

# Neural basis of visual object recognition in monkeys and humans

MIT Course 9.720

Dept. of Brain and Cognitive Sciences

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## HOW TO GIVE A PAPER PRESENTATION

Scientific oral presentations are not simply readings of scientific manuscripts (see the reading “How to present a paper orally” on the 9.720 Stellar site for more on this and a discussion of good presentation techniques.) Nevertheless, at an overall level, your scientific talk should be organized into sections that parallel the sections in the scientific paper. As in the scientific paper, the key sections are:

- 1) **INTRODUCTION:** The rationale for the experiment (why did you do it?)
- 2) **METHODS:** The methods that were used (how did you do it?)
- 3) **RESULTS:** The results obtained (what did you find?)
- 4) **DISCUSSION:** An interpretation of those results (what does this mean?)

Although not part of a standard oral presentation, you should end your talk with:

**5) CRITIQUE AND GROUP DISCUSSION:** Your job as presenter is to not only present the paper, but also lead class discussion of its strength and weaknesses. To help focus the class discussion, end your presentation with a list of approximately three major questions/issues worthy of further discussion (see below).

### 1. INTRODUCTION

The first 1 or 2 slides should introduce your subject to the audience. Very briefly (you only have about 20-25 minutes total) give a concise background. Explicitly state the question addressed in the paper. Start with the “big picture” and then immediately drive to how your study fits in the big picture (one or two sentences.) **One key difference of the talk versus the paper is that you should state your major conclusion(s) up front.** That is, in a few sentences, tell the audience where you will lead them in this presentation. (e.g. “Although previous studies have found that inferotemporal neuronal receptive fields are very large, in this talk I will show that, under certain conditions, IT receptive fields are remarkably small.”)

### 2. METHODS

There should be 1 or 2 methods slides that allow the audience to understand how the experiment was conducted. You might include a flow chart describing the “recipe” of the experiment. Do not put in details that might be appropriate in a paper (people can ask about them at the end if they are interested). For example, “extracellular, single-unit recording was used to measure ...” NOT: “The electrode impedance was 1 megaohm when measured at 1 kilohertz with a xx instrument...”

### **3. RESULTS**

The next slides should show the major results. If appropriate, it is nice to start with a slide showing the basic phenomenon (in neurophysiology, this might be a “a single cell” example). It reminds your audience of the variables that were manipulated and introduces your audience to the basic unit of measure. Next, show figures that clearly illustrate the main results. Do not show charts of raw data. All figures should be clearly labeled. When showing figures, be sure to explain the figure axes before you talk about the data (e.g., “the X axis shows time. The Y axis shows level of neural activity”).

### **4. DISCUSSION (Conclusions)**

List the conclusions in clear, easy to understand language. You can read them to the audience. Also give one or two sentences about what this likely means (your interpretation) in the big picture (i.e. come full circle back to your introduction) and perhaps some future directions.

### **5. CRITIQUE**

Please end your presentation with at least two or three major things that should be discussed. These should consist of things like: things that might be improved in the study, additional experiments that you think might be appropriate (better?), and general issues about object recognition (i.e. put the study in the “big picture” of the course). Discussion from the audience should be especially encouraged at this point, but you should be prepared to foster this by raising these issues (e.g. one slide with a list of issues).

### **Overall tips:**

- Control of time. For most conference presentations, interruptions are not allowed and questions are held until the end. For the relaxed discussion environment of this course, you can choose to encourage questions or defer some of all questions until the end.
- As a rule of thumb, you should have no more slides than the minutes allowed for the presentation (e.g. 10 slides for a 10 minute presentation), but less is better.
- show enthusiasm for your topic. Both enthusiasm and boredom are contagious.
- As you put up each slide, have in mind the key points you want to make with that slide (one or two points). When you are preparing and designing the presentation, think: “Why is this slide in here?” If you cannot think of an important reason, the slide probably should not be in the presentation.
- Speak in short sentences and use easy to understand language. Avoid jargon. If you are a neurophysiologist, think about how you would like a molecular biologist (i.e. a scientist who knows something about neuroscience, but is not an expert in your particular field) to present to you (and vice-versa).
- Practice, practice, practice.

- With enough practice, you will find that once you are into a presentation, it will flow smoothly (you have already put the work in to create the proper slides and have thoroughly practiced presenting the key points of each slide before you even walked into the room). Thus, the goal is simply to “get started” with the presentation. Once you are started, the nervousness will disappear as you are now “in your familiar zone” (well practiced). A very helpful tip here is to memorize your first one or two sentences. When you get up to speak, these will almost reflexively come out of your mouth and launch you into your presentation.

- 95% of the work is done before you even show up to give the presentation:
- You have clear slides, with large fonts and minimal clutter.
- Those slides are organized along the primary topics discussed above.
- You know the key points you want to make with each slide and have practiced - making those points.
- You have practiced the entire presentation and worked out any “rough spots”.
- Because of this practice, you are confident that the presentation is at the expected time limit, so there is no reason to rush or become concerned with the clock. You can relax and enjoy showing off your grasp of the study and well-polished presentation.