The Royal College of Pathologists of Australasia

FACULTY OF SCIENCE

TRAINEE HANDBOOK 2018

CHEMICAL PATHOLOGY

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

AACB	Australasian Association of Clinical Biochemists
AST	Aspartate Aminotransferase
CPD	Continuing Professional Development
CSF	Cerebrospinal Fluid
EBLP	Evidence Based Laboratory Practice
EQAP	External Quality Assessment Program
HPLC	High Performance Liquid Chromatography
ICU	Intensive Care Unit
ISO	International Organisation for Standardisation
LIS	Laboratory Information System
MCQ	Multiple Choice Question
NATA	National Association of Testing Authorities
NPAAC	National Pathology Accreditation Advisory Council
OHS	Occupational Health and Safety
PhD	Doctor of Philosophy
PoCT	Point of Care Testing
PSA	Prostate Specific Antigen
QA	Quality Assurance
QAP	RCPA Quality Assurance Programs Pty Ltd
QC	Quality Control
RCPA	The Royal College of Pathologists of Australasia
RI	Reference Interval
TSH	Thyroid Stimulating Hormone
TFT	Thyroid Function Test
UV	Ultraviolet

SECTION 1

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 Chemical 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 Chemical Pathology.

2. Clinical Laboratory Standards

- Demonstrate competence in applying the techniques, technology and reporting associated with a Chemical Pathology laboratory with a broad case-mix of patients.
- Apply the theoretical and technical expertise in laboratory techniques required to lead the activities of a Chemical 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 a Chemical Pathology laboratory.
- Demonstrate a commitment to the continual improvement and advancement of Chemical 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 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 chemical pathology that a trainee should know. Information for examination may come from books and journals outside this list.

Textbooks

Baynes J, Dominiczak MH. Medical Biochemistry. Mosby, London, 2010.

Besser GM, Thorner MO. Comprehensive Clinical Endocrinology. Mosby, 3rd edition, 2002.

Blau N, Hoffmann GF, Leonard J, Clarke JTR (eds). Physcian's Guide to the Treatment and Follow-up of Metabolic Diseases. Springer-Verlag, Berlin Heidelberg, 2006.

Burtis CA, Ashwood ER, Bruns DE (eds): Tietz Textbook of Clinical Chemistry and Molecular Diagnostics. Elsevier Saunders, Philadelphia, 5th edition, 2012.

Saudubray J-M, van den Berghe G. Walter JH (eds): Inborn Metabolic Diseases. Diagnosis and Treatment. Springer, Berlin, 5th edition, 2000.

Fraser CG. Biological Variation: From Principles to Practice. AACC Press, Washington DC, 2001

Kaplan LA, Pesce AJ. (eds). Clinical Chemistry. Theory, Analysis, Correlation. Mosby, St Louis, 5th edition, 2010.

Melmed S, Polonsky KS, Larsen PR, Kronenberg H (eds). Williams Textbook of Endocrinology. Elsevier Saunders, 12th edition, 2012

Scriver CR, Beaudet AL, Sly WS, Valle D (eds). The Metabolic & Molecular Bases of Inherited Disease. McGraw-Hill, 8th edition, 2001.

Walmsley RN, White GH. A Guide to Diagnostic Clinical Chemistry. Blackwell, 1994.

Westgard JO. Basic QC Practices, Westgard QC, Inc. 2nd edition 2001.

Zilva J, Pannall P, Mayne P. Clinical Chemistry in Diagnosis and Treatment. Hodder Arnold 1994.

