Writing and presenting a research talk or poster

1. Message: what essential message do you want to convey?
2. Organization: logical, clear structure
3. Style: Simple, effective, attractive slides or poster figures
4. Talks: Speaking style, clarity
5. Posters: Presentation strategy

Why? You want people to UNDERSTAND your work, BE INTERESTED in your work, and RESPECT you as a young scientist
Writing and presenting a research talk or poster

“Surveys show that the #1 fear of Americans is public speaking. #2 is death. Death is #2. That means that at a funeral, the average American would rather be in the casket than doing the eulogy.”

Picture courtesy of [http://www.paramountcomedy.es/series/seinfeld/jerry.htm](http://www.paramountcomedy.es/series/seinfeld/jerry.htm)
1. What is the essential message you want to convey?

Decide the essential scientific question that your thesis addresses.

State it in one sentence.

Now state it again with the absolute minimum jargon.

This is your title, and is the main point you will show convincingly in your talk or poster.
2. Organization

1. Title, authors, affiliation
2. Introduction – general area, specific question, and why your question is important
3. Goal of your honors thesis
4. Methods – equipment, technique, not detailed
5. Results – experimental design, observations, measurements, tables, figures
6. Conclusions – Could you answer your main question? Implications of your work for overall function of cells, organs, or organisms
7. Acknowledgements
A talk/poster is not a research paper

A research report includes:

- A **comprehensive** introduction
- Necessary *background and prior results*
- Methodological details *sufficient for repetition*
- Full presentation of *all* results
- Details of *all control* experiments
- *Exhaustive* discussion of
  - Limitations
  - Implications
  - Applications
  - Conclusions

A poster or talk has **none** of these *at this level of detail!* Rather, it is a *summary* of key points and findings.
3. Simple, effective, attractive graphics

Each slide or poster panel has a title that states the general scientific question, topic, or conclusion.

Easy-to-read figures. Delete unessential elements. Label important elements.

Maximize the information-to-ink ratio on all figures.

Relatively little text, that should be simple, well-defined, jargon-free.

Keep it simple and to the point. Do not get hung up on details. It’s not a publication.
Taste in the Peripheral Nervous System

Stocker, 1994

Include proper attributions for borrowed graphics.
What is Itch?

An unpleasant sensation evoking the desire to scratch

Why study itch?
- Common symptom
- Can be debilitating in some cases

"The One With Chicken Pox"

Consider adding major points as text boxes to slides of graphs or graphics.
Evidence for positive selection on these amino acid changes in the human lineage

Two amino acid substitutions unique to humans

Enard et al. 2002
*pickpocket (ppk)* is related to Epithelial Na Channels (ENaC)

**A**

Epithelial Na\(^+\) Channel (ENaC) Tree

**B**

Conserved ENaC Channel

---

*pickpocket (ppk)* mechanosensation

**Epithelial Na\(^+\)**

**Conserved ENaC**
In Situ Hybridization

1. Linearize, transcribe

2. Hybridize to sample RNA

3. Wash with Ab

Plasmid with exon → Riboprobe

mRNA hybridized Riboprobe
- Pass success rate in FRET football goes with $1/r^6$
- Orientation between donor/acceptor is crucial

Referring to something familiar may be helpful. Consider using a dark background to reduce glare.
Goals of the project

- Determine if and when Foxp2 expression is induced during embryoid body (EB) formation. Establish whether it plays a role during early embryogenesis and cell lineage specification.

- Determine the consequences of ectopic expression of Foxp2 in embryonic stem (ES) cells.
Large, readable fonts

Font Size: You are close to the screen or poster, your audience is far away. Use sans serif fonts.

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Easy-to-read graphics

1. Make lines thicker, fonts & symbols larger.
2. Use distinct types of lines and symbols.
3. Make axis ticks visible; use appropriate minor ticks.
4. Use labels instead of legends.
5. Label the axes! Position them intelligently.

**Bad!**

**Good!**

This slide uses PowerPoint’s animation features.
Easy-to-read graphics

Bad!  Good!

1. Use vivid colors with different brightnesses.

2. Avoid separate keys. Add labels within the drawings.
7% of males in your audience are color blind

Double-staining with red and green signals.

normal vision  protanope (red)  deuteranope (green)
7% of males in your audience are color blind

Color Blind Simulator
Vischeck
http://vischeck.com/

Double-staining with red and green signals.

normal vision  protanope (red)  deuteranope (green)

Dark backgrounds work best for dim color images
“3-cube FRET” with a single cube

A Methods panel may be appropriate if new techniques are developed.
Easy-to-read graphics

The two most common problems:

Too much information.

Simplify!
Avoid too much text, lists, long tables.

Jargon, unexplained terms or symbols.
Define, use plain English, or remove.

In talks, use movies and animations with care.
Make very certain they run properly.
4. Talks: Speaking style, clarity

Get your audience interested (show enthusiasm)
Speak clearly, concisely, & loudly (but don’t shout), avoid monotone.
More than 1 slide per minute usually doesn’t work.
State results in past tense.
Avoid jargon if possible, define terms if you must.
It’s ok to use “I” and “we.”
It’s ok to say “I don’t know”.
Practice (the entire talk, and key ideas or transitions in your poster presentation)!
Preparing for talks

1. Know the lecture hall: visit it before your talk.

2. Show up early, prepare in advance:
   a) Learn how to control lights, turn on projector, lower screen.
   b) To use board, bring your own thick chalk or dark non-permanent markers.
   c) Bring a laser pointer or stick; if you use PowerPoint arrow, stop it from disappearing with <ctl>h, a.
   d) If you use Presenter View, learn its hidden tricks, like making the mouse pointer visible by moving it offscreen.
   e) If you need to use sound, work out in advance what cable you must bring and how to connect it and adjust sound.
Slide Show: Normal View

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This is a screen shot of Normal View: Your computer shows what the projector shows (including the pointer).
Slide Show: Presenter View

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This is a screen shot of Presenter View: The projector shows only the left pane. You also see notes and slide tape. But beware of pointer behavior! Presenter View is activatable only with projector connected!
5. Posters: presentation strategy

Prepare a 2-minute and 5-minute presentation of your poster; NEVER LONGER!

The introduction should be clear and accessible.

Poster presentations are interactive – judge the expertise and interest of your audience and tailor your presentation to them.

Your goal is to present the major points and conclusions, not every detail of what you’ve done!
GraphPad’s **Prism** is a popular and easy to use statistical analysis, curve fitting, and graphing program. But it can only plot Y columns vs. one X column (*really*…!)

Golden Software’s **Grapher** is a more powerful and customizable graphing, analysis, and spreadsheet program.

Microsoft’s **Excel** is best for sophisticated spreadsheet manipulations and many functions, but statistical tests are very limited and graphing is primitive, not designed for presentation.

And then there’s **Matlab**, **Mathematica**, **SAS** (statistics), ….
Programs useful for drawing

**CorelDraw** is a popular and relatively easy to use graphics design application.

**Adobe Illustrator** is more extensive and comprehensive, but also more expensive and difficult to learn.

For presentation, it’s best to use Microsoft’s **PowerPoint**, in case you have to load your talk onto someone else’s computer (carry a back-up on a memory stick).
Thanks

To Prof. Dan Feldman
for his slides from an earlier talk on this subject.