TPCB Chemical Biology Seminar Course 2024–2025

Course Director

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Schedule

Journal Club	Thurs 1:30p – 3:00p (unless otherwise noted)	ZRC-2170
Seminars	as scheduled (mostly Mon or Tue 4 pm)	as scheduled

Remote attendance will be permitted only in cases of illness or quarantine

Overview

Numerous chemical biology seminars in the Tri-Institutional Research Program provide students with exposure to current research topics by leading scientists in the field. TPCB students in the first and second years are required to attend the seminars listed below and to participate in a student-led journal club prior to each seminar.

Two students will lead each journal club and should contact the seminar speaker directly approximately 2-3 weeks before the journal club meeting to request articles that will likely be presented in the seminar. Selections must be approved by the Course Director at least one week prior to the journal club meeting, at which point the presenters will email the articles to the class. One student will present an introduction to the speaker and research area, generally structured around a review article (which need not be written by the speaker). The other student will present a relevant primary research article authored by the speaker. The students leading the journal club will give PowerPoint presentations to stimulate discussion about the research topic and article. The paired students should work together to create cohesive, non-overlapping presentations that are accessible to a broad audience of chemical biology students.

The overview presentation (≈30 minutes plus questions) should cover:

a) Introduction of speaker and list of other key labs working in research area
b) Background and significance of research area
c) Summary of historical progression of research area, including seminal advances
d) Review of Responsible Conduct of Research considerations (see below)

The research article presentation (≈30 minutes plus questions) should cover:

a) Key experimental approaches and techniques used in the paper
b) Critical analysis of data and interpretations (discussion of each figure)
c) Additional and/or future experiments to be considered
d) Analysis of Rigor and Reproducibility of the experiments (see below)
e) Review of Responsible Conduct of Research considerations (see below)

See last page of this syllabus for more advice on preparing presentations.

Rigor and Reproducibility

The research article presentation should analyze whether or not the experiments were conducted in a rigorous and reproducible manner. Application of rigor ensures robust and unbiased experimental design, methodology, analysis, interpretation, and reporting of results. When a result can be reproduced by others, it validates the original results and readiness to progress to the next phase of research. Potential considerations include, but are not limited to:

a) Is the data presented sufficient to support the conclusions stated by the authors?
b) Are alternative hypotheses considered? What positive and negative controls are used?
c) Are appropriate statistical analyses applied to the data? Is the sample size sufficient?
d) Are chemical and biological reagents characterized sufficiently?
e) Is there sufficient detail in the experimental protocols for others to reproduce the work?
f) In animal studies, are biological variables such as sex considered appropriately?

This analysis should be provided throughout the presentation, with a separate summary slide at the end of the presentation, focusing on specific rather than generic issues.

See also: https://www.nih.gov/research-training/rigor-reproducibility

Responsible Conduct of Research

The review article presentation should identify any conflicts of interest that the speaker may have, such as intellectual property, roles or equity holdings in for-profit entities, appointments at foreign institutions, and whether or not this information is accessible on the speaker's website.

The research article presentation should review whether or not the work was conducted responsibly, according to established professional norms and ethical principles.

Potential considerations include, but are not limited to:

a) Is prior work by other labs appropriately cited to provide context for the present work?
b) Is any electronic manipulation of images such as gels specified? Are raw images provided?
c) Are personal, professional, and financial conflicts of interest disclosed?
d) Are suitable laboratory safety, vertebrate animal, and human subject protocols used?
e) Do the research and results have any ethical implications for scientists and/or society?

These analyses should be presented in summary slides at the end of the presentations.

See: https://oir.nih.gov/sourcebook/ethical-conduct/responsible-conduct-research-training

Grading

Pass/Fail based on required attendance at seminars, journal club presentations, and journal club participation when not presenting. Students are expected to ask questions of the speaker during in the question & answer period after each seminar.

Students must notify the Course Director in advance of any absences from journal club and seminars and a makeup assignment must be completed within one week of the seminar date, consisting of a one-page written summary and critical analysis of the primary research paper presented in Journal Club, unless otherwise specified by the Course Director.

Students may not use artificial intelligence (AI) platforms to draft or write presentations or makeup assignments in this course. Students should instead use scientific search engines and the primary scientific literature to develop their presentations and assignments independently.

Schedule

For complete seminar schedules, from which these seminars are selected, see:

Sanders Tri-Institutional Chemical Biology Seminar Series
Tri-Institutional Structural Biology Seminar Series
MSK Molecular Pharmacology & Chemical Biology Seminar Series
MSK Jack J. Fox Lectureship (annual)
MSK David Y. Gin Symposium (biannual)
MSK President's Research Seminar Series
RU Friday Lecture Series

Note that seminar times and locations may change from the initial schedule below. Be sure to refer to seminar announcement emails just before the event for up-to-date information.

