WELCOME TO THE 2020 MEDICAL BIOPHYSICS VIRTUAL OPEN HOUSE
MEDICAL BIOPHYSICS VIRTUAL OPEN HOUSE
November 7, 2020
PROGRAM

10:00 am  Welcome & Program Information
Prof Thomas Kislinger, Chair, Medical Biophysics
Prof John G. Sled, Vice-Chair, Medical Biophysics

10:30 am  General MBP Q and A.
Questions related to graduate admissions/MBP summer program.

10:45 am  Welcome/Information from the Medical Biophysics Graduate Student Association
Mr Steven De Michino and Ms Paige Smith,
Graduate Student Association Presidents

11:00 am  Student Experience Panel and Q and A.

11:30 am  Self-Directed Research Poster Display
Participants are free to explore our online research poster display at
https://medbio.utoronto.ca/posters

Posters presented by the following labs:

- Dr. Laurie Ailles
- Dr. Margarette Akens
- Dr. David Andrews
- Dr. Cheryl Arrowsmith
- Dr. Colleen Bailey
- Dr. Scott Bratman
- Dr. Avi Chakrabarty
- Dr. Jean Chen
- Dr. Catherine Coolens
- Dr. Charles Cunningham
- Dr. Ralph DaCosta
- Dr. Christine Démoré
- Dr. Nilesh Ghurge
- Dr. Maged Goubran
- Dr. Simon Graham
- Dr. Benjamin Halbe-Kains
- Dr. Razg Hakem
- Dr. Shane Harding
- Dr. Hansen He
- Dr. Michael Hoffman
- Dr. Mitsuhiko Ikura
- Dr. Marianne Koritzinsky
- Dr. Angus Lau
- Dr. Fa-Hsuan Lin
- Dr. Courtney Jones
- Dr. Rama Khokha
- Dr. Thomas Kislinger
- Dr. Lothar Lilge
- Dr. Benjamin Lok
- Dr. Christopher MacGowan
- Dr. Bradley MacIntosh
- Dr. Mohammad Mazhab-Jafari
- Dr. Brian Nieman
- Dr. Meaghan O'Reilly
- Dr. Linda Penn
- Dr. Gil Privé
- Dr. Thomas Purdie
- Dr. Jüri Reimand
- Dr. Bernhard Ross
- Dr. John Rubinstein
- Dr. Giles Santyr
- Dr. Aaron Schimmer
- Dr. John Sled
- Dr. Vuk Stambolic
- Dr. Bojana Stefanovic
- Dr. Anastasia Tikhonova
- Dr. Olivier Villenmain
- Dr. Alex Vitkin
- Dr. Bo Wang
- Dr. Graham Wright
- Dr. Gang Zheng
- Dr. Arash Zarrine-Afsar
MBP Graduate Program - FAQs

What is Medical Biophysics?
Medical Biophysics is the application of research in the biological and physical sciences to the problems of medicine. The diversity of our Faculty and the abundance of multi-disciplinary projects reflect these objectives. Our laboratories are located in Canada's largest cluster of hospital-based institutes in Toronto.

What is the objective of the graduate program?
Medical Biophysics applies fundamental investigations in the biological and physical sciences to address problems of medicine, cutting across the conventional boundaries of physics, engineering, chemistry, mathematics, biology and medicine. Interdisciplinary research is at the heart of our program, which emphasizes both basic and translational research.

We welcome students from backgrounds in molecular and cell biology, physiology, chemistry, biochemistry, physics, engineering, computer science, mathematics and beyond.

How do I apply?
You can submit your application through the University of Toronto’s School of Graduate Studies (SGS) Online Application website. This is accessible through our website at https://medbio.utoronto.ca/apply Once all components of your application have been received, your application will be processed.

A complete application should include: a letter of intent, two letters of reference, your resume or curriculum vitae, unofficial transcripts and if applicable, an official English language proficiency test score.

Can International students apply to the MBP Graduate program?
The Department welcomes applications from International students and strongly encourages all International students to apply directly to the PhD program. Due to tuition fee differentials, International students accepted to the MSc program will not participate in lab rotations and are required to secure a supervisor before starting in the program.

What is the application deadline for September 2021 admission?
Students are encouraged to submit a complete application by November 19, or January 6, for early acceptance. We will continue to accept applications until March 19, 2021. Alternatively, but less common (~10% of students), applications can also be submitted for a January 2022 start date (deadline is October 1, 2021).

What are the essentials of a strong application?
A strong application combines the following:
1. A minimum average of B+ in the final two years of undergraduate studies (for MSc program applicants) and an average of A- during the entire MSc program (for PhD program applicants). This guideline is flexible, particularly for applicants demonstrating exceptional aptitude for research.

