Chapter Twelve: Oral Presentations

While public speaking remains the #1 fear of people, it will likely be something you will encounter in your scientific career as you are asked to present your research/work to different groups of people. Nervousness related to public speaking is not only prevalent in novice scientists, but it often affects experienced speakers, no matter how often they have to give presentations. However, everyone can improve their effectiveness as a presenter of scientific information with proper assessment and practice and even become more comfortable speaking for groups of people. Many people benefit from attending Toastmasters’ Groups where you can learn and practice presentations skills in a gradual way with others who want to improve their public speaking skills. You’ll even meet interesting people.

General Pointers for Effective Speaking

1. All talks are persuasive in nature although with some talks it is more obvious. The level of emotion you demonstrate in your presentation will vary depending on the type of talk and the audience.

2. Different talks have different goals. Know what effect(s) you desire to elicit: communicating knowledge, swaying an opinion, encouraging an action.

3. Your talk must be developed for the audience and setting. Knowing the age, size and familiarity of the audience helps you assess the content and style of your presentation.

4. Different presentation styles are effective with different audiences

5. If the talk is long, 30-60 minutes, use a variety of visual aids or approaches.

6. You need to know what you’re talking about, but you don’t need to have all of the answers. Acknowledge when you don’t know something; don’t apologize.

7. Pay attention to timing. It is rude and unprofessional to go overtime, except in unusual circumstances.
A Very Long Talk – A Very Receptive Audience

When Carlos Bustamante, Ph.D. presented a talk on using molecular tweezers to study the structure of a functioning RNA polymerase at BCM, the audience was enthralled. He logically explained complex experiments and results in terms people could understand. His slides and videos were informative and eye-catching. People were so excited about the work that they kept interrupting him with questions, which he patiently answered. About 50 minutes into the talk, he turned to the audience and said, “I’m running behind. I want to share more of this story with you. The seminar may run overtime.” Everyone nodded and said, “OK”. Only two people had to leave, everyone else stayed until he finished the story twenty minutes after the seminar was supposed to end. Then he had to wait for the applause to die down. When he spoke at the 2004 ABRCMS the undergraduates and faculty were on their feet cheering before he finished the talk. One faculty member said, “If that doesn’t get you excited about science, nothing will!” We have stars in science, too. They do great science, sometimes using high tech physical techniques to answer biological questions and have a flare for explaining their work in understandable, exciting terms. Thanks Carlos!

Common Components of a Scientific Presentation:

1. Discuss the focus of your work in general terms
2. Present the background of your lab, including pertinent past research results.
3. Highlight your aim, or the question you are answering (this may or may not be in hypothesis form).
4. Discuss your approach to the problem, often including a word slide or flow diagram to illustrate the general steps of your project. Avoid unnecessary details but be specific enough to allow the audience to appreciate your work.
5. Present your results, show some data and present graphs or tables to summarize multiple observations. Use statistics, if appropriate. Be sure people get a sense of how much work went into the study. How long did it take to make the DNA construct? How many different designs did you have to test to get the instrument to work? How many different photos did you examine looking for a new star? How long did it take to write the computer code that lets you visualize a virus in 3-D space?
6. Explain your results. The detail you include will depend on the time allotted for the talk.
7. Identify problems that arose and how you dealt with them.
8. Summarize your conclusions or observations.
9. Discuss the conclusions you were able to draw and mention the direction the research is heading. Propose, in general terms, experiments that might be done to further your work, with your mentor’s ok.

**Preparing a Scientific Presentation:**

1. Planning is important.
2. Decide on the key point(s) and build the talk around it (them). Your points do not have to be in chronological order. Remember that you’re telling a story so make the presentation logical and easy to follow.
3. Acquire information that supports the point(s).
4. Organize information in an effective way. Using note cards, or a computer can be helpful.
5. Produce an effective summary of information using word summaries, models, graphs (generally easier to read than tables) and pictures. Presenting a model with question marks on what you don’t know at the beginning and closing with the model with new info highlighted can be very effective.
6. Decide on visual aids that are appropriate for your audience, information, budget, and resources. Some common aids are: handouts, photographs, slides, transparencies, PowerPoint presentation with or without video, poster, chalk or marker board.
7. Write out the talk, especially if you have a tight time frame or you’re really nervous.
8. Practice your presentation both to yourself (looking in a mirror) and with a friend, those who can provide critique.
9. Revise your talk to improve rough spots.
10. Prepare an easy to follow written format and use a font that is easy to read.

**Preparing Effective Speeches**

1. Have something significant to say. Even if you don’t have results, you can still convey important information to your audience.
2. Organize information logically.
3. Emphasize important points vocally and with phrases that draw attention.
4. Start with adequate background material.
5. Explain what you are doing and why you are doing it or want to do it.
6. Use visual aids effectively and point out points the audience might miss. Effective visual aids are: large enough to be seen, complete, but not too busy, clearly labeled, colored effectively (in a manner that clarifies data instead of obscuring it).
7. Avoid excessive repetition.
8. Use analogies that people can understand.
9. Re-summarize important points or conclusions.
10. If you are showing a printed copy of the summary or conclusions, use the same wording so people can follow along.
11. Allow time for questions. Try to anticipate questions and prepare answers.

**Effective Presentation Skills**

1. Speak clearly and speak at a speed that is understandable.
2. Use an appropriate volume that is loud enough without screaming. Request a microphone, if needed, and test it before you begin.
3. Get familiar with lighting controls and AV equipment ahead of time; especially if you are using video or Powerpoint.
4. Decide if you will sit, stand or use a podium (often decided by the size and style of the audience). Use a podium if you are unfamiliar with material and need to refer to written text often or you are so nervous you really need to hold onto something. That’s OK.
5. Use pointers effectively, especially when the audience is not familiar with your data. Point to bands on gels, areas on photographs, parts of a diagram, etc. that are difficult to describe. Be careful to not overuse pointers; you can make people dizzy.
6. Be careful of using distracting mannerisms, like playing with your hair, pacing, saying “uh…”, gesturing too much with your hands.
7. Look at the audience. Make eye contact with a variety of people, unless you are very nervous in which case it helps to look at one “friendly” listener.
8. Use humor only if appropriate and you can carry it off well. Be cautious about using jokes that don’t fit or insult your audience.
9. Avoid coming across as a snob, as overly apologetic, or as belittling.
10. Acknowledge help within the constraints of time. You can always include a final slide that lists the people involved in the project and acknowledges the funders of the project.

**Mentally Preparing for a Presentation:**

1. Be aware of the mood you want to create: professional, reconciling, encouraging.
2. Be aware of your mental status.
3. Match your mental status to the mood you need. Relax if you need to be soothing; “rev up” if you need to be stimulating. Use mental images that help you adjust your mood.
4. Visualize a successful presentation.