

Anatomical Pathology Residency Program

OVERALL GOALS OF RESIDENCY PROGRAM and ROTATION SPECIFIC GOALS & OBJECTIVES - PGY

OVERALL GOALS

The overall goal of the training program in Anatomical Pathology is to provide residents with high quality training in all areas of anatomical pathology. In addition to receiving training in all major areas, residents will be afforded the opportunity to tailor the program to suit their individual career goals and will be encouraged to develop areas of scholarly interest. At the conclusion of the training period, residents will have the skills necessary to pass the Royal College examination and function as effective and skilled consultants to their clinical colleagues.

OBJECTIVES

Preamble

The rotation specific objectives that follow are arranged according to year of residency training. The objectives build upon each other i.e., objectives listed for an initial rotation is not re-listed for subsequent rotations, but are presumed to have been attained.

Residents should also be familiar with the Royal College's documents outlining the Objectives of Training, and Specialty Training Requirements, publically available on the Royal College website.

The objectives are organized according to the seven competencies of the CanMEDS roles, derived from the Royal College of Physicians and Surgeons of Canada's Canadian Medical Education Directions for Specialists. This delineates a competency framework to assist future specialists in responding to challenges as health-care providers — challenges that require specialists to function in a health-care system in a constant state of flux and facing increasing fiscal constraints — while still providing the best specialty care. The CanMEDS roles framework lies at the core of postgraduate medical education in Canada. The goal of the CanMEDS framework of competencies is to make objectives and strategies for learning more explicit by consolidating and organizing them into a uniform framework that can be modeled nationally, across the medical specialty curricula.

The following are the essential roles and key competencies for specialist physicians in Canada:

ROLES	KEY COMPETENCIES
Medical Expert	The specialist must be able to:
	<ul style="list-style-type: none">• demonstrate diagnostic and therapeutic skills for ethical and effective patient care• access and apply relevant information to clinical practice• demonstrate effective consultation services with respect to patient care, education and legal opinions

Communicator	<ul style="list-style-type: none"> • establish therapeutic relationship with patients/families • obtain and synthesize relevant history from patients/families/communities/other physicians • listen effectively • discuss appropriate information with patients/families and the health care team
Collaborator	<ul style="list-style-type: none"> • consult effectively with other physicians and health care professionals • contribute effectively to other interdisciplinary team activities
Manager	<ul style="list-style-type: none"> • utilize resources effectively to balance patient care, learning needs, and outside activities • allocate finite health care resources wisely • work effectively and efficiently in a health care organization • utilize information technology to optimize patient care, life-long learning and other activities
Health Advocate	<ul style="list-style-type: none"> • identify the important determinants of health affecting patients • contribute effectively to improved health of patients and communities • recognize and respond to those issues where advocacy is appropriate
Scholar	<ul style="list-style-type: none"> • develop, implement and monitor a personal continuing education strategy • critically appraise sources of medical information • facilitate learning of patients, housestaff/students and other health professionals • contribute to development of new knowledge
Professional	<ul style="list-style-type: none"> • deliver highest quality care with integrity, honesty and compassion • exhibit appropriate personal and interpersonal professional behaviours • practice medicine ethically consistent with obligations of a physician

While the role of *medical expert* may seem distinct from the other six roles of *communicator*, *collaborator*, *manager*, *health advocate*, *scholar* and *professional*, it is increasingly recognized by both the public and leaders in medical education that competency in these latter roles is essential to success as a medical expert. By the end of residency training, all specialists should have a grounding in each role and have the background to develop expertise as needed any time in their future careers.

PGY1

These objectives are divided into General and Rotation Specific objectives.

GENERAL OBJECTIVES

1. Medical Expert

The resident must:

- 1.1 Gain sufficient clinical knowledge and skills for successful completion of the LMCC part II examination.

2. Communicator

The resident must:

- 2.1 Establish a sound and therapeutic relationship with patients and communicate well with families.
- 2.2 Establish a good working relationship with clinical and non-clinical colleagues, and allied health care workers.
- 2.3 Prepare written documentation that is accurate and legible.

3. Collaborator

The resident must:

- 3.1 Interact effectively with all members of the health care team.
- 3.2 Consult and delegate appropriately.
- 3.3 Be able to work effectively with community based care providers when appropriate.

4. Manager

The resident must:

- 4.1 Be an effective time manager, able to prioritize personal and professional time to achieve a healthy balance.
- 4.2 Understand and use information technology effectively, including the performance of literature searches.
- 4.3 Understand the rationale for and approach to the ordering of laboratory tests; order tests with due regard to minimizing unnecessary testing.

5. Health Advocate

The resident must:

- 5.1 Understand the specialist's role in representing the patient's best interests with respect to disease prevention and advocating for socio-economic factors to improve health.
- 5.2 Understand the specialist's role in community intervention with regard to disease prevention.

6. Scholar

The resident must:

- 6.1 Accept responsibility for self-learning and self-evaluation.
- 6.2 Implement an effective personal learning strategy.
- 6.3 Be able to appraise the literature critically.
- 6.4 Facilitate the education of more junior housestaff by providing guidance, feedback and mentorship.