Journals

Clinical Chemistry
Annals of Clinical Biochemistry
Clinica Chimica Acta
Clinical Biochemistry
Clinical Biochemistry Reviews
Journal of Clinical Endocrinology and Metabolism
Clinical Chemistry and Laboratory Medicine

Conferences

AACB annual scientific meeting
AACB SES events
RCPA Update meeting

Websites

Australasian Association of Clinical Biochemistry	http://www.aacb.asn.au/
Association for Clinical Biochemistry (ACB)	http://www.acb.org.uk/
Americal Association for Clinical Chemistry (AACC)	https://www.aacc.org/
International Federation of Clinical Chemistry (IFCC)	http://www.ifcc.org/

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

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 Chemical Pathology.**

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 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	• Document material presented at weekly laboratory meetings • Document the planning and progress of research towards a higher degree through Annual or 6 monthly report • Publications, presentations and poster abstracts • Document the contribution to research training programs or assisting other scientists/ registrars in conducting research AND • Answer 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 a Chemical Pathology laboratory with a broad case-mix of patients.**

Content	Outcomes	Indicator
CC1 – Describe the principles of physiological biochemistry to guide testing.	**CC 1.1** – Describe the metabolic inter-conversions of the following: • Carbohydrates • Lipids • Enzymes • Amino acids and proteins • Nucleic acids • Trace elements and vitamins of nutritional significance • Electrolytes and the kidney • Urine composition and analysis • Blood gases and pH • Basic metabolism in the adult, child and neonate	Answer examination questions describing the processes by which cells maintain homeostasis and metabolise these analytes.
CC2 – Describe the pathophysiology of disease to inform the analysis of test results.	**CC 2.1** – Describe the pathophysiology of the following, to explain the value and significance of test results. • Acid-base disturbance • Renal function • Liver function • Cardiac function • Gastro-intestinal function • Tumour markers • Haematological biochemistry and coagulation • Endocrinology: diabetes, pituitary, thyroid, adrenal cortex, reproduction, adrenal medulla, calcium • Porphyrins • Inborn errors of metabolism • Transplantation • Therapeutic drug monitoring • Toxicology • Overdose – diagnosis and management • Fluids (including but not limited to ascites, CSF, pleural fluids) • Lipids • Pregnancy • New markers of neurological disease • Population screening • Principles of newborn screening • Paediatric chemical pathology • Autoantibodies • Nitrogen balance	Answer examination questions or provide work samples in a portfolio of work that describes the relationship between these tests and the pathophysiology of disease

Content	Outcomes	Indicator
CC3 – Laboratory techniques Apply and evaluate the techniques and technology routinely used in the laboratory	**CC 3.1** – Explain the principles, performance and limitations of the following techniques, including technical and clinical aspects to support the interpretation of results • Automated general chemical analysers • Spectrophotometry • Flame photometry • Atomic absorption spectrophotometry • Mass spectrometry • Turbidimetry and nephelometry • Osmometry • Electrophoresis • Isoelectric focussing • Western blot • Ion-selective electrodes • Chromatography • HPLC • Enzymology • Immunoassay • Polymerase chain reaction • Blood gas analysis • Radioactivity • Automation • Nucleic acid specific technology • Centrifugation • Buffers • Units of measurement • Fluorescence • Phosphorescence • Calibration procedures • Pipettes • Water quality • Waste disposal • Point of care technology • Interferences	Answer examination questions or provide work samples in a portfolio of work that explain the scientific principles that underpin each technique, considerations in applying each technique and factors that may affect data and its interpretation.
	CC3.2 – Explain the principles, performance and limitations of the following assays, including technical and clinical aspects to support the interpretation of results • Glucose • HbA1c • Bilirubin • Electrolytes • Creatinine • Calcium • AST • Bicarbonate • Cholesterol • Porphyrins • TSH • Cortisol • Albumin • Aluminium • Arterial blood gases • PSA • Troponin • Urate • Urea	Answer examination questions or provide 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
	CC 3.3 – Assess the accuracy, reliability and validity of test results using the following statistical and evaluative methods • General statistics • Theory of reference intervals • Quality control measures • 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	Answer examination questions or provide work samples in a portfolio of work including calculations and explain the significance and impact of each on the interpretation of results.
	CC 3.4 – 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	Answer examination questions that describe the impact that each factor can have on test results, with examples.
CC4 – Preparation of samples Evaluate the processes of selecting, collecting and transporting samples	**CC 4.1** – Evaluate specimen preparation • Evaluate methods for the selection, collection and transport of specimens with reference to recent advancements • Suggest new strategies for the selection, collection and transport of specimens to optimize diagnostic yield • Evaluate samples rejected as “not for testing”	Complete workplace based assessment scaffolds that evaluate and comment on specimen collection procedures and rejection criteria, with specific examples of improvements.
	CC 4.2 – Explain the protocols for the performance of the following dynamic tests and interpret results to advise clinical staff • Synacthen simulation test • Overnight dexamethasone suppression test • Oral glucose tolerance test • Ischaemic forearm exercise test • Water deprivation test • Insulin hypoglycaemia test • Glucagon stimulation test • Other dynamic tests	Answer examination questions and/or complete workplace based assessment scaffolds that give examples of identifying appropriate tests for a particular circumstance and offering advice on the interpretation of results