2. Strong reference letters. Choose referees who can comment knowledgeably on your academic performance and aptitude for research.

3. Clear communication in your letter of intent of your research interests and aspirations, academic achievements and research experience. Previous experience in research is certainly an asset but is not required.
How will my application be evaluated?
Applications are evaluated on academic achievement, references and the applicant’s potential for creative research.

Is there a specific undergraduate program that is most suitable for admission to the MBP program?
No. Applicants with a degree in biological or physical sciences are encouraged to apply.

But there must be a program that will best prepare me for MBP.
We find that most of our students entering our program have a science background of some kind. Specifically, we receive many applications from chemistry, biochemistry, medical sciences as well as medicine, computer science and engineering.

Are there any specific courses I should take to prepare myself for graduate studies in your department?
Please see our list of suggested courses (on another handout).

Am I required to find a supervisor before I submit the application?
It is not necessary to have a supervisor prior to applying to the program. Eligible applications are circulated to faculty members who are recruiting for potential graduate students. Students have an opportunity to rotate through several labs before making their final choice.

If a faculty member offers me a position in their laboratory, am I accepted into the program?
No. The Admissions Committee is responsible for the final decision. Applicants will be notified after the interview.

How is GPA calculated?
We will consider your last 20 half-courses completed or 10 full courses equivalent.

Do I have to carry a full-course load every year to be eligible to apply?
No.

Do you require students with research experience?
Generally, students have some research experience by taking a fourth year thesis project course during their undergraduate studies.

Do you offer a stipend?
Yes. For the 2020-21 academic year, all students in the MSc program receive $28,404/year. Students in the PhD program receive $30,687/year. If you receive a competitive scholarship (NSERC, CIHR, etc.), the department provides a ‘top-up’ of $4,000 above the minimum stipend. Success in competitive scholarships can result in substantial increase in your stipend.

Do I need to apply for a scholarship?
If you are applying for graduate studies for Fall 2021, we encourage students to apply for scholarships (CIHR, NSERC, OGS, etc.) for which they are eligible. The deadline to apply for OGS is March 1 (VISA students) and March 26 (Domestic students). For more information, please visit: https://medbio.utoronto.ca/awards-and-scholarships.

How many students are accepted each year?
Generally, 45 students are accepted into the program. Do note, however, that each application is evaluated on its own merit; the Department does not process applications on the basis of any quota.

How many students are currently in the program?
There are currently approximately 255 graduate students in Medical Biophysics.
What is the average time to finish the graduate degree?
Approximately 2.5 years for the MSc degree, and approximately 5-6 years for the PhD degree.

Can I be accepted directly into the PhD program?
If you have an undergraduate degree, we generally would consider you for entry into the MSc program; however, students with an A- average can be considered for direct PhD entry. Direct entry PhD students are required to pass a qualifying exam within the first 18 months of starting in the program.

How can I find out the status of my application?
Applicants are encouraged to periodically login to the School of Graduate Studies online application system to check the status of any outstanding documents such as transcripts and reference letters. Your application will be reviewed only after all of its components have been received.

For specific application-related questions, please contact Ms. Annette Chan at medbio.info@utoronto.ca, or Ms. Donna-Marie Pow at donna-marie.pow@utoronto.ca.

To find out more information about the program and to apply online, please go to http://medbio.utoronto.ca
Rotations - FAQs

What are rotations?
On entry to the Department, students rotate through three labs in order to find the best student - supervisor “fit”.

Can I opt out of rotations?
All students newly admitted to Medical Biophysics participate in rotations. There are very few exceptions.

Can I choose which labs I rotate through?
Yes. You will have an opportunity to specify labs of your choice when you are offered admission. Students can also specify their interest in working with particular faculty members in the online application form.

I would like to work with a specific faculty member. Am I required to participate in rotations?
Yes. When you are admitted, you can specify this faculty member as your first choice for a rotation. After completing your three rotations, you may join this lab if the supervisor agrees to recruit you. In our experience, almost half of the students with a specific lab in mind on arrival ultimately choose a different lab.

How long do the rotations last?
There are three rotations that each last 5 weeks, beginning in September and ending in December.

What if I am offered a position before I have finished all three rotations?
You cannot accept a position in any lab until you have completed all three rotations. Even if you have already determined in which lab you want to work before the end of the third rotation, we ask that you complete all three rotations before you inform us of your choice.

What if I do not want to work in any of the three labs I rotated through?
There is the possibility of completing a final rotation in a fourth lab. If you participate in a fourth rotation, this would become your permanent lab.

