Histology and Imaging

The Histology/Imaging core provides support to the institute staff in the areas of Histology, Immunohistochemistry, Immunofluorescence, and Imaging. Specifically, staff members of the core provide management of imaging resources, training in the use of core equipment, and direct technical support. The technical support can include full performance of protocols as well as development of new techniques and protocols as required.

The core is equipped with microtomes for cutting Paraffin, frozen, and plastic sections as well as a vibrating microtome for thick sections of unprocessed tissues. There are two microscopes in the core. Our upright microscope is a Zeiss Axiophot II and is capable of capturing digital images of brightfield samples and up to 3 color fluorescent images. The second microscope is a Zeiss Axiovert 200M that is equipped with optics for live cell imaging (DIC) as well as an environmental chamber to keep cells viable for extended periods of time. The inverted scope has the capability of up to 4-color fluorescence and has micromanipulators that can be used for micro-dissection. We also manage the Luminex machine as well as the ELISpot reader. The Plethysmograph is also part of the Imaging core.

One priority of the core is to develop relationships with other institutes that would provide Trudeau with access to equipment and techniques that are of interest to the scientific staff.

Services

Tissue collection

- Harvesting tissues
- Fixing tissues
- Embedding tissues (paraffin, frozen, or plastic)

Sectioning tissues

- Paraffin
- Frozen
- Plastic
- Thick sections (vibratome sections)

Staining of sections

- Heamatoxylin and Eosin
- Masson’s Tri-chrome
- PAS
- Acid fast
- Development of new stains as requested

Immunofluorescence

- Two and three color fluorescent imaging
- Fluorescent staining combined with live cell imaging (DIC)
- Fluorescent staining in thick (unfixed) sections
- Intra-cellular cytokine staining
- FISH (fluorescent in-situ hybridization)
- Tetramer staining (thick unfixed sections)

Leica TCS SP5 Laser Scanning Confocal Microcsope

- 5 channel spectral detection (5 PMT’s)
- Nine excitation Laser lines (405, 458,476, 488, 496, 514, 543, 594, and 633)
- AOBS (Acousto Optical Beam Splitter) equivalent to 255 beam splitters
- XY motorized stage for Mark and find as well as Tile scanning experiments
- Live cell incubation chamber with environmental control.
- Objectives (10X, 20X, 40X oil, 63X oil, 63X water, 63X glycerol, 100X oil)

Immunohistochemistry

- One or two color staining with various substrates and counterstains.
- in-situ hybridization (molecular biology core could help to develop probes
- Intra-cellular cytokine staining

Protein chemistry

- Purification and conjugation of antibodies to fluorochromes or biotin for use in imaging or flow cytometry.

Lung function assays

- Whole body plethysmography (respiratory rates, Penh values)
- Restrained plethysmography