Hauber Summer Research Fellows

Introduction to Science Writing
The Loyola Writing Center

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Lots of Questions

How to give a scientific presentation...
How to write a scientific paper...
How to develop an abstract...
How to use APA style...
How to use/generate a rubric for peer review of presentations?
How To Give A Research Talk

The Writing Center acknowledges materials graciously provided by Dr. J. John Cohen, U of Colorado School of Medicine
If Your Work Is Good, You Look Good

• First, spend your energy on the best explanation of the work, then worry about the elegance of the power point.

• Be organized
• Be articulate
• Start/finish on time
• Practice before hand!
• Explore university templates
What Should I Present?

• Tell the story of your research.
• A short talk reveals what you wanted to do, what you did, what happened, what it might mean, and maybe, where you go from here.

Stories Share A Common Shape

Exposition
Rising action
Climax
Falling action
Denouement
Begin With Review

• Audiences appreciate having the background explained.

• It helps people remember your talk if you review the necessary concepts and key terms before you dive in.
Where Should I Focus?

• Save extra time to discuss the implications of your results.
• Don’t dwell on methods unless they are novel or unique.
  – Be succinct: “We stained the cells of the onion with iodine. If they are positive they look like this [photo A], if they are negative like so [photo B].
• 3 points that people remember are better than 12 they forget. Don’t try to do too much!
### Example of Research as a Story

<table>
<thead>
<tr>
<th></th>
<th>Narrative Flow</th>
<th>Specifics for talk</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Context</strong></td>
<td>There is a problem in the world</td>
<td>Each year in the US 70,000 people are hospitalized with food poisoning, and 6,000 die.</td>
</tr>
<tr>
<td><strong>Rising Action</strong></td>
<td>We made a pertinent observation when thinking about the problem:</td>
<td>Many cases seem to be caused by <em>Bacillus cereus</em>, which makes an unfamiliar toxin.</td>
</tr>
<tr>
<td><strong>Challenge</strong></td>
<td>This made us wonder:</td>
<td>if it triggers a pathway we can block?</td>
</tr>
<tr>
<td><strong>Methods</strong></td>
<td>The method we used to see was:</td>
<td>Flow cytometry (illustrated) and a DNA fragmentation assay (diagrammed)</td>
</tr>
<tr>
<td><strong>Climax</strong></td>
<td>And we found:</td>
<td>It induces apoptosis in femtomolar concentrations!!!</td>
</tr>
<tr>
<td><strong>Falling Action</strong></td>
<td>That matters because ...</td>
<td>That is one toxic molecule. It doesn’t take much to kill you.</td>
</tr>
<tr>
<td></td>
<td>And because ...</td>
<td>Ingestion of the toxin causes lethal apoptosis in mice, but it can be blocked with genistein</td>
</tr>
<tr>
<td><strong>Denouement</strong></td>
<td>Our next steps will be:</td>
<td>Find out which cells are the target in vivo and see if this could be applied to humans.</td>
</tr>
<tr>
<td></td>
<td>“Thank you very much.”</td>
<td></td>
</tr>
</tbody>
</table>
Notes on PowerPoint

• Plan on one slide per two minutes of allotted time as a general rule, especially if you are reviewing data.

• **Save time for questions** at the end.

• Fonts should be 20 point or larger.

• Images should be no larger than 800x600.
Pro Tips

• Practice before hand, in the room if possible.
• Have a back up of the presentation in the cloud, in your email, on a thumb drive, etc.
• If possible bring paper copies of your presentation in case of technical failure. They also make nice handouts for note-taking.
• Leave the audience with a S.T.A.R. “Something They will Always Remember.”
Research Writing

• Structure: I (Intro) M (Methods) R (Results) A (Analysis) D (Discussion) = “IMRAD”

• IMR are fairly formulaic, analysis and discussion are more challenging and stress creative/critical thinking.
  – Analysis means identifying potentially meaningful patterns in the data.
  – The discussion looks closely at the data for/against each different, significant possible meaning—and it usually does so while locating that argument in the context of current existing research.

• Explore guides: https://writing.colostate.edu/guides/guide.cfm?guideid=83
Abstracts

• Since we are on the internet let’s look at one of the many excellent “libGuides” available on composing scientific abstracts.

• [https://libguides.usc.edu/writingguide/abstract](https://libguides.usc.edu/writingguide/abstract)

• Important: You write the abstract after the paper is done.
APA Style

• So many resources exist online. Many YouTube Videos walk you through how to set up Microsoft Word for APA Style.

• The Writing Center collects useful links: https://www.loyola.edu/department/writing-center/resources/apa-style

• Writing Center tutors will also help you review and help you learn to use the book and/or online resources.
## Presentation Rubric

<table>
<thead>
<tr>
<th>Categories</th>
<th>Qualities Assessed</th>
<th>Excellent</th>
<th>Good</th>
<th>Fair</th>
<th>Needs Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audience</td>
<td>Verbal presentation, Body language</td>
<td>Maintains eye contact, stands confidently, speaks authoritatively and clearly</td>
<td>More so</td>
<td>Less so</td>
<td>Reading from notes/slides; hard to hear; uses 'um' or 'like' as a crutch; shows nervous tics</td>
</tr>
<tr>
<td>Engagement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Confusing in parts, questions about accuracy, lacking continuity</td>
</tr>
<tr>
<td>Content</td>
<td>Smart, relevant, stimulating</td>
<td>Accurate, current, on point, witty, and surprising</td>
<td>More so</td>
<td>Less so</td>
<td>Confusing in parts, questions about accuracy, lacking continuity</td>
</tr>
<tr>
<td>Slides</td>
<td>Aesthetic and functional design</td>
<td>Clear and effective use of bullets, color, images, transitions, balance of white space</td>
<td>some inconsistency; longer text starts to creep in; some graphics and color</td>
<td>mostly text, full sentences, bland design, lack of transition</td>
<td>very wordy, black and white, hard to follow</td>
</tr>
<tr>
<td>Energy Level</td>
<td>Passion for subject matter</td>
<td>Enthusiastic</td>
<td>More so</td>
<td>Less so</td>
<td>Monotone, soft voice</td>
</tr>
<tr>
<td>Time Management</td>
<td>Group Planning and rehearsal</td>
<td>Spot on for 10 minutes</td>
<td>w/in 1 or 2 minutes</td>
<td>+/- 2-5 minutes</td>
<td>Off by 5 or more minutes</td>
</tr>
</tbody>
</table>