How to present a scientific paper – do´s and don´t´s

Each student selects a research paper and accompanying review article(s). Read the paper and concentrate initially primarily on the following points:

- What is the fundamental scientific question that the authors investigate/try to answer?
- What is the background and how is this topic related to the course (connect to lecture, course, etc.)?
- Which is/are the key experiment(s) in the paper?
- What is the take-home message of the paper?

Thereafter try to understand the scientific and technical aspects of each experiment in detail (concentrate on key experiments). Consult textbooks and the internet, and, where questions remain, ask the assistants.

Prepare a PowerPoint (or Keynote etc.) presentation (preferably in English, but German is OK in case English should be a problem). Consider the following important points:

- Enlarge the figures that you want to show as much as possible and at least to the extent that all important details are clearly visible in a beamer projection.
- Presenting different panels individually, one after the other, instead of everything at once, is helpful. Less content per slide is usually better than more.
- Explain everything that you show on a slide. If there are things that you don´t need to explain, eliminate them from the slide.
- Summarize key points on your slides (e.g. with bullets and/or arrows), such that the figures can be rapidly understood.
- Every slide needs a title, ideally a very brief statement that summarizes the take-home message of the slide.
- Convey the message with as little text as possible on the slides.
- Use a sufficiently large (at least 18 pt for regular text) font size, preferably non-serif (Arial, Helvetica, etc., not Times etc.). Stick to the same slide layout (style, background color, font size, arrangement) throughout the talk. Avoid any unnecessary fancy design elements, logos, etc. on your slides.
- Prepare a one-page handout for the other students and the course assistants (see below).

Structure of your presentation

Introduction:
Present the scientific background so that the significance of the main questions addressed in the paper becomes evident. Here, review articles are helpful to quickly get an overview of a field. What is the big question behind this work? Why is this an important question? Present the main questions of the paper clearly and concisely.

Results:
For every key experiment, clearly state the purpose followed by an explanation of the chosen experimental approach and finally the findings obtained (keep in mind that not all experiments shown in the paper may be equally important to support the main conclusions of the paper - select the most important experiments!). Explain what is shown in images, graphs that you present on your slides. State the conclusions that the authors have drawn from the findings.

Discussion:
Place the work in a broader context: What has been answered or clarified by the paper? Are there any problems with the conclusions and interpretations proposed in the paper (e.g., missing control experiments, overstatements etc.)? What remains to be clarified in the future? This is the time to be critical and to point out open questions, strengths and weaknesses of the paper.

Take home message:
Summarize the important points as concise as possible (e.g. 2-3 bullet points).

Prepare a one-page handout containing:

- Reference (Authors, Year of publication, Title, Journal, Volume, Page numbers)
- Scientific background
- Key questions addressed
- Key experiments (approach and findings)
- Take-home messages
- Keep the text short! (bullet points usually help)
- Use one or few selected instructive figures and/or cartoons that summarize the findings (“Graphical abstract”).

Distribute the handout to all other students and to the course assistants before you start your presentation.

Some additional hints for improving your oral presentation

Speak freely (yes, you can!) and do not read off a piece of paper.

Do make use of the black (or white) board! Write important information (e.g., gene or protein names, abbreviations, pathway schemes etc.) onto the board, so it remains visible throughout the presentation and helps the audience to remember the names.

Position yourself so that you face the audience and do not cover up the screen. Talk to the audience and not to the computer or the screen.

Use a stick or laser pointer.

Keep within the allotted presentation time, so that enough time remains for questions during the talk and for the discussion at the end.

End your presentation by starting a scientific discussion with your fellow students and the assistants and answer questions. A good way to do this is to prepare a first question that you ask the audience at the end of your presentation (“ice breaker” question).