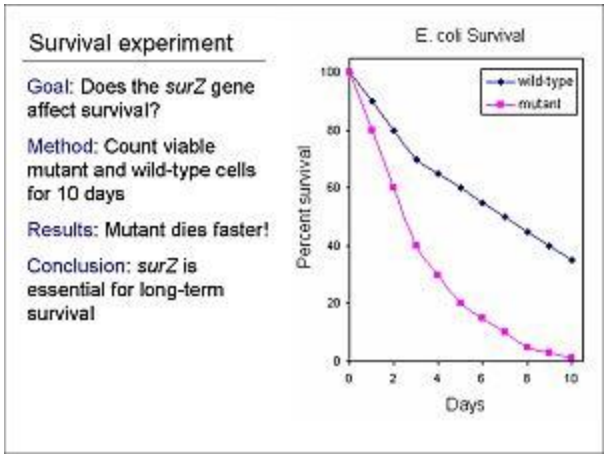
Tips for Seminar Presenters

Presentation skills can make or break a presentation! Your seminar will be primarily graded on how well you communicate your research project, and great presentation skills can make even a project you wish you'd done differently into a first-rate seminar. These tips will help you avoid common pitfalls and create a sparkling presentation.

Organization

- **Get to the point.** Suspense is for novels; in a scientific presentation, don't make your audience wait through a lengthy introduction to find out what your research question is or try to hide the conclusion until the end. Give at least a brief statement of your main question or hypothesis right up front, helping your audience know why they need the background.
- **Focus on the design.** Your audience will need to know something about the mechanics of your experiments, but first and most importantly, they need to know how your experiments were designed to test your hypothesis or address your research question. What is your overall approach, and what controls are needed to validate it?
- **"Package" each experiment.** A rigid intro-methods-results-discussion format is required for a scientific paper, but a presentation needs to be more flexible: your audience can't flip back to a previous page. A good format is to consider each experiment as a package: give its purpose, how you did it, the results and their meaning, then go on to the next experiment. At the end, summarize the results of each experiment again briefly before wrapping up with general conclusions.



- **Show me the data!** Don't show results on one slide and then flip to a text slide where you talk about them. The audience wants to see what you're talking about, so put a little text right on the result slide, or leave out the text completely and just show the results as you talk about them.
- **Walk through the results.** Spend enough time on the actual graphs, gels, micrographs, or other data that the audience can clearly see how your results lead to your conclusions. Take the audience through the data step-by-step.
- **Don't forget the analysis**. Where appropriate, talk about how many times you've repeated the experiment or show standard deviations, t-tests, ANOVAs, or other statistics to provide support for your conclusions. Remember that not everyone in your audience will have done the analyses you're talking about, so introduce them briefly, especially if you did a less-common statistical test.

- **Keep methods brief.** Listeners can easily get lost in a long list of methods. Instead, list only the key steps of the method (or use a diagram!) and tell why you did it this way. Anyone who wants to know the details can ask.
- **Know your audience.** Your audience is diverse, including biology and biochemistry students ranging from first-years to seniors as well as faculty. While it may not be possible for every single person in the audience to fully understand every aspect of your work, at the very least everyone should understand what you were researching, why it is important, the basic plan of your research and what you were able to learn from your work.
- **Hit the "Goldilocks zone" on background.** Anyone in your audience who has taken 200-level courses in your major should be able to understand your entire talk clearly. Everyone in your audience should be able to understand the significance of your research, the hypotheses you were investigating and the take-home message. But, don't drag out your background for 20 minutes: succinctly explain the key points that the audience actually needs to know.
- **Give context.** **Background** is the general information needed to understand your project. **Context** is the research that you or others (in your lab or elsewhere) have done that represents our current understanding of the field, the basis for your hypothesis, etc. All scientific research builds on and connects with the work of others, so tell how your work fits into the context of what is already known. Explain how others' work forms the basis for the hypotheses you're testing now. Discuss how your work supports or contradicts what has been previously published. Demonstrate that you have a good grasp of the scientific literature in your field.
- **Be persuasive.** As you design your presentation, ask yourself what you want to convince your audience of. A good scientific presentation should build a case for your conclusions much as a trial lawyer gives evidence to build a case for a client's guilt or innocence.
- **Seal the deal.** The last section of your talk should mirror the first section: In the introduction, you set up the significance of your work, your big question, your hypothesis, etc. After explaining your results, come back and put them in this same context: Was your hypothesis supported? What did you learn about the big-picture questions? How does your work fit with what others have learned?
- **Less is more.** Your audience does not have to hear about every experiment you ever did, including the one you totally screwed up. Focus your talk on clearly presenting a limited number of ideas and experiments that really make your point.
- **Give credit where it's due.** Be sure it's clear what is your work and what comes from the work of others. But don't clutter the slide! You can put a condensed reference in small type at the bottom of the slide where the information is given, such as: Smith *et al*., J. Biol. Chem. **53**:11417 (2002). Or, you could put a citation on the slide (Smith *et al*., 2002) and add a References slide at the end.

