

How to give a good talk:

Strategy:

-Paraphrasing Einstein “Keep things as simple as possible, but not simpler.”.

-Be clear what you want to achieve – what is it that you want audience members to leave remembering about your work? Design your talk around this. Define the MAIN IDEA of the entire talk. Describe this idea, your PREMISE, to yourself in a single sentence with a subject, object and verb. For example: ‘Cells change their shape by regulating the actin cytoskeleton’, not, ‘Cell shape and the cytoskeleton’. The talk *should contain only material that is relevant to the premise, not the topic in general.*

Material:

1. Tell a story.

"Tell'em what you are going to tell'em. Tell'em. Then tell'em what you told'em."

Scientific talks are not simply oral papers – being concise and avoiding repetition is important in writing. Talks need to deal with reality of an audience’s limited attention span.

(a) The *Introduction* should not just be a statement of the problem - but it should indicate your motivation to solve the problem, and you must also motivate the audience to be interested in your problem. In other words, the speaker must try and convince the audience that the problem is important to them as well as the speaker. It has become conventional wisdom that a speaker has 2 minutes to convince people to make the effort to listen and try and understand a talk. Specific examples are often a better way to get an idea across than abstract theory. When time is short omit the general not the example.

An outline slide? Think about whether you need one. If the talk has multiple parts, it can be useful (people like to know how a talk will progress). If the talk is simple it may not give any additional information. If you use one it should probably be after the general introduction.

(b) The *Method* details your approach. Be careful to pare this section down to what is necessary for the audience to know in order to put your results in proper context. They need to know your model organism was *Drosophila*, they probably don’t need to know the recipe for the growth medium. The appropriate level of detail will depend on the expertise of the audience. One strategy: Methods can be more interesting if they are "story like" rather than "text book like" – "I did this and then I did that, but that didn't work so I did something else." This rather than, "The final result was obtained using this approach."

(c) The *Results* section is a brief summary of your main results. Try and be as clear as possible in explaining your results – include only the most salient details, but make sure you include everything needed for the audience to logically step through the evidence

you use to arrive at your conclusions. Be extremely careful to be as precise as possible. You have not shown: The average effect of mutations are deleterious. You have shown: The average effect of the type of mutations you introduced, on the organism you studied, in the environment you used, was deleterious. You can extrapolate, but this should be done responsibly and clearly. Balancing this, don't over qualify statements. When you can say something succinctly, do.

(d) The *Conclusion/Summary* section should condense your results and raise implications. Be sure to connect your results with the overview statements in the *Introduction*. Don't have too many points - three or four is probably the maximum. Be explicit, "If you remember one thing, remember this...".

2. Be clear in your mind about what you want to achieve in giving the talk. Is it better to be 'broad and shallow' or 'narrow and deep'? It may be harder, but audiences will be more impressed if you manage to effectively present a complex detailed story – something they wouldn't have been able to get by paging through an introductory text.

3. Be ruthless, prune unnecessary material. Good speakers will have one or two central points and stick to that material – the talk should be designed around getting these points across. How many talks have you heard where the speaker squanders their time on unessential details and then runs out of time at the end? The point of a talk is to communicate scientific results, not to show people how smart you are, tell them everything you know or present all possible technical details (if I see one more picture of a gel in a talk...). *Less is better for a talk.*

4. Be very careful about assuming knowledge. In general audiences will be more forgiving if the speaker assumes too little than too much. Most people don't mind a short refresher and, in any case, terms and theories are rarely unambiguous, the audience should know exactly what you mean by "X". When invited to give a talk ask about the type of audience you should expect. A talk to an evolutionary biology department won't need an introduction to natural selection. A talk to a mathematics department might.

5. Consider placing additional detail slides after the last slide of the talk. A cost of presenting only essential information is that you won't be able to present all the information you have or the raw data supporting all the claims you make. Having this information on hand is a good way to address follow up questions.

Visuals:

1. Title each slide with its premise. In each slide, the title must be a full sentence, with a subject, object and verb, that describes the main idea of the slide. It is the PREMISE of the slide, and will help the audience get the idea at a glance. Avoid questions like "What is the velocity?" or fragments like "An assay of velocity." Instead, use a full sentence like "Velocity increases with time" – the idea you want to get across. As you prepare, finding the premise of your talk and of each slide is not easy, and should be considered part of the research: it can focus you on what is important and essential, and help you to see if any part of the argument is missing.

2. Think hard about the best way to present data. Sometimes raw data can quickly convey the context and significance of results. Other times it is needlessly complex and distracting. Showing a stunted plant vs. a healthy plant may be useful – this is what a 50% reduction in biomass looks like, but is that gel, detailed phylogeny, microarray slide, regulatory network or sequence alignment really helping you get a point across – is there any hope that the audience will be able to properly interpret it in the time available? In general raw data will be better presented as interpreted in graphs etc. Include simple indicators of significant differences etc. Is that sequence alignment really necessary?

