CANADIAN BIOMATERIALS SOCIETY
SOCIÉTÉ CANADIENNE DES BIOMATÉRIAUX

BI-ANNUAL NEWSLETTER: Fall 2024

Letter from the President

Dear Colleagues,

As we are already well into Fall, it is time to update everyone about what is happening in our Society! I would like to take the opportunity to welcome our President-elect Dr. Lindsay Fitzpatrick, as well as our new Board members: Dr. Vahid Adibnia, Dr. Marc-André Fortin, and Dr. Laura Wells. Dr. Fitzpatrick has served our Society as a Board member for two years prior to becoming President-elect. She is therefore very familiar and very engaged with our Society, and I am very excited to be working with her in her new role. I am delighted to have Dr. Adibnia, Dr. Fortin, and Dr. Wells joining us this year, and it is a pleasure to continue working with Dr. Marta Cerruti, our past President, as well as Dr. Simon Matoori and Dr. Jean-Philippe St-Pierre who are in the second year of their term as Board members. I am also very pleased to welcome Dr. Patricia Comeau as our Secretary, and Ms. Mahdieh Heydarigoojani as our Student Representative. Finally, I am very grateful to Dr. Emilio Alarcón who assumed the position of Treasurer after serving as a Board member for two years.

It is truly my great pleasure to work with all these dedicated individuals, along with our student chapters. Our Board of Directors has already had five meetings since the last Annual General Meeting (AGM) and is working on fostering our Society's important endeavors. Throughout the year, we will keep promoting student engagement (through, for example, student chapters and awards), keep working on improving our website, provide support for the 2025 Annual Meeting in Kingston next May, reinforce industry relations and representation of clinicians in our Society, and increase the visibility of our Society through, for example, partnership with other Canadian societies with overlapping interests.

I wish everyone a wonderful 2024-2025 academic year and look forward to working with all of you towards the success of our Society!

Sincerely,
Isabelle Catelas
President, Canadian Biomaterials Society

Letter from the President Elect

I am truly honored to be elected as the next CBS President, and I look forward to working with Isabelle, Marta and the Board of Directors to continue to grow the CBS, increase the visibility of the society and support our members through important opportunities for our trainees (student travel and experience awards, student chapters and mentorship program) and by fostering our links with industry partners, clinicians and government organizations. I am particularly excited about welcoming everyone to Kingston this May for the 39th Annual Meeting of the CBS and have been busy preparing for the conference with my co-Chair, Laura Wells, and the rest of the organizing committee.
I hope you enjoy the newsletter, and I look forward to connecting with you at CBS2025!

Lindsay Fitzpatrick
President Elect, Canadian Biomaterials Society

Dr. Vahid Adibnia
Senior Board Member

Vahid Adibnia is an Assistant Professor of biomedical engineering and chemistry at Dalhousie University since July 2022, and Tier II Canada Research Chair in Functional Polymeric Biomaterials. He received his Ph. D. in chemical engineering from McGill University in 2017 and completed his postdoctoral studies at University of Toronto and University of Montreal. His research interests are in applied soft matter science. In his research, he tunes intermolecular and nanoscale interactions in colloidal and polymeric systems to induce unique and useful material properties at the macroscale. Materials that Dr. Adibnia's group design are applicable to a wide range of biomedical applications, including osteoarthritis treatment, wound management and antifouling coating. Vision: As the chair of Clinical & Industry Engagement committee of CBS, his mission is to establish long lasting relationships between CBS and industrial partners, and to set up opportunities for clinicians to be engaged in our community.

Dr. Laura Wells
Senior Board Member

Laura Wells is an Associate Professor in the Department of Chemical Engineering at Queen's University and a recipient an Ontario Early Researcher Award (2019). She received her Ph.D. at McMaster University and Postdoctoral studies at the University of Toronto. Dr. Wells' research focuses on the development of poly(acrylate) and natural polymers for controlled release and to modulate cell-material interactions for ocular applications and surgical mesh. She helps lead a Smith Engineering Research Cluster at Queen's University focused on Sex and Gender considerations Biomedical Devices and is an advocate for local outreach, including supporting demos in high schools and for Kingston Science Rendezvous. Vision: Dr. Wells serves as the chair of the Communications Committee in CBS and will focus on keeping members informed through the newsletter and on improving networking within members and also across groups outside of the CBS for stronger collaboration across multiple sectors. Dr. Wells also serves on the awards committee to support trainee access to research and conferences.

