INTRODUCTION

From graduate school to retirement, giving presentations is part of the fabric of scientific life. In the course of that life, scientists generally progress from “entrance” poster presentations, to short oral presentations, to longer invited lectures. Although the first edition of this booklet focused on the latter, this version addresses all three forms of presentation because each has its own challenges—challenges that must be identified and met if effective scientific communication is to happen.

Although scientific presentations are an accepted means of accomplishing the exchange of knowledge and information that is essential to scientific endeavor, many posters are ineffective communication tools and far too many bad talks are still being given. If presentations are not of the highest caliber in both content and delivery, communication is flawed and science is neither properly served nor facilitated. Development of good public speaking skills will also make positive contributions to many other aspects of an individual’s career, given the importance of oral communication in other scientific situations, such as committees, boards, and public-policy discussions.

To improve the flow of information among scientists, this publication attempts to provide advice and observations on preparing and delivering scientific presentations, taking these in career order, starting with poster presentations and moving on to oral presentations, both short and long. Many of the oral presentation points will apply to any public speaking situation, although others are unique to a scientific environment. We hope that the material assembled here will be of value to the scientific community. Future posters and talks will tell.

POSTER PRESENTATIONS

Since the first edition of this booklet was published in 1995, poster presentations have become the norm throughout scientific careers, but most particularly at the early career stages when (positive!) attention at meetings can lead to the postdoc or job of your dreams. Although fancy graphics are certainly no substitute for content, realize that for maximum effectiveness, posters require not only scientific care, but also graphics flair.

Anyone who has entered a meeting room filled with 200+ posters subconsciously realizes the first important thing a poster must do for its presenter:

GRAB ATTENTION!

To grab attention, at least some (ideally all) of your title should be in type large enough to be read from 6–7 m away. To make room for this attention-getting device:

• Choose a short title (!)
• Use a smaller font for the poster author(s), an even smaller one for associated institutional information (and abbreviate this—no one needs your street address).
• Leave out institutional “brands” or logos

The second important thing a poster must do . . .

DELIVER YOUR MESSAGE QUICKLY!

This point is less obvious, but equally true in the era of television sound bites, Internet surfing, and decreased attention spans. Ask yourself how much time you are willing to spend trying to grasp the importance of science in a poster when the presenter is absent (which happens a lot—people often cruise poster sessions before and after any allotted presentation time). If it’s longer than 2-3 minutes, you’re pretty unusual.
EXAMPLE OF A “BAD” POSTER

This poster was designed to be 6 feet wide by 4 feet high. Unfortunately, there is simply too much content. The results are text and graphics set too small to be easily legible. The background photo makes it even harder to read. Unnecessary logos add to the visual confusion.
EXAMPLE OF A “GOOD” POSTER
This poster was designed to be 6 feet wide by 4 feet high. Titles and text are deliberately kept to a minimum and the type is sized for easy reading. The flow of content is left to right. Acknowledgements and references are single spaced and concise.

LANGMUIR SUPERCELLS

ABSTRACT

1. OBSERVATIONS
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So, within this short time, the poster must at least convey your basic message. At best, it should also engage the interest of the viewer enough that they are willing to invest more of their time in you and your work. Certain steps will help you to design a poster that fulfills both of these functions.

- Choose only ONE essential concept to address in the poster.
- Write a concise abstract that communicates what you have learned about this one concept and how it relates to a larger picture of your field. This abstract need not be identical to the one you submitted so many months previously in order to be accepted to the meeting. It does need to transmit the important point of your poster to the (typical) viewer who only reads the abstract and glances at the figures.
- Display this abstract prominently, in print large enough to be read from 2-3 m away.

Up to this point, the action of an effective poster is like that of a fisherman who first hooks a fish, then reels it in for a closer encounter. Once the viewer’s attention has been both hooked and engaged, you want to make the most of their encounter with you and your poster. Some general suggestions for efficient transmission of information by poster encounter:

- **Use first names in the list of poster authors and add e-mail information for the lead author.** First names facilitate informal interaction with you, the presenter, if you are there. If you’re not, an e-mail address makes it possible to contact you.

- **Keep text to an absolute minimum.** Write what you think is the absolute minimum, then force yourself to cut it in half. Continually remind yourself “There is ALWAYS too much text in a poster.”

- **Tell your story with graphics as much as possible.** An efficient way to structure a poster presentation is to choose the graphics first, then write the “story” and arrange the spatial flow of the poster around them. As with text, a few well-chosen and large graphics are more effective than 10-12 smaller ones. Use of a few colors is effective: overuse of color is not. Size your graphics so they are easily visible from 2-3 m (a good visual is another “hook”).

- **Make your poster easy on the eyes.** If something is easy to read, it is more likely to be read. To increase your chances of being read, we suggest the following graphics “best practices”:
  - Use black type on a pale background, either a solid color (or white) or a subtle texture/photograph. Intensely colored “busy” backgrounds suck attention from poster content and make it difficult to read the superimposed text, tiring the viewer.
  - Design simple flow paths. Complex paths from one element of your poster to another make it hard for the reader to follow the logical flow of your ideas in your poster: disorganized posters reflect badly on your scientific thinking.
  - Double-space all text except things like acknowledgments and references.
  - Use left-justification, shown to be easiest to read.
  - Use 18 pt minimum for text, larger for headings
  - Use a sans-serif font, like Arial or Helvetica, also shown to be easier to read than serif fonts like Times: be font-consistent throughout the poster.

In the end, we learn from what works. Go through the next poster session you encounter answering the questions—what hooked me? What made me willing to be netted? What did I get from a “good” encounter with a presenter? Could I have gotten at least their basic message from their poster if the presenter hadn’t been there?

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A poster must at least convey your basic message within two to three minutes. At best, it should also engage the interest of the viewer enough that they are willing to invest more of their time in you and your work.