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 a Chemical Pathology laboratory, including one specialised area of Chemical Pathology.**

Content	Outcomes	Indicator
CC 5 – Advanced laboratory techniques in Chromatography	**CC 5.1** – Detail your experience and contribution with an advanced laboratory technique in chromatography used in reporting on one or more of the following: • Tumour markers • Haematological biochemistry and coagulation • Endocrinology: diabetes, pituitary, thyroid, adrenal cortex, reproduction, adrenal medulla, calcium • Porphyrins • Inborn errors of metabolism • Transplantation • Therapeutic drug monitoring • Toxicology • Lipids • Pregnancy • New markers of neurological disease • Principles of newborn screening • Paediatric chemical pathology • Autoantibodies	All of CC5 - CC8 will be evidenced through: Faculty of Science Reports including a Report that shows how a test has been developed or introduced in a new context, its benefits and the underlying scientific principles, in addition to a viva voce examination, to the satisfaction of the principal examiners appointed by the college
	CC 5.2 – Describe the development of an advanced technique used in chromatography and its application to the analysis of a pathological disorder. Evaluate the science or technology underpinning the technique and list some key authors who contributed to the development of this technique	
OR **CC 6 – Advanced laboratory techniques in electrochemistry**	**CC 6.1** – Detail your experience and contribution with an advanced laboratory technique in electrochemistry used in reporting on the following: • PoCT • Electrolytes • Mass Spectrometry • Principles of newborn screening	
	CC 6.2 – Describe the development of an advanced technique used in electrochemistry and its application to the analysis of a pathological disorder. Evaluate the science or technology underpinning the technique and list some key authors who contributed to the development of this technique	

Content	Outcomes	Indicator
OR **CC 7 – Advanced laboratory techniques in Immunoassays**	**CC 7.1 –** Detail your experience and contribution with an advanced laboratory technique in Immunoassays used in reporting on the following: • Cardiac function • Tumour markers • Haematological biochemistry and coagulation • Endocrinology: diabetes, pituitary, thyroid, adrenal cortex, reproduction, adrenal medulla, calcium • Inborn errors of metabolism • Transplantation • Therapeutic drug monitoring • Toxicology • New markers of neurological disease • Population screening • Principles of newborn screening • Paediatric chemical pathology • Autoantibodies	All of CC5 - CC8 will be evidenced through: Faculty of Science Reports including a Report that shows how a test has been developed or introduced in a new context, its benefits and the underlying scientific principles, in addition to a viva voce examination, to the satisfaction of the principal examiners appointed by the college
	CC 7.2 – Describe the development of an advanced technique used in an immunoassay and its application to the analysis of a pathological disorder. Evaluate the science or technology underpinning the technique and list some key authors who contributed to the development of this technique.	
OR **CC 8 – Advanced laboratory techniques in Photometry**	**CC 8.1 –** Detail your experience and contribution with an advanced laboratory technique in Photometry used in reporting on the following: • Porphyrins • Fluids (including but not limited to ascites, CSF, pleural fluids) • Glucose • Bilirubin • Electrolytes • Creatinine • Calcium • AST • Bicarbonate • Cholesterol • Albumin • Aluminium • Arterial blood gases • Haemoglobin and its variants	
	CC 8.2 – Describe the development of an advanced technique used in photometry and its application to the analysis of a pathological disorder. Evaluate the science or technology underpinning the technique and list some key authors who contributed to the development of this technique	