All Journal Club meetings will be held in person. A Zoom option will be provided when necessary, only for students who are unable to attend in person due to illness or who are quarantining due to COVID exposure:

https://meetmsk.zoom.us/j/98822780792?pwd=ZaMg8gVMhRnseY83M4zR0IqyWAKwMB.1

Meeting ID: 988 2278 0792
Passcode: 831102

Seminar		Journal Club	
Tu 8/27/24 4:00-5:00 pm MSK RRL-116 (MP&ChB)	**Vidhya Rangaraju, PhD** Max Planck Florida Inst. Neurosci. *Molecular and Structural Adaptations of Brain Energy Supply*	*seminar only (recommended)*	
Th 8/29/24 10-11:00 am MSK RRL-Aud (MP&ChB)	**Rebecca Goss, PhD** University of St. Andrews *Precision Molecule Editing for MedChem (A Game of Bio and Chemo Catalysis)*	*seminar only (recommended)*	
Y1: required *Y2: optional*	**Workshop #1** *How to read a scientific paper critically*	Tu 9/3/24 1:30–3:00 pm ZRC 2170	Derek Tan
Y1: required *Y2: optional*	**Workshop #2:** *The peer review process*	Th 9/5/24 1:30–3:00 pm ZRC 2170	Beth Moorefield
Tu 9/10/24 4:00-5:00 pm MSK ZRC-Aud (President's)	**Alice Ting, PhD** Massachusetts Inst. Technology *Title tba*	*seminar only (REQUIRED)*	

Seminar		Journal Club	
Y1: required *Y2: optional*	**Workshop #3:** *Presenting a scientific seminar*	Th 9/12/24 1:30–3:00 pm ZRC-1670	Derek Tan
Tu 9/24/24 4:00-5:00 pm MSK RRL-Aud (MP&ChB)	**Dustin Maly, PhD** University of Washington *Parallel Methods for Studying Signaling Protein Function and Druggability*	Th 9/19/24 1:30–3:00 pm ZRC-2170	Review: Burdette Paper: Carbone
Mo 9/30/24 4:00-5:00 pm MSK RRL-Aud (Sanders Tri-I)	**A. Sloan Devlin, PhD** Harvard Medical School *Gut Microbial Chemistry in Health and Disease*	Th 9/26/24 1:30–3:00 pm ZRC-2070	Review: Chen, Zhi'ang Paper: Chen, Zirong
Fr 10/4/24 3:30-4:30 pm RU Caspary (Friday Lecs.)	**Michael A. Fischbach, PhD** Stanford University *Title tba*	*seminar only* *(REQUIRED)*	
Mo 10/7/24 10-11:00 am MSK M-107 (MP&ChB)	**Nina Hartrampf, PhD** University of Zurich *New Methods for the Chemical Synthesis of Post-Translationally Modified Peptides and Proteins*	Tu 10/1/24 1:30–3:00 pm ZRC-2170	Review: Goffin Paper: Guo
Fr 10/18/24 3:30-4:30 pm RU Caspary (Friday Lecs.)	**Carolyn R. Bertozzi, PhD** Stanford University *Title tba*	Th 10/10/24 1:30–3:00 pm ZRC-2170	Review: Hoang Paper: Kolodzinski
Mo 10/21/24 4:00-5:00 pm MSK ZRC-Aud (Sanders Tri-I)	**Neal Devaraj, PhD** U. California, San Diego *Making, Breaking, and Traversing Lipid Membranes in Artificial Cells*	Th 10/17/24 1:30–3:00 pm ZRC-2170	Review: Nishikawa Paper: Shi
Mo 11/18/24 TBA pm MSK tba (Gin Symp.)	**Laura Kiessling, PhD** Massachusetts Inst. Technology *Title tba*	Tu 11/12/24 1:30–3:00 pm ZRC-2170	Review: Williams Paper: Cohen
Mo 11/18/24 TBA pm MSK tba (Gin Symp.)	**Gregory Fu, PhD** California Inst. Technology *Title tba*	*seminar only* *(recommended)*	