3. Make sure everything that is on the slide is readable. Especially figure legends. Make sure you walk through axes of all slides. If you don't, either the audience won't be confident they understand what you are showing or will spend the time you want them to spend listening to you trying to figure out the figure you've moved on from. If it doesn't matter whether they understand the figure, it shouldn't be there. Scientists are good at interpreting and remembering figures. Take advantage of this – make sure what you show is interpretable in a reasonable time. What is a reasonable time? The time it takes you, as speaker, to explain what the figure shows.

4. Talking points? Better for slides to be as simple as possible. Whether to include bulleted talking points (yes – helps you, can help the audience; no – audience's attention is diverted from the pacing and emphasis you want to present, adds visual clutter)? Perhaps a compromise, some complex slides may be helped by bullet points. Some slides, for example, a nice elegant graph, may not need them.

5. Any device that reduces the degree of concentration required to follow your talk is a good idea. Assume that any given person will drift off (despite your best efforts) at some point in your talk. Will they be able to reorientate themselves? Examples: (a) Progress indicator – can be useful if a talk has multiple parts. (b) Colors – be careful about the use of discriminating colors (projected colors may not reflect what you saw on your screen when choosing them), but do use them. It can be very helpful to have, e.g., two treatments colored consistently through a series of slides (“...through the next 4 slides the red bars will always show the control, the blue the manipulated treatment.”).

6. Be consistent with terminology. In text and in speech if there are two terms for an idea you are using, note this, but only use one. People that understand the terms will translate as necessary. People that don't will only get confused if you use both.

7. Are those equations *really* necessary? Avoid equations as much as is possible – they are not intrinsically impressive!

8. Powerpoint effects – No! Exception is to build up parts of a complex slide through addition of text or detail – these should “appear” instantly, no “fade-ins” etc. Consider breaking a complex slide into separate slides.

9. Backgrounds. Keep them simple. Black on white is probably best for 99% of talks. (Yellow on blue was good when talks were given on slides in darkened rooms.)

Presentation:

1. Practice! Nothing is worse than watching someone who is clearly ill-prepared, even if they know the material. Common advice is to try and memorize exactly what you are going to say for the first 2-3 sentences (or perhaps up to the first 2 slides). This lets you gradually “warm up” to a more relaxed and engaging presentation style. It’s almost impossible to explain a complex idea on the fly. Decide how you are going to do it during your practice. Also, knowing the material, and how the slides are put together makes it easier to...

2. Talk to the audience, not the screen. A side-effect of simple slides is that you can direct attention to areas without having to point to them (“This graph...” vs. “The graph second from left two down from the top...”).

3. Laser pointers – use sparingly. It’s not necessary to underline every point as you make it.

4. Don’t rush slides. Do discuss everything on the slide (or mention that you will return to some parts later). If you don’t plan on talking about it, it shouldn’t be there. You need to build up the trust of the audience that it is worth their time to try and understand the slide – that it is relevant to the point you are trying to make. In general aim to spend at least 1.5 to 2 minutes per slide.

5. Pauses are important – try to avoid OK’s, Umm’s and Err’s. Pauses give the audience time to digest information and orientate themselves to graphics etc.

6. Don’t say: do you understand? Rather say: did I explain myself? The responsibility for clarity is yours. Be polite and gracious. But, within reason, don’t apologize.

Questions:

1. Listen to the entire question before responding.

2. Repeat the question before responding. The audience may not have heard the question and it gives you time to think through what is really being said.

3. Don’t be confrontational. It’s not true that there is no such thing as a stupid question. But you shouldn’t point that out.

4. Compliment good questions (but don’t go overboard).

5. Be clear as to whether your answer is supported by data or is your hypothesis/opinion.

6. Don’t be afraid to say “I don’t know”.

7. Don’t be afraid to suggest continuing a discussion with a questioner after the formal question time.

General:

1. Go to as many talks as you can. As well as taking notes on the talk, take a couple of points about good and bad things the speaker did.
2. Give as many talks as you can. Talks that don't have much riding on them are good practice for those that will.
3. Ask a trusted colleague to assess your talk. What did and didn't work? What can be improved on?
- 4. Don't blindly follow any particular piece of advice. What works for some people, won't work for others.**

Ideas and materials from: Mark Schoeberl and Brian Toon (http://www.cgd.ucar.edu/cms/agu/scientific_talk.html); Simon Peyton Jones (<http://research.microsoft.com/en-us/um/people/simonpj/papers/giving-a-talk/giving-a-talk-slides.pdf>); Uri Alon (<http://www.weizmann.ac.il/mcb/UriAlon/>); Mike Dahlin (<http://www.cs.utexas.edu/~dahlin/professional/goodTalk.pdf>)

Other good resources:

How To Conquer Public Speaking Fear
(<http://www.stresscure.com/jobstress/speak.html>).

Writing Referee Reports – the Nurturing Viewpoint. Uri Alon
(<http://www.weizmann.ac.il/mcb/UriAlon/>).