

## BIOC 462/491 Internship Position in Industry

Winter 2024

### Restrictions

Open only to Honours Students enrolled in BIOC 462/491 during the winter 2024 semester

### Company:

**REPAIR**  
THERAPEUTICS

Repair Therapeutics,  
7171, Rue Frederick Banting, Building 2  
Ville Saint-Laurent, QC H4S 2A1  
<https://www.repairrx.com/>

### Project Title: Hematopoietic Toxicity

#### Project background

Hematopoietic toxicity is a frequent side-effect of many cancer therapeutics and is often dose-limiting in clinical settings. A good pre-clinical understanding of these toxicities provides opportunities to optimize administration of candidate compounds in clinical trials. In pre-clinical toxicity studies, complete blood count data along with histological examination of the bone marrow are often employed to assess the toxicity of candidate therapeutics. In recent years, flow cytometric evaluation of bone marrow has provided a more rapid, reliable and quantifiable approach to assessing potential hematopoietic cytotoxicity of new candidate anti-cancer agents.

#### Project outline

The student will develop a flow cytometric method to assess hematopoietic toxicity of candidate anti-cancer therapeutics. The assay will utilize antibodies against selected cell surface antigens to quantify myeloid, erythroid and megakaryocytic lineages within rat bone marrow. The assay will be validated against traditional histopathology bone marrow smears and compared with complete blood counts from treated animals. The student may also develop an in vitro human hematopoietic stem and progenitor cell toxicity assay if time permits.

#### Skills acquired:

- A good understanding of immune cell maturation and development
- Oral administration of test compounds to rats by gavage
- Harvesting of bone marrow from rat femurs
- Blood collection by tail vein for complete blood cell counts and compound analysis
- Flow cytometry and optimization of antibody staining for multi-colour analysis
- Data analysis with FlowJo
- Basic tissue culture techniques and cell viability assays

#### Contact Information

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