What if none of the labs I rotated through agrees to recruit me?
You would complete a fourth rotation and then continue in that lab permanently. If the fourth rotation does not work out, your offer of admission will be withdrawn. This is rare and generally only occurs if unusual issues become apparent with a student.

Do I receive a stipend during rotations?
Yes, all students will receive a stipend during the rotations.
Course suggestions for Undergraduate students with a background in

**Biological Science**

Students with bioscience backgrounds who are interested in graduate studies in the Biology Stream of the Department of Medical Biophysics are encouraged to consider taking some of the courses listed below during their undergraduate years. These courses are not requirements for admission, but they will provide a strong foundation for graduate studies in the Department of Medical Biophysics at the University of Toronto.

Students with backgrounds from outside of the traditional biosciences (e.g. Chemical Engineering, Chemistry, Computer Engineering, Computer Science, Electrical Engineering, Engineering Physics, Engineering Science, Mathematics, Pharmacy, and Physics), who are interested in the Biology Stream of the Department of Medical Biophysics, are also encouraged to apply. It is recognized that undergraduate course requirements for these programs will vary; however, students would benefit from taking a few of the courses listed below.

**First year:**

- Introductory Biology (e.g. from evolution to population genetics)
- Introductory Chemistry (organic and inorganic chemistry)
- Introductory Physics (or Physics for Life Sciences)
- Introductory Calculus (from limits to differentials to integral calculus)
- English Course - Effective Writing (e.g. Eng 100)
- Introduction to Computer Science for non-computer scientists

**Second year:**

- Introductory Biochemistry
- Organic Chemistry
- Inorganic Chemistry
- Physical Chemistry for the Life Sciences
- Vectors, Matrices, and Linear Algebra
- Cell biology/Genetics/Immunology/Microbiology/Physiology
- Statistics (2nd or 3rd year)
- Computer Science for General Sciences
Third year:

- Molecular biology, and nucleic acid structure and function
- Protein structure and function
- Physical Chemistry
- Laboratory course in Biochemistry/Cell Biology/Immunology/Physiology
- Specialized course in Bioscience (see below)

Fourth year:

- Fourth year Research Project
- Fourth year Advanced Laboratory Course in Biochemistry/Cell Biology/Immunology/Physiology
- Two or more specialized courses in Bioscience (see below)

Examples of specialized courses in Bioscience:

Bioinformatics, Biomembranes and Membrane Proteins, Cancer and the Immune System, Developmental Biology, Epigenetics, Infection and Immunity, Innate Immunity, Molecular/Cellular/Genetic Basis of Cancer, Neurobiology, Neurodegeneration, Neuronal Biophysics, Protein Biosynthesis, Protein Trafficking, Radiation and Cancer Biology, Signaling Pathways, Stem Cells in Development and Disease, Structural Biology, Systems Biology, and other related courses.
Course suggestions for Undergraduate students with a background in

**Physical Science**

“All science is either physics or stamp collecting” :)

*Ernest Rutherford, nuclear physicist and 1908 Nobel Laureate*

The above quote notwithstanding, students entering the Physics Stream of the Department of Medical Biophysics (MBP) do so with a variety of academic backgrounds and from various undergraduate programs. These include, but are not limited to, majors in Physics, Chemistry, Computer Science, Mathematics, and Engineering (Engineering Physics/Science, Electrical and Computer Engineering, Mechanical Engineering/Mechatronics, Nuclear Engineering, Biomedical Engineering, Nanotechnology Engineering, etc). Given this excellent diversity which MBP values, prescribing a specific program of study and suggesting particular courses is difficult and may in fact be counter-productive. Instead, we offer the following considerations and guiding principles for undergraduates interested in entering the MBP Physics Stream:

1. Physics is the central underlying theme of this Stream, so maximizing the number and variety of undergraduate physics courses (including advanced ones) is a definite asset.

2. The Physics stream’s emphasis on quantification could be well met by taking some advanced undergraduate courses in mathematics, statistics, and other quantitative / computational sciences.

3. Some specialized upper-year undergraduate courses that may prove useful for the Physics Stream studies in MBP include those that cover topics in Nuclear Physics, Mathematical Methods in Physics, Physics of Medical Imaging, Photonics and Laser Physics, Acoustics, Signal Processing and Image Analysis, Linear Systems Theory, Modeling and Simulation Methods in Physics, and Radiation Physics.