Dr. Marc-André Fortin
Senior Board Member

Marc-André Fortin is the head of the Biomaterials for Imaging laboratory at the Centre Hospitalier Universitaire de Québec (CR-CHU de Québec - Université Laval in Quebec City). He is a Full Professor at the Department of Mining, Metallurgy and Materials Engineering at U. Laval. He is and expert in the field of nanomaterials for diagnosis and imaging of cancer, including for radiosensization therapies. He is also the founder and the manager of CR-CHU de Qc's small-animal imaging platform (magnetic resonance imaging, positron emission tomography, and X-ray computed tomography), mainly dedicated to the study of nano(bio)materials pharmacokinetic processes *in vivo* for acquiring evidence toward regulatory approvals in the biomedical device and pharmaceuticals industries. Dr Fortin graduated with a Ph.D. from Institut National de la Recherche Scientifique – Énergie et Matériaux (INRS-ÉMT – Montréal, Canada), followed by a Postdoc in biomedical imaging at Uppsala and Linköping Universities (Sweden; in biomedical imaging). Dr Fortin received twice a Career Award from the Fonds de la Recherche en Santé du Québec (FRQS Junior 1 and 2; 2008 - 2016). His main research interests include the development of nano(bio)materials for imaging applications, new strategies to image the biodistribution of nanomaterials *in vivo*, additive manufacturing of biomedical polymers for enhanced visibility in biomedical imaging, as well as novel routes for radioactive nanoparticles synthesis. Dr. Fortin has published more than 75 scientific papers (*ACS Nano, Nanoscale, Advanced Materials, Chemistry of Materials, Journal of Controlled Release…*), 3 book chapters and 3 reviews in the field of nanomaterials for imaging. He holds several patents on novel nanoparticle synthesis routes by plasma technologies, including effective technology transfers in the precious metals extractive industry. Currently, he holds funding from NSERC, CIHR, CFI, FRQNT, and NRCan. He is a member of the College of Reviewers of the Canadian Institutes of Health (CIHR; Pharmaceutical Sciences panel). At U.Laval since 2007, he lectures on materials analysis, biomedical imaging, and nanotechnology for biomedical applications. He chaired the International Gold Conference 2022 (www.gold2022.org), a scientific platform uniting research in gold-based nanomaterials for high-technology applications.

Mahdieh Heydarigoojani
Student Board Member

Mahdieh Heydarigoojani is a PhD candidate in Biomedical Engineering at the University of Ottawa, conducting her research in Prof. Isabelle Catelas's laboratory. Her project focuses on developing an osteochondral tissue substitute using 3D bioprinting technology. She had the pleasure of serving as president of the Ottawa Student Chapter of the CBS for two consecutive terms (2022–2023 and 2023–2024). As a student representative, her goal is to amplify students' voices within the CBS community, fostering a more inclusive platform for engagement and ensuring their ideas and concerns are actively represented in all CBS initiatives.

Dr. Patricia Comeau
Secretary

Patricia Comeau is an Assistant Professor in the Department of Chemical and Materials Engineering at Concordia University (Montreal, QC). Dr. Comeau completed her PhD in Biomedical Engineering at Dalhousie University, with a focus on the development of a calcium phosphate-based biomaterial for use in a localized drug delivery system towards treating bone infection. During her most recent post doc, she developed a new photodynamic therapy (PDT) system for managing dental cavities, including a new natural fluoride-free varnish and a custom multi-LED-based light device for in-house testing of material response to PDT. Her current research focuses on the design and development of 3D-printable and biologically-inspired material systems for targeted and controlled therapy of various diseases. Central to this research will be the use of the structure-property-function paradigm and harnessing the body's own natural responses in the healing and regeneration of damaged tissues. Dr. Comeau is looking forward to making significant contributions to the biomaterials community as a board member of the CBS. Her goals include improving (1) student training opportunities with experts based in Canada, (2) academia and industry/clinic collaboration(s) for more successful clinical translation of new biomaterial systems, and (3) cross-country collaborations in research with similar targets.

Upcoming CBS Award Deadlines

Conference Travel Awards

WBC2016 Legacy Travel Award	**Application Deadline: January 31, 2025**
CBS Merit & Travel Award*	**Application part of CBS 2025 abstract submission.**

Research Experience Awards

CBS Visiting Scholar Award	**Application Deadline: February 28, 2025**
WBC2016 Legacy Postdoctoral Experience Award	**Application Deadline: February 28, 2025**

Please check out the CBS Awards Webpage for further information on all CBS awards.

Congratulations to the WBC 2024 Travel Award Winners!

