

Developing WWW-based Molecular Biology Tutorials

Margaret (Peggy) G. Richey
Centre College
Departments of Biology and Biochemistry/Molecular Biology

Project Summary/Assessment

I created a set of Flash-animated tutorials that encompass the major molecular biology processes covered in most undergraduate Introductory Biology courses. This set includes DNA replication, transcription, translation, and an example of gene regulation (the *lac* operon model). This set of tutorials is currently being used in several fall sections of Centre's introductory Biology course, Bio 110. Feedback on these tutorials will be in the form of an evaluation that the students will complete (see Appendix) and the comments of the instructors for these sections. Student and faculty evaluations will allow me to assess the usefulness of these tutorials as teaching and learning tools.

In addition, I created a DNA replication tutorial for Centre's sophomore-level introductory cell/molecular biology course, BMB 210. This tutorial will be used in this year's classes and will be assessed in the same manner as the Bio 110 tutorials.

Based on student evaluations on previously developed Flash-animated tutorials that I used in a senior-level Molecular Biology course in 2000-01, I am confident that students will use these tutorials as effective learning tools and that they are useful in-class teaching tools.

Sharing tutorials

- All tutorials have been published on the Internet via the BMB Movies Home Page (see "Websites for Flash tutorials" below for annotated URLs).
- These tutorials have been made available to my colleagues at Centre for use in their Introductory Biology and Cell/Molecular Biology classes. Students can access these tutorials via the BMB Movies Home Page from any Internet-linked computer on campus.
- These tutorials are also available to anyone off-campus with an Internet-linked computer, so they may be used in the classroom and/or as a resource link for students.
- If there is sufficient interest, my Bio/BMB colleague Stephanie Dew, who also has experience creating Flash tutorials, and I will conduct an ACS summer workshop for faculty on creating animated tutorials using Flash. Although our experience has been in creating tutorials for science classes, we could give a general introduction to creating Flash tutorials that can be applied to any discipline.

- I can, and will, provide copies of the Flash files used to create the movies to colleagues at other ACS institutions. The Flash files can be edited by the recipient (if he/she knows how to use Flash) so that they can be adapted for their own particular needs. I can also provide copies of the movie and HTML files so that they can be run on any computer with the Flash plug-in and/or loaded onto a campus server. The movie files can't be edited, but they could be useful if there are network problems that prevent connection to the Centre web sites.

Websites for Flash tutorials:

To view these tutorials, you must have the Flash Player for Flash 5. You can download this player for free from <http://www.macromedia.com/downloads/>

http://web.centre.edu/~bmb/movies/list_of_movies.htm

This page contains links to all Flash tutorials made by Biology faculty at Centre College, organized according to course. In addition to the tutorials mentioned below, there are tutorials on telomeres, ATP and ADP antiport, and DNA Replication (for a senior-level course in molecular biology).

<http://web.centre.edu/~bmb/movies/Bio110dnareplication.html>

This movie on DNA replication is designed for a freshman-level introductory biology course which uses the 9th edition of Starr and Taggart's The Unity and Diversity of Life. It could be used with any textbook.

<http://web.centre.edu/~bmb/movies/Bio110transcription.html>

This movie on transcription is designed for a freshman-level introductory biology course which uses the 9th edition of Starr and Taggart's The Unity and Diversity of Life. It could be used with any textbook.

<http://web.centre.edu/~bmb/movies/Bio110translation.html>

This movie on translation is designed for a freshman-level introductory biology course which uses the 9th edition of Starr and Taggart's The Unity and Diversity of Life. It could be used with any textbook.

<http://web.centre.edu/~bmb/movies/Bio110prokregulation.html>

This movie on the *lac* operon is designed for a freshman-level introductory biology course which uses the 9th edition of Starr and Taggart's The Unity and Diversity of Life, but it will also be used in a sophomore-level introductory cell/molecular biology course.

<http://web.centre.edu/~bmb/movies/bmb210dnareplication.html>

This movie on DNA replication is designed for a sophomore-level introductory cell/molecular biology course. It is more detailed than the Bio 110 tutorial.