What if my research didn't "work?" Despite your best efforts, sometimes a project just doesn't yield results in the limited time that an undergraduate can spend on it. Don't panic: no one expects that every research project will produce polished, publishable results!

- Compensate for lackluster results with a strong background section: review the literature and explain the context of your work thoroughly.
- Explain why you designed your experiments the way you did and show the audience the results you got, helping them understand why they don't make sense or fell short of your expectations.
- Clarify what could be done better next time.
- If you have realized that you left out key controls or designed your experiment poorly, don't leave it to your audience to point out the flaws: talk about the problems up front and discuss how the experiment should be re-designed given what you know now.
- You can still give an excellent seminar even without satisfying experimental results!

Be fully prepared. If you use a technique, be sure you know how it works and could explain more about it if asked a question. Same if you used a statistical method. You are expected to be the expert on your topic, so be sure you really know the work that others have done in your area, the basis for your hypotheses, how instruments work, etc. You should understand much more than just what you plan to talk about during your presentation, so that you can readily answer questions.

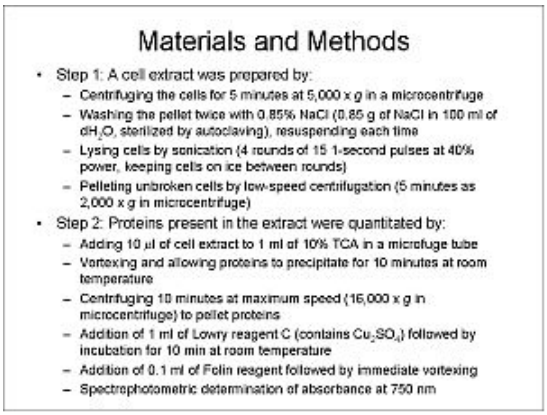
Speaking style:

- **Get comfortable with your material.** To engage your audience, you have to be making eye contact and talking directly to them; you can't do this if you're reading directly from your slides or relying heavily on your notes. Practice your talk until you know it well, so you won't stumble or wonder what slide is coming next. Then you can look at your audience when you deliver it—and you'll be less nervous, too.
- **Notes are OK.** There's nothing wrong with having notes to refer to in case you get stuck, or a list of slides, etc. Just don't use 'em as a crutch. It's a very good idea to write down any details you think you might forget: a chemical structure that someone might ask a question about, or a long chemical name that you might blank on. Be sure you're not shuffling through your notes in a distracting way, though.
- **Be natural.** It's a seminar, not a campaign speech. The people in the audience are your colleagues, so talk to them as a fellow scientist explaining what you think are important results that need to be shared.
- **Be enthusiastic.** Hey, this is great research you spent all summer on! If you sound bored with it, for sure your audience will be, too. Show them with your voice and manner how excited you are about the work you did.
- **Make yourself heard.** It could be the greatest presentation on earth, but your audience will never know that if they can't hear you. If you tend to speak quietly, practice with a friend sitting in the back row and have him or her stop you every time you're not loud enough. Breathing from your diaphragm and pitching your voice a little lower than normal can help.
- **Know the vocabulary.** If you mis-pronounce a key term, your audience automatically assumes you don't really know what you're talking about. Be sure you know the meaning, use, spelling and pronunciation of every term.

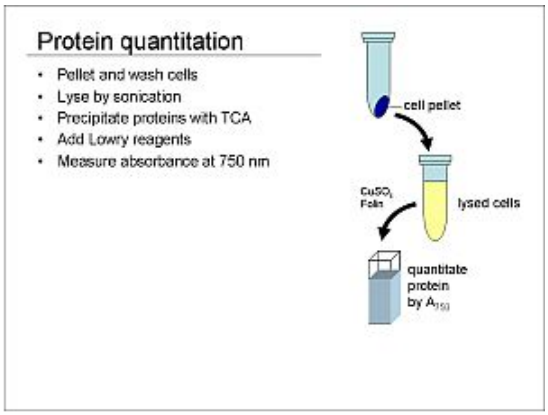
- **Practice your talk.** Don't just prepare the *slides*: prepare the *presentation* and prepare *yourself*. Go through the whole talk and figure out how you're going to say what you need to say. Where will you need to spend the most time? Where would an example be helpful? How will you make a good transition between these ideas? In addition to practicing on your own, it is helpful to practice in front of friends and your research mentor.
- **Dress nicely.** A suit and tie or dressy dress isn't necessary, but cutoffs and a torn shirt don't make much of an impression. Your dress helps let your audience know you're in charge.
- **Avoid jargon.** Scientists use lots of lab slang, but in a formal presentation, you need to be sure you're using terms precisely and that your audience understands them. Instead of "we PCR'd up the gene," try "we used PCR to amplify the *lacZ* gene from the *E. coli* chromosome."

