

SELECTED TOPICS IN BIOTECHNOLOGY BIOT 505

Prof. Elias GEORGES

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Biotechnology continues to dominate many aspects of our lives. We depend on biotechnology to feed, heal and power our world. Advances in biologic, biophysical and robotics tools have opened possibilities that are only limited by our imaginations. Stem cell biology, whole genome sequencing, extreme high throughput drug screening, nanotechnology and CRISPR genome editing are the new tools of biotechnology that will transform our food, medicine and energy products. When combined with equally disruptive advances in mass-data analyses, computer power, imaging techniques, robotics and artificial intelligence, new technologic sciences are surly to rise and develop. As implied by the title of this course, BIOT 505 lectures will attempt to capture the new world of biotechnology.

LECTURES

BIOT 505 lectures are structured as 50-80 minutes, 10 minute break, followed by in depth discussion and question and answer period. Students are encouraged to ask questions and discuss the contents of the lectures with each speaker. As some speakers may present unpublished research findings, slides for such lectures may not be posted on MyCourses or recorded. However, students can use their own devices to record any or all lectures. Reading material provided by the lecturer will be posted on MyCourses.

LECTURE TOPICS

Animal models of human diseases
Advanced imaging techniques
Artificial cells
Protein interactions
Plant signaling and the Phytomicrobiome
Environmental biotechnology
Bio-engineered cells

ASSESSMENT

1. Quizzes (10; worth 7.5 points): 75% of final grade.
Short answer format or multiple choice, based in lecture and/or reading content.
2. Final project worth: 25% of final grade.
One-page essay describing an inventive bio-product based on one or more of the lecture materials.

Office Hours

My office is located at the Institute of Parasitology, Macdonald Campus. As such, I do not have fixed office hours, email to make sure I am in the office and drop by. There is a free shuttle between the two campuses.

McGill University values academic integrity. Therefore all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the code of student conduct and disciplinary procedures (see www.mcgill.ca/integrity for more information).

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Fall 2019

Lectures are held in McIntyre Medical Building (MCMED) Rm-1034 on Fridays, from 2:35 PM - 5:25 PM

Course Coordinator: Prof. Elias GEORGES
 Canadian Pacific Chair of Biotechnology
 Institute of Parasitology, Macdonald Campus

Session #	Date	2:35 – 5:25 PM
SEPTEMBER		
1	6	<p>Course introduction & Lecture: Understanding Protein-protein Interactions Prof. Elias Georges Institute of Parasitology, McGill University</p>
2	13	<p>Mouse Models of Human Disease Prof. Michel Tremblay Biochemistry and the GCRC; McGill University</p>
3	20	<p>Zebrafish: A Powerful Model to Study Vertebrate Development & Human Diseases Dr. Babykumari Chitramuthu Experimental Medicine, McGill University</p>
4	27	TBA
OCTOBER		
5	4	<p>Artificial Cells in Biotechnology, Nanobiotechnology and Nanomedicine Prof. Thomas Ming Swi Chang Director, Artificial Cells & Organs Research Centre, Depts Physiology, Medicine & Biom Eng, Faculty of Medicine, McGill University</p>
6	11	<p>Label-free Protein Interaction Analysis Dr. Mark Hancock SPR-MS Facility (Pharmacology), McGill University</p>
7	18	<p>Gut Microbiome Modeling for Human Health: Current Applications and Future Directions Prof. Stan Kubow School of Human Nutrition, McGill University</p>
8	25	<p>Helping Genetic Research Through Guilt-free Gaming Prof. Jerome Waldispuhl Computer Science, McGill University</p>

NOVEMBER		
9	1	<p>Conformational profiling of G protein-coupled receptors using resonance energy transfer-based approaches- applications for drug discovery</p> <p>Prof. Terry Hébert Department of Pharmacology and Therapeutics, McGill University</p>
10	8	<p>Signaling Between Plants and the Phytomicrobiome: Exploitation for Improved Crop Growth</p> <p>Prof. Donald L. Smith Director and CEO, BioFuelNet Canada & Director of MNIBB and ECODI Plant Science Department, McGill University</p>
11	15	<p>Environmental Biotechnology</p> <p>Prof. Lyle Whyte Natural Resource Sciences, McGill University</p>
12	22	<p>Viral Vectors for Cell and Gene Therapy</p> <p>Prof. Amine A. Kamen Department of Bioengineering, McGill University</p>
13	29	<p>Leveraging Big Data and Analytics in Life Sciences</p> <p>Prof. Jianguo Xia Institute of Parasitology, McGill University</p>
DECEMBER		
14	6	<p>Project Submission Deadline</p>