Content	Outcomes	Indicator
OR **CC9 – Detection and measurement of therapeutic drugs and toxins**	**CC 9.1.1** Explain the principles and clinical importance of therapeutic drug monitoring **CC 9.1.2** Explain the principles of detection and quantitation of toxins and their importance as causes of disease and the maintenance of health **CC 9.2** Describe the analytical techniques that can be used in therapeutic drug monitoring **CC 9.2.1** Immunoassay **CC 9.2.2** Chromatography **CC 9.2.3** Mass Spectroscopy **CC 9.3** Describe the analytical techniques that can be used in the detection and quantisation of toxins **CC 9.3.1** Immunoassay **CC 9.3.2** Chromatography **CC 9.3.3** Mass Spectroscopy **CC 9.4** Describe the Quality Assurance principles in drug and toxin detection and measurement. **CC 9.5** Detail your experience and contribution to therapeutic drug monitoring and/or toxicology.	CC9 will be evidenced through Faculty of Science Reports in therapeutic drug monitoring and/or toxicology, in addition to a viva voce examination, to the satisfaction of the principal examiners appointed by the college
OR **CC 10 Instrumentation**	**CC 10.1** Describe the principles of operation of an advanced system or apparatus in your field of expertise **CC 10.2** Explain the significance of this instrument to a specialised area of Chemical Pathology	CC10 will be evidenced through a viva voce examination, to the satisfaction of the principal examiners appointed by the college, describing scientific principles supported by appropriate formulae and statistics, limitations, error detection and troubleshooting, along with how the apparatus or system has advanced Chemical Pathology
OR **CC 11 Advanced Pathology Science**	**CC 11.1** Describe the pathogenesis of a disorder or lesion **CC 11.2** Describe the molecular pathways identified in this pathogenesis **CC 11.3** Discuss the implications for investigations and diagnosis	CC11 will be evidenced through Faculty of Science Reports, in addition to a viva voce examination, to the satisfaction of the principal examiners appointed by the college
OR **CC12 Core Laboratory Automation**	**CC 12.1** Describe the levels of automation that may be found in an automated core laboratory including their benefits and risks in each of the following areas **CC 12.1.1** Describe the benefits and risks of an automated core laboratory. **CC 12.2** Describe the technical principles involved in the following stages of core laboratory automation. **CC 12.2.1** Pre-analytical automation including sample checking, centrifugation, aliquotting, sample transport **CC 12.2.2** Automated analysis including testing capacity, reagent capacity, redundancy and back up **CC 12.2.3** Analytical validation including workstation software	CC12 will be evidenced by Publications &/or Faculty of Science Reports in Core Laboratory automation plus answering viva voce questions to the satisfaction of the principal examiners appointed by the college

Content	Outcomes	Indicator
	CC 12.2.4 Clinical validation including expert systems for interpretation of core laboratory results **CC 12.3** Describe quality assurance of automated core laboratories including **CC 12.3.1** Discrete internal quality control of multiple analysers **CC 12.3.2** Discrete external quality assurance of multiple analysers **CC 12.3.3** Continuous quality control of multiple analysers **CC 12.4** Detail your experience and contribution to core laboratory automation.	
OR **CC13 Point of Care Testing**	**CC 13.1** Explain the clinical principles of Point of Care Testing (PoCT) including their differences to the principles of Laboratory based pathology tests. **CC 13.2** Describe the technical principles of the following PoCT devices **CC 13.3.1** Electrochemical Devices **CC 13.3.2** Immunoassay Devices **CC 13.3.3** Photochemical Devices **CC 13.3** Describe Quality Assurance principles for PoCT as they apply to: **CC 13.3.1** Pre-analytical Quality **CC 13.3.2** Analytical Quality **CC 13.3.3** Post-analytical Quality **CC 13.4** Detail your experience and contribution to PoCT.	CC13 will be evidenced by Publications &/or Faculty of Science Reports in Point of Care Testing plus answering questions in a viva voce examination to the satisfaction of the principal examiners appointed by the college
OR **CC14 Data mining**	**CC 14** Detail your experience and contribution to PoCT. **CC 14.1** Describe the data structures used in healthcare **CC 14.2** Describe the data Structures used in Laboratory Information Systems **CC 14.3** Describe the tools available for exploring the relationships that exists in databases **CC 14.4** Describe how data mining of laboratory information systems can be used to: **CC 14.4.1** Investigate the physiological variations in health including reference intervals **CC 14.4.2** Investigate the mechanisms of disease and their impacts including clinical decision limits. **CC 14.4.3** Investigate the quality of laboratory analysis **CC 14.4.4** Investigate the clinical impact and value of pathology tests **CC 14.5** Detail your experience and contribution to data mining.	CC14 will be evidenced by Publications &/or Faculty of Science Reports 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 a Chemical Pathology laboratory** • **Demonstrate a commitment to the continual improvement and advancement of Chemical Pathology.** • **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 Chemical Pathology	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

