

CHM1059S

Topics in Chemical Biology of Complex Systems

Monday 2-4 pm (except weeks 11, 12)

ES 1016

Instructors: Deborah Zamble deborah.zamble@utoronto.ca
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Web Site: On Quercus

Topics: This course is intended to be highly interactive, focusing on scientific communication (oral and written), critical thinking, and constructive evaluation. Class attendance is expected. There are no prerequisites. This course is intended for students with strong backgrounds in biological chemistry, intending to proceed with doctoral studies.

Proposed Schedule:

<i>Week</i>	<i>Date</i>	<i>Content</i>
1	Jan. 6	Introduction and goals of the course. Topics should be chosen by January 10 .
2	Jan. 13	Communication for a general audience. Discussion of recent media release, mechanics, and delivery
3	Jan. 20	Components of a good research proposal, peer review process and evaluation of a research proposal News article due (email, 5 pm)
4	Jan. 27	Delivering a teaching class Peer critiques of news article due
5	Feb. 3	No class Final news article due (email, 5 pm)
6	Feb. 10	Oral pitch of research proposal ideas (5 min) LOI due Feb. 14 (email, 5 pm)
RW		
7	Feb. 24	--
8	Mar. 2	Teaching classes
9	Mar. 9	Teaching classes Proposals due (email, 5 pm)
10	Mar. 16	Teaching classes Submit peer reviews Mar. 18 (email, 5 pm)
11	Mar. 23*	Peer Review Committee
12	Mar. 30*	Peer Review Committee Final research proposal due April 6 (email, 5 pm)

*Note: Weeks 11, 12 will be 3-4 h each

Marking Scheme:	News article (due Jan. 20/Feb. 3)	: 5+5
	Peer comments (due Jan. 27)	: 5
	Oral pitch (in class, Feb. 10)	: 5
	Summary of proposal (due Feb. 14)	: 5
	Class presentation	: 20
	Research proposal (due Mar. 9/Apr. 6)	: 25
	Proposal reviews (due Mar. 18)	: 10
	Grant panel presentation	: 10
	Participation in discussions	: 10
	Final exam	: none

Penalty for late assignments: 5% per day (weekend days included)

Turnitin: “Normally, students will be required to submit their course essays to Turnitin.com for a review of textual similarity and detection of possible plagiarism. In doing so, students will allow their essays to be included as source documents in the Turnitin.com reference database, where they will be used solely for the purpose of detecting plagiarism. The terms that apply to the University's use of the Turnitin.com service are described on the Turnitin.com web site”.

Absence: If you miss a test or a significant period of class work through illness or a related reason, you should request consideration by submitting a completed University of Toronto Student Medical Certificate, which is available at the Faculty of Arts and Science web site.

<http://www.artsandscience.utoronto.ca/current/forms.shtml>

The document must be presented within one week of the date of the absence. Only serious illness (or equivalent reason) will be accepted as justification for absence (note: the UofT Medical Certificate, filled out by your doctor, stating that you saw him/her on a given day is not adequate. Your doctor must certify that you were too sick to attend the test, etc.) The form of consideration extended for a particular item of missed term work will be explained to you when you submit the certificate.

Email Policy:

- All emails must contain a full student name and be written in english.
- Short questions only. All efforts will be made to return emails within 24 hrs during the week. Detailed questions should be saved for class or face-to-face meetings, which can be scheduled by email. Telephone/skype conversations are also an option if you are not downtown.

Accessibility Needs:

The University of Toronto is committed to accessibility. If you require accommodations for a disability, or have any accessibility concerns about the course, the classroom or course materials, please contact Accessibility Services as soon as possible:

disability.services@utoronto.ca or <http://studentlife.utoronto.ca/accessibility> .

Hope vs Hype

Topic suggestions

Please note that these are just a small selection of possible topics. If there is something else that you would like to learn more about as a topic for these assignments, please discuss it with Deborah or Mark. In addition, most of these topics are very broad, so you will have to decide how to focus your reading and presentation/proposal. Each student will work on a different topic.

Please email your choice by **January 10**, at the latest.

Activity based protein profiling

~~Adjuvants for antibiotic therapy (β-lactamase inhibitors, metal chelators)~~ Horace Huang

Amber suppression

Antibody drug candidates (like keytruda)

Antibody recruiting small molecules (ARMS)

Biomining (extraction based on biochemical or microbial concentration)

~~β-peptides for therapeutic applications~~ Elyse Digby

~~Camelid antibodies~~ Reizel Pejana

~~Cannabinoids~~ Nicole Potter

~~CarT therapy~~ Erica Quilates

~~Checkpoint inhibitors (PD-L1 inhibitors)~~ Karishma Kailass

Combinatorial Chemistry

CRISPR/Cas gene editing Yuju Kim

~~Deuterated drugs~~ Hanlin Liu

~~DNA origami~~ Jamie Bu

Dynamic covalent chemistry for therapeutic discovery or application

~~Fake meat~~ Matthew Tung

Gene therapy

Gleevec

Golden Rice

Machine learning for drug discovery (or some other application)

Metabolic engineering of cellular glycans

Nanoparticles as therapeutics (probably lots of angles)

~~NRPS/PKS derived therapeutics~~ Lila Begovic

ParP1 inhibitors

~~Plastic recycling/digestion (enzymes or microbes)~~ Sarah Bickers

Peptide staples

~~Peptoids for therapeutic application~~ Daniel Szames

~~Phage therapy~~ Keith Tang

Probiotics

Prebiotics

PNA (protein nucleic acid)

PROTACs—Funing Lin

siRNA

Stem cell therapy

Thalidomide/lenalidomide

Zinc finger nucleases