

## The Cell Organelle Pageant

By Jason K. Pearson and Lee E. Hughes

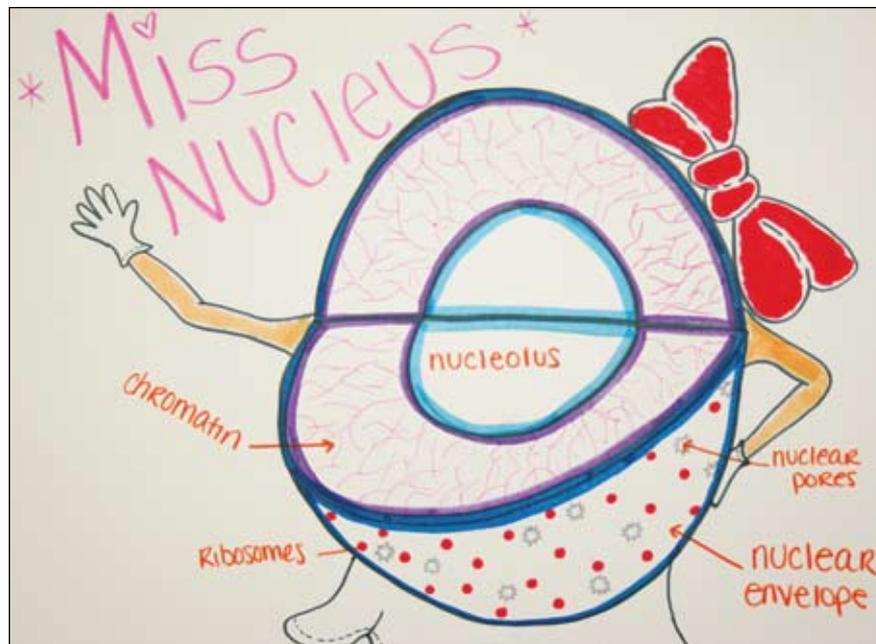


ILLUSTRATION COURTESY OF THE AUTHORS

Example of student work.

The Cell Organelle Pageant is an activity to reinforce student's understanding of the structure and function of eukaryotic cell organelles. This activity should follow readings and a lecture presentation on cell types and structures. Students often learn about the structure of the eukaryotic cell in introductory biology courses, but they rarely move beyond a simple memorization of names and basic function. This activity not only requires that students remember these facts, but also expects them to move toward further understanding of the importance of various cellular functions.

### Learning objectives

By the end of the activity students should be able to do the following:

1. Differentiate between the different organelles within a eukaryotic cell.
2. Explain the importance of each organelle.
3. Recognize the organelles' structure.

### Materials

Each group will be creating a drawing and a speech. The following materials will be needed:

- 1 box of colored markers per group
- 1 half-sheet of poster board per group
- 1 copy of speech form per group (see Figure 1)
- 1 pageant ballot form per student (see Figure 2)
- 1 peer evaluation of group work per student (see Figure 3)

### The pageant

The activity is designed for small classes (25–30 students) and can be completed in one 50-minute class period. Students work in small groups (four to six students) to create an oral presentation and visual representation of an assigned organelle. They must then present their work to the entire class. The oral presentation is given in the form of a 2-minute persuasive speech, and the visual is given in the form of a “glamour shot.” The speech should be formatted in a manner that discusses the role of the organelle within the cell while highlighting the relative importance of the organelle to cell function. The poster or glamour shot should be representative of the organelle's actual structure but may include creative license to show the organelle as a contestant in the beauty pageant. Following presentation by all the groups, the class members will vote to crown a winner of both the oral presentation and the glamour shot portions of the pageant.

### Procedures

In the week leading up to the activity, students complete textbook reading and receive instruction on the topics of cell structure and function. They are told in advance that this information will be the subject of a course activity. In order to focus on what students recall and to help reinforce their learning, they are also notified that they must complete the activity without using their textbooks or other sources.

To begin the Cell Organelle Pageant, divide the class into seven

**FIGURE 1**

**Cell Organelle Pageant and two-minute persuasive speech.**

Organelle assigned to group:  
\_\_\_\_\_

In the space below, write the text of the two-minute speech you will give that details why your assigned organelle is the "most important" organelle in the cell. This written version of the speech will be turned in to the instructor for grading after you complete your presentation.

**FIGURE 2**

**Cell Organelle Pageant ballot.**

Date: \_\_\_\_\_

Name: \_\_\_\_\_

Organelle group you were in:  
\_\_\_\_\_

**Glamour shots**

Using accuracy of information in the drawing and quality of the overall presentation as your criteria, rank in order (no ties permitted) your top three "glamour shots." *Note: You may not vote for your own entry.*

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Presentations**

Using accuracy of the information and overall persuasiveness of the group presentation as your criteria, rank in order (no ties permitted) your top three organelle presentations. *Note: You may not vote for your own entry.*

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

groups of three to four students each by a random process. Each group must then select, through a blind draw, the organelle that they will present. Finally, the instructor will perform another blind draw to determine presentation order. Class members should be instructed that they will be acting as the pageant judges, but their work will also be graded by the instructor. To prepare for the pageant, the class is given the following assignment:

Prepare your organelle for the Cell Organelle Pageant. You will have twenty minutes to prepare the following for presentation to the entire class (you may use only the knowledge of yourself and the members of your group, so no books or notes): a "glamour shot" of your organelle for the beauty portion of the contest (you will make a drawing of your organelle using the materials available in the classroom), and a 2-minute persuasive speech on why your organelle is the "most important" organelle in the cell.

