Poster Presentations

Posters are a means of communicating research results quickly. They provide a great opportunity to get feedback about preliminary data and ideas. Poster sessions are often held at large national meetings, and they allow you to meet other scientists in an informal setting.

Why Posters?

Scientists who attend poster sessions constitute a much larger audience than the one attracted to a journal article on a particular topic. Thus, your goal is to produce a poster that not only attracts experts in your subdiscipline, but also the much larger group of scientists with tangential research interests. The latter group provides a unique opportunity for you to learn about applications of your work to other research areas (and vice versa), spurs scientific creativity, and prompts you to apply an interdisciplinary approach to problem-solving.

Posters are not papers; they rely more on visuals than on text to present the message. It is not necessary to supply as many supporting details as you would for a paper, because you (the author) will be present to discuss details one-on-one with interested individuals. Too much material may even discourage individuals from reading your poster.

An appropriate poster presentation should fulfill two objectives. First, it must be esthetically pleasing to attract viewers in the first place. Second, it must communicate the methods, results, and conclusions clearly and concisely.

Poster Format

Size

Poster boards come in many sizes. Check with the conference organizer regarding minimum and maximum sizes. For poster sessions in your class, ask your instructor about appropriate materials and sizes.
Font (Type Size and Appearance)

Remember that most readers of your poster will be 3 to 6 feet away, so the print must be large and legible. Sans serif fonts like Arial are good for titles, but serif fonts like Times and Palatino are much easier to read in extended blocks of text. The serif(s) (small strokes that embellish the character at the top and bottom) create a strong horizontal emphasis, which helps the eye scan lines of text more easily.

Make the title Mixed Type or ALL CAPS in 72 point bold. Mixed type has the advantages of being easier to read and taking up less space than all caps. Do not use all caps if there are case-sensitive words in the title, such as pH, cDNA, or mRNA. Limit title lines to 65 characters or less.

Times
ARIAL

Authors’ names and affiliations should be 48 or 36 point bold, serif font, mixed type:

Times 48 Pt

The section headings can be 28 point bold, serif font, mixed type:

Times 28 Pt

The text itself should be no smaller than 24 point, serif font, mixed type, and not in bold:

Times 24 Pt

Poster Esthetics

The success of a poster presentation is a blend of a few factors: good attention-getters, but avoid them in a serious and professional manner.

Organize the layout so that it flows right. Align text on the left rather than centered; this provides the reader with a strong visual line. Avoid crowding. Large blocks of data and bulleted lists should present your objectives and conclusions. Use blank space to separate sections and allow for optimal flow from one section to the next.

Use appropriate graphics that are not complex. Three-dimensional graphs only in small size. Colored borders around graphs and framing to a minimum. Framing is the material is mounted on a piece of colored paper to provide a decorative effect judiciously so that they do not distract.

Nuts and Bolts

To affix text and figures to the poster backboard, stick. These tend to have lower gaff and are easily removed. Ask the conference organizer (or you will be displayed at the poster session) to pin a cork notice to your cork bulletin board to which posters are attached.

Poster Content

Posters presented at large national meetings can draw readers to stand 10 feet away from the board and read the message in 30 seconds or less. Because it is (lectures) and an even larger number of people experience sensory overload. To stand out, make the section headings large enough to the point, and the conclusions matter.

Posters for a student audience in a section should follow the same principles as those traditionally found in scientific presentations.
Poster Esthetics

The success of a poster presentation depends on its ability to attract people from across the room. Interesting graphics and colored photos are good attention-getters, but avoid "cute" gimmicks. Present your poster in a serious and professional manner so people will take your conclusions seriously.

Organize the layout so that information flows from top left to bottom right. Align text on the left rather than centering it. The smooth left edge provides the reader with a strong visual guide through the material.

Avoid crowding. Large blocks of text turn off viewers; instead, use bullets to present your objectives and conclusions clearly and concisely. Use blank space to separate sections and to organize your poster for optimal flow from one section to the next.

Use appropriate graphics that communicate your data clearly. Use three-dimensional graphs only for three-dimensional data.

