

Department of Chemistry Newsletter



Issue 5 (September), 2021

Irving K. Barber Faculty of Science, University of British Columbia
Sylx Okanagan Nation Territory

Announcements

Congratulations to:



Dr. Robert Godin for being chosen to be the recipient of one of UBC's observer badges for the upcoming UN Climate Change Conference (COP26) taking place in Glasgow, Oct 31 – Nov 12 (<https://ukcop26.org>).

Dr. Godin will be attending within the Blue Zone, where the international negotiations over climate change agreements and actions take place.



Ryland Giebelhaus for winning the "1st Place Poster Prize" for his poster presentation at the 2021 (Virtual) IUPAC World Chemistry Congress and Canadian Chemistry Conference & Exhibition:

Giebelhaus, RT, Erland LAE, Murch SJ (2021). "HormonomicsDB: A new tool for analysis of plant growth regulators".



Lauren Erland for winning "Honourable Mention" for her poster presentation at the 2021 virtual meeting of the Society of Experimental Biology, UK:

Erland LAE, Forsyth JA, Frodova L, Yasunga AB, Pun W, Li ITS, Murch SJ (2021). "Mammalian melatonin agonist pharmaceuticals stimulate rhomboid receptors in plants".

Welcome



Julia Solonenka is joining PlantSmart Laboratory (Dr. Susan Murch's group) for her MSc in Chemistry

The SolarSpec Laboratory (Dr. Robert Godin's group) is welcoming:

- **Katharina Mazzotti** as a work-study student, working on the covalent attachment of carbon nitrides to solid substrates with minimal disruption of the photophysics;
- **Kadie Wert** as a CHEM449 student, co-supervised by Dr. Nicolás Peleato (Engineering), working on developing carbon nitrides for degradation of natural organic matter in water;
- **Ziyi Zhang** as a CHEM449 student, working on modifying the electronic properties and spin dynamics of carbon nitrides via post-synthetic modification.

Recent publications/presentations



Gulzari L. Malli, **Gino A. DiLabio**, Walter Loveland, et al. Dramatic relativistic and magnetic Breit effects for the superheavy reaction $\text{Og} + 3\text{Ts}2 \rightarrow \text{OgTs}6$: Prediction of atomization energy and the existence of the superheavy octahedral oganesson hexatennesside $\text{OgTs}6$. *Theoretical Chemistry Accounts* (2021) 140:137. DOI: 10.1007/s00214-021-02832-y



Nejatie A., Steves E., Gauthier N., Baker J., Nesbitt J., McMahon S., Verena O., Nicholas T., **Noyovitz B.**, Khazaei K., Brock B., **Zandberg W.F.**, Gloster T., Moore M.M., Bennet A.J. Kinetic and structural characterization of sialidases (Kdnases) from ascomycete fungal pathogens. *ACS Chemical Biology* (2021) (accepted).



Jung J., Enterina J.R., Bui D., Mozaneh F., Lin P.-H., Nitin, Kuo C.-U., Rodrigues E., Battacherjee A., Raeisimakiani R., Daskhan G.C., St. Laurent C.D., Khoo J.-H., Mahal L.K., **Zandberg W.F.**, Huang X., Klassen J.S., Macauley M.S. Dissecting sulfation-dependent binding by Siglecs as a mechanism used in cancer. *ACS Chemical Biology* (2021). DOI: 10.1021/2021.06.27.450109



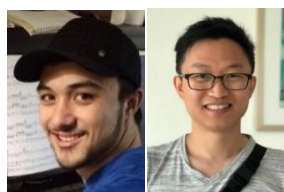
Emma Mitchell, Abigail Law, Robert Godin. Interfacial charge transfer in carbon nitride heterojunctions monitored by optical methods. *Journal of Photochemistry and Photobiology C: Photochemistry Reviews*. DOI: 10.1016/j.jphotochemrev.2021.100453



Rafaeal H. Rakin, Hitendra Kumar, Ashna Rajeev, Giovanniantonio Natale, **Frederic Menard**, **Isaac T.S. Li**, Keekyoung Kim. Tunable metacrylated hyaluronic acid-based hybrid bioinks for stereolithography 3D bioprinting. *Biofabrication* (2021) 13:044109. DOI: 10.1088/1758-5090/ac25cb

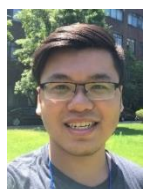


Scott M. An, Seong Ho Kim, Vanessa J. White, Adam B. Yasunaga, Kathleen M. McMahon, Y. Murad, Isaac T.S. Li. Imaging molecular adhesion in cell rolling by adhesion footprint assay. *JoVE* (2021) 175:e63013. DOI: 10.3791/63013



Adam B. Yasunaga, Isaac T.S. Li. Quantification of fast molecular adhesion by fluorescence footprinting. *ScienceAdvances* (2021) 7:eabe6984. DOI: 10.1126/sciadv.abe6984

Upcoming Seminars



Tuesday, October 5th, 1:00 pm

Tuan Anh M. Nguyen, MSc Candidate

Title: Discovering and harnessing hydroxylase enzymes for chemo-enzymatic synthesis of anticancer compounds

Abstract: Some of the most effective chemotherapeutic agents come from nature. New and diverse therapeutic options for cancer treatments are always in high demand, and plant-derived natural products provide us with a vast treasure trove to this end. My project aims to develop a biotransformation approach for production of clinically important anticancer compounds as well as new-to-nature derivatives by exploring and discovering new biocatalysts from plants. Among biocatalysts with substantial implications in plant natural product metabolism, cytochrome P450 enzymes (CYPs) stand out with their ability to activate and derivatize substrates via oxidation with striking chemo-, regio- and stereo-selectivities. Such properties can be explored and exploited for the biosynthesis of bioactive compounds, expanding the much-desired chemical and bioactive space of pharmaceuticals. Multidisciplinary techniques, including bioinformatics, molecular cloning, and organic synthesis, were implemented to discover and characterize two new cytochrome P450 monooxygenases. This discovery enabled heterologous production of anticancer precursors in the baker yeast *Saccharomyces cerevisiae*. Up to 13 derivatives have been successfully synthesized by combining bio- and chemo-catalysts sequentially in the chemoenzymatic process. This research is a step forward in quinoline alkaloid biochemistry and leading to the economical and sustainable production of more active and water-soluble anticancer derivatives.

Student affairs

Research proposals

None scheduled for October

Ph.D. comprehensive/candidacy oral examination

None scheduled for October

Thesis oral examinations

Tuan Anh M. Nguyen (Dang group), MSc thesis oral examination

Tuesday, October 5th, 1:00 PM — Zoom

Meeting ID: 626 9485 3808; Passcode: 772680

Committee meetings:

None scheduled for October

News/Events



Week of October 18th: Welcome/Welcome Back party for all students.

Come meet your peers and profs while having some pizzas and drinks to celebrate the new school year! For more information or to get involved, please contact Helena Nunes (helenahitomi170399@gmail.com), Matthew McConnachie (mmcc1998@mail.ubc.ca) or Anh Nguyen (tuananh.nguyen@ubc.ca) from Dang group. Official date and location will be sent out next week.

We would like to acknowledge that the land on which we gather is the unceded territory of the Syilx (Okanagan) Peoples.

If you would like to contribute to, or have any suggestions for, our Department's upcoming newsletters, please contact Thuy Dang (thuy.dang@ubc.ca).