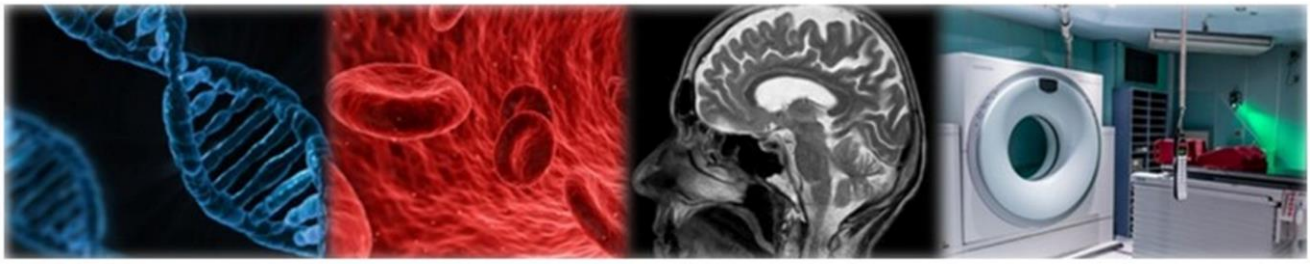
Division of Physics in Medicine and Biology
Canadian Association of Physicists



In this issue of DPMB Newsletter

Website: http://dpmb.physics.umanitoba.ca/
Contact Email: omermut@yorku.ca

Greetings from the Chair

Dear members and colleagues of DPMB,

I hope you have been having a fruitful and enjoyable summer despite unusual circumstances of our times. Thank you to the organizing committee of CAP, the DPMB executive members and volunteers for putting together the virtual student competition event this year which led to a record-breaking number of student competitors and audience participants. We were very pleased with the top quality of the presentations from students which was reflected in DPMB's student winner of the CAP Overall Oral Student Oral Presentation. Congratulations! Our original program for this years' congress had sessions in Biomicrofluidics, Medical applications of Imaging (joint with DAPI), Sensory Biophysics, Biophotonics (joint with DAMOPC), Medical Physics (joint with COMP), and Topics in Medical Physics and Biophysics. In planning next years 2021 CAP Congress I invite the DPMB membership to propose other theme suggestions for our 2021 program.

Ozzy Mermut, DPMB Chair

DPMB Executives, 2020-2021

Chair
Ozzy Mermut
York Univ.
Email; Website

Vice Chair
Cornelia Hoehr
York Univ.
Email; Website

Treasurer
Melanie Campbell
Univ. of Waterloo
Email; Website

Past Chair
Emily Heath
Carleton Univ.
Email; Website

Message from the Past Chair

We were looking forward to welcoming you in Hamilton this summer and had an exciting DPMB program planned for the 2020 CAP Congress at McMaster University. Unfortunately, due to the COVID-19 pandemic, that was not possible. At the time of writing this newsletter, discussions are underway about planning next year's virtual congress. Our hope is that we can invite many of the speakers that we had planned for this year's congress to next year's version.

The one session that we did run at this year's virtual congress was the DPMB student competition which turned out to be a great success! We had 8 students participating and our division winner, Claire Park, went on to win the overall CAP student oral competition. Congratulations Claire! I'd like to thank Edward Kendall, Daniel Charlebois and Dan Xiao for volunteering as judges for our division student competition and to thank all of you who took the time to listen to either the divisional entrants or the CAP finalists or both. The audience for the students were gratifying large.

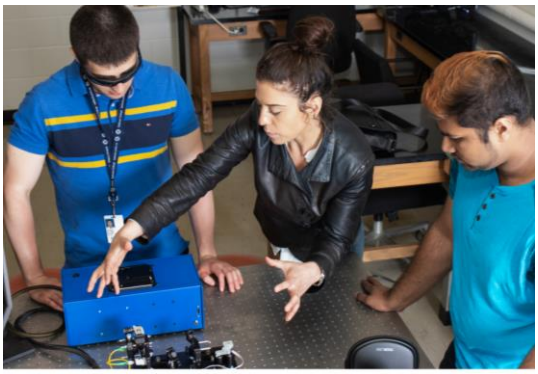
I'd like to welcome Cornelia Hoehr (TRIUMF) to the role of Vice Chair. You may remember Cornelia's excellent talk on 'Cyclotrons for Medicine' at the DPMB 101 session at the 2019 congress. The DPMB Chair role now passes over to Ozzy Mermut (York University). We have decided to profile Cornelia and Ozzy in this newsletter so that you can get to better know your division executive. Melanie Campbell continues to serve as division treasurer. Finally, a huge thanks to Francis Lin for his contributions to DPMB over the past 3 years. Francis has been maintaining the DPMB website and these newsletters were one of his initiatives that he introduced while on the DPMB exec. We wish you all the best Francis and hope to see you at a future CAP congress.

