



A. Course Overview

I. Course Objectives:

- ❑ Develop your ability to determine the value and relevance of the original literature in biochemistry. This will be accomplished by in-depth exploration and oral presentation of a recent scientific paper.
- ❑ Practice in preparing and presenting an oral presentation. This is an essential skill for a successful career in biochemistry and other fields. You will often be judged on the basis of your ability to speak to a group.
- ❑ Begin doing groundwork for your Senior Thesis (BC499).

II. Class Schedule:

Duration: Jan 18, 2022 - May 08, 2022.

20-Jan	No class: Read syllabus, Instructions
27-Jan	Lecture: Delivering an effective presentation
3-Feb	No class: Finalize papers
10-Feb	Student Talks [2 presentations/class]
17-Feb	Student Talks [2 presentations/class]
24-Feb	Student Talks [2 presentations/class]
3-Mar	Student Talks [2 presentations/class]
10-Mar	Student Talks [2 presentations/class]
17-Mar	No class: Spring Break
24-Mar	Student Talks [2 presentations/class]
31-Mar	Student Talks [2 presentations/class]
7-Apr	Student Talks [2 presentations/class]
14-Apr	Student Talks [2 presentations/class]
21-Apr	Student Talks [2 presentations/class]
28-Apr	Student Talks [2 presentations/class]
5-May	Student Talks [2 presentations/class]

III. Grading:

1. **Abstract of presentation (20%). Due the day BEFORE your presentation** (by e-mail). One page, ≤ 500 words, *with your own title, and written in your own words*. Include a list of all the literature you plan to use. It will be graded for spelling and grammar, as well as content, organization, and proper references.
2. **Presentation (60%).** Must be based on a peer-reviewed research article from the **primary literature** (not a review article), with supporting papers (including review articles) to introduce and give perspective to the topic. Each presentation should be ≈ 20 -25 minutes, followed by few questions from the audience.

You will be graded on:

- ❑ Content of the presentation:
 - Understanding of the topic **(15 pts)**
 - Appropriate introduction and background **(15 pts)**

- Discussion of methods and results (**15 pts**)
 - Conclusions (**5 pts**)
 - Quality of the presentation: (**10 pts**)
 - Delivery (More schematics and Figures, very few words/sentences)
 - Slide interaction (Use Animations to discuss one part at a time)
 - Visual aids/quality of slides (not too busy, good use of bulleted points, etc.)
 - Length of the presentation:
 - Keep your talk between $> 20 - 25 <$ minutes. *If too short or lengthy, 5-10 pts will be deducted.*
- 3. Presentation evaluations (20%).** You are required to evaluate each student presentation (except yours) and provide feedback by email. Your name and the speaker's name must be at the top of each form. Do not simply say it was great or poor. You need to provide constructive criticism, how can he/she improve.

Traditional letter grades (A to F) will be assigned. The individual class assignments will constitute the total percentage of your final grade as indicated above. *5 points will be reduced for every unexcused absence.*

B. Instruction for Individual Sections

1. Abstract of presentation (20%):

You must write a 1-page, ≤ 500 words abstract that contains the following bulleted-points:

1. Your name, date, and your title of the presentation [Not included in the word-count]
2. A short description of the general research problem (**5 pts**)
3. Why you thought this paper was important to discuss (**5 pts**)
4. A brief synopsis of the results (**5 pts**)
5. A brief conclusion (**5 pts**)
6. List the reference for the main paper(s) that you will be discussing [Not included in the word-count]

The abstract must be in your own words – not the abstract of the paper you select.

The abstract should be tailored towards a general audience (easy to understand even without background information). Use a short, general title (not the title of your selected research paper or review article).

Cite the reference of your paper(s) in the following format:

Authors, Year, Title, Journal name, volume: inclusive page numbers. For example: Robzyk, K., Recht, J. and Osley, M.A. (2000). Rad6-dependent ubiquitination of histone H2B in yeast. *Science*, 287:501-504.

