

LITERATURE REVIEW COURSE

PROPEL Scholars

August 2024

Claude Chapman

Claude.lesaux@ucsf.edu

EXPECTATION FOR YOU TO US

- Each scholar will be assigned a month in which to present (one time during year 1 of PROPEL program)
- Each scholar will select 3 topics of their choice to present and will accommodate to the best of our ability
- Scholars will work in pair to present the selected article
- The assigned article will be posted approximately on the 15th of the month prior to presentation in advance
- Scientific background will be covered in the 101's
- A TA will assist you to prepare for your presentation
 - Assist is not synonymous of Do
- Evaluation by TA on your preparedness and presentation

EXPECTATION FOR US TO YOU

- Literature Review course is a mandatory event for all scholars in year 1
- A scholar cannot move on to year 2 Propel activities if year 1 is not validated
- It is the scholar's responsibility to contact Claude Chapman, the director (claude.lesaux@ucsf.edu), and Jessica, program coordinator (Jessica.Allen@ucsf.edu) if they are unable to attend with a valid excuse. There are 3 sessions/month and scholar can reschedule to any of them.
- One excused participation for the I01's lectures and two excused participations for Literature Review in-person sessions are allowed

Month	Topic	Key Activities
August	Introduction	<ul style="list-style-type: none"> • Class Zoom meeting: How to critically read and present a paper for journal club • Science Topics 101's: Targeted Genetic Manipulation
September	Targeted Genetic Manipulation (e.g. CRISPR-Cas9, viral targeting, shRNAs)	<ul style="list-style-type: none"> • In Person: Journal club • Science Topics 101's: In vivo disease modeling
October	In Vivo Disease modeling (e.g. transgenic systems, PDX)	<ul style="list-style-type: none"> • In Person: Journal club • Science Topics 101's: Molecular Mechanisms
November	Investigating Molecular Mechanisms	<ul style="list-style-type: none"> • In Person: Journal club • Science Topics 101's: Transcriptomics
December	Break	<p>No Journal Club</p> <p>Happy Holidays!</p>
January	Transcriptomics	<ul style="list-style-type: none"> • In Person: Journal club • Science Topics 101's: Proteomics
February	Proteomics	<ul style="list-style-type: none"> • In Person: Journal club • Science Topics 101's: Structural Biology

SCHEDULE

March	Structural Biology	<ul style="list-style-type: none"> • In Person: Journal club • Science Topics 101's: Advanced microscopy and image analysis
April	Advanced Microscopy and Image Analysis	<ul style="list-style-type: none"> • In Person: Journal club • Science Topics 101's: Artificial Intelligence in Science
May	Artificial Intelligence in Science	<ul style="list-style-type: none"> • In Person: Journal Club • Science Topics 101's: Scientific Integrity
June	Scientific integrity	<ul style="list-style-type: none"> • In Person: Journal Club

STRUCTURE

- Month prior to journal club > 101's
 - 1-hr session
 - Zoom
 - Mandatory
 - To provide information of the topic to help understand and prepare the selected article
- Meeting with TA to review article and presentation
 - Scholar needs to arrive at the meeting with TA with at least an outline of presentation
 - Meet with TA asap
- Session at Parnassus or Mission Bay
 - Presenter must be in the classroom to present
 - 1-hr session

MISCELLANEOUS

- Syllabus is available online
- You'll receive an email from claude.lesaux@ucsf.edu on the 15th of each month including the article and the name and contact info of your TA
- Respond asap to the email from your TA to schedule a meeting to be go over your presentation

HOW TO PREPARE A JOURNAL CLUB SESSION

HOW TO ORGANIZE THE SESSION

- Scholars should plan to present 40 minutes of the journal club hour, leaving some time for questions and discussion.
- Have a PowerPoint/Keynote presentation
- Allocate about **1-2 minutes per slide**. This pace allows you to cover the material thoroughly without rushing, while also leaving room for discussion.
- Given this, for a typical 30-40 minute journal club presentation, you might prepare **15-20 slides**.
- **Title Slide & Introduction:** 2-4 slides
- **Background & Objectives:** 4-5 slides
- **Methods:** 3-4 slides
- **Results:** 6-8 slides
- **Discussion & Conclusion:** 3-4 slides
- **Critical Appraisal:** 1-2 slides
- **Questions & Discussion:** Time allocated for audience interaction (remaining time)
- This structure keeps the presentation focused and allows for in-depth discussion, which is a key part of a journal club meeting. Adjust the number of slides depending on the complexity of the study and the time allotted for your presentation.