CBS Merit & Travel Awards

Aidan Macadam
Brenden N. Moeun
Brian Webb
Daniela Isaacs-Bernal
Jonathan Brassard
Kai Slaughter
Kai Yu
Mahdokht Akbari Taemeh
Marcelo Munoz
Maria Elena Lombardo
Nate Dowdall
Norma Garza Flores
Sajjad Fanaee
Sara Palladino
Souheib Zekraoui
Xixi Guo
Yizhou Chen
Comtois-Bona Maxime

WBC 2016 Legacy Travel Awards

Benjamin Campbell
Christina Boghdady
Cristina Lopez Serrano
Katya D'Costa
Melissa Kosovari
Sydney Wheatley
Zachary Gouveia
Capucine Guyot
Tianqin Ning
Alex Ross
Nasteho Abdoulkader Doubad
Kenny Kimmins
Siyuan Li
Chen Li
Marin Baptiste
Peyman Malek Mohammadi Nouri

Visiting Scholar Report 2023

The Canadian Biomaterials Society is providing a Visiting Scholar Award to give to the most promising young scientists the opportunity to visit another university / lab with common research interests and stimulate their interest to pursuit their career in the field of biomaterials. The award also intends to foster collaborations as well as exchange of technologies and ideas between Canadian universities in the field of biomaterials.

2023 Scholar – Yuxi Zhang, Queen's University

Q: Briefly explain the research you carried out using this award.
A: In Canada, approximately 3.7 million Canadians were diagnosed with diabetes according to Diabetes Canada, with Type I Diabetes accounting for 5~10% of these cases. Currently, there is no cure for T1D, and it is managed using exogenous insulin analogues and lifestyle modifications. Continuous subcutaneous infusion (CSII) has been developed to benefit patients by delivering insulin continuously over 24 hours. However, the insulin injection sets are only approved for up to

3 days of use. Extended wear is associated with deteriorating glycemic control and variable insulin absorption at the injection set. Studies indicate that the host response plays an important role in these issues.

Adipose tissue functions as an endocrine organ, secreting metabolites and adipokines. There is a current a gap in understanding how insulin analogues affect the interaction between adipocyte metabolism and macrophage immune response. My PhD project aims to develop a 3D adipose tissue model to study the effect of therapeutic doses of insulin on macrophage activity at the insulin injection set.

During my visit to Dr. Flynn's lab at Western University, I focused on isolating and differentiating adipose-derived stem cells (ASCs) and explored using a decellularized adipose tissue (DAT) matrix as a scaffold for engineering adipose microtissue. I followed a two-week research protocol to prepare the human DAT. Meanwhile, I prepared 3D adipose modules by embedding isolated ASCs in the human DAT. Additionally, I applied the Oil Red O characterization method with cryosection techniques on one week-differentiated adipose modules and assessed cell viability of the prepared adipose modules at 3-day and 6-day intervals. The 2D cultured or differentiated ASCs served as control groups.

Q: Explain the importance of this award for your career.
A: Upon my return to Fitzpatrick lab at Queen's, I will apply these new skills in ASC culture, differentiation, and DAT hydrogel formation to construct 3D ASC-laden DAT microtissue using a modular tissue engineering approach. It will benefit my PhD project, enhancing my understanding of both the ethical and experimental processes involved in collaborating with surgeons to build engineered tissue modules. This experience could benefit my future career in academia, enriching my research expertise in the field of biomaterial.

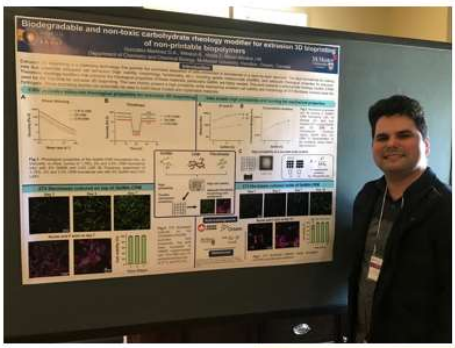
Q: Describe the outcomes of this award (future grants, joint publications, etc.)
A: This award will bring new techniques and expertise to my lab group at Queen's and accelerate my research progress by saving me valuable time that would otherwise be spent learning these techniques independently. Moreover, it will advance my understanding of developing an in vitro adipose tissue model for investigating host responses within adipose tissue. This knowledge will significantly contribute to future publications and strengthen grant applications.

