



# Reporting Results

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## What You Will Learn in This Chapter and Associated Exercises

Students will learn how to make effective poster and oral presentations using data generated during previous weeks.

### 12.1 Final Student Projects

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At the end of the 3-month period, students are given 3 weeks to conduct their own experiments to engineer their tissue of choice. Students are first asked to search the literature and present the most suitable published protocols. This is followed by an in-class discussion to determine how feasible it is to perform these experiments both time and reagent wise. The availability of live animals or freshly excised tissue has to be established ahead of time. It is also important to discuss what exactly will be measured or imaged to document the creation of teams' tissue of choice. Students are free to offer up to ten options of what they want to measure. After the discussion, two to three of the most suitable options can be finally chosen. Students are encouraged to test at least one specific hypothesis within the framework of their experiments. This can be the effect of animal age, type of species, bioreactor type, etc. Team members then work together using their own schedule to create and examine their tissue-engineered constructs. It is important to understand that the gained data will be later used in the team's poster/oral presentations; so pictures should be captured under the same conditions to show the representable results.

### 12.2 Poster Preparation

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At the end of the 3-week period, teams are asked to prepare posters that summarize the results of their efforts. Due to limited course time, participants are advised to begin poster preparation even before they collect all the data, by starting to formulate their introduction, methods, and hypothesis sections. Each poster must be formatted according to the standard guidelines and include Abstract, Introduction, Methods, and Results sections. The latter usually contains four to eight figures with figure legends followed by the Conclusion section. Acknowledgments and References sections are included at the very end. The title should be concise, not very specific, and no longer than two lines. The authors, their affiliation, and the place where experiments were performed have to be mentioned below the title.

**Abstract section** An abstract is a condensed description of the performed work so viewers can quickly catch the general idea of the study. To formulate an abstract, students are advised to compose one to three sentences each describing study rationale, methods, results, and conclusion. These sentences can be then put together into a coherent text.

**Introduction section** Through the Introduction section, the key points leading to the study should be delivered—why this particular tissue was chosen, what was done by others in this field, why the selected features were measured, and why the work was important clinically. Be attentive not to repeat the abstract content in the introduction. The use of flow charts and any other visual effects in this section is encouraged.

**Methods and results sections** Methods can be described only briefly, particularly if there is a lack of space. Most space should be given to the results. The charts, graphics, and images must be clear, well-labeled, and easily understood. Each documented step in the experimental protocol or measured result can be presented as a separate figure. It is advised to make line art for the graphs in dark colors while keeping the background white or light color. This will make it easier to use the created graphs for other types of publications. Each image needs to have a scale bar. Each numerical value has to be accompanied by statistical information.

**Conclusion section** This section should summarize results and whether collected data supported or disproved the authors' initial hypothesis. Future directions and ideas can also be mentioned in the conclusion. The Reference section is optional for posters. However, it is advised to include the most critical papers on which the study was based. Giving the acknowledgments to people, who supported and helped during the whole project, is also important. It is best to mention the type of specific assistance and not simply list the names.

**Overall design** Students are advised to use the maximal contrast between the font color and the poster background, to minimize unnecessary details, and to use cartoons to better portray experimental procedures. It is important that the poster content is visible from a distance of approximately 2 m. The quality of the images must be high. The font of the text should be large enough and appropriate to the poster size. Two to three colors can be used to make fonts or frames of the poster more eye-catching. Using more colors can actually distract from the poster's main content. Any additional artistic effects (i.e., 3D graphs, shadows, etc.) should be carefully considered for them not to divert the viewer from the main message. A scientific poster should visually attractive, but its main point is to present the data to the viewer. PowerPoint, Keynote or Adobe Photoshop programs can be used as tools to create the poster. It is advised to convert the file into PDF format to see how the final version of the poster looks like when printed.

### 12.3 Oral Presentations

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The last part of the course is the teams' oral presentations. This can be organized as an event open to the interested public. After the course director introduces the main subject of the course, teams take turns presenting their projects. Students are encouraged to be creative about the exact format of their oral presentation while touching on the main points. These points include why and where their tissue of choice can be clinically useful, what has been accomplished by others to build it, what were the teams' methods, what worked or did not work, and what was the most exciting part of the experiments conducted. Depending on the audience, the presentation can be more public-oriented and less scientifically specific. A slide-based presentation is probably the most practical option. The core of a good presentation is its visual representativeness. Only high-quality pictures should be included. The number of slides must be limited to one slide per minute. The mean duration of such type of presentation can range from 15 to 20 min. The structure of the presentation is similar to the poster structure but with fewer details. The overall appearance of slides is very important as it helps to keep the audience's attention. Each slide should not contain

too much text. As much as possible, the text should be replaced with cartoons, pictures, charts, graphs, and tables. Students can use the background material they prepared for earlier sessions of the course. Sharing a few funny moments the team experienced during the course allows connecting better with the audience. The talk of each student should be well prepared and coordinated with other teammates. Students should be ready to answer questions from the audience following their presentation.

## 12.4 Peer-to-Peer Ratings and Student Feedback

Practicing oral and poster presentations a day or two before the public presentation is highly recommended. Such a preview session gives the course director an excellent opportunity to conduct peer-to-peer review and rating of the team's presentations. The latter process has multiple benefits. First is immediate feedback that can improve the quality of a team's oral presentation. Secondly, it provides the instructor with the opportunity to discuss mistakes made by individual teams and turn them into learning opportunities for the entire class. Thirdly, students learn how to provide constructive criticism to fellow students. Finally, collected peer-based ratings can be used to issue awards at the completion of the course. Awards for the best poster, the best oral presentation, the most helpful member of the team, the least contaminated cultures, or any other additional/humorous achievements can be given to the teams as well as individual participants. Students are also asked to complete course evaluation forms.

### Take-Home Message/Lessons Learned

After reading this chapter and preparing their own presentations, students should:

- Be able to analyze and present their own data
- Be able to use appropriate fonts and colors to effectively present their data
- Understand the general structure of either poster or oral presentation and contents of its main elements
- Know how to engage in peer-review grading of presentations

## Self-Check Questions

- ?** Q.12.1. The main goal of the poster presentation is to
- A. Present all the data in detailed format
  - B. Produce stunning visual effects
  - C. Include all relevant references
  - D. Outline results and conclusions in a visually clear way
- ?** Q.12.2. The recommended number of slides for oral presentation is
- A. One slide per minute
  - B. One slide per 5 minutes
  - C. Three slides per minute
  - D. Ten slides per minute

- ❓ Q.12.3. In order to use the same figures for other types of publications, it is recommended to format poster figures using
- A. Light colors on a dark background
  - B. Dark colors on a light background
  - C. A close match between background color and graphics
  - D. Red color on yellow background
- ❓ Q.12.4. Choose the correct statement.
- A. Humor is not allowed in an oral presentation.
  - B. Poster content should be visible from approximately 2 m.
  - C. Oral presentation needs to include all methodological details.
  - D. Acknowledgment section should only include funding sources and not the names of the people who assisted authors with their studies.
- ❓ Q.12.5. Most space in a typical science poster has to be given to the \_\_\_\_ section.
- A. Introduction
  - B. Methods
  - C. Results
  - D. Conclusion