7. Professional

The resident must:

- 7.1 Demonstrate integrity and respect when dealing with all peers, supervisors and other staff.
- 7.2 Demonstrate honesty in dealing with colleagues and others.
- 7.3 Demonstrate compassion for and employ tactful honesty with individuals and their families.
- 7.4 Be accountable for his/her personal actions.
- 7.5 Have a high degree of self-awareness and insight, and be able to evaluate himself/herself realistically and on a regular basis.
- 7.6 Be aware of personal and professional limitations and be willing to seek appropriate help when faced with these.
- 7.7 Maintain an appropriate balance between personal and professional roles.
- 7.8 Deal effectively with interpersonal disagreements and conflicts, working for harmonious outcomes.
- 7.9 Act as an appropriate role model for students and others.
- 7.10 Be reliable and conscientious in the discharge of professional responsibilities.

- 7.11 Be aware of the existence of cultural, ethnic and personality differences in his/her own and others' behaviour and responses to situations.
- 7.12 Be able to accept and evaluate criticism with equanimity and to take appropriate steps to improve as required.
- 7.13 Practice medicine in an ethically responsible manner that respects the medical, legal and professional obligations of belonging to a self-regulating body.
- 7.14 Know and understand the professional, legal and ethical codes to which physicians are bound.
- 7.15 Recognize, analyze and know how to deal with unprofessional behaviours in the practice of medicine, including but not exclusive to health problems such as dementing illness, psychiatric illness or substance abuse, taking into account local and provincial regulations.

ROTATION SPECIFIC OBJECTIVES

GENERAL SURGERY

1. Medical Expert

- 1.1 Learn the clinical approach, differential diagnosis, and management of common problems in general surgery.
- 1.2 Observe the process of procuring tissue and cytological biopsies, including an understanding of the indications and contraindications of these.
- 1.3 Learn how to submit properly to pathology various specimen types e.g., specimens from the OR.

2. Collaborator

- 2.1 Review selected pathological specimens from surgical patients with the pathologist.
- 2.2 Attend rounds, particularly those with pathology input.
- 2.3 Observe any autopsies performed on the resident's patients; communicate findings to members of the clinical team and family where appropriate; participate in obtaining informed consent for hospital autopsy.

3. Communicator

- 3.1 Educate peers on the importance of accurate clinical information on requisition forms that accompany surgical specimens.

GENERAL INTERNAL MEDICINE (or Adult Medicine Subspecialty)

1. Medical Expert

- 1.1 Learn the clinical approach, differential diagnosis, and management of common problems in internal medicine.
- 1.2 Appreciate the role of pathology in the diagnosis and management of selected disorders. e.g., diseases of the respiratory tract and kidney, and take the opportunity to become familiar with pathogenesis and basic pathology in clinical cases encountered.

2. Collaborator

- 2.1 Review selected pathological specimens from medicine patients with the pathologist.
- 2.2 Attend medicine rounds.
- 2.3 Observe any autopsies performed on the resident's patients; communicate findings to members of the clinical team and family where appropriate; participate in obtaining informed consent for hospital autopsy.

EMERGENCY MEDICINE

1. Medical expert

- 1.1 Learn the clinical approach, differential diagnosis, and management of common emergency problems.
- 1.2 Observe most commonly performed medical procedures in the emergency department; perform selected procedures.

2. Collaborator

- 2.1 Attend emergency department rounds as appropriate.
- 2.2 Observe any autopsies performed on the resident's patients; communicate findings to members of the clinical team and family where appropriate.

3. Health Advocate

- 3.1 Become familiar with criteria for the use and procedural aspects of the coroners' system

GYNECOLOGICAL ONCOLOGY

1. Medical Expert

- 1.1 Learn the clinical approach, differential diagnosis, and management of gynecologic problems, particularly gynecological oncology.
- 1.2 Observe investigation and management of patients in the colposcopy clinic.
- 1.3 Be familiar with the correct methods of obtaining adequate cytological specimens, e.g., pap smears.

2. Collaborator

- 2.1 Appreciate the role of pathology in the diagnosis and management of gynecologic disorders and malignancies.
- 2.2 Review selected pathological specimens from gynecologic patients with the pathologist.
- 2.3 Attend weekly gynecology multidisciplinary meetings (Tumour Board) and rounds.
- 2.4 Observe any autopsies performed on the resident's patients; communicate findings to members of the clinical team and family where appropriate; participate in obtaining informed consent for hospital autopsy.

RADIATION ONCOLOGY

1. Medical Expert

- 1.1 Learn the approach to, rationale for and complications of radiation treatment of common malignancies.
- 1.2 Observe the procurement of biopsies and cytology specimens by radiation oncologists.
- 1.3 Attend disease site clinics and simulation procedures for radiation.

2. Collaborator

- 2.1 Review selected pathological specimens from oncology patients with the pathologist.
- 2.2 Attend weekly oncology rounds.
- 2.3 Observe any autopsies performed on the resident's patients; communicate findings to members of the clinical team and family where appropriate; participate in obtaining informed consent for hospital autopsy.

GASTROENTEROLOGY

1. Medical Expert

- 1.1 Learn the clinical approach, differential diagnosis, and management of gastrointestinal (GI) problems.
- 1.2 Observe endoscopy procedures (at least one half-day per week).
- 1.3 Obtain familiarity with techniques used to obtain tissue samples, including endoscopic and liver biopsies, and FNA biopsies.
- 1.4 Become familiar with the role of pathology in the diagnosis and management of GI disorders.