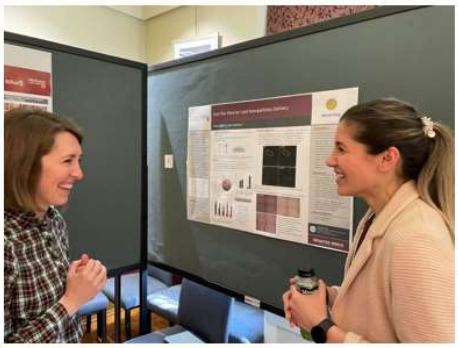
Student Chapter Updates

Southwestern Ontario Student Chapter

Here you can find details on the various networking, academic, social, and professional events hosted by CBS-SWOSC. Be sure to follow us on social media for up-to-date additions to our event schedule.

Congratulations to all students who presented their research at the **2024 Symposium on Biomaterials and Biofabrication for Regenerative Medicine Applications**! Shout-out to David A. González-Martínez, Mahmoud Farahat and Sara Salimi for winning the 1st, 2nd and 3rd prize, respectively, for the poster session judged by the distinguished speakers: Dr. Sarah Gilpin, Dr. Axel Guenther, Dr. Adam Feinberg, Dr. Eva Mueller, PhD, Dr. Edana Cassol, and Dr. Ryan Wylie.





Montreal Student Chapter

2024 was a big year for the Montreal Student Chapter of the Canadian Biomaterials Community.

In February we had the great honor of hosting a symposium in CHUM Research Center with two invited professor that are major actors in the field: Diego Mantovani from Université Laval (Québec City) and Frédéric Chaubet from Université Paris 13 (France).

In May, the Chapter organize the 1st Montreal Biomaterials Research Day since 2018, in École de Technologie Supérieure (ÉTS). We were thrilled to have presentations from three important members of our community in Montreal: Marta Cerruti (McGill University), Patricia Comeau (Concordia University) and Simon Matoori (Université de Montréal). During this event, we also had a 3-minutes thesis contest to highlight the work of the students and interns of our community. This event was a great success with an important turnout!

The Montreal Student Chapter held its annual meeting and board elections on October 23rd in McGill University. We also had a tour of Pr. Jianyu Li's lab during this event! The Chapter welcomed its new executive committee and associate members, composed of students from McGill University, Université de Montréal, ÉTS and Concordia University.

The new members are highly motivated and have a lot of ideas for the upcoming year! Our first activity will be a trivia night in December to celebrate holidays. In 2025 we plan to organize two research symposiums, one industry/entrepreneurship event, one social summer BBQ and finally a new edition of our Research Day following the success of last year.

February research symposium

2024 Montreal Biomaterials Day

British Columbia Student Chapter

This year marks the 13th official year of the British Columbia Student Chapter of the CBS (CBS BCSC). We will be hosting a variety of themed Trivia Nights throughout the year to connect students and staff with the CBS BCSC. In addition, to foster collaborations and networking prospects, we will be organizing valuable networking opportunities through a Speaker Series in the Spring term.

Quebec Student Chapter

The Quebec City Student Chapter of the Canadian Biomaterials Society (CBS-QCSC) is excited to begin another promising academic year! Following the virtual elections in October 2024, a dynamic new executive committee has taken the lead. This year's team includes graduate students from diverse fields such as radiochemistry, biology, biomedical engineering, and materials science, bringing fresh perspectives and innovative ideas to the CBS-QCSC.

The chapter is now under the leadership of our newly elected president, **Raquel Espino López**, a member of Dr. Marc-André Fortin's research group, and as vice president, **Neshat Eghbali**, from Dr. Diego Mantovani's group. With their dedication and vision, we are confident this year will bring exciting opportunities and impactful initiatives.

Notably, our chapter will proudly sponsor the annual colloquium of the Centre de Recherche sur les Matériaux Avancés (CERMA), scheduled for March 2025. This sponsorship not only supports students and researchers in advanced materials but also enhances the visibility of CBS-QCSC, helping us attract more students interested in biomaterials.

Additionally, we are planning a networking night to connect students and professionals, as well as seminars showcasing innovative biomaterials research. These events aim to foster collaboration, inspire innovation, and strengthen our community.

Follow us on our website and social media for the latest news, events, and opportunities to get involved and join us in making this year another success for CBS-QCSC!

CBS Membership

We would like to take this opportunity to encourage everyone in our community to renew your membership for the coming year. Your continued support and involvement with the CBS are essential to our ability to organize activities that help engage our vibrant biomaterials research community in Canada, including our annual meeting, mentorship program, seminar series, and providing support to our Student Chapters.

Thanks for Reading!

On behalf of the Canadian Biomaterials Society

Communications Committee and Board of Directors

https://biomaterials.ca