

# Mitosis & The Cell Cycle

Jason Fitzgerald

## Course

Biology 111, Introduction to Biology

## Description

This module is a tutorial on mitosis and the cell cycle. The students will follow directions provided by the instructor on how to utilize the tutorial and complete the module. The tutorial includes diagrams, animations, completion exercises, and quizzes to help students better understand the processes involved with and the happenings occurring in the cell cycle. The module is based on a CD-ROM (*Essential Study Partner for Biology*, 7<sup>th</sup> edition, by Sylvia Mader) that is available from *McGraw-Hill*.

## Transferability

This module applies only to classes that use *Biology*, 7<sup>th</sup> edition, by Sylvia Mader as their text (since that is the text to which the CD-ROM corresponds); however, many texts have an ancillary CD-ROM that is available from the publisher to assist students in learning the material presented within the text. The instructor will need to check with his or her textbook representative to see whether an accompanying CD is available.

## Faculty Technology Skill

Instructors will need to possess basic computer skills. They will need to know how to install the program onto their computer (instructions are provided with the CD) and be able to navigate through the various screens on the program. This know-how will be important when it comes time to explain to the students how to access the tutorial.

## Student Technology Skill

The students will need the same skills as the faculty.

## Faculty Equipment

A computer with a CD-ROM drive and a copy of the *Essential Study Partner* CD are required.

## Student Equipment

A computer with a CD-ROM drive, a copy of the *Essential Study Partner* CD, and a printer are required.

## Cost

If the CD is not automatically included with the purchase of the textbook, the student should be able to purchase it separately for around \$15.

## Improvement on Teaching and Learning

Students typically have a difficult time visualizing the events of each phase of the cell cycle. By watching a narrated animation of the cell cycle students can see what actually does occur, and in what order, of each phase of the cell cycle. By including interactive

exercises and quizzes, students can test their knowledge of the subject. By making the process interactive and animated, I feel that the students will comprehend and retain the material more easily.

### **Nontechnology Comparison**

There are many events occurring during the cell cycle, and it tends to overwhelm students somewhat. When presented with nothing but diagrams and text, the students have difficulty associating specific events with their appropriate stages of the cell cycle. I think that the animated cycle and interactive exercises on the CD will help bring the concepts presented in class into focus for the students.

### **How to Use in the Classroom**

This module will be used by the students outside of the classroom on their own time; however, if the classroom is equipped with SMART technology or has a computer and projector, portions of the module could be incorporated into the lecture.

## **Module**

# **Mitosis and The Cell Cycle**

### **Instructions to Provide for Students.**

1. To access the mitosis tutorial, click on “Start” and then, “Programs.” Click on “Biology 7e Mader ESP” and then, on “Start ESP.”
2. Click on the “Genetics” icon, then “Cell Division,” and finally on “Mitosis / Cell Cycle.”
3. On the first screen, position your pointer over the text on the right of the screen to highlight each stage at its position during the cell cycle.
4. Click ⇨ along the bottom of the screen to begin a detailed description of the events occurring during each phase.
5. Click ⇨ again to continue the detailed description.
6. Click ⇨ to begin the animation of mitosis (the filmstrip icon along the bottom of the screen should now be highlighted).
7. After the animation has finished, click ⇨ to view a diagram of how cytokinesis occurs in animal cells.
8. Click ⇨ once more to view a diagram of cytokinesis in plant cells.
9. Click ⇨ to bring up the interactive activity.
10. Click on the name of each phase, and drag it to the box above the picture that best represents that phase.
11. Once this activity is complete, print a copy of this screen to hand in to your instructor.
12. To exit the program, click on the leaf icon along the bottom of the screen and choose “exit.”