2. Collaborator

- 2.1 Attend GI medical and pathology rounds.
- 2.2 Review selected pathological specimens with the pathologist.
- 2.3 Observe any autopsies performed on the resident's patients; communicate findings to members of the clinical team and family where appropriate; participate in obtaining informed consent for hospital autopsy.

3. Scholar

- 3.1 Perform a review of a GI topic with emphasis on clinicopathological aspects, and present this at GI or GI-pathology rounds.

UROLOGY

1. Medical Expert

- 1.1 Understand the clinical presentation of common urological conditions with particular emphasis on genitourinary malignancies.
- 1.2 Be able to obtain a thorough patient history and be cognizant of the important relevant physical findings of common urologic conditions.
- 1.3 Understand the indications for surgical intervention of common urological conditions with emphasis on GU malignancies.
- 1.4 Be knowledgeable about the clinicopathological staging systems and their importance in clinical decision making for common urological cancers at the following sites: prostate, bladder, kidney, urethra, penis and testis.
- 1.5 Be knowledgeable about the grading systems for transitional cell carcinoma, prostate adenocarcinoma and renal cell carcinoma, and the importance of this in clinical decision making.
- 1.6 Observe the process of procuring tissue biopsies, including an understanding of the indications and contraindications of these.

2. Collaborator

- 2.1 Review selected pathological specimens with the pathologist.
- 2.2 Attend GU rounds and GU-pathology rounds.
- 2.3 Observe any autopsies performed on the resident's patients; communicate findings to members of the clinical team and family where appropriate; participate in obtaining informed consent for hospital autopsy.

3. Scholar

- 3.1 Perform a review of a GU topic with emphasis on clinicopathological aspects and present this at GU or GU-pathology rounds.

HEMATOLOGY/ONCOLOGY

1. Medical Expert

- 1.1 Become familiar with the clinical presentation of common nonneoplastic and neoplastic haematological conditions, and their management.
- 1.2 Receive an introduction to the laboratory analysis of blood smears and bone marrow aspirates.
- 1.3 Learn to correlate blood smear and bone marrow aspirate findings with clinical findings; ideally, there should also be correlation with bone marrow biopsies.
- 1.4 Gain exposure to haematological problems which arise in medical or surgical inpatients through consultations; whenever possible, follow the clinical course of these patients.

2. Manager

- 2.1 Receive a general introduction to the operation of various areas of the haematology laboratory.

3. Collaborator

- 3.1 Appreciate the role of the pathology report in management decisions.
- 3.2 Participate in hematology rounds, and present a relevant topic.
- 3.3 Observe any autopsies performed on the resident's patients; communicate findings to members of the clinical team and family where appropriate; participate in obtaining informed consent for hospital autopsy.

ANATOMICAL PATHOLOGY

1. Medical Expert

- 1.1 Learn to use and care for a light microscope.
- 1.2 Start to acquire familiarity with normal histology and basic histopathological features.
- 1.3 Observe and assist pathologists, assistants and/or residents with surgical dissection.
- 1.4 Under supervision, learn to describe some routine simple gross surgical specimens.
- 1.5 Begin to learn methods of tissue sampling for histology.
- 1.6 Examine slides for selected routine cases assigned to the general surgical pool and review cases with residents and/or pathologist.
- 1.7 Observe the technique and approach to frozen section diagnosis.
- 1.8 Attend autopsies; observe and assist pathologist and/or resident with dissection.
- 1.9 Be able to recognize abnormal gross autopsy findings and to correlate with pathophysiology and cause of death.

2. Communicator

- 2.1 Learn what constitutes valid consent for autopsy.
- 2.2 Be able to review a patient chart and present a coherent summary prior to starting an autopsy.

3. Scholar

- 3.1 Begin reading a standard basic pathology textbook, e.g., *Robbin's Pathologic Basis of Disease*.
- 3.2 Read around autopsy and surgical cases.

PEDIATRICS/PEDIATRIC EMERGENCY

1. Medical Expert

- 1.1 Learn the clinical approach, differential diagnosis, and management of common problems in pediatric medicine.
- 1.2 Appreciate the role of pathology in the diagnosis and management of select pediatric disorders.
- 1.3 Understand diseases and disorders unique to the pediatric population (including neoplastic, congenital and developmental).

2. Collaborator

- 2.1 Review selected pathological specimens from pediatric patients with the pathologist where applicable.
- 2.2 Attend rounds and rotation specific teaching.
- 2.3 Observe any autopsies performed on the resident's patients; communicate findings to members of the clinical team and family where appropriate; participate in obtaining informed consent for hospital autopsy.

3. Health Advocate

- 3.1 Become familiar with criteria for the use and procedural aspects of the coroners' system
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PGY2: July – December

1. Medical Expert

1.1 Autopsy Pathology

Residents are expected to perform at least 10 hospital (pediatric and/or adult) or coroner's autopsies in this 6 block period. Residents should also observe and assist with medicolegal cases.