Your abstract must be emailed to me (soham.chanda@colostate.edu) at least a day prior to your seminar.

2. The paper presentation (60%):

- Note that you will present a primary research article with experimental results, not a review paper.
- Only present a work that uses biochemistry, cell biology, or molecular biology approaches; stay away from clinical research, population study, environmental research, behavioral study etc. (for this class).
- First, select presentation topic based on a biological question that truly interests you! *Very important.*
- Your paper must be from a high-quality peer-reviewed journal and should not be older than 5 years.
- However, perhaps the easiest way to find a presentation topic is by reading well-written review articles first. The reviews are usually written to highlight a recent paper of particular significance. You should start by reading recent review articles in the “News and Views” sections of journals like *Cell*, *Science* and *Nature*. Other excellent journals with reviews include: *Nature Cell Biology*, *Nature Neuroscience*,

Cell Stem Cell, Nature Biotechnology, Nature Methods, Nature Medicine, Neuron, Science Translational Medicine, Molecular Cell, Journal of Neuroscience, Cell Reports, PNAS, Nature Communications, Stem Cell Reports, eLife, EMBO, Journal of Biological Chemistry, Journal of Cell Biology, the Current Opinion journals, Trends in Biochemistry / Cell Biology / Biology / Genetics, Current Biology, The Scientist etc.

- Find reviews and primary research articles using Pubmed: <http://www.ncbi.nlm.nih.gov/pubmed/>
- You will prepare a PowerPoint presentation on the selected topic. The research article will provide the basis for your talk; the review papers may help provide introductory information and major questions.
- Pay attention to the length of your primary paper. Some very short 'letters' (as commonly published in Science and Nature) may not provide enough material. A good way to check for this is to look at total number of figures. The selected paper should contain at least four, multi-panel figures. Do not present all panels of a figure on one slide – split them in multiple slides – keep all slides simple and uncluttered.
- Pay close attention to the time it takes to give the presentation. A general rule of thumb is about 1 minute/slide, but it can be highly variable depending on the content of the slide.

3. Seminar Evaluation (20%):

[Use the following format, a copy of this is also available in course materials. **Upload in Canvas Assignment**]

Speaker's Name: _____

Your Name: _____

Please be honest! If you didn't follow the talk, say so. It's not a reflection of your knowledge; it's also the lack of a speaker's ability to efficiently communicate the big picture/experimental details/major conclusions, etc.

State at least two aspects of the talk that you really enjoyed:

State at least two aspects of the talk that you think could be improved:

Ask one question about the talk that requires clarification, or just curiosity:

C. Some Tips on Preparing & Presenting

1. General Considerations:

I. Content:

- Realize that different people have different perspectives and understanding of your topic. You must target your presentation to a broad audience. If you don't, you will lose your audience midway.
- Make sure that you actually understand the article you are presenting. Don't simply reiterate points from the paper, don't simply repeat/memorize conclusions. Make sure that you follow the author's arguments; make sure that the data supports the conclusions, if there is any alternative hypothesis.
- Bridge from simple background knowledge to complex experimental details, results, and conclusion.

II. Presentation style:

- State the significance (big picture) of the research in the beginning, and highlight throughout.
- Your excitement or boredom about a subject tends to be highly contagious to the audience.
- Establish communication with the audience, make eye-contacts with them while presenting.
- Speak freely; try not to read from your notes. Interact with each slide, and the audience.
- Practice good voice projection, tempo and tone. Speak slowly, articulate your points clearly.
- If you feel relaxed and at home 'on stage', your audience will enjoy what you are saying.
- Avoid speech mannerisms such as "um" → record yourself or ask a friend to point them out.
- Don't talk too quietly, or mumble. Project your voice loudly (don't yell either), and confidently.
- Avoid high usage of acronyms. If cannot be avoided, at least make certain that you define them. Acronyms often tend to be a major problem with most student presentations.
- Don't go overtime or undertime – it generally means that you should have taken more time on the introduction, or that you didn't explain the results thoroughly, or discuss why your topic is relevant.

