Stem Cell Network | Réseau de Cellules Souches
Powering Regenerative Medicine
Propulsons la médecine régénératrice

Insights from the Network

Training Canada's Future Regenerative Medicine Leaders through Industry-Based Internships

In January 2022, the Stem Cell Network (SCN) and Mitacs partnered to offer industry-based internships in the regenerative medicine (RM) sector, successfully placing four interns within the first year of the program. Now in its third year, SCN is pleased to announce that five applicants were successful and are now interning with RM-focused biotech companies that are moving innovative therapies and technologies into the marketplace. SCN had the opportunity to speak with the successful interns about their career paths, internship projects and future career goals.

Hamed Alizadeh Sardroud, Post-doctoral Fellow, University of Victoria
Company Match: Octane Orthobiologics

Hamed is a postdoctoral fellow in Mechanical Engineering with a background in Chemical Engineering. His interest in regenerative medicine was sparked during his master's degree, where he realized he could apply his engineering skills to find solutions for human disorders.

After specializing in microencapsulated cell expansions and bioreactor operations in Iran, Hamed pursued a Ph.D. in Biomedical Engineering at the University of Saskatchewan, focusing on 3D bioprinting, mechanical bioreactors, and in vivo implantation of 3D constructs.
"Since my master's, I've worked on cell and biomaterial projects, focusing on bioreactors for cell expansion and tissue regeneration," said Hamed. "Recently, I've been involved in a muscle cell expansion and tissue regeneration project at the University of Victoria."

Hamed is interning at Octane Orthobiologics, where he's translating manual muscle cell culture processes to an automated platform. This project aims to streamline muscle cell production, reduce costs, and improve the scalability and accessibility of muscle regeneration therapies.
"The SCN-Mitacs internship offers me a unique chance to transition into industry, where I can apply my expertise to drive innovation in bioengineering and regenerative medicine," said Hamed.

He believes in bioengineering's potential to transform healthcare by developing affordable, accessible treatments. Hamed is excited to collaborate with the team at Octane to push the boundaries in tackling challenging human diseases.

Kartar Singh, PhD Candidate,
University of Waterloo
Company Match: Mediphage Bioceuticals

Kartar Singh is a PhD Candidate in Pharmaceutical Sciences at the University of Waterloo. His research interests include molecular neuroscience, neurodegenerative diseases, and stem cell biology. Kartar is highly interested in learning about the commercialization of cell and gene therapies and gaining insights from leading experts on the process of taking a therapy from the benchtop to large-scale production.
“Stem cell technologies and gene therapies hold a promising potential for transforming the healthcare landscape. Diseases that were previously thought to be uncurable, now have the potential to be cured,” said Kartar. “I hope to see these technologies improve the capabilities of medicine and make a noticeable difference on the lives of patients.”

Karter is interning at Mediphage Bioceuticals. Mediphage is a gene delivery company located at JLabs in Toronto, Canada and spun off from the University of Waterloo. Their proprietary core technology, ministring DNA (msDNA™), is a novel high fidelity and safe non-viral DNA vector that is designed to overcome critical challenges facing viral and other non-viral gene therapies and leverages advancements of non-viral gene delivery. Kartar’s project will focus on conducting pre-clinical studies on this proprietary gene therapy system. Working alongside experts in the field he will gain expertise in pre-clinical experimental design, managing research, industrial manufacturing, and various molecular biology techniques.

“The challenges within industry can differ from those seen within academia, hence it is important to learn firsthand the inner workings and intricacies of industry from experts in the field,” said Kartar. “The SCN-Mitacs internship is an amazing opportunity for me to learn the details of how novel gene therapies are being developed, tested, and commercialized.”

Kartar’s aspiration is to become a leading scientist in the field of regenerative medicine and gene therapy, aiming to contribute to the industry by bringing innovative cell and gene therapies to market.

Abdelaziz Ghanemi, Post-doctoral Fellow, Université Laval
Company Match: Axolotl Biosciences

From a young age, Abdelaziz always knew he wanted to pursue "something in science." His journey took him across three continents and three culturally diverse countries, where he learned four languages and built a rich, diverse academic and scientific profile.

“After graduating top of my class in pharmacy from Constantine University in Algeria, I pursued master’s research in pharmacology in China (At China Pharmaceutical University with Dr. Ling He), focusing on cell cultures and molecular pathways,” said Abdelaziz. “I then completed a PhD in molecular medicine under the supervision of Dr. Jonny St-Amand at Laval University (Canada), studying metabolism with transgenic mice, and authored a thesis comprising 27 published papers. My first postdoc with Dr. Fabrice Mac-Way at CHU de Québec-UL Research Center shifted my focus to mineral metabolism, investigating bone disorders and vascular calcification in chronic kidney disease in human and rat models, adding new dimensions to my expertise.”