Emily Heath, **DPMB Past Chair**

Profile of DPMB Chair: Ozzy Mermut

Professor in Biomedical Physics at York University, Department of Physics and Astronomy

omermut@yorku.ca
https://omermut.lab.yorku.ca/
https://www.physics.yorku.ca/faculty-profiles/mermut-ozzy/



Ozzy Mermut studied at McGill University, earning a B.Sc. (Honours BioOrganic Chemistry), and a Ph.D. (Optical Materials), completing research with The Centre for Physics of Materials at McGill, and the Canadian Institute for Neutron Scattering in Chalk River. Ozzy then spent two postdoctoral years at U.C. Berkeley and the Lawrence Berkeley National Labs, developing nonlinear optic second harmonic probing of proteins at surfaces. She then joined Canada's National Optics Institute in Quebec City, where as Director of the Biophotonics Research Program, Ozzy lead INO's optical physics research, filing ~10 patents in medical technology development. During this time, Ozzy also worked with the Canadian Space Agency and NASA, developing the Microflow cytometry device taken to the International Space station by astronaut Chris Hadfield. As co-PI she oversaw cytometry at the Soyuz and SpaceX launches in Kazakhstan, and Cape Canaveral, respectively.

In 2018 Ozzy accepted a Faculty Position at York University in Biophysics, and Electrical Engineering and Computer Science. Also working with the Centre for Vision Research, her current research focuses on the development of photonic techniques to investigate biosensory disorders and age-related degenerative diseases for diagnostic, therapeutic, and dosimetry applications.

Profile of DPMB Vice-Chair: Cornelia Hoehr

Research Scientist, Deputy Associate Laboratory Director – Life Sciences, TRIUMF

Adjunct Professor in Medical Physics at University of Victoria and University of British Columbia Okanagan

choehr@triumf.ca

https://www.uvic.ca/science/physics/medicalphysics/people/faculty/profiles/hoehr-cornelia.php

Biography

Cornelia Hoehr earned her M.Sc. in atomic physics at Albert-Ludwigs University in Freiburg, Germany (2001), and her Ph.D. in atomic physics at the Max-Planck Institute for Nuclear Physics in Heidelberg, Germany (2004). During that time she was involved in research at the Max-Born Institute in Berlin and the Australian National University in Canberra, Australia. She then moved as a postdoctoral fellow to the Argonne National Laboratory (2005) before coming to TRIUMF as a postdoctoral fellow in 2006. Taking her background in atomic and nuclear physics, she then transitioned into medical physics and is currently a research scientist at TRIUMF and an adjunct professor in medical physics at the University of Victoria and the University of British Columbia – Okanagen. At TRIUMF, she was the manager of the Proton Therapy facility and she is currently responsible for the research in the Life Sciences division as the Deputy Associate Laboratory Director for the Life Sciences.

Research interests

The overarching direction of my research program is to improve the therapeutic index for cancer therapy, be it via better beam delivery or novel modalities. TRIUMF is a unique research environment in Canada with access to beams of photons, electrons, neutrons and protons, and for many years Canada's only clinical proton therapy facility. I am leveraging this infrastructure to explore improved and novel radiation therapy deliveries. Currently, we are testing new detectors for dosimetry, especially different optical fibers. We are also investigating FLASH radiotherapy with 10 MeV photons as well as 100 MeV protons., where the dose is delivered in only one fraction in less than a second. This holds the promise to reduce the damage to the co-irradiated healthy tissue. In addition, I am exploring novel radioactive isotopes with a heavy emphasis on isotopes for PET, as well as Auger emitters and alpha emitters for Targeted Radiation Therapy.

Life Sciences division at TRIUMF.

DPMB Student Presentation Winners at the 2020 Virtual CAP Congress

DPMB Division Student Oral Presentation Winners

1st Place: Claire Park, Robarts Research Institute
Title: A novel technique for breast lesion targeting under ultrasound-guidance and positron emission mammography localization

2nd Place: Lucas Philipp, University of British Columbia
Title: Kinetics of Capture and Translocation in Salt Asymmetry

Honourable Mention: Kurt Van Delinder, Ryerson University
Title: Particle Neutron Gamma-X Detection (PNGXD) based localization for ion beam radiotherapy

CAP Overall Student Oral Presentation Winners

1st Place: Claire Park, Robarts Research Institute
Title: A novel technique for breast lesion targeting under ultrasound-guidance and positron emission mammography localization

Congratulations to our student winners!

Future events

- 2021 Biophysical Society Meeting (virtual meeting) (February 22-26, 2021)
- 2021 APS March Meeting in Nashville (March 15-19, 2021)
- 2021 Biophysical Society of Canada Annual Meeting in Halifax, NS (May 19-22, 2021)
- 2021 COMP Annual Scientific Meeting in Quebec City (June 23-26, 2021)