

<b>Company Name:</b>	Mediphage Bioceuticals	<b>Company Areas of Focus:</b>	Biomanufacturing, Gene Therapy, Bioengineering/biomaterials, Reagent production
<b>Location:</b> Toronto			
<b>Internship Description:</b>			
<p>A) BioManufacturing of Therapeutic Components for Regenerative Medicine:</p> <p>This project offers interns an immersive experience in the field of biomanufacturing, focusing on the production of therapeutic components vital for regenerative medicine. Interns will delve into the intricacies of manufacturing Lentiviral vectors, AAV vectors, and DNA cargos. This hands-on opportunity will expose them to the entire biomanufacturing process, from design to production, providing valuable technical skills. Additionally, interns will gain insights into the industry and develop skills that are essential for a successful career.</p> <p>B) Sequence Design, Analysis, and Improvement of Therapeutic Components for Gene and Cell Therapy:</p> <p>This project is tailored for interns interested in the intricate world of gene and cell therapy. Interns will be engaged in sequence design, analysis, and the enhancement of therapeutic components. The focus includes both Knock-in strategies with homologous recombination and transient gene augmentation. Through this project, interns will not only develop technical skills but also gain a comprehensive understanding of the strategic aspects involved in optimizing therapeutic components. This experience will serve as a solid foundation for a future career in the industry.</p> <p>Both projects are meticulously designed to provide a holistic learning experience, encompassing technical proficiency and industry-relevant skills.</p>			
<b>Essential skills required to undertake this internship:</b>			
<p>For the "BioManufacturing of Therapeutic Components for Regenerative Medicine" project, prospective interns should ideally possess the following essential skills: Biomanufacturing Knowledge: A foundational understanding of biomanufacturing processes and techniques involved in producing therapeutic components. Technical Aptitude: Ability to engage with and operate biomanufacturing equipment and tools effectively. Laboratory Skills: Proficiency in executing laboratory procedures and protocols associated with Lentiviral vectors, AAV vectors, and DNA cargo production. Attention to Detail: Precision and accuracy in following protocols to ensure the quality and consistency of manufactured components. Problem-Solving: Ability to troubleshoot and address challenges that may arise during the biomanufacturing process. Team Collaboration: Strong teamwork and communication skills to collaborate with colleagues and contribute to the overall success of the project. Adaptability: Flexibility to adapt to changing project requirements and unexpected situations in a laboratory setting. Industry Awareness: A basic understanding of the regenerative medicine industry and its current trends. For the "Sequence Design, Analysis, and Improvement of Therapeutic Components for Gene and Cell Therapy" project, prospective interns should ideally possess the following essential skills: Bioinformatics Knowledge: Understanding of bioinformatics tools and methodologies for sequence analysis and design.</p>			

Molecular Biology Skills: Proficiency in molecular biology techniques, particularly related to gene and cell therapy. Genetic Engineering: Familiarity with gene editing techniques, including Knock-in strategies with homologous recombination. Analytical Thinking: Ability to analyze sequence data and propose improvements to enhance therapeutic components. Computer Skills: Competence in using bioinformatics software and tools for sequence analysis and design. Critical Thinking: Capacity to critically evaluate and strategize improvements for therapeutic components. Detail-Oriented: Attention to detail in sequence analysis to ensure accuracy and reliability. Project Management: Basic project management skills to organize and execute sequence design and improvement initiatives. Both projects also require interns to be eager learners, adaptable to new challenges, and committed to the success of the overall project objectives.

**Skills that a prospective intern will learn:**

Interns participating in these projects will be exposed to a range of skills that are highly applicable to a career in the industry:

**A) BioManufacturing of Therapeutic Components for Regenerative Medicine:**

Biomanufacturing Techniques: Interns will gain hands-on experience in the manufacturing of Lentiviral vectors, AAV vectors, and DNA cargos, honing their skills in the entire biomanufacturing process.