Colored borders around graphics and text enhance contrast, but keep framing to a minimum. Framing is the technique whereby the printed material is mounted on a piece of colored paper, which is mounted on a piece of different-colored paper to produce colorful borders. Use borders judiciously so that they do not distract from the poster content.

Nuts and Bolts

To affix text and figures to the poster board, use adhesive spray or glue stick. These tend to have fewer globs and bulges than liquid glues.

Ask the conference organizer (or your instructor) about how posters will be displayed at the poster session. Some possibilities include a pinch clamp on a pole, an easel, a table for self-standing posters, and cork bulletin boards to which posters are affixed with pushpins.

Poster Content

Posters presented at large national meetings should be organized so that readers can stand 10 feet away from the poster and get the take-home message in 30 seconds or less. Because of the large number of sessions (lectures) and an even larger number of posters, conference participants often experience "sensory overload." Thus, if you want your poster to stand out, make the section headings descriptive, the content brief and to the point, and the conclusions assertive and clear.

Posters for a student audience in the context of an in-house presentation should follow the same principle of brevity, but may retain the sections traditionally found in scientific papers. These include:
Title Banner

Use a short, yet descriptive, title. This is the first and most important section for attracting viewers, so try to incorporate your most important conclusion in the title. For example, *Gibberelic Acid Makes Dwarf B. rapa Grow Taller* is more effective than *Effect of Gibberelic Acid on Dwarf B. rapa*.

The title banner should be at the top of the poster and in 72 point bold font, mixed type, or all caps, 65 characters or less on a line. Underneath the title, include the authors’ names, in alphabetical order, and the institutional affiliation(s). Use 48 point bold, mixed type for the authors’ names.

Introduction

Instead of this conventional heading, consider using a short statement of the topic or introduce the topic as a question. Under the heading, briefly explain the existing state of knowledge of the topic, why you undertook the study, and what specifically you intended to demonstrate. A bulleted list of objectives may be a good way to present some of this information.

Materials and Methods

Present the methods you used to investigate the problem in enough detail so that someone competent in basic laboratory techniques could repeat your experiments. You might write the basic approach as a series of bulleted statements, and then provide more details in the subsequent text. Be both brief and thorough.

Results

The Results section of a poster consists mostly of visuals (pictures, tables, and graphs) and a minimum of text. Poster viewers do not have time to read the results leisurely, as they do in a presentation of the results should provide a visual that supports the results or complements the visuals.

Figures are a summary of the raw data that viewers can appreciate both the general degree of variability that they possess and the general patterns, trends, and other numbers themselves. For example, a figure showing chlorophyll increased in days more easily than “the chlorophyll units on the fourth day, increased to then stayed about the same at X × 10.”

Avoid using tables with large amounts of data in a poster. Flip through the data and come up with flip-out charts, in which one table of data is printed on the inner leg of one page and the other chart appears when a button is pushed or the page flipped. Figures may contain some statistical information, such as standard error and minimum and maximum values. Make the data points prominent without crossbars for the error bars. Labels and the key as you use for the same data in both a table and as a graph.

Visuals in posters do not need a legend. The graphs and pictures are integrated into the text in which they are first described.

Edit the text ruthlessly to remove visuals. A sentence like “The effects of temperature on chlorophyll” is nothing more than “B. rapa plants treated with gibberellic acid increased only water” informs the reader.

Remember to leave room for other sections and give each its separate section.

Discussion or Conclusions

Interpret the data in relation to the literature, relate these interpretations to the problem described in the Introduction. Discuss any surprises or direction of the research. Where experimental data suggest ways to improve the experiment, you may also speculate on the broader implications. Use bullets to help you present
read the results leisurely, as they do with a journal article. An effective presentation of the results should announce each result with a heading, provide a visual that supports the result, and use text sparingly as a supplement to the visuals.

Figures are a summary of the raw data and are constructed so that viewers can appreciate both the general patterns of the data and the degree of variability that they possess. Written text should concentrate on general patterns, trends, and differences in the results, and not on the numbers themselves. For example, the reader can visualize “the concentration of chlorophyll increased initially, and then leveled off after 10 days” much more easily than “the chlorophyll concentration was $9 \times 10^{-6}$ units on the fourth day, increased to $6 \times 10^{-4}$ units on the tenth day, and then stayed about the same at $4 \times 10^{-4}$ units on day 21.”