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 work-based activities
3. Satisfactory progress (Supervisor reports)

See Assessment Matrix in **Appendix 7**

The aim of the **Part I** assessments are 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 Chemical Pathology.

1. Formal examinations

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

The written examination will require short answer and 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.

The practically oriented structured oral examination, organised into a series of 10 to 15 minute stations, will normally pose similar questions for all candidates. Responses will be marked against model answers.

The focus of the oral examination will be on demonstrating practical aspects of Laboratory Standards (Part I) and Laboratory Innovation, Development and Leadership Standards 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. Where relevant all candidates will be given reading material to evaluate before entering the exam stations.

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

The supervisor should 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 initiate each CbD assessment. At the time of the assessment, 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 Chemical Pathology, trainees are to spend the ***minimum specified time*** on each laboratory rotation, covering ***all*** specified rotation types. Trainees will be required to demonstrate competence in their day-to-day work by performing Directly Observed Practical Skills. Competence in each rotation is usually certified through the issuance of a DOPS competence certificate, indicating the trainee is competent in all subtasks in that area. The Trainee and supervisor should be guided by the outcomes in CC 3 and CC 4 for the scope and level of competence required. Once proficiency is achieved (to be assessed by at least one instance of observing the trainee in each of the different techniques at each rotation and giving feedback) the supervisor should complete the relevant FSc Competency form included as **Appendix 5**, including details such as the workload in that area and the nature of the instruments used. The signed DOPS competency forms should be included in the portfolio and noted in the Portfolio Summary spreadsheet.

The table below shows the minimum timeframe to be spent at each rotation during **Part I** training in Chemical Pathology.

Rotation type	Minimum training time (months)
General chemical pathology Specimen reception and data entry	1
Core chemical pathology laboratory after hours	1
Immunoassay (automated)	1
Immunoassay (Semi-automated or manual)	1
Routine Chemistry	1
Toxicology	2
Proteins	3
Other specialised (eg. trace metals, breath tests, genetics)	1

Other Evidence

Trainees should ensure that they are engaged in a variety of learning activities related to teaching, scholarship and leadership 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 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
Oral examination: Multi-stationed set of assessment tasks including structured interviews, with practically-oriented questions	After submission of pre-exam supervisor report and portfolio summary sheet	Examined by two (2) examiners with appropriate experience	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 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 a Chemical 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 Chemical Pathology 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 Chemical Pathology the Advanced Laboratory Techniques area selected during Part II (from CC 5-9 or CC 12-14) should be addressed by at least two (2) reports, the Advanced Pathology Science section of Part II (CC 11) should be addressed by at least one (1) report. Reports should demonstrate candidate's competence in Instrumentation (CC 10) where relevant.

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

Other Evidence

Trainees should ensure that they are engaged in a variety of learning activities related to teaching, scholarship and leadership 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.