The resident must be able to:

- 1.1.1 Extract relevant information from the clinical chart.
- 1.1.2 Summarize this information orally.
- 1.1.3 Use this information appropriately to plan the autopsy.
- 1.1.4 Assess the validity of consent for autopsy.
- 1.1.5 Perform the autopsy in a systematic manner.
- 1.1.6 Apply appropriate precautions for cases with infectious etiologies.
- 1.1.7 Cut and sample tissue/organs appropriately.
- 1.1.8 Describe orally the gross findings of specimens.
- 1.1.9 Photograph gross specimens. Understand the differences between pediatric and adult autopsy and special considerations required for pediatric cases.
- 1.1.10 Correlate autopsy findings with the clinical, radiological, laboratory and other data.
- 1.1.11 Produce accurate preliminary and final autopsy report within accepted turnaround time guidelines.

1.2 Surgical Pathology

The resident is expected to complete the Introductory Program in Histotechnology (Wednesdays, July-August).

The resident is expected to become proficient in the gross examination of the following specimens (adult and pediatric) during this 6 block period (according to their rotation schedule)
Biopsies

- *Needle (liver, breast, soft tissue, kidney, prostate, heart)*
- *Endometrial curettings*
- *Prostate curettings*
- *Products of conception*
- *Skin – punch, shave, curetting, ellipse*
- *Miscellaneous – GI, cervical, vulvar, bladder mucosal*
- *Lymph node*

GI

- *Appendix*
- *Small bowel resection – benign*
- *Colonic/rectal resection – benign*

Pancreaticobiliary

- *Gallbladder*

Gyn

- *Cervical cone biopsy*
- *Simple hysterectomy – benign*
- *Salpingo-oophorectomy – benign*

Breast

- *Lumpectomy*

Head and Neck

- *Salivary gland resection*
- *Thyroidectomy*
- *Parathyroidectomy*
- *Staging neck dissection*

Lung

- *Lung wedge resection*

Bone and Soft Tissue

- *Joint resections for degenerative disease*

Other

- *Amputations for vascular disease*
- *Splenectomy*

The resident must be able to:

- 1.2.1 Describe gross findings orally.
- 1.2.2 Describe the gross findings in writing.
- 1.2.3 Appropriately cut and sample surgical specimens.
- 1.2.4 Apply appropriate precautions for dealing with surgical specimens with established or suspected infectious etiologies.
- 1.2.5 Handle instruments including sharps safely.
- 1.2.6 Demonstrate knowledge of the commonly used routine and special histochemical stains.
- 1.2.7 Operate and maintain a light microscope.
- 1.2.8 Adequately describe microscopic findings orally.
- 1.2.9 Use word-processing, database, graphics and presentation programs.
- 1.2.10 Demonstrate familiarity with the applications of computers to laboratory medicine in general and anatomical pathology in particular.

1.3 Knowledge Base

The resident should begin reading a standard textbook of Pathology such as Robbins during this 6-month period.

The resident should also read around current autopsy and surgical cases in a book such as Robbins in addition to a standard surgical pathology textbook, such as that by Sternberg.

The resident must have knowledge of:

- 1.3.1 Normal gross anatomy.
- 1.3.2 Normal histology.
- 1.3.3 The mechanisms of cellular injury and repair.
- 1.3.4 Inflammation.
- 1.3.5 Immunity and immune mediated diseases.
- 1.3.6 How specific derangements, focal or general, in tissue structure and/or function leads to specific clinical, physiologic, radiological and laboratory abnormalities.

The resident must begin to acquire knowledge of the disorders of the following:

- 1.3.7 Heart and blood vessels.
- 1.3.8 Haematopoietic system, lymph nodes and the mechanisms of thrombosis.
- 1.3.9 Respiratory system.
- 1.3.10 Head and neck.
- 1.3.11 Gastrointestinal tract, liver, biliary tract and pancreas.
- 1.3.12 Kidneys and genitourinary tract.
- 1.3.13 Breast.
- 1.3.14 Endocrine system.
- 1.3.15 Integument.
- 1.3.16 Skeletal system and connective tissues.
- 1.3.17 Nervous system.
- 1.3.18 Gynecological tract.

2. Communicator

The resident must be able to:

- 2.1 Communicate effectively with technical and other support staff in the laboratory.
- 2.2 Communicate effectively both verbally and in writing with clinical colleagues.
- 2.3 Present autopsy findings at and participate effectively in rounds.
- 2.4 Present surgical pathology at and participate effectively in rounds.

3. Collaborator

The resident must be able to:

- 3.1 Consult with clinicians to obtain clinical data, clinicopathological correlation, and suggest appropriate investigations.
- 3.2 Recognize the expertise, roles and opinions of other members of the health care team, and work effectively with them.
- 3.3 Consult with other residents and with pathologists when needed.

4. Manager

The resident must be able to:

- 4.1 Use discretion in ordering special stains and special techniques to optimize resource utilization and minimize waste.
- 4.2 Effectively utilize information technology such as the Pathology LIS and for self-learning activities.