Avoid using tables with large amounts of data; if you think the data are important, prepare the table to give as a handout. Your job is to sort through the data and come up with the take-home message. Do not use flip-out charts, in which one table or figure is displayed beneath another.

Figures may contain some statistical information including means and standard error and minimum and maximum values, where appropriate. Make the data points prominent and use a simple vertical line without crossbars for the error bars. Use the same sized font for the axis labels and the key as you use for the text (24 pt). Do not present the same data in both a table and as a figure.

Visu als in posters do not need a caption (number and title). Instead, the graphs and pictures are integrated so that they immediately follow the text in which they are first described.

Edit the text ruthlessly to remove nonessential information about the visuals. A sentence like “The effect of gibberellic acid on B. rapa is shown in the following figure.” is nothing but deadwood. On the other hand, “B. rapa plants treated with gibberellic acid grew taller than those receiving only water” informs the reader of the result.

Remember to leave room for blank space on a poster. Space can be used to separate sections and gives the eyes a rest.

**Discussion or Conclusions**

Interpret the data in relation to the original objective or hypothesis and relate these interpretations to the present state of knowledge presented in the Introduction. Discuss any surprising results. Discuss the future needs or direction of the research. Where appropriate, identify sources of error and basic inadequacies of the technique. Do not cover up mistakes; instead, suggest ways to improve the experiment if you were to do it again. You may also speculate on the broader meaning of your conclusions in this section. Use bullets to help you present this information concisely.
Literature Citations

In scientific papers, it is common to cite the work of others, particularly in the Introduction and Discussion sections. The full references are then given in the References section at the end of the paper. Posters, on the other hand, are informal presentations that do not need to contain all the supporting details. Scientists who visit your poster are likely to work in the same field and probably are already familiar with most of the literature, so a long list of references would only waste valuable space on your poster. Even visitors who have a general knowledge of your topic but who work in a different subdiscipline are not interested in the details. They are interested mainly in how your approach or findings might help them improve their methodology or provide insight into their work. (Discussions with scientists in this second group are valuable to you because they provide a different perspective and may help you see applications to other subdisciplines.)

Student presentations in an in-house setting are different from poster sessions at large national meetings, because students usually do not have the background or the familiarity with the literature that career researchers have. Researching your topic is part of the scientific method, however, and presenting your work in the context of the published literature is part of good science. Thus, your instructor may ask you to include literature citations on your poster or to provide a list of references on a handout. See the section “Documenting Sources” in Chapter 4.

Presenting Your Poster

Authors should prepare a 5-minute talk explaining their poster; anticipate questions from students and instructors, and prepare appropriate answers. After this presentation, at least one author must be present at his or her poster at all times to answer questions from the session participants. The more you interact with your audience, the more feedback you are likely to receive on your work. (On the other hand, do not throw yourself on passersby who demonstrate little interest.)

Oral Presentation

Scientific findings are communicated at meetings, and oral presentations at meetings, and oral presentations are different from journal articles and laboratory notebooks. The delivery plays a critical role in the success of the presentation.

The most natural form of oral presentation involves the speaker having carefully prepared the presentation, and the speaker having rehearsed it, and may use an outline of the talk. Most of your lectures in biology to your audience, so you may need to focus your presentation on the outlines of the lectures on biodiversity, and the characteristics that make this type of talk:

- The speaker establishes a good rapport with the audience.
- The presentation is well organized and clear, and the speaker understands the material.
- The visuals are simple, legible, and important points.

Organization

Extemporaneous presentations are usually oral, but they are much more scientific papers. The introduction provides background information on the work (Table 8.1). The body is organized into Methods and Results sections, and includes results sections, and the body is organized into Methods and Results sections, and includes the results, then the strategies and the steps and more time on visuals that help explain the results, then the steps, and more time on visuals that help explain the work.