5. 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 Chemical 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 Chemical 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**	At least eight (8) with one (1) for each rotation type 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. 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 (Part I)

RCPA The Royal College of Pathologists of Australasia	**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 (Part I)

RCPA The Royal College of Pathologists of Australasia	**Chemical Pathology 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:		

Technique/ area of testing (select one or few)

☐	bone - calcium, magnesium;	☐	proteins, enzymology
☐	liver, gastroenterology; nutrition	☐	trace metals
☐	water, electrolytes	☐	toxicology
☐	lipids	☐	genetics/molecular pathology
☐	gases, acid/base metabolism	☐	paediatric
☐	diabetes	☐	pregnancy
☐	other endocrinology (……)	☐	other

Focus of discussion (tick as many as apply)

☐	Principles of pathophysiology and disease pathogenesis	☐	Significance to clinical management
☐	Common diseases and their diagnostic features	☐	Instrumentation
☐	Research relevance	☐	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 as expected for the stage of training	Yes	No	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 of 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 in the setting of clinical presentation of the patient.			
Ability to suggest further relevant or more useful tests towards the management of the patient in relation to diagnosis and monitoring including prognostication.			
Ability to communicate findings to a non-medical person (e.g. patient, lawyer)			
Understanding of management and financial aspects of the case			
Overall laboratory and clinical judgment			

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	**Chemical Pathology Investigations (DOPS) Assessment form**	
Trainee name	**Trainee ID (RCPA)**	**Stage of training** Y1 Y2 Y3 Y4 Y5 if > Y5 please specify
Assessor name	**Assessor's position** ☐ Pathologist ☐ Scientist ☐ Other (pls specify)	

Rotation type & minimum training time:

- ☐ General chemical pathology specimen reception & data entry (1 month)
- ☐ Core chemical pathology After hours (1 month)
- ☐ Routine chemistry (1 month)
- ☐ Immunoassay-automated (1 month)
- ☐ Immunoassay-semi automated or manual (1 month)
- ☐ Toxicology (2 months)
- ☐ Proteins (3 months)
- ☐ Other specialised (eg. trace metals, breath tests, genetics) (_____)

Details of instruments used/ techniques practiced:

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

Has a satisfactory level of competence been achieved: ☐ Yes ☐ No

Signature of assessor	**Signature of Trainee**

Laboratory

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 Chemical Pathology the Advanced Laboratory Techniques area selected during Part II should be addressed by at least two (2) reports, the Advanced Pathology Science section of Part II should be addressed by at least one (1) report. Instrumentation (CC 10) by itself is not considered as a specialised area, but the Reports should demonstrate candidate's competence in Instrumentation where relevant.

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, at least 2 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 Chemical Pathology Assessment Matrix

	Outcomes to be assessed *(From the Faculty of Science curriculum)*	Part I		Part II				Portfolio				
		Written exam (SAQ)	Structured oral exam	Structured oral exam	Research thesis	Published articles	Faculty of Science Reports	Short case reports	CbDs	DOPS	Other reports	Suggestions for portfolio evidence
Clinical Laboratory – I	CC1 Principles of physiological biochemistry in guiding testing	Y	Y									1, 2
	CC2 Pathophysiology of disease in test result analysis	Y	Y					Y	Y	Y		1, 2
	CC3.1 Laboratory techniques	Y	Y						Y	Y		
	CC3.2 Laboratory techniques - assays	Y	Y						Y	Y		
	CC3.3 Laboratory techniques - accuracy, validity and reliability assessment	Y						Y	Y			
	CC3.4 Laboratory techniques – factors influencing test results	Y	Y					Y	Y			
	CC4.1 Specimen Preparation	P	P							Y		
	CC4.2 Dynamic tests protocols/ interpretation	P	Y					Y	Y			
Clinical Laboratory – II	CC5 Advanced laboratory techniques in Chromatography			Y			Y					
	CC6 Advanced laboratory techniques in Electrochemistry			Y			Y					
	CC7 Advanced laboratory techniques in Immunoassays			Y			Y					
	CC8 Advanced laboratory techniques in Photometry			Y			Y					
	CC9 Therapeutic drugs and toxins			Y			Y					
	CC10 Instrumentation			Y			P					
	CC11 Advanced pathology science			Y			Y					
	CC12 Core laboratory automation			Y			Y					
	CC13 Point of Care Testing			Y			Y					
	CC14 Data mining			Y			Y					
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		Y	P	P	Y	P				8, 9
	I3 Evidence Based Laboratory Practice in decision making	Y	P	Y			Y	P			P	1, 3
Research	R1 Conducting Research			Y	Y	Y	P					
	R2 Research Management & administration			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