5. Scholar

The resident must be able to:

- 5.1 Understand and commit to the need for continuous learning, implementing an on-going and effective personal learning strategy. Demonstrate the ability to identify gaps in knowledge and expertise.
 - 5.2 Incorporate an attitude of scientific inquiry and the use of evidence into the process of making pathologic diagnoses.
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PGY2: January – June

1. Medical Expert

1.1 Autopsy Pathology

Residents are expected to perform at least 10 hospital (adult and/or pediatric) or coroner's autopsies in this 6 block period. Residents should observe and assist with medicolegal cases.

The resident must be able to:

- 1.1.1 Remove organs in the most effective manner to demonstrate malformations in the fetus, neonate, infant and child.
- 1.1.2 Discuss the pathophysiology of the disease process in the particular patient being discussed.
- 1.1.3 Discuss the relationship of the autopsy findings to the cause of death.
- 1.1.4 Effectively communicate autopsy results to clinicians, including presentations at rounds.

1.2 Surgical Pathology

The resident is expected to become proficient in the gross examination of the following specimens (adult and pediatric) during this 6 block period (according to their rotation schedule)

GI

- *Small bowel resection – malignant*
- *Colonic/rectal resection – malignant*
- *Abdominoperineal resection*

Liver

- *Segmental hepatic resection*

Pancreaticobiliary

- *Partial pancreatectomy*

Gyn

- *Hysterectomy – malignant*
- *Salpingo-oophorectomy – malignant*
- *Placenta*

Breast

- *Mastectomy + axillary dissection*

Head and Neck

- *Radical neck dissection*

Lung

- *Pneumonectomy*
- *Pulmonary lobectomy*
- *Deep soft tissue resection specimen*

Genitourinary

- *Nephrectomy*
- *Orchidectomy*

Other

- *Adrenalectomy*

The resident must be able to:

- 1.2.1 Understand the principles of tissue fixation, the types of fixatives used and their indications in the practice of surgical pathology, for both light and electron microscopy.
- 1.2.2 Understand the principles of tissue processing.
- 1.2.3 Know the principles of, and be able to perform paraffin sectioning.
- 1.2.4 Understand the basic principles involved in the routine and special stains used in surgical pathology.
- 1.2.5 Understand the principles of electron microscopy.
- 1.2.6 Take photomicrographs and incorporate these into a case presentation.
- 1.2.7 Demonstrate an ability to produce a surgical pathology report with an interpretation appropriate to the clinical setting.
- 1.2.8 Correlate findings with the known clinical, radiologic, laboratory and other data.
- 1.2.9 Provide accurate pathological diagnoses.
- 1.2.10 Discuss the pathophysiology of the disease process as it applies to that particular patient.
- 1.2.11 Recommend any further investigations that may be helpful, based on the biopsy findings.

1.3 **Knowledge Base**

The resident should complete reading of a standard textbook of Pathology such as Robbins during this 6 block period.

The resident must have knowledge of:

- 1.3.1 Genetics and the molecular basis of cell function and dysfunction.
- 1.3.2 Neoplasia.
- 1.3.3 Systemic nutritional and metabolic disorders.
- 1.3.4 Influences of environmental and toxic factors on the body.
- 1.3.5 Infectious diseases - bacterial, fungal, viral, rickettsial and parasitic - and their effect on the body.

The resident must continue to acquire knowledge of systems disorders as listed in 1.3 under PGY2 (Jul-Dec).

1.4 **Introductory Molecular Pathology and Cytogenetics**

The resident will do a one- block rotation in these areas within the first year of training (first or second 6 months)

The resident must:

- 1.4.1 Read the relevant section in Robbins on Molecular Genetics
- 1.4.2 Understand the terminology used in molecular biology and cytogenetics applicable to pathological diagnoses.
- 1.4.3 Understand general principles of molecular and cytogenetics biological methods as applied to pathological diagnosis.
- 1.4.4 Formulate ideas for a research project that could incorporate molecular and/or cytogenetics methods.

2. Collaborator

The resident must:

- 2.1 Understand the role of the anatomical pathologist as a member of the health care team, providing timely, high quality service to patients and clinicians.
- 2.2 Understand the role of intra- and extra-departmental review of diagnostic material.

3. Manager

The resident must:

- 3.1 Understand the roles and responsibilities of laboratory physicians.
- 3.2 Have a general understanding of medical informatics and pathology information systems.

4. Health Advocate

The resident must be competent to:

- 4.1 Understand criteria for notification of the coroner.

5. Scholar

The resident must be able to:

- 5.1 Teach pathological principles to students, other residents and health professionals, at rounds, conferences and other forums.

PGY3: July – December

1. Medical Expert

1.1 Autopsy Pathology

Residents are expected to perform at least 15 hospital (adult and/or pediatric) or coroner's autopsies in this 6 block period. Routine hospital cases should be able to be performed with minimal supervision.

Residents should observe and assist with medicolegal cases.

At this level, residents are expected to review slides and order appropriate ancillary tests prior to signout; autopsies should be largely completed prior to signout with the supervising pathologist.

The resident must be able to:

- 1.1.1 Remove the brain, spinal cord and pituitary gland at autopsy, including sampling appropriate peripheral nerves/nerve plexus/ganglia, skeletal muscles, autonomic nervous system, as appropriate.