4. It is NOT essential to mix your science/engineering major with “softer” undergraduate courses such as introduction to biophysics, survey courses in medical physics, overviews of medical instrumentation, physics for the life sciences, etc. There will be ample opportunity to acquire relevant expertise during graduate studies in MBP. Instead, we suggest that undergraduate studies be focused on acquiring the core basic science/engineering skills, without “diluting” the curriculum with too many “softer” interdisciplinary offerings. That said, if the core is “solid” as per numbered points above, one or two such courses (or a basic biology / physiology course) may prove beneficial.
MBP GRADUATE APPLICATION CHECKLIST

Complete the SGS Online Application* including the names and e-mail addresses of 2 referees, then upload the following documents:

- Letter of intent (1.5 pages max, 1-inch margins, 12.pt font, single-spaced)
- List of 5 faculty members you are interested in working with
- Curriculum vitae (CV)
- University transcript(s)
- TOEFL scores (Required if final degree was completed at an Institution where the language of instruction and examination was not English)

*An application is considered complete when all documents are submitted, 2 references are received, and the application fee has been paid. All documentation must be submitted and received by the deadline date for the application to be considered complete.

Fall 2021 Admission Dates

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<th>APPLICATION DEADLINE</th>
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Winter 2022 Admission Dates

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For more information about our graduate program, please visit: [http://medbio.utoronto.ca/gradstudies](http://medbio.utoronto.ca/gradstudies)

For more information about admission requirements, please visit: [https://medbio.utoronto.ca/requirements](https://medbio.utoronto.ca/requirements)

To apply to the MBP graduate program, please visit: [https://medbio.utoronto.ca/apply](https://medbio.utoronto.ca/apply)

**Biological Sciences contact**

Annette Chan  
E. acw.chan@utoronto.ca

**Medical Imaging & Physics contact**

Donna Marie-Pow  
E. donnamarie.pow@utoronto.ca
Summer Student Program

We are accepting applications for the 2021 MBP Summer Student Program*. The online application will open on Tuesday, December 1, 2020 and close on Monday, January 18, 2021. The application deadline is Monday, January 18, 2021.

Some areas of research are in:

- Biomedical Imaging
- Cancer Diagnosis & Therapy
- Cancer Mechanisms & Models
- Cardiovascular Sciences
- Data Science & Computational Biology
- Image-Guided Therapy & Device Development
- Neuroscience
- Stem Cells & Regenerative Medicine
- Structural Biology

Eligibility requirements for summer students are:

- At the time you submit the application, you should be in your 1st, 2nd and 3rd year of undergraduate studies.
- If you are a 4th year co-op student and have not completed your program, you can also apply.
- Applicants must have a cumulative grade point average of at least B+ (>77%), preferably greater.

The summer student program runs from May to August and will give you an opportunity to participate in hospital research institute biomedical research. At the end of the program, you will present a poster of your project at the Summer Student Poster Day.

For more information contact Daphne Sears at daphne.sears@utoronto.ca

All applications must be completed online. To find out more information about the program and to apply online, please go to https://medbio.utoronto.ca/how-apply-summer-student-program

* Please note that decisions regarding running the Summer Student program in 2021 will be based on the status of COVID-19 restrictions at the time the program begins.
Vibrant student community

Why MBP? from our grad student perspective

A continuing legacy of scientific impact: stem cells were discovered here!

Student symposium: discuss your work with world-renowned faculty

Interdisciplinary collaborations: between physics and biology, from lab to clinic

Amazing resources: access to world-class facilities and equipment

Have a question?
Ask the students: mbpgsa@gmail.com
http://mbpgsa.ca
Grad school interviews 101: 
The tough (but critical) questions to ask at your interview

Hello, prospective MBP student. We (the MBP grad students association) would love if you want to join our fantastic department – but the most important thing is that you find the right lab/supervisor fit with your own style.

Here are things to consider discussing at your interviews to help you make the most informed choice.

Would you consider yourself more of a ‘hands-on’ or ‘hands-off’ supervisor? Think about what kind of student you will be and try to find a supervisor that will suit your style.

What is your availability like? How often will you and I meet to discuss my progress?

Describe your academic history. Where did you receive your PhD, where did you do your post-doctoral fellowships?

How well-funded is your lab? What journals have you recently published in? Do you expect your students to work weekends and long hours? What about holidays? Some supervisors have strict guidelines on the amount of vacation time per year and this is something you should ask about.

How many conferences can I attend each year? How much financial support will you offer me in this regard?

What is the lab space like?

How many students have graduated from your lab with a Master’s and PhD? What are your former graduate students doing now?

What is the length of time to obtain a Master’s or a PhD in your lab? How many lab members are there? Does your lab have a good social dynamic? Do you have lab social events? Try to meet with someone from the lab, away from the supervisor, to help understand the group you’ll be working with.

There are lots of questions to ask, and the interview is your chance to get informed. Also, don’t hesitate to contact any of us from the MBP Graduate Students Association (via mbpgsa.ca) if you’ve got other questions or concerns.

Good luck! 
http://mbpgsa.ca
mbpgsa@gmail.com