This presentation describes how to organize and present a talk at a Western scientific conference.
Never rise to speak till you have something to say, and when you have said it, cease.

—John Witherspoon*  

*The sixth president of Princeton University, a signer of the Declaration of Independence, and from 1776 to 1782, a leading member of the Continental Congress

Witherspoon, John (1723-1794), was the sixth president of Princeton, a signer of the Declaration of Independence, and from 1776 to 1782 a leading member of the Continental Congress. He came from Scotland in 1768 to assume the presidency of the college and held office until his death a quarter of a century later.

See
http://mondrian.princeton.edu/CampusWWW/Companion/witherspoon_john.html
Goals for this session

Understand the various purposes for giving a talk or presenting a poster

Learn how to analyze your audience and tailor your presentation to it

Review conventional presentation structure

Learn the basics of preparing visual materials to illustrate your presentation

Understand the importance of practice and timing

Discuss language considerations
You will have a variety of goals in giving a scientific presentation

Disseminate your results
Gain recognition for your work
Establish future collaborations
Get a job or secure funding
Teach the audience something
Learn something yourself—gain a new perspective on your work

1. The audience must want to pay attention to you. You want to earn their respect. If you do not build a good relationship with your audience, they will not listen to you, no matter how brilliant or groundbreaking your research is.

2. You are not here to tell the audience everything that is in your paper. You are here to make them interested enough so that they want to read it!

3. You must also, however, give your audience one or two important points to take with them now.
You cannot give a successful presentation unless you take your audience into account

Who are your listeners?
What do they need to know?
What is their level of understanding?
What one message from your presentation do you want them to take with them?

1. Who is in the audience? Are they peers with the same specialty as you have? Are they peers with a general knowledge about your subject? Are they from a general scientific background with, perhaps, little or no knowledge of your specialty? (AAAS Annual meetings.)
2. Direct your talk at some middle level of expertise.
3. Be able to explain complex concepts to non-experts.
4. Be able to go into detail when specialists ask questions. Bring some backup slides with more details, just in case someone asks.
5. What do you want your audience to do for you?
   - Give constructive feedback?
   - Learn about what you are reporting?
   - Participate by asking relevant questions?
   - Give you new ideas or insights?
   - Hire you? Give you a grant?
   - Buy your product?
If you can answer this question, you can prepare your talk to help you get what you want and need.
The content and delivery of your presentation will vary, depending on your purpose and your listeners

- Informal seminar
- Scientific conference
- Report to funders
- Job interview

You must tailor your talk for your purpose and audience to be effective.
Informal Seminar
Purpose—discuss on-going work
Audience—research peers
  Want detailed methods and results
  Understand fine points of work
Atmosphere—informal but professional
Content
  More speculative—preliminary results
  Interpretation of results
  Next steps
Questions
  Informal, detailed, and specific
Formal Conference Talk

Purpose—disseminate results; earn respect; establish future collaborations

Audience—professional scientists
- Want detailed methods and results
- May not understand fine points of work

Atmosphere—formal and professional

Content
- Latest confirmed results
- Conclusions drawn from work
- Implications for future work

Questions
- Formal and time-limited
- Both specific and general
Report to Funder

Purpose—present results or proposal

Audience—more generalists
  Want “big picture”
  May not understand fine points of work

Atmosphere—Formal and professional

Content:
  Less technical
  Trends and most important results
  Emphasizes successes

Questions
  General questions about the science
  Specific questions about problems, finances, management issues
1. There is a U-shaped curve of attention. The audience will pay attention at the very beginning; attention will decline during the middle of your talk; and then it will increase again as soon as you use the words “To summarize” or “In conclusion.”

2. During the middle period, you must use your skills to keep your audience alert. Some techniques for doing this include:
   - Moving around the room.
   - Making eye contact with some of the members of the audience.
   - Asking your audience questions or have them directly participate in some way.

3. Remember, unlike a paper where the reader can go back and forth in the text or take time to study charts, your audience will see and hear what you have to say and show them only once; and it will be at a speed that you set.
Organizing a 20-minute talk

Background and Introduction
(2–4 minutes)
Title slide
Overview slide
1–2 additional slides, if needed

Body (9–12 minutes)
Develop at most three or four main ideas
(2 slides each)
5–7 slides

Summary (1 minute)
1 slide

Questions (3 minutes)
3–4 back-up slides

Back-up slides; consider likely questions or objections and make a slide to answer them.
Use a combination of slides and handouts to deliver your message

Use slides to:
- Emphasize main points
- Illustrate experimental apparatus, schematics, samples, photographs or simulations of results
- Present equations
- Summarize numerical data

Use printed handouts to:
- Facilitate note-taking
- Reinforce main points
- Convey complicated information
- Provide additional details
Follow some simple “rules of thumb”

If you’d write or draw something on the blackboard while explaining your ideas to a friend, make a slide of it.

