Hypothesis:

Participation in Journal Club is an important part of your graduate education

Goals for today

- Review the purpose and format of Journal Club
- Overview global strategies to give effective presentations
- Discuss “what does it mean to critically analyze a paper” and strategies to effectively present your critical analysis
- Illustrate strategies with an example journal club presentation

Purposes of Journal Club

- To fulfill a mandatory requirement of the Immunology Grad Program ☺
- To learn about new areas of immunology and gain exposure to recent important advances
- To develop critical thinking skills
- To improve communication skills - learn how to effectively present and stimulate discussion
- Journal club provides several ways to learn: 1) content learned during preparation for your own presentation, 2) practice preparing/delivering effective presentations, 3) content learned as an audience member, 4) scientific interactions/discussion during question/answer – exposure to variety of opinions

Presentation format (adapted from Immunology webpage)

- ✓ **study rationale & questions** (include sufficient introductory/background information to explain)

- ✓ **research hypothesis**

- ✓ **results** – for each figure being presented include:
  - ✓ specific question being asked
  - ✓ experimental methods/design used (What does the assay readout measure? What variables are being manipulated? What are the positive and negative controls?)
  - ✓ data/results generated (statistics used?)
  - ✓ conclusion (was the question fully/partially answered?)

- ✓ **summary** (could provide one final summary or summarize each section)

- ✓ **significance/impact of research** (what is the new contribution)

- ✓ **critical analysis** (could provide throughout presentation and/or outline at the end)

General Guidelines (adapted from Immunology webpage)

- ✓ Limit the amount of text per slide
- ✓ Use a sans-serif font with size >12 pt. for easy viewing
- ✓ Use colours and figures which are easy to see when projected
- ✓ Practice often!
- ✓ Present in a clear, loud voice and do not rush
- ✓ Engage your audience with eye contact and be conscious of their presence
- ✓ Give audience time to take everything in on each slide
- ✓ Pause before transitioning into a new thought

General Guidelines 2

How to Give Better Talks: Eight ways to improve your biomedical research presentation by David Rubenson, *The Scientist* website, October 2013.

> this is excellent, read it!

Figure out what you can achieve

> remember your time frame, decide what aspects of the paper you can present well in this time

Consider your audience

> introduce the potential significance of the study with your audience in mind – what concepts / models / techniques may have broad interest?

Organize the story—build it up, don't cut it down

A critical mistake is to start with a mountain of data and ask, "What can I cut?" Everything seems essential. Instead, **identify the core message** and build up according to the available time and level of audience expertise.

Strategy to do this:

Before opening PowerPoint read the paper carefully and write yourself some notes on what background and context you'll need to present, the overarching question, the experimental design etc.

> re-read as many times as needed

> do background research to better understand the research question / methods

Note slide presentations can evoke fragmented thinking; we first need to have sense of the purpose and message of the entire presentation before diving into the details and obsessively pointing and clicking

Adapted from: How to Give Better Talks: Eight ways to improve your biomedical research presentation by David Rubenson, *The Scientist* website, October 2013.

Help the audience deal with information overload

Include only **one overarching message per slide** and use the title to convey that message.

Ideally, include no more than one graph per slide. Label axes clearly. Take a few seconds to explain each axis as you are pointing to it.

Don't include complex tables/figures with lots of unreadable data. Figure out the message that data is meant to convey and make a slide to deliver that message.

Don't over-decorate. Every unnecessary item distracts the audience. Logos or colored backgrounds don't help you communicate with the audience. Color is a strategic tool that can display different categories of information.

Adapted from: How to Give Better Talks: Eight ways to improve your biomedical research presentation by David Rubenson, *The Scientist* website, October 2013.

Journal Club specific guidelines

(adapted from Immunology webpage)

- ✓ Read background papers as needed to familiarize yourself with the field of research
- ✓ Understand the methodology and the experimental design
- ✓ It is not necessary or advisable to present EVERY figure or table to communicate the results of the study
- ✓ Plan to be interrupted - time your presentation for 30min, leaving 15min or more for Q&A
- ✓ Being critical doesn't mean being negative – point out both strengths and weakness and give the authors credit for interesting/creative/well-controlled/informative experiments

Critical analysis

Critical analysis does not mean simply a few critiques of specific data pieces

- Its primarily about providing a clear analysis of the author's biological questions/hypotheses within the context of current knowledge/literature

- Assessing how well the questions were answered - major conclusions/model and reflections on the specific evidence supporting the conclusions

- Thus critical analysis comes at the beginning and the end (and often along the way while assessing the specific evidence/experiments)

Introducing the paper

Clearly state the over-arching question(s) and specific sub-questions

- In order to understand and communicate these aspects you need to introduce the specific molecules/cells/process/disease context under study
- Introduce the major type(s) of methodology that will be used
- Critical analysis: For papers with large amounts of data, choose which parts you consider critical to examine in detail and which parts you will briefly summarize (tell your audience up front)
- Critical analysis: "What is currently known and unknown regarding the question"?
- Critical analysis: "Why is this an important and novel question"?
- Critical analysis: "What gaps in our understanding do the authors aim to fill"?

Evaluating the evidence

- Were there multiple lines of evidence supporting the major conclusion or a single experimental approach?
- Does their model system accurately reflect normal biology or the actual disease state?
- Were appropriate controls used?
- Are there alternate explanations for their results?
- Were there major “missed opportunities”?

Evaluating the conclusions

- How well does the specific evidence support the specific conclusions?
- What parts of the over-arching question(s) were answered and what remains to be answered?