III. Visual aids:

- Font size: stay close to the default sizes in the Power Point template. Don't mix fonts if possible.
- Information content: Don't make too many points per slide. Attention will drop if you present your audience with overloaded, busy slides. Just make an additional slide. Bulleted points should be short.
- Slide style: Don't use a busy slide background. Keep it simple.
- Slide title: Remember that the title is the most valuable 'real estate' on your slide. Make it count – I prefer titles that are a statement of the result or a summary of what you are showing in the slide.
- Use pictures/symbols/diagrams, rather than text, wherever possible.
- Vary your visuals. Follow text slides with graphics, etc. if you can.
- Animations: Use animations wisely to make your points flow well, but don't get carried away.
- Use the original figures from your paper and pay close attention to image resolution. Make sure they don't appear blurred. See me if you have problems obtaining high resolution. I will discuss this in class.
- A good rule of thumb: For a 30-minute talk, prepare 20-25 slides (depending on the content per slide and speaking pace). If you have more slides than minutes available for your talk, you may be in trouble.

2. Format of the presentation:

The general outline of a scientific talk is as follows:

- Introduction: Provide a broad Introduction that funnels to the specific question that will be addressed in the paper, and why it is relevant. Introduce and clearly describe the goals of the research.
- Results: Start each slide with a question. Describe the rationale. Slowly walk your audience through results. Clearly state the conclusion of each experiment, and how it addresses the question you raised.
- Conclusions and future directions: Have at least 1-2 slide(s) that summarizes the findings of the paper, how it impacts the field, etc. Another slide that suggests potential future directions for the research.

- Citations: A list of all references used.

Think of the presentation as telling a story. Scientific experiments generally follow logical arguments. Explain why certain tests were done; find the 'logical thread' in a series of experiments. Good science is often like a good detective story. The best talks tell an interesting story that excites and thoroughly engages the audience.

➤ **Introduction**

- You need to develop sufficient background for the general listener to understand your talk.
- Better to over explain and have all your audience appreciate the importance of your topic rather than to confuse a portion of your audience with jargon and/or technical speech. Properly introduce the important concepts, what are the major questions, and how your paper is going to address them.

➤ **Results**

- Progress smoothly into a discussion of the experiments in the original paper. Prior to showing each experiment, you may want to introduce the methods, and remind the audience why it is important.
- Describe the data using original figures. Do not include the figure legends from the paper. They are not made for this format. Slowly 'walk' the audience through an experiment, explaining what was done.
- It is important to intermittently remind the audience of the "big picture".

➤ **Conclusions and future directions**

- Review the major points of your talk ('Take home lesson'). Come back to the main question/hypothesis stated in the Introduction. What did we learn from this study? What are the future directions?

➤ **Citations/references**

- As a final slide, list your references. Give their full citation, including authors, paper title, year etc.
- For material taken from the web, try to be as descriptive as possible. Give the title of the website, etc.

3. Combating nervousness:

There is no remedy for stage fright, it is perfectly normal. It happens/happened with all of us, but eventually goes away with more practice. You can manage it and make less noticeable by using the following tricks:

- ⇒ Know your subject matter
- ⇒ Be prepared (practice, practice, practice!)
- ⇒ Have EXCELLENT slides
- ⇒ Know your transitions from one slide to the next
- **Practice** your talk out loud at least three times. Record your presentation using your phone, then listen to yourself carefully. This helps to eliminate filler words. Practice in front of friends.
- **Practice again... And again.** Make sure you know what point you want to make with each slide.
- Know your transitions. Identify something on each slide that will remind you of your next slide.
- Have the first few sentences of the introduction well-rehearsed. It gets easier once you are underway.
- Good breathing techniques work wonders against nervousness.
- Familiarize yourself with the room. Picture the seats filled with people smiling at you.