspects of the Trainee's performance are Satisfactory (S) or Unsatisfactory (U)	**S**	**U**	**N/A**
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 the laboratory tests 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			

Please comment on other relevant aspects, especially on aspects for improvement

Final outcome (please tick)	**Date of CbD**	**Time taken for CbD**	**Time taken for feedback**
☐ As expected for the stage of training ☐ Below expected for the stage of training			

Assessor	**Signature of Trainee**
_____ _____ Name (please print) Signature	_____ Signature

Laboratory

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

RCPA The Royal College of Pathologists of Australasia	**Immunopathology Investigations DOPS Assessment Form**	
Trainee name	**Trainee ID (RCPA)**	**Stage of training** Y1 Y2 Y3 Y4 Y5 if > Y5 please specify
Assessor's name	**Assessor's position** ☐ Pathologist ☐ Scientist ☐ Snr trainee ☐ Other (pls specify)	

Laboratory Techniques: Please indicate the area of competence for this form

☐ Fluorescence	☐ Molecular techniques
☐ Antigen and/or Antibody protection	☐ Flow cytometry and cellular function
☐ Electrophoresis	

Details of instruments used/ techniques practiced:

Details of workload (Average number of tests per day or week)

This form certifies that the trainee named has completed the minimum number of procedures for the selected area and is competent in all aspects of this area as defined in the curriculum.

Comments:

Signature of assessor	**Signature of Trainee**
Date completed	

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 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 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 Immunopathology the four Reports should comprise of two (2) from the major sub-discipline and one (1) each from the minor sub-disciplines (selected by the candidate for Part II).

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://edmgr.ovid.com/pat/accounts/ifauth.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 RCPA at **exams@rcpa.edu.au**. The declaration and the report will be kept on file at the College. E-copies will be sent to examiners. Please refer to RCPA website for due dates.

The Royal College of Pathologists of Australasia

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 Immunopathology Assessment Matrix

	Outcomes to be assessed *(From the Faculty of Science curriculum)*	Part I		Part II				Portfolio				
		Written exam (SAQ)	Structured practical/ oral exam	Structured oral exam	Research thesis	Published articles	Faculty of Science Reports	CbDs	DOPS	Short Case reports	Research Management Report	Suggestions for portfolio evidence of activity
Clinical Laboratory – I	IM1 Immune system structure/physiology	Y	Y							Y		
	IM2 Functions of the immune system	Y	Y					Y		Y		1, 2
	IM3 Pathophysiology of immune disease	Y	Y					Y		Y		1, 2
	IM4 Laboratory techniques – general procedures & immunological techniques	Y	Y					Y	Y	Y		
	IM5.1 Laboratory techniques – assays	Y	Y					Y	Y	Y		
	IM5.2 Laboratory techniques - accuracy, validity and reliability assessment	Y	Y					Y	Y	Y		
	IM5.3 Laboratory techniques – factors influencing test results	Y	Y					Y	P	Y		
	IM5.4 Specimen Preparation	Y	Y					Y	Y	Y		
Clinical Laboratory – II	IM6 Laboratory techniques in Immunopathology			Y		Y	Y					
	IM7 Laboratory techniques in Immunoassays			Y		Y	Y					
	IM8 Laboratory techniques in Immunogenetic or genetic analysis			Y		Y	Y					
	IM9 Laboratory techniques in general Immunopathology including automation			Y		Y	Y					
	IM10 Analysis of instruments and results			Y			Y					
	IM11 Organization of laboratory data			Y		Y	Y					
Innovation & Leadership	I1 Quality & safety of laboratory practices	Y		Y			Y					4, 5, 6, 7
	I2 Leadership and innovation in discipline	P		Y	P	P	Y				P	8, 9
	I3 Evidence Based Laboratory Practice	Y		Y			Y					1, 3
Research	R1 Conducting Research			Y	Y	Y	P					
	R2 Research Management & admin.			Y	P						Y	
	R3 Research Communication			Y		Y						1, 2

Y = Yes P = Possibly

* Portfolio categories: 1. Attendance/ presentations at laboratory/ multidisciplinary meetings; 2. Attendance/ presentations at scientific forums e.g. conferences; 3. Teaching sessions; 4. Attendance at management meetings; 5. Quality activities; 6. Incident reports; 7. RCPA Management module; 8. RCPA Ethics module; 9. Educational material development

