

## TPCB Chemical Biology Seminar Course 2023–2024

### 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 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:

- Introduction of speaker and list of other key labs working in research area
- Background and significance of research area
- Summary of historical progression of research area, including seminal advances

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

- Key experimental approaches and techniques used in the paper
- Critical analysis of data and interpretations (discussion of each figure)
- Additional and/or future experiments to be considered
- Analysis of Rigor and Reproducibility of the experiments (see below)
- 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. The application of rigor ensures robust and unbiased experimental design, methodology, analysis, interpretation, and reporting of results. When a result can be reproduced by multiple scientists, it validates the original results and readiness to progress to the next phase of research.

Potential considerations include, but are not limited to:

- a) Are suitable positive and negative controls used?
- b) Are appropriate statistical analyses applied to the data?
- c) Are chemical reagents characterized sufficiently and appropriate protocols provided?
- d) Is the provenance of biological reagents described sufficiently?
- e) 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.

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 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) Was prior work by other labs appropriately cited?
- b) Was electronic manipulation of any images such as gels described clearly?
- c) Were 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 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 particularly encouraged 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.

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

**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*  
*RU Evin Chemical Biology Seminar Series*  
*MSK Jack J. Fox Lectureship (annual)*  
*MSK David Y. Gin Symposium (biannual, odd years)*

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/94247537401?pwd=RzRuMINvK1V1RUNIV21QZU54MVZ0dz09>

Meeting ID: 942 4753 7401

Passcode: 588155

Seminar		Journal Club	
Y1: required Y2: optional	<b>Workshop #1</b> <i>How to read a scientific paper critically</i>	Th 9/21/23 1:30–3:00 pm ZRC 2170	Derek Tan
<b>Tu 10/3/23</b> <b>10 am-11 am</b> MSK RRL-120 (MP&ChB)	<b>Markita Landry, PhD</b> University of California, Berkeley <i>Imaging Neuromodulation in the Brain with Near-IR Fluorescent Nanosensors</i>	<i>seminar only</i>	
Y1: required Y2: optional	<b>Workshop #2:</b> <i>The peer review process</i>	Th 10/5/23 1:30–3:00 pm ZRC 2170	Beth Moorefield
Y1: required Y2: optional	<b>Workshop #3:</b> <i>Presenting a scientific seminar</i>	Th 10/12/23 1:30–3:00 pm ZRC 2170	Derek Tan
<b>Tu 10/24/23</b> 4:00-5:00 pm MSK ZRC-105 (MP&ChB)	<b>Charlie Fehl, PhD</b> Wayne State University <i>Chemical Tools to Capture and Control Hexosamine Sugar Signaling in Hyperglycemic Disease</i>	Th 10/19/23 1:30–3:00 pm ZRC 2170	Review: Soileau Paper: Banerjee