This activity was designed for a 50-minute class period, so no more than 5 minutes at the beginning of the class should be spent on describ-

ing and setting up the activity. Once students have received the instructions, the instructor should explain that their speech should not be simply a description; they should use the oral presentation to show why their organelle should be considered the most important organelle. This might include thinking about what would happen if this organelle were absent or describing how the organelle interacts with other parts of the cell. They should also be instructed to include appropriate labels and details in their glamour shot, while also being creative in the presentation.

On receiving their instructions, the student groups will work on their speech and glamour shot for 20 minutes. At the end of that time, each group will place their glamour shots along the blackboard where they can be reviewed by the class. The members of each group will then present their speech in the presentation order previously selected. At this time, pass out the ballots and instruct the students to select their top three choices for both the poster and the oral presentations—noting that they may not vote for their own entries. Once the votes are tallied by the instructor, the top three places in each category are announced.

**FIGURE 3**

**Peer evaluation of group work.**

Evaluate each member of your group based on the following criteria (*Note: You must justify all rankings of 5 or 1*):

- 5—Excellent:** Contributed positively to the group discussion throughout the process. Stayed "on task" at all times. Was thoughtful and appreciative of the contributions of others.
- 4—Very Good:** Contributed positively to the group discussion throughout the process. Generally stayed "on task." Was thoughtful and appreciative of the contributions of others.
- 3—Good:** Contributed positively to the group discussion much of the time. Generally stayed "on task." Was generally thoughtful and appreciative of the contributions of others.
- 2—Average:** Contributed to the group discussion at times. Generally stayed "on task." Was generally thoughtful and appreciative of the contributions of others.
- 1—Poor:** Did not contribute or contributed very little to group discussion. Was not "on task" much of the time. Was not accepting or appreciative of the contributions of others.

# FAVORITE DEMONSTRATION

## Method of evaluation

The evaluation of the activity includes a peer evaluation by group members (20 points), an instructor evaluation of the speech (30 points), and glamour shot (30 points), and up to 10 points each awarded for the results of the pageant voting. Student peer evaluations of group work are used to measure the contribution of each member to the activity (see Figure 1). For the instructor evaluation of the activity components, a grading rubric is used (see Figure 4). Finally, the results of the student vote are used to assign points for each part of the activity as follows:

## Voting point tally

- First place in each competition: 10 points
- Second place in each competition: 8 points

- Third place in each competition: 7 points
- All other submissions: 5 points

## Conclusion

Together, the speech and poster provide an exercise that allows students to creatively express their knowledge of the organelles and provide reinforcement of the concepts presented in the lecture. This activity requires them to evaluate their prior learning along with their peers (as they prepare their presentation using only the knowledge they each remember). It also exposes all members of the class to additional practice with the content material in a direct way through their own group's presentation and indirectly through the experience as judges for the other presentations. These activities move their learning from simply memorization of

knowledge toward further comprehension and application of the biological concepts (Crowe, Dirks, and Wenderoth 2008). The pageant also provides the instructor insight into the students' knowledge base as an informal assessment tool. ■

## Reference

Crowe, A., C. Dirks, and M.P. Wenderoth. 2008. Biology in bloom: Implementing Bloom's Taxonomy to Enhance Student Learning in Biology. *CBE—Life Sciences Education* 7 (4), 368–381.

*Jason K. Pearson* is a seventh-grade teacher with the Frisco, Texas, Independent School District, and *Lee E. Hughes* (lhughes@unt.edu) is an assistant professor, both in the Department of Biological Sciences, University of North Texas in Denton.

**FIGURE 4**

## Activity evaluation rubric.

Information accuracy	20—Excellent	15—Good	10—Adequate	5—Minimal
Glamour shot	Drawing contains accurate representation of the organelle with great attention paid to detail and/or labels.	Drawing is a generally accurate representation of the organelle and has appropriate detail and/or labels.	Drawing is somewhat accurate representation of the organelle and/or has marginal detail or labels.	Inaccurate representation and/or lack of detail and/or lack of any kind of labels (when appropriate).
Speech	Facts were used appropriately throughout and were accurate.	Most facts were used appropriately and there were less than 3 factual errors.	Many facts were used appropriately and/or only minimum facts presented. Not more than 5 factual errors.	Facts were not presented or there were more than 5 errors.
Information accuracy points awarded (out of 40) = _____				
Presentation	10—Excellent	8—Good	6—Adequate	4—Minimal
Glamour shot	Artwork is presented in a pleasing format, is neat, and shows creativity. Includes appropriate use of color.	Artwork is presented in a pleasing format and is generally neat, but is lacking in overall detail or lacks appropriate color.	Artwork is somewhat sloppy, and/or lacking in overall detail (for example: sketch only) and/or makes little use of color.	Artwork is sloppy, and/or contains little relevant detail, and/or does not use color or uses inappropriately.
Speech	Strong speaking voice and confident demeanor	Strong to average speaking voice with good demeanor	Able to hear presentation and/or demeanor is good to average	Unable to adequately hear presentation or presentation lacked any confidence
Presentation points awarded (out of 20) = _____				
TOTAL POINTS: _____				

Copyright of Journal of College Science Teaching is the property of National Science Teachers Association and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.