Technical Proficiency: Through active involvement in the production process, interns will develop technical skills crucial for roles in biomanufacturing, including equipment operation, quality control, and process optimization.

Industry Insight: Interns will acquire valuable insights into the regenerative medicine industry, understanding its dynamics, regulations, and best practices, preparing them for a career in this specialized field.

**B) Sequence Design, Analysis, and Improvement of Therapeutic Components for Gene and Cell Therapy:**

Genetic Sequence Design: Interns will engage in genetic sequence design, honing their skills in creating sequences for therapeutic components used in gene and cell therapy.

Data Analysis: Interns will be exposed to data analysis techniques related to genetic sequences, gaining proficiency in tools and methodologies relevant to the field.

Strategic Thinking: Involvement in Knock-in strategies with homologous recombination and transient gene augmentation will provide interns with a strategic understanding of optimizing therapeutic components for gene and cell therapy.

Cross-disciplinary Understanding: Interns will develop a comprehensive understanding of the interplay between genetic sequences and therapeutic outcomes, fostering a cross-disciplinary perspective that is valuable in the industry.

In both projects, the goal is to equip interns not only with technical expertise but also with the broader skills and knowledge required for successful careers in regenerative medicine, gene therapy, and related industries.			
<b>Company Name:</b>	Octane Orthobiologics	<b>Company Areas of Focus:</b>	Biomanufacturing, Cell Production, Bioengineering/biomaterials
<b>Location:</b> Kingston			
<b>Internship Description:</b>			
Octane Orthobiologics is a Kingston-based Biotechnology company focusing on patient-specific cell therapy and tissue engineering processes for regenerative medicine. Our class-leading automation technology enables the complete automation of a cell culture process within an enclosed system. This automated bioreactor is currently used for orthopedic applications such as the production of an autologous chondrocyte implant. The proposed project will focus on expanding our current portfolio to translate a new cell culture process to treat disorders affecting bone, ligament, muscle, or tendon to Octane's bioreactor system.			
<b>Essential skills required to undertake this internship:</b>			
Problem solving, interested in cell culture processes, engineering program.			
<b>Skills that a prospective intern will learn:</b>			
During this placement at Octane, the student will have many learning opportunities and enhance skills related to biology, chemistry, and engineering. In particular, the student will be involved in learning laboratory techniques such as cell culture as well as analytical methods. The student will also be involved in translating a manual cell culture process to an automated platform by designing specific flowpaths and parts to be used in the automated platform.			
<b>Company Name:</b>	Axolotl Biosciences	<b>Company Areas of Focus:</b>	Biomanufacturing, Bioengineering/biomaterials, Organoid production/transplantation, 3D printing
<b>Location:</b> Victoria			
<b>Internship Description:</b>			
We will offer projects focusing on the development of bioinks for 3D bioprinting stem cell derived tissues, including neural, cardiac, and skin. The intern will learn about 3D printing and bioink preparation as well as help with social media and grant applications as needed. They will interact with customers and beta testers providing exposure to skills that will help them in industry.			
<b>Essential skills required to undertake this internship:</b>			