1.2 Surgical Pathology

At this level, residents are expected to be able to describe, dissect and block virtually all gross specimens (adult and pediatric) without supervision, but consulting appropriately when necessary. Remaining specimens in which grossing proficiency needs to be acquired are as follows:

GI

- *Esophageal resection*
- *Gastric resection – benign*
- *Gastric resection – malignant*

Liver

- *Liver explant*

Pancreaticobiliary

- *Whipple's resection*

GYN

- Vulvectomy
- Radical hysterectomy

Breast

- Needle localization specimen

Head and Neck

- Maxillectomy/mandibulectomy
- Laryngectomy

Bone

- Amputation for malignancy

Genitourinary

- Cystectomy
- Radical prostatectomy
- Suprapubic prostatectomy

Heart

- Valves

Other

- Thymic resection

At this level, residents are expected to be able to interpret and diagnose most straightforward surgical specimens.

The resident must be able to:

- 1.2.1 Be proficient in the making of smears and touch preparations.
- 1.2.2 Be proficient in the embedding of fresh tissue, and the cutting and staining of frozen sections.
- 1.2.3 Appropriately sample surgical specimens for rush and intraoperative diagnosis.
- 1.2.4 Effectively communicate the rush diagnosis to the operating surgeon.
- 1.2.5 Understand the basis of immunohistochemical staining techniques.

During this 6 block period, residents are expected to make the time to personally perform the immunohistochemistry on two separate cases, and to follow these through to reporting.

- 1.2.6 Understand the utility of the immunohistochemical stains used in surgical pathology.
- 1.2.7 Understand the basis of immunofluorescence staining techniques.
- 1.2.8 Understand the utility of the immunofluorescent stains used in surgical pathology.
- 1.2.9 Understand the basis of flow cytometry.

During this 6 block period, residents are expected to make the time to become familiar with the technique of flow cytometry by following two separate cases from submission through to reporting (during lymph node / hematopathology rotation).

- 1.2.10 Understand the utility of flow cytometry in surgical pathology.
- 1.2.11 Understand the basis of molecular biological procedures.
- 1.2.12 Understand the utility of molecular biological procedures used in surgical pathology.
- 1.2.13 Select the appropriate stains and molecular biological procedures in the work up of cases.
- 1.2.14 Interpret the normal, abnormal and artifactual microscopic findings demonstrated by each of these stains in tissue sections.
- 1.2.15 Operate the electron microscope.
- 1.2.16 Take electron micrographs suitable for a case presentation.
- 1.2.17 Run a conference with colleagues in the discussion of routine, interesting, and difficult cases.
- 1.2.18 Be familiar with quality control programs for tissue processing and staining.

- 1.2.19 Be familiar with quality control for rush and intraoperative diagnosis - final diagnosis comparisons for surgical pathology specimens.

1.3 Knowledge Base

The resident should begin reading a comprehensive surgical pathology textbook such as that by Sternberg during this 6 block period.

The resident must have knowledge of:

- 1.3.1 Types of disorders which affect the fetus, infant, and child, including a general knowledge of embryologic development and its relationship to malformations, the molecular biology and genetics associated with malformations.

The resident must continue to acquire knowledge of systems disorders as listed in 1.3 under PGY2 (Jul- Dec).

1.4 Pediatric and Lung Pathology

The resident may do a mandatory 1-block Pediatric and Lung Pathology Rotation in this 6-month period (or else the next 6-month Period).

The resident is expected to read the Pediatric pathology section of Robbins at the beginning of this rotation, then use additional texts for cases seen in this rotation.

During this rotation the resident is responsible for:

- 1.4.1 Grossing all pediatric surgical specimens, under the supervision of the on-call pathologist.
- 1.4.2 Dealing with emergent issues, including organizing tumour protocols, participating in pediatric frozen sections, as well as handling/triaging fresh tissue. If there is a Hirschsprungs case at Victoria Hospital, the resident should attend.
- 1.4.3 Reviewing the department teaching sets that include common and rare cases in pediatric pathology that have been assembled from LHSC archives. The residents are required to review the teaching slides and topics during this rotation.
- 1.4.4 Attendance at the following mandatory rounds during the pediatric rotation: Perinatal Morbidity and Mortality Rounds (monthly), Pediatric Mortality Rounds (monthly), Pediatric Grand Rounds (monthly), as well as attending the regular mandatory department rounds (e.g. Gross rounds, Anatomical Pathology grand rounds). If there is a conflict the pediatric rounds take precedence. The resident will be responsible for presenting at the interdisciplinary rounds when relevant, as well as preparing and presenting a topic during their rotation.
- 1.4.5 The resident will participate in pediatric autopsy consultations, as they arise during their rotation. During this rotation they will get exposure to Pediatric autopsy topics, including; congenital abnormalities, metabolic disorders, as well as a wide range of infectious, neoplastic and inflammatory pathology. Residents will also get exposure to medicolegal cases (under supervision), covering such topics as SIDS, abuse and trauma.
- 1.4.6 There will be an exam at the end of the rotation that includes glass slides/images, as well as the formal evaluation (ITER).

1.5 Cytopathology

The resident may do a mandatory 1-block Introductory Cytopathology rotation during this 6-month period (or in the next 6-month period).