With this SCN-Mitacs project, Abdelaziz is starting his second postdoc with Dr. Roxane Pouliot at Université Laval, who has developed a skin model for psoriasis. His SCN-Mitacs project focuses on enhancing a current skin model and creating an optimized 3D bio-printed version at Axolotl Biosciences, under the supervision of Dr. Stephanie Willerth. These improved models will help better understand skin diseases, test new therapies, and support applications in cosmetics.

“My next steps involve integrating my expertise in molecular and cellular applications, animal models, and tissue engineering within a collaborative academia-industry project,” said Abdelaziz. “This will also enhance my skills in tissue engineering, bioprinting, and project management across Quebec and British Columbia.”

Abdelaziz’s long-term career goal is to develop deep expertise and make a significant impact as a scientist, while also raising awareness about the importance of supporting scientific research through collaborations across diverse sectors.

Maria del Toro Zechinelli, Master's Student, University of Calgary
Company Match: Telescope Therapeutics

Maria holds a BSc (Honours) in Biotechnology Engineering from Tec de Monterrey (ITESM) and is now pursuing a master's degree in biomedical engineering in the Roman Krawetz Lab at the McCaig Institute for Bone and Joint Health, University of Calgary.

Her current research interests focus on the study of induced pluripotent stem cells (iPSCs) and their bioengineering applications to address healthcare challenges with practical solutions.

"During my graduate studies at the University of Calgary, I have been working on a project that involves generating and characterizing equine and human induced pluripotent stem cells," said Maria. "This work aims to deepen our understanding of certain disease mechanisms, like articular cartilage degeneration due to osteoarthritis, and identify potential therapeutic targets such as iPSC-derived mesenchymal stem cells. It also fosters ongoing collaboration between the veterinary and biomedical engineering departments."
Maria is interning at Telescope Therapeutics under the guidance of Dr. Terry Hébert. Telescope Therapeutics is an emerging leader in disease modeling and is dedicated to personalizing healthcare and training the next generation of researchers through the use of advanced cell and organoid models. Her SCN-Mitacs project will focus on cardiovascular disease, aiming to group it into clinically relevant subtypes. The goal is to create better models for studying the disease and testing treatments, using real-world patient data.
"This internship will provide me with a unique opportunity to engage with a vibrant community of scientists dedicated to pioneering transformative healthcare solutions," said Maria. "I am excited to learn from industry experts and contribute to the development of lifechanging innovations in the biopharmaceutical industry."
Maria's work at Telescope Therapeutics represents a major step toward her goal of integrating scientific innovation, sustainable development, and business skills. As she advances professionally in a time of rapid scientific breakthroughs, she is poised to make significant contributions with real human and societal impact.

Jaime Neira, Master's Student,
University of Calgary
Company Match: Mesintel Therapeutics

Jaime is an MSc student at the University of Calgary, researching signaling mechanisms in porcine and human pluripotent stem cells (PSCs) related to pluripotency and developmental patterning. Driven by a lifelong curiosity about how organisms and cells function, he earned his honors degree in cellular and molecular biology at the University of Calgary. His undergraduate thesis on metabolic engineering in lettuce using CRISPR-Cas9 sharpened his molecular biology skills.
"My undergraduate research sparked my passion for scientific inquiry," Jaime said. "This led me to pursue a master's in Biochemistry and Molecular Biology to explore cutting-edge stem cell biology."

Jaime is working to develop easy and scalable methods for creating and maintaining porcine stem cells without using genetic modifications. He plans to use these stem cells to create organoids that mimic early developmental processes. His goal is also to make these stem cells more commercially viable for new biotechnologies.
Jaime is interning at Mesintel Therapeutics, a biotechnology company based in Vancouver. Mesintel has developed a proprietary target discovery platform based on fibroblast biology to accelerate the development of therapeutics in areas of high unmet medical need, including cancer and fibrosis. Jaime's project focuses on creating a stem cell model to study and improve mesenchymal stem cells (MSCs). This model will help identify factors that influence MSCs and screen potential treatments. Through this internship, Jaime will gain valuable experience in drug discovery, development, and bringing new treatments to market.

“I am thrilled to be working at Mesintel Therapeutics, where I can apply my research skills to real-world challenges,” said Jaime. “I am deeply motivated by the desire to do meaningful work, and the SCN-Mitacs internship is an incredible opportunity to learn from experts in the biotechnology industry and contribute directly to the development of innovative therapies. I am confident that this experience will serve as the foundation to a productive and impactful career.”

Jaime’s long-term goal is to pursue an extensive research career in industry, focusing on regenerative biology and diseases of aging. His aspiration is to be at the forefront of these fields, developing novel treatments that allow us to live longer, healthier lives.