Stem Cell Culture, Molecular Biology Experience, Strong Written and Oral Communication, Detail oriented.			
<b>Skills that a prospective intern will learn:</b>			
They will be exposed to quality control and manufacturing along with scale-up activities. They will interact with beta testers and customers as well.			
<b>Company Name:</b>	Telescope Therapeutics	<b>Company Areas of Focus:</b>	Cell Production, Drug screening
<b>Location:</b> Montreal			
<b>Internship Description:</b>			
Interns would learn how to generate and characterize cardiac cells (muscle cells, fibroblasts, endothelial cells) made from iPSCs, generate cardiac organoids from these cells and use them to undertake disease modelling or drug discovery projects. High content phenotypic as well as high throughput screening methods would be used in these models.			
<b>Essential skills required to undertake this internship:</b>			
Molecular biology skills, cell culture training, general lab skills.			
<b>Skills that a prospective intern will learn:</b>			
Trainees would learn how to develop stem cell-based disease models which would prepare them for jobs in the regenerative medicine space. They would also learn how to use modern FRET- and BRET-based drug discovery approaches of use in any pharmaceutical company.			
<b>Company Name:</b>	AmacaThera	<b>Company Areas of Focus:</b>	Bioengineering/biomaterials
<b>Location:</b> Toronto			
<b>Internship Description:</b>			
A hydrogel-based platform for local and sustained delivery of a lipid nanoparticle formulated gene therapy for tissue regeneration.			
<b>Essential skills required to undertake this internship:</b>			
Experience with biomaterials functionalization strategies; tissue culture or aseptic technique a plus.			
<b>Skills that a prospective intern will learn:</b>			
Technical skills: formulation, quality analysis, in vitro activity, assay development. soft skills: presentations, reports, scientific communication, collaboration			
<b>Company Name:</b>	Virano Therapeutics	<b>Company Areas of Focus:</b>	Gene Therapy, Immunotherapy, Drug screening
<b>Location:</b> Toronto			
<b>Internship Description:</b>			

Virano Therapeutics is seeking an intern to support proof-of-concept studies that will test the ability of Virano's Vector Potentiators (VEPOs™) to effectively reduce the dose of the gene therapy required for effective treatment of Spinal muscular atrophy (SMA). The results from this project will allow Virano to continue the development of a more effective, safer SMA gene therapy and demonstrate the value proposition of the VEPO technology for other therapeutic applications requiring high doses of virus, such as for Duchenne Muscular Dystrophy (DMD).

**Essential skills required to undertake this internship:**

The intern must have post-secondary experience in molecular/cellular biology, virology, immunology, or a related discipline. They must likewise have experience in generation of cell-based therapies and familiarity with experiment design (DOE), managing projects, and effectively recording/communicating results.

**Skills that a prospective intern will learn:**

A trainee at Virano will be directly exposed to strategies and tactics required to grow a biotechnology business in cell and gene therapy. In particular, the trainee will learn:

- o Pre-clinical experimental design and data analysis for translational research
- o Research and development budget management
- o Communication of Scientific data for a broad range of stakeholders.
- o Intellectual property generation and management

**Company  
Name:**

Mesintel  
Therapeutics

**Company  
Areas of Focus:**

-Omics, Drug screening

**Location:** Vancouver

**Internship Description:**

The internship project will involve four major components: 1) execution of unique high-throughput screens to identify modifiers (candidates) of mesenchymal stromal cell biology; 2) integration of screen-derived candidates with existing datasets (including RNA-seq and single cell omics); 3) assessment of the patentability and translation potential of identified candidates for a variety of clinical indications; and 4) participation in developing a business case for specific candidates, enabling their advancement towards the clinic. In this manner, the intern will have an opportunity to build on their experimental skills, but will also receive training in how targets and associated molecules are vetted and prioritized for subsequent pre-clinical development.

**Essential skills required to undertake this internship:**

Required skills for this internship include: 1) experience with tissue culture; 2) familiarity with routine molecular and cellular biological experiments (i.e., qPCR, immunodetection, histological staining, etc.); 3) some knowledge of bioinformatics is an asset; and 4) high level of interest and engagement.

**Skills that a prospective intern will learn:**

The intern will gain numerous skills that will prepare them for a job in industry, including: 1) development, execution and interpretation of robust screens; 2) development of cross-validation skills for target assessment; 3) approaches for the assessment of business and therapeutic

opportunities for identified candidates; 4) insights into pre-clinical programs aimed at modifying mesenchymal stromal cell (MSC) activity for the treatment of various diseases. MSC dysfunction is associated with a wide spectrum of diseases, and there is intense interest in this field from a range of biotechnology and pharmaceutical companies.