

Anatomical Pathology Residency Program

MOLECULAR PATHOLOGY AND GENOMICS TRAINING

Rotations will be scheduled by **Cheryl Campbell**, Dept. of Pathology and Laboratory Medicine, Western University. Efforts will be made to pair residents on a given rotation. Schedules will be provided to **Sue Taber** and **Julie Balkwill**, Molecular Genetics and Cytogenetics Laboratories so that Residents are expected.

Rotation length: 1 block (PGY1/2), 1 block (PGY4/5)

Block breakdown:

- Introductory meeting with Section Heads and Senior Technologists (1 hour – to be scheduled by Sue Taber)
- Cytogenetics (1.5 weeks)
- Molecular Genetics (2.5 weeks)
- Biochemical genetics (1 – 2 days during above rotations)
- Exit meeting and evaluation with Section Heads (30 min to 1 hr – to be scheduled by Sue Taber)
- Above block lengths are flexible

General:

- Residents will require card access to the 10th floor laboratories, B Tower, VH (please see Eva Smith in advance of rotation)
- Desk space with a computer is usually available in the Molecular Genetics swing office
- Due to variable caseloads, Residents may not have direct exposure to the entire repertoire of cases performed by the laboratory. An online folder of teaching cases will be available to review during self-learning time to ensure adequate exposure to a variety of cases, as well as for Residents to test their knowledge gained on the rotation.
- Residents are expected to attend weekly lab meetings, as well as any relevant educational rounds/special lectures scheduled during their rotation (may include somatic oncology bench huddle, genetic rounds, LRCP rounds).
- Residents will be expected to give one educational presentation/case report (e.g. 1 page write-up of 1 or 2 interesting cases seen during rotation) during their on a topic of their choice. This will form part of the basis for evaluation.

Objectives:

1. **Background Learning:** variable time will be available each day for Resident self-learning - use provided resource folder ([S:\PATH\SHARED\Residents and Fellows\Molecular Genetics and Genomics](#)) as needed (depending on previous level of training). This folder includes relevant publications, powerpoint presentations, links to online resources, podcasts, and the ASCP “Training Residents in Genomics (TRIG)” case-based workshop. The Academic Half Day series on Molecular Pathology will also provide some background. Efforts should be made to have a basic understanding of methodologies in Molecular Pathology and Genetics, including:
 - DNA sequencing (Sanger, NGS (IonTorrent, Illumina)) and related bioinformatics
 - PCR (incl. RT-PCR, Real-time PCR)
 - Karyotyping

- FISH
- Microarray (high-density SNP array)

2. Constitutional Genetics:

- Hereditary cancer genetics
 - Breast/ovarian cancer
 - Colorectal cancer
 - Other cancers
 - Genetic counselling clinic (attend 1 clinic during rotation – to be scheduled at beginning of rotation by Sue Taber and Medical Genetics contact (K. Panabaker)
- Other hereditary diseases
 - Epilepsy
 - Mitochondrial genetic diseases

3. Biochemical Genetics

- Spend 1 day in biochemical genetics (to be scheduled at beginning of rotation)

4. Solid tumour somatic genetics

- Mutational profiling
- Microsatellite instability testing
- Copy number alterations/structural abnormalities (karyotyping/FISH)

5. Hematological malignancies

- Acute leukemia profiling (when available)
- Lymphoma clonality testing
- CML – BCR/ABL monitoring
- Myeloproliferative neoplasms – JAK2 testing
- Copy number alterations/structural abnormalities (karyotyping/FISH)

6. Specimen matching/Identity testing

- STR analysis

7. Weekly sign-out:

- Residents should schedule a sign-out session with the Lab Director/Section Head at least once per week (ad hoc basis).

Senior rotation: additional opportunities:

- Research and Development: spend 1 day with Molecular Genetic Post-doctoral Fellow
- Research project in molecular genetics: opportunities exist within the molecular genetics laboratory for research projects. Some research time may be undertaken during senior rotation, but is not limited to this time-period. Interested Residents should see Section Heads (CH, BS, PY) for more information.

Evaluation:

- One45
- Verbal feedback during exit meeting

Contacts:

- Section Heads, Molecular Genetics:
 - Dr. Christopher Howlett x36338
 - Dr. Bekim Sadikovic x53074
- Section Head, Cytogenetics:
 - Dr. Ping Yang x76632
- Section Head, Biochemical Genetics
 - Dr. Tony Rupar x71558
- Senior Technologists:
 - Alan Stuart, Molecular Genetics x56129
 - Shirley Nan, Cytogenetics x75714
- Administration:
 - Cheryl Campbell x86389
 - Sue Taber x58122
 - Julie Balkwill x78970

*Reviewed & Updated by AP Residency Program Committee –
May 31, 2017
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