Allow about two minutes per slide.

Allow more time for slides that present:
- Equations
- Complicated schematics
- Numerical data in tables or graphs
Provide a title slide and an outline

Title slide
- Your name and affiliation
- Venue and date
- Attention-getting graphic

Outline or overview of presentation
- Prepares the audience to listen
- Provides a logical structure for your talk
- Summarizes key points (limit to three or four for a 20-minute talk)

I. Introductory material is used to:
- Build rapport with your audience
- Get their attention
- Get your main ideas across
- Tell them what you are going to tell them.
The “body” of your presentation should take the most time

Problem statement, motivation for work
1–2 slides

Previous work
1 slide

Method
1–2 slides

Results
4–6 slides

Future work
1–2 slides

II. Body

Problem Statement - Here you must tell the audience why it is worth their time listening to you? What is important about what you have to say?
- Related work - citations, people, past models, frameworks
- Methods - keep this section short unless you are employing an exciting new methodology that is one of the main points you want to make.
- Results - only three or four main results
- Backup slides - have a few detailed backup slides to help answer questions the audience might ask.
III. Summary
- Tell them the main points again. This will be the third time!
- Thank people for their attention
- Tell them you are ready to answer questions
Make your slides interesting and easy to read

Use short phrases and bulleted lists
Make all lettering at least 20 pt
Use figures
  To illustrate key points
  To maintain audience interest
Use tables or graphs to present numerical data
Use colors and styles consistently
Select an easy-to-read, professional-looking font

Profreed carefully!

1. Examples of good and bad slides
2. If your audience is too busy trying to figure out your charts and tables, they are not listening to you. Your visual material should never detract from what you are saying. They should support what you say.
3. Vary styles and colors - especially for long presentations.
Choose an easy-to-read font (36 pt)
Make sure your audience (32 pt)
Can easily read (28 pt)
Every one of your slides (24 pt)
From the back of the room (20 pt)
See what I mean? (14 pt)

1. Examples
2. The larger the room, the bigger the font size!
3. If the room is not full, have the members of the audience come up to the front of the room. You will not be required to talk as loudly!
**“Embed” special fonts in PPT**

Open the document in PowerPoint
Click on the "Tools" tab on the top menu
Click on the "Options" link
Click on the "Save" tab
Locate “Font options for current document only” and “Embed TrueType fonts”
Click in the check box to turn on the option

If you use special fonts in your slides, be sure to “embed” them when you save your presentation. Your Greek letters and special symbols may show up as something quite unexpected when you give your talk using the conference’s computer—as in this case, where they turned into diamonds, dots, and pencils!
Choose your colors carefully
Colors that look fine on your computer monitor look entirely different when projected with an LCD projector
Pastel colors “disappear” when projected
One color + black offers greatest contrast
Use a neutral background
Avoid using red and green*

Black or dark blue letters on a white background offer the greatest contrast and are easiest for most audience members to read. Never use red text on blue or green backgrounds (or blue or green text on red backgrounds); it is impossible to read, even if you’re not colorblind.
Label all elements in a figure

Point out important features

Label both axes of graphs and show units

Provide a caption

Give credit

The Nike laser system uses discharge pre-amplifiers. (Courtesy US Navy)

Sample normalized signals from the two-beam optical drive. (Courtesy C. Michael)
Effective Oral Presentations

Visual Aids—
The Good, the Bad, and the Ugly

Electrical conductance of a carbon nanotube

Conductance is measured with respect to two variables: magnetic field (horizontal axis) applied parallel to the tube, and the bias voltage (vertical axis).

The structure is one flux quantum in each direction.

In agreement with theoretical expectations.

