

SELECTED TOPICS IN BIOTECHNOLOGY BIOT 505

Prof. Timothy GEARY

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Biotechnology continues to profoundly influence many aspects of our lives. We depend on biotechnology to feed, heal and power our world. Advances in biological, biophysical and robotics tools have opened possibilities that are limited only by our imaginations. Stem cell biology, whole genome sequencing, extremely high-throughput drug screening, nanotechnology and CRISPR genome editing are 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 technological platforms will surely rise and develop. As implied by the title of this course, BIOT 505 lectures will address the new advances in biotechnology.

LECTURES

BIOT 505 lectures are structured as a 50-80 minute lecture and then a 10 minute break, followed by an in-depth discussion/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 As some speakers may present unpublished research findings, slides for such lectures may not be posted on MyCourses or formally recorded.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 each): 75% of final grade.
Short answer/multiple choice format, based on 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 lectures.

Office Hours

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

Understand these important issues:

*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). In accord with McGill University's Charter of Students' Rights, students in this course have the **right to submit in English or in French** any written work that is to be graded. This does not apply to courses in which acquiring proficiency in a language is one of the objectives.*

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Fall 2017

Lectures are held in Stewart Building, room S3/3* on Fridays, from 2:35 PM - 5:25 PM

Course Coordinator: Timothy GEARY

Tier I Canada Research Chair in Parasite Biotechnology

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SCHEDULE OF LECTURES (subject to change)

Session #	Date	2:35 – 5:25 PM
SEPTEMBER		
1	8	Prof. Elias GEORGES Institute of Parasitology, McGill University
2	15	“Mouse Models of Human Disease” Prof. Michel Tremblay Biochemistry and the GCRC; McGill University
3	22	“Environmental Biotechnology” Prof. Lyle Whyte Natural Resource Sciences, McGill University
4	29	“Zebrafish: A Powerful Model to Study Vertebrate Development & Human Diseases” Dr. Babykumari Chitramuthu Experimental Medicine, McGill University
OCTOBER		
5	6	“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
6	13	“Label-free Protein Interaction Analysis” Dr. Mark Hancock SPR-MS Facility (Pharmacology), McGill University
7	20	“Applications Of Yeast As A Tool For Drug Discovery - Successes And Failures” Prof. Malcolm Whiteway Concordia University
8	27	TBA Prof. Terry Hébert Department of Pharmacology and Therapeutics McGill University

NOVEMBER		
9	3	<p>BioConnect Symposium No Lecture - Students are invited to attend BioConnect symposium, 2017 in Montreal, organized by MSc(Applied) Students in Biotechnology</p>
10	10	<p>“Signaling Between Plants and the Phytomicrobiome: Exploitation for Improved Crop Growth” Prof. Donald L. Smith Director and CEO, BioFuelNet Canada & Director of MNIBB and ECODI Plant Science Department, McGill University</p>
11	17	<p>“Helping Genetic Research Through Guilt-free Gaming” Prof. Jerome Waldispuhl Computer Science, McGill University</p>
12	24	<p>Leveraging Big Data and Analytics in Life Sciences Prof. Jianguo Xia Institute of Parasitology, McGill University</p>