THE ARTICLE

- A well-written published article every month.
- Represents an important advance in this field of research.
- Will be provided on the 15th of the previous month of your assignment
- Both 101's instructors and TAs will have received the selected article

JOURNAL CLUB PRESENTATION FORMAT

Title Slide

1. Title of the article
2. Authors, journal, and publication year
3. Your name and date of the presentation

Background & Rationale

1. Brief overview of the topic
2. Importance of the study (why this research is needed)
3. Research question or hypothesis

Study Objectives

1. Clearly state the primary and secondary objectives of the study

Methods

1. Study design (e.g., RCT, cohort, case-control)
2. Population/sample (inclusion/exclusion criteria)
3. Interventions/exposures and controls
4. Data collection methods and tools
5. Statistical analysis (key tests used, significance levels)

Results

1. Key findings (primary outcomes first)
2. Use figures, tables, and graphs to illustrate data
3. Subgroup analyses, if applicable

Discussion

1. Interpretation of results (what do the findings mean?)
2. Comparison with other studies
3. Strengths of the study (e.g., robust design, large sample size)
4. Limitations (e.g., biases, confounders, small sample size)

Conclusion

1. Summary of key points
2. Future research directions suggested by the study

Critical Appraisal

1. Evaluate the scientific soundness (study design, methodology, statistical analysis)
2. Discuss any potential biases or conflicts of interest
3. Assess the relevance and applicability of the findings

Questions & Discussion

1. Open the floor for questions
2. Facilitate discussion on the study's implications and limitations

References

1. List of key references, including the article presented and any other important sources

PART I: BACKGROUND AND RATIONALE

1. Who are the authors?
2. Consider the title of the paper, the authors and their affiliated institution(s).
3. Are there any outstanding features, e.g. a first study of its kind, a well-known author or institution? What is the impact factor of the journal? What is the circulation (i.e. regional, national or international) and who is the readership? Try to ignore the abstract initially. Reading the author's stated conclusions before forming your own ideas about the validity of the paper may influence your appraisal.
4. What is the research question? Is it well constructed? Does it observe the four basic components (PICO) of a good research question? (Van Loveren and Aartman, 2007).
 - a. Population – who was studied?
 - b. Intervention – what was the intervention tested?
 - c. Control – what was the alternative that the intervention was compared to?
 - d. Outcome – what was the nature of the outcome measured?
5. As literature review course attendees will have a wide range of experience and expertise, the presenter should provide a background to the chosen article at the beginning of their presentation.
6. A third of the presentation time can be spent on the background.
7. The background should give the article context within its field and familiarize the audience with the relevance of the research being presented within the article.

PART2: METHODS

1. Study design
2. Explain any non-standard techniques
3. Knowledge of basic scientific techniques within the audience should be assumed, however any specialized scientific or research techniques should be explained (to be discussed with TAs)

PART3: RESULTS

Key Findings

- Summarize the main outcomes of the study
 - Covering every figure within the article is not required, particularly articles with extensive online supplements
 - For each figure select the most valuable panels to be presented and summarized the data not selected
 - Highlight significant results (p-values, effect sizes)

Figures & Tables

- Select the most relevant figures/tables
- Explain what each figure/table shows
- Point out trends, patterns, and anomalies

Limitations & Uncertainties

- Acknowledge any limitations in the results
- Discuss any uncertainties or unexplained findings
- Consider the quality of the data and whether or not it supports the authors' conclusions

PART 3: SCIENTIFIC SOUNDNESS

- **Study Design**
 - Type: Randomized Controlled Trial (RCT), Cohort, Case-Control, etc.
 - Appropriateness for the research question
- **Sample Size & Population**
 - Adequacy of sample size (Power analysis)
 - Representativeness of the study population
- **Methodology**
 - Clear, reproducible methods
 - Proper controls and blinding
 - Data collection and handling procedures
- **Statistical Analysis**
 - Correct statistical tests used
 - Appropriate handling of confounders and biases
 - Transparency in reporting (p-values, confidence intervals)
- **Data Integrity**
 - Consistency and accuracy of the data
 - Handling of missing data
- **Reproducibility & Validation**
 - Reproducibility of results by independent studies
 - Validation of findings through additional experiments

PART 4: DISCUSSION AND TAKE-HOME MESSAGE

1. Summarize important findings
2. Discuss authors' conclusions and whether the data support them
3. Put conclusions in context of future research
4. Be prepared to answer questions