The resident must:

- 1.6.1 Begin to understand the principles of cytology specimen fixation and processing including the procurement of fine needle aspiration biopsies.
- 1.6.2 Begin to develop a familiarity with the cytopreparatory and screening processes in the

cytology laboratory.

1.6.3 Begin to acquire knowledge of cervical cancer screening including the principles of the screening process as well as the cytopathological features of preneoplastic diseases of the cervix.

1.6.4 Begin to acquire knowledge of the cytopathological features of normal and neoplastic cells, as seen in common exfoliative and fine needle aspiration biopsy specimens.

2. Collaborator

The resident must:

2.1 Understand the principles relating to tissue acquisition for research.

3. Scholar

The resident must:

3.1 Pose a research question, formulate a plan to answer the question and carry out the research appropriately.

PGY3 : January – June

1. Medical Expert

1.1 Autopsy Pathology

Residents are expected to perform at least 20 hospital (adult and pediatric) or coroner's autopsies in this 6 block period. Residents should perform straight-forward medicolegal cases under supervision.

At this level, residents are expected to have most straight-forward autopsies dictated and in final form before review with the supervising pathologist.

1.2 Surgical Pathology

At this level, residents are expected to be able to interpret most complex surgical specimens while being able to formulate an approach to such cases.

The resident must be able to:

1.2.1 Interpret the normal, abnormal and artifactual findings demonstrated by use of molecular biological procedures in tissue specimens.

1.2.2 Describe ultrastructural findings.

1.2.3 Correlate electron microscopic findings with the gross, light microscopic, clinical, radiologic, laboratory and other data.

1.3 Cytopathology

The resident may do a 1-block Introductory Cytopathology rotation during this 6 month period (if not already done in the first 6 months of PGY3).

The resident must:

1.3.1 Begin to understand the principles of cytology specimen fixation and processing including the procurement of fine needle aspiration biopsies.

1.3.2 Begin to develop a familiarity with the cytopreparatory and screening processes in the cytology laboratory.

1.3.3 Begin to acquire knowledge of cervical cancer screening including the principles of the screening process as well as the cytopathological features of preneoplastic diseases of the cervix.

1.3.4 Begin to acquire knowledge of the cytopathological features of normal and neoplastic cells, as seen in common exfoliative and fine needle aspiration biopsy specimens.

1.4 Knowledge Base

The resident must continue to acquire knowledge of systems disorders as listed in 1.3 under PGY2 (Jul- Dec).

2. Manager

The resident must:

- 2.1 Understand principles of laboratory management and administration.
- 2.2 Understand methods used in quality control and principles of quality assurance in the laboratory.
- 2.3 Understand the principles of workload measurement within the laboratory.
- 2.4 Demonstrate knowledge of laboratory safety.
- 2.5 Demonstrate knowledge of regulations pertaining to the retention of gross specimens, tissue blocks, slides and reports.

3. Health Advocate

The resident must be competent to:

- 3.1 Identify populations at risk for specific disease entities.
- 3.2 Understand the pathologist's role in providing information pertaining to public health issues, especially infectious diseases.
- 3.3 Act as a patient advocate by virtue of timely and accurate completion of pathology reports.

4. Scholar

The resident must:

- 4.1 Be able and willing to apply new knowledge to his/her practice of anatomical pathology.
 - 4.2 Apply the principles of critical appraisal to sources of medical information.
 - 4.3 Keep current with the evidence-based literature pertinent to the practice of anatomical pathology.
 - 4.4 Provide constructive feed-back to others in the learning process.
 - 4.5 Acquire skills in the development of guidelines relevant to the practice of anatomical pathology.
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PGY4

PGY4 residents are expected to help supervise junior residents, off-service residents and medical students in conjunction with more senior residents. This supervisory role has an important teaching component, whereby more senior residents are expected to teach more junior residents. Towards the end of PGY4, the resident may be assigned the role of Chief Resident.

1. Medical Expert

1.1 Cytopathology (3-block rotation)

The resident must be able to:

- 1.1.1 Understand the basis of the routine stains and special stains used in cytopathology.
- 1.1.2 Understand the basis of immunocytochemical staining techniques.
- 1.1.3 Understand the utility of the immunocytochemical stains used in cytopathology.
- 1.1.4 Understand the basis of molecular biological procedures.
- 1.1.5 Understand the utility of molecular biological procedures used in cytopathology.
- 1.1.6 Select the appropriate stains and molecular biological procedures (as appropriate) relevant to the problem based on the gross, histological, clinical, radiologic, laboratory and other data available.

- 1.1.7 Interpret the normal, abnormal and artifactual microscopic findings demonstrated by each of these stains (and molecular biological procedures, as appropriate).
- 1.1.8 Be able to organize the work-up and sign-out of cytopathology case material in a timely and cost-effective manner.
- 1.1.9 Organize case material, special stains and additional studies in a timely fashion.
- 1.1.10 Understand the basis of cytomorphometry.
- 1.1.11 Screen slides and make appropriate diagnoses on a broad range of cytological cases.
- 1.1.12 Demonstrate a knowledge of criteria for satisfactory and unsatisfactory specimens.
- 1.1.13 Work cooperatively with cytotechnologists and support staff in evaluating cytopathology specimens.
- 1.1.14 Have a high degree of self-awareness in terms of sign-out and appropriate referral of difficult cases.