Seminar		Journal Club	
Tu 11/19/24 4:00-5:00 pm MSK RRL-Aud (MP&ChB)	**Brent Stockwell, PhD** Columbia University *Ferroptosis: Mechanisms and Therapeutic Applications*	*seminar only* *(REQUIRED)*	
Mo 12/2/24 4:00-5:00 pm MSK RRL-Aud (Sanders Tri-I)	**Paula Hammond, PhD** Massachusetts Inst. Technology *Title tba*	Tu 11/26/24 1:30–3:00 pm ZRC-2170	Review: Collado Paper: Davasam
Tu 12/17/24 4:00-5:00 pm MSK RRL-Aud (MP&ChB)	**Danette Daniels, PhD** Foghorn Therapeutics *Targeting Chromatin Regulatory Proteins with Therapeutic Degraders*	Th 12/12/24 1:30–3:00 pm ZRC-2170	Review: Lam Paper: Lee
Mo 1/6/25 4:00-5:00 pm MSK tba (Sanders Tri-I)	**Steven Townsend, PhD** Vanderbilt University *Title tba*	Th 12/19/24 1:30–3:00 pm ZRC-2170	Review: Moyer Paper: Pan
Fr 1/17/25 3:30-4:30 pm RU Caspary (Friday Lecs.)	**Bil Clemons, PhD** California Inst. of Technology *Title tba*	*seminar only* *(recommended)*	
Tu 1/28/25 4:00-5:00 pm MSK tba (MP&ChB)	**Liron Bar-Peled, PhD** Massachusetts General Hospital *Title tba*	*seminar only* *(recommended)*	
Fr 2/14/25 3:30-4:30 pm RU Caspary (Friday Lecs.)	**Jason Chin, PhD** University of Cambridge *Title tba*	Th 2/13/25 1:30–3:00 pm ZRC-2170	Review: Scheib Paper: Scott
Tu 4/22/25 4:00-5:00 pm MSK tba (MP&ChB)	**Michael Taylor, PhD** University of Arizona *Title tba*	Th 4/10/25 1:30–3:00 pm ZRC-2170	Review: Shah Paper: Simon
Mo 4/28/25 4:00-5:00 pm MSK tba (Sanders Tri-I)	**Jack Taunton, PhD** U. California, San Francisco *Title tba*	Th 4/24/25 1:30–3:00 pm ZRC-2170	Review: Strain Paper: Su

Seminar		Journal Club
Mo 6/9/25 4:00-5:00 pm MSK tba (Sanders Tri-I)	**Shiva Malek, PhD** Novartis Insts. for Biomedical Res. *Title tba*	*seminar only* *(REQUIRED)*
tba	**Julio Aguirre-Ghiso, PhD** Albert Einstein College of Medicine *Title tba*	*seminar only* *(REQUIRED)*

General Tips for PowerPoint Slide Design

- Depending on how much material you put on each slide, you should have ideally 15–20 slides (1–2 min/slide) and absolutely no more than 30 slides (1 min/slide)
- Include an outline slide at the beginning of the talk and a summary slide at the end
- Use descriptive slide titles that explicitly state the take-home message of each slide, not just the topic; this can also be done with subtitles, headings, or a summary line
- Develop and use a clean, consistent layout for all slides, titles, text, and figures; proofread slides by reviewing each element for consistency, one at a time
- Use slide master to number all slides in the lower right or left corner for easy reference
- Use color, font formatting, and animation judiciously to emphasize key items
- Avoid layouts that are overly sparse (white space) or overly dense (no space)
- Use at least 14-point font, with larger titles & headings (12-point is ok for references)
- Use hanging indents for bullet lists; use concise phrases instead of full sentences
- Make sure all graphics are clear and readable; redraw structures if necessary
- Do not use the ACS format for ChemDraw structures – for a PowerPoint presentation, structures should be 25–50% larger, with thicker lines, and larger atom labels
- Use regular, 120° bond angles where appropriate for ChemDraw structures

General Tips for Oral Presentations

- Stand up for all presentations; command the attention of the room
- Rehearse your presentation several times prior to your presentation; shorter talks should be rehearsed more times to ensure that you adhere to time limits
- Avoid reciting from notes or text from your slides; memorize your talk and place information on the slides to cue your verbal statements
- Avoid colloquialisms such as: “you know”, “I mean”, “like”, “um”, “ah”, “sort of”, etc.; listen to yourself as you speak to catch and eliminate these phrases
- Use a bright laser pointer, or mouse if presenting online, and guide the audience step-by-step through each component of each slide
- Speak authoritatively and confidently - avoid raising the inflection of your voice at the ends of phrases and sentences, unless you are actually asking a question?
- Be dynamic in your oral presentation and convey your enthusiasm to the audience

Key Online Resources

- Communicating Science: Giving Talks (Burroughs Welcome Fund)
  http://www.bwfund.org/career-tools/communicating-science-giving-talks
- Designing Effective Scientific Presentations (Susan McConnell, PhD)
  http://www.ibiology.org/ibioseminars/techniques/susan-mcconnell-part-1.html
- TED Talk: Talk nerdy to me (Melissa Marshall)
  https://www.presentyourscience.com/