Seminar		Journal Club	
<b>Tu 11/14/23</b> 11 am-12 pm MSK ZRC-105 (MP&ChB)	<b>Paul Mischel, PhD</b> Stanford University <i>Extrachromosomal DNA (ecDNA): Cancer's Dynamic Circular Genome</i>	<i>seminar only</i>	
<b>Mo 12/11/23</b> 4:00-5:00 pm MSK RRL-116 (Sanders Tri-I)	<b>Philip A. Cole, PhD</b> Harvard Medical School <i>AKTivation Mechanisms</i>	Th 12/7/23 1:30–3:00 pm ZRC 2170	Review: Nambiar Paper: Chen
<b>Tu 1/16/24</b> 4:00-5:00 pm MSK ZRC-105 (MP&ChB)	<b>Jonathan Abraham, MD, PhD</b> Harvard Medical School <i>Dynamic and Multiscale Microscopy to Understand Systemic Cancer Immunotherapy</i>	<i>seminar only</i>	
<b>Mo 2/5/24</b> 4:00-5:00 pm MSK tba (Sanders Tri-I)	<b>Virginia Cornish, PhD</b> Columbia University <i>Expanding the Synthetic Capabilities of Yeast</i>	Th 2/1/24 1:30–3:00 pm ZRC 2170	Review: Wollowitz Paper: Lin
<b>Tu 2/13/24</b> 4:00-5:00 pm MSK tba (MP&ChB)	<b>Sara Buhrlage, PhD</b> Dana-Farber Cancer Institute <i>Harnessing Deubiquitinases for Protein Stability Therapeutics</i>	Th 2/8/24 1:30–3:00 pm ZRC 2170	Review: Spotton Paper: Neugroschl
<b>Tu 2/27/24</b> 4:00-5:00 pm MSK tba (MP&ChB)	<b>Karen Allen, PhD</b> Boston University <i>Leveraging Sequence and Structure to Unravel Specificity in Glycoconjugate Biosynthesis</i>	Th 2/22/24 1:30–3:00 pm ZRC 2170	Review: Pimentel Paper: Soileau
<b>Mo 3/11/24</b> 4:00-5:00 pm MSK tba (Sanders Tri-I)	<b>*POSTPONED*</b> <del><b>Nicholas Thomä, PhD</b></del> <del>Friederich Miescher Institute</del> <del><i>How Transcription Factors Work on Chromatinised DNA (and how to get rid of them)</i></del>	Th 3/7/24 <del>1:30–3:00 pm</del> <del>ZRC 2170</del>	Review: Eum Paper: Burdette
<b>Tu 3/12/24</b> 4:00-5:00 pm MSK tba (MP&ChB)	<b>Pieter Cullis, PhD</b> University of British Columbia <i>Design of Lipid Nanoparticles for In Vivo Delivery of Nucleic Acid-based Drugs</i>	Th 3/7/24 1:30–3:00 pm ZRC 2170	Review: Eum Paper: Burdette
<b>Mo 3/18/24</b> 4:00-5:00 pm MSK tba (Sanders Tri-I)	<b>Susan Marqusee PhD</b> University of California, Berkeley TBA	Th 3/14/24 1:30–3:00 pm ZRC 2170	Review: Carbone Paper: Chen, Z-a

Seminar		Journal Club	
<b>Mo 4/15/24</b> 4:00-5:00 pm MSK tbd (Sanders Tri-I)	<b>Hosea Nelson, PhD</b> California Institute of Technology <i>Mechanical Force, Metabolism, and Cancer Progression</i>	Th 4/11/24 1:30–3:00 pm ZRC 2170	Review: Chen, Z-r Paper: Goffin
<b>Mo 4/29/24</b> 4:00-5:00 pm MSK tba (Sanders Tri-I)	<b>Angela Cacace, PhD</b> Arvinas, Inc. <i>Discovery and Optimization of PROTAC Degradar Molecules for the Treatment of Neurologic Disorders</i>	Th 4/18/24 1:30-2:30 pm ZRC 2070	Review: Pimentel
<b>Tu 5/7/24</b> 4:00-5:00 pm MSK tba (MP&ChB)	<b>Yingming Zhao, PhD</b> University of Chicago <i>A New Family of Metabolite-mediated Lysine Acylation Pathways: Biochemistry, Epigenetics and Pathophysiology</i>	Th 5/2/24 1:30–3:00 pm ZRC 2170	Review: Guo Paper: Hoang
<b>Tu 5/21/24</b> 4:00-5:00 pm MSK tba (MP&ChB)	<b>Brent Stockwell, PhD</b> Columbia University <i>Ferroptosis: Mechanisms and Therapeutic Applications</i>	Th 5/16/24 1:30–3:00 pm ZRC 2170 (Guest Moderator)	Review: Kolodzinski Paper: Nishikawa
<b>Mo 6/3/24</b> 4:00-5:00 pm MSK ZRC Aud (MP&ChB)	<b>Sarah Slavoff, PhD</b> Yale University <i>Dark Matter of the Human Proteome</i>	seminar only	
<b>Tu 6/18/24</b> 4:00-5:00 pm MSK tba (MP&ChB)	<b>Angela Koehler, PhD</b> Massachusetts Inst. of Technology <i>Attenuating Oncogenic Transcription with Small Molecules</i>	Th 6/13/24 1:30–3:00 pm ZRC 2170 (Guest Moderator)	Review: Shi Paper: Williams
<b>TBD</b>	<b>*POSTPONED*</b> <del>Karlene Cimprich, PhD</del> Stanford University		

### **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 spaces)
- Use at least 14-point font, larger for 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 seminar; 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 strong laser pointer, or mouse if presenting online, and guide the audience step-by-step through 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 Wellcome 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/>