1.2 **Neuropathology (2-block rotation)**

1.2.1 Autopsy pathology

The resident must be able to:

- 1.2.1.1 Remove the brain, spinal cord, eyes, peripheral nerves, and muscles without damage.
- 1.2.1.2 Know when special procedures are indicated prior to fixation of the brain (e.g., subarachnoid hemorrhage).
- 1.2.1.3 Know the risks of conventional infectious agents and prions, and the appropriate precautions.
- 1.2.1.4 Select and procure appropriate samples for histological examination.
- 1.2.1.5 Recognize the histological appearance of all parts of the brain and spinal cord.
- 1.2.1.6 Diagnose all common lesions and be able to classify less common lesions into the appropriate category.

1.2.2 Surgical pathology

The resident must be able to:

- 1.2.2.1 Handle neurosurgical specimens appropriately, including obtaining smears, frozen sections, preparing tissue for culture or flow cytometry, and fixing samples for electron microscopy.
- 1.2.2.2 Provide an appropriate gross and microscopic description.
- 1.2.2.3 Be familiar with the technical principles for special stains in neuropathology and their diagnostic significance.
- 1.2.2.4 Know the pitfalls of the different antigenic markers used in immunoperoxidase, immunofluorescence, and lectin immunohistochemistry.
- 1.2.2.5 Interpret microscopic findings in light of clinical and radiological information, and incorporate this process into a written comment.
- 1.2.2.6 Diagnose all common conditions, and recognize uncommon conditions.
- 1.2.2.7 Understand the role of electron microscopy in neuropathological diagnosis, and be able to use the electron microscope.
- 1.2.2.8 Be familiar with normal and abnormal CSF cytology.

1.3 **Autopsy Pathology**

The resident will do a one block anatomical pathology autopsy rotation this year.

At this level, residents are expected to be able to perform straight-forward medicolegal autopsies, including the accurate documentation of all findings.

The resident should attend court with one of the forensic pathologists; a minimum of two times is recommended.

The resident must be able to:

- 1.3.1 Formulate findings and interpretations such that they are relevant to the medical-legal implications of forensic cases.
 - 1.3.2 Express findings and interpretations such that they are understood by persons without medical training, such as lawyers, or legal professionals, and the lay public.
 - 1.4 **Knowledge Base**
The resident must continue to acquire knowledge of systems disorders as listed in 1.3 under PGY2 (Jul- Dec).
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PGY5

PGY5 residents are expected to supervise junior residents, off-service residents and medical students in conjunction with the Chief resident who will also be responsible for organizing daily and on-call schedules, and rounds. This supervisory role has an important teaching component, whereby senior residents are expected to teach more junior residents.

1. Medical Expert

1.1 Senior Surgical Pathology Rotations

At this level, residents are expected to be able to handle a large volume of cases, similar to that of a junior surgical pathologist.

At this level, residents are expected to produce reports on most cases without direct supervision, with the completed case to be reviewed by the supervising pathologist at their discretion.

A high level of diagnostic accuracy is expected.

1.2 Senior Molecular Pathology and Cytogenetics Rotation

1.2.1 Show understanding of the terminology used in molecular biology and cytogenetics as applied to pathological diagnosis.

1.2.2 Demonstrate understanding of general principles of molecular biological and cytogenetics methods as applied to pathological diagnosis.

1.2.3 Be able to correlate microscopic findings with information obtained from molecular and cytogenetics, including the principles and practices of personalized medicine studies.

1.2.4 Be able to extract and quantify DNA, RNA from tissues.

1.2.5 Be able to set up a PCR and a RT-PCR reaction

1.2.6 Be able to run gels with PCR products and interpret the results.

1.2.7 Be able to interpret results of common molecular pathology tests (PCR- and RT-PCR-based, sequencing).

1.3 Cytogenetics

1.3.1 Understand of the process of cell culture and chromosome preparation.

1.3.2 Be familiar with the routine techniques of chromosome analysis, i.e., G-banding and karyotyping.

1.3.3 Understand the basic concepts in cytogenetic nomenclature.

1.3.4 Be familiar with the most common chromosomal aberrations in cancer.

1.3.5 Develop knowledge of cytogenetic techniques, such as FISH and microarray analysis and their clinical applications.

1.4 Senior Cytopathology Rotation

The resident must:

- 1.4.1 Review a large number of routine cases in order to re-establish and refine diagnostic criteria.
 - 1.4.2 Review teaching set material of gynecologic and nongynecological cytology in order to better understand diagnostic criteria and pitfalls associated with unusual cases.
 - 1.4.3 Demonstrate an understanding of quality assurance procedures and cytotechnologist work flow at a level appropriate for a staff pathologist.
- 1.5 **Knowledge Base**
The resident must have acquired knowledge of systems disorders as listed in 1.3 under PGY2 (Jul-Dec).

2. Communicator

The resident must be able to:

- 2.1 Understand the principles of presentation of evidence in court.

3. Health Advocate

The resident must:

- 3.1 Understand the importance of promoting and reinforcing to the public and the profession the essential contribution of laboratory medicine to health.

4. Professional

The resident must:

- 4.1 Use appropriate strategies to maintain and advance professional competence in Anatomical Pathology.