This is a visually interesting slide, but it may have too much text.
Visually interesting, but nobody can read what has been handwritten on the bottom of the slide.
I call this an example of an “eating an elephant” slide (where do you take the first bite?) It is too busy; it contains many unrelated elements, the text is too small to read in most of the figures, and the colors are ugly.
Visually interesting slide, with the right balance of figures and text.
First Atomic-Scale Imaging of a CuO$_2$ Plane in a Superconductor

STM Tip

the CuO$_2$ plane

Visually interesting slide with minimal text and features clearly identified.
Use graphs and tables to present numerical data
Use to show trends or reveal relationships
Keep graphs and tables simple—provide complex data in handouts
Specify units of measure (in SI units)
Provide a title for each graph or table

1. Examples
Keep graphs and tables simple—convey ideas, not data

Verbosity Index


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Regrettably, does represent actual data

In the table on the right, note that the row of data that is most important has been highlighted to draw the viewer's attention to it.
Graphics are powerful; use them wisely and ethically

The data is the same in both slides, but note how the selection of the y-axis scale distorts the viewer’s perception of the meaningfulness of the results.
Get started early to prepare a successful presentation

Analyze your audience
  What do they want to know?
  What do you want to tell them?

Make an outline of key points

Make a timetable with hard deadlines and *stick to it*
  Start 1–2 weeks before your presentation
  Finish (including practice) at least 1–2 days before your talk

Review your materials
Proofread!

1. Make an outline of your talk -

I. Introduction
   A. Title
   B. Main points
   C. Agenda, etc.

2. Anticipate questions the audience might ask you and be prepared to answer them.

3. Prepare any handouts you may think would be useful - e.g. detailed graphs and charts.
Rehearse your talk before you give it

A few days before
- Practice in front of friends and check timing
- Rehearse likely questions
- Solicit feedback about logic and clarity
- Revise (*shorten*)

The night before
- Go over one more time
- Put all materials *in order* (number your slides!)

1. Think about the importance of each slide. What if, for some reason, your talk must be shortened by five or ten minutes? What slides would you take out?
Western presentation style is more informal and relaxed

- Convey your enthusiasm for your work
- Ask the audience rhetorical questions
- Maintain eye contact with people in all parts of the room

1. Picture a person you know and respect professionally. What in particular did you like about him or her? Can you reflect any of these traits during your presentation?
Remember your purpose in giving the presentation

Your purpose is to tell an interesting, memorable story of your work

*Not* to read a book

*Not* to demonstrate how smart you are

*Not* to attack others’ work

*Not* to show how fast you can talk
Check everything before your talk

Check the projector
   Make sure you know how to turn it on
   See that it is plugged in
   Check which way to position your slides
   Adjust the focus

Check microphones, pointer, other tools

Arrange your slides, notes, and other materials
   Be able to reach everything without moving
   Be able to go through your slides without fumbling

Put your watch next to your notes and check the time

1. Do not expect the conference organizers to take care of all of your needs if you do not tell them what they are ahead of time. Did you request an overhead projector? Slide projector? video-tape player?

2. Make the room comfortable for your audience as much as you can. Clean up clutter; if the room next door is noisy, ask them to quiet down, etc.

3. Arrange yourself -
   - If you are nervous, take some deep breaths
   - Try to look friendly and approachable
   - Be ready - do not daydream during the presentation just before yours!
   - Be flexible!
“Stage fright”? Be prepared!

Know your subject thoroughly
Practice in a big room before real people
Have all your materials in order
Arrive early
Familiarize yourself with the equipment

Ask a friend to sit in the middle of the audience and speak primarily to him or her
Tell him to look interested and nod frequently
Ask her to smile and nod encouragingly whenever she catches your eye
If English is not your native language

Do not use slang
Choose the simplest word
Have a native speaker listen to a rehearsal and review your slides
Speak slowly and distinctly
Watch for audience cues; if people are looking confused, they don’t understand you

1. Do not use jargon unless you explain it (MIR)
2. Choose the simplest words - imagine that you are giving a talk in English to someone from China!
3. Do not be embarrassed to ask a native speaker to review your presentation.
4. If translation is simultaneous, cut your presentation by 1/3. If it is consecutive, but it by at least 1/2.
Allow time to answer questions

Repeat the question
- Not everyone in the audience may have heard it
- Repeating the question allows the questioner to clarify it and gives you time to think about your answer

If you don’t know the answer, say “That’s an excellent question. I don’t know; I’ll have to look into it.”

If the questioner disagrees, don’t argue

Never insult the questioner
Express your thanks

At the beginning of your talk
  Acknowledge colleagues and collaborators who contributed to the work
  Thank the conference organizers for allowing you to speak

At the end of the talk
  Thank your audience for their attention

Keep your thanks very brief
Finish on time!

Practice your timing
Set your watch for a two-minute warning

*Do not talk faster—*
  Simplify
  Cover fewer points
  Eliminate slides

If you talk too long, the audience will lose interest in your work and respect for you!
1. Put your contact information back on the screen; pass out business cards after the panel.
2. Thank people for listening to you.
3. Do not monopolize the discussion period; there are other presenters who also want to be heard.