Visuals:

- **Your slides are not your presentation.** Develop your presentation (what you are going to *tell* your audience) and support it with slides (what your audience needs to *see* to help them understand what you're telling them).
- **Keep it simple.** Flashy backgrounds or fancy animations don't work well in a formal presentation. PowerPoint's zillion templates often give too much space to the title and force slide text into small fonts. It's best to design your own slides, using simple, clear fonts and plain backgrounds. Black or dark blue on white, light gray or light tan are good combinations. Avoid glaring or clashy colors. Use animation only if needed for emphasis, not for entertainment.
- **Minimize text.** If there are a lot of words on your slide, your audience will spend its time reading them instead of listening to what you're saying. Plus, *you* will be tempted to read them instead of making eye contact! Just a few key words will help your audience get the message without distracting them.
- **Use pictures.** Wouldn't it be easier to explain that complicated experiment if you had a diagram? Plus, photos and drawings add life to your presentation. You can take photos, find appropriate images on the Web (try a Google image search or Wikimedia Commons) or just draw your own--remember, PowerPoint is a drawing program!



Who's going to read all this text??



Much easier for the audience to grasp!

- **Keep images relevant.** Photos of equipment, chemical bottles, etc. are not useful to your audience. It's appropriate to show a complex or unusual experimental set-up, but no one needs to see photos of a power supply, microscope, animal cage, etc. Sometimes you can use an image that's just for fun, but keep these "throw-away" pictures to a minimum or they'll become distracting.
- **Be sure text is clearly readable** even from the back of the room.
- **Portray results appropriately.** No one wants to squint at tiny numbers in a table when a nice, visual graph would show them better. Consider whether a bar graph is appropriate for your data, or whether a line graph is called for. Label all graphs and axes, and add titles to graphs and captions to photos where appropriate. Use black lines for both *x*- and *y*-axes and black text for labels and numbers (caution: current Excel version often leave out axis lines and use gray text by default). Don't forget units! Add labels or arrows to a photo or NMR spectrum to help make your point.
- **Don't accidentally "squash" photos or graphs.** When you resize an illustration, be sure you shrink or stretch both its width and height at the same time. Your audience will notice if you flatten or stretch it by changing its size only in one dimension.

- **Proofread carefully.** Use the spell checker built into PowerPoint, but also read through every slide carefully before the presentation. You don't want a typographical error to appear in 48-point bold text for your audience to focus on!
- **Make your visuals look professional.** If you need to show a chemical structure, use a structure-drawing program. In graphs, change colors, fonts, sizes, backgrounds, etc. to make your graph as clear as possible and remove unnecessary legends, equations, etc. Learn how to insert subscripts, superscripts, greek letters, and so on. Use standard scientific notation: 1.3×10^4 looks a lot better than the computer shorthand 1.3E04. Watch your significant figures, and don't let your figures get cluttered with numbers like 147.021341112. Be sure to italicize all genus and species names.
- **Use a pointer.** Don't just wave at your slide! Use a pointer (laser or old-fashioned) to direct your audience's attention where you want it. Or in a pinch, walk up to your slide and use your finger. If you use a laser pointer, hold it still and don't make distracting circles and swirls.

PowerPoint hints:

- **Use a flash drive** to transport your slides to the seminar room. Don't e-mail them to yourself or plan to get them from Box or another cloud service. These methods require time-consuming log-ins and will leave you high and dry if there is a problem with the wireless at an inconvenient moment.
- **Right-size your slides.** All of our projectors show slides in 4:3 format, not the 16:9 format that is the default in current versions of Excel. If you choose 16:9 slides, there

will be a lot of space at the top and bottom of the screen you can't use. If you make your slides 4:3 (Slide Size on Design ribbon), you will make better use of screen real estate and what you see will be more like what you get.

- **Embed fonts and videos.** If you use a font that isn't installed on the computer in the seminar room, PowerPoint will substitute some other font, and that can mess up your slides. To avoid any problem, click the File ribbon and choose Options; then click Save from the menu on the left and check Embed fonts in the file. If you're using a video or sound clip, be sure it is embedded in the slide or included on your flash drive and be extra sure to test it first.
- **Test your presentation** in the seminar room at least a day before you give it! Be sure your images look right, your text shows up, any videos or animations work, your fonts look right, etc. You don't want any surprises on the big day.
- **Know how to run your show.** A little playing with PowerPoint will pay off in making your slide show smooth. Did you know that either the space bar or the left mouse button will advance to the next slide? Did you know that the backspace key goes back one slide? Did you know you can hit the "B" key to temporarily black out the slide (for example, so that you can write on the board or while you're waiting to be introduced)? Some people like "Presenter mode," where the computer screen shows the *next* slide, while others prefer for the computer screen to show the *current* slide.