Highlighting the Latest Biological Findings and Issues

Introduction

"A year or two ago, Joe Levine and I decided it was time to start over; Tear up the table of contents, lay down a clean sheet of paper, and completely rethink our approach to biology. In addition we had new subjects to explore....New ways to present material.

We had to think for example, how to explain phenomena like RNA interference; how to explain the fields of adult and embryonic stem-cell research; how to present students with these marvelous new transitional fossils that document the epical sweep of evolution across the ages.

The result is the program that you have before you. What we hope is that this program will continue our partnership with students and teachers to expand and explore the world of biology and to open the eyes of a new generation to the wonders of the science of life."
—Ken Miller

This guide looks at the latest biological findings and issues included in the 2010 version of the Miller & Levine Biology program. It provides suggestions for ways that teachers can approach controversial topics in biology instruction.

In the Headlines

When looking at the Miller & Levine textbook, it is easy to see that many topics come directly from today's headlines. The authors have included these topics in various text components.

Chapter Mystery

The Chapter Mystery is introduced at the beginning of each chapter. It helps students connect back to the Big Idea of the chapter. Many of these mysteries deal with current topics, such as the following:

- the use of human growth hormone;
- medical mysteries;
- DNA identification;
- bird flu; and
- Mad Cow Disease (also known as BSE).

Analyzing Data

Most chapters include a section titled *Analyzing Data*. This section gives students practice with graphing, calculating, and drawing conclusions about real data. Many of these deal with recent headlines such as MRSA, genetically engineered crops, rising skin cancer rates, and so forth.

Lab Experiences

In addition, students will experience several lab activities that deal with topics ripped from the latest headlines.

Feature Pages

Feature pages are located at various points throughout the text. These pages help students learn more about biological controversies, technological advancements, career opportunities, and historical implications.

Biology & Society

The Biology & Society pages cover issues that affect society. Students learn more about these issues by reading about the various viewpoints surrounding them.

Biology & Technology

The feature pages also introduce students to biotechnology topics.

Careers & Biology

Students learn more about various biology career fields in the Careers & Biology Section.

Biology & History

The Biology and History pages use timelines to trace a concept from discovery to current understanding. This helps students gain valuable historical perspective on contemporary biology topics.

Untamed Science

Untamed Science videos encourage students to explore the world. The Ecogeeks bring current biology topics to life. These videos help students answer that all-important question: *Why should I want to learn about biology?* Look for one of these engaging videos per chapter. Untamed Science is available on Biology.com and on DVD.

Covering Controversial Issues

"One of the things that makes it as exciting as it is to study Biology today also makes it challenging to write a textbook and teach about Biology today. What I am referring to of course is to the fact that biology is involved in a lot of headline news these days from stem cell research to ideas about human cloning to global warming to studies of evolutionary biology. All of these things are controversial issues.

They're always in the headlines, which means that you can use them to grab and hold your student's attention, because you can use these issues to show them that biology really matters.

The question is how do you deal with controversial issues in the classroom in a way that doesn't take a stand or a way that presents the information in a manner that lets students make their own decisions.

Ken and I have worked very hard on perfecting this kind of approach, because we believe that our job as textbook authors and your job as science teachers is not to get the kids to form particular opinions, but to help your students gather the scientific information and the scientific perspective that will enable them to evaluate news stories in a rational way by understanding the science that is behind the stories that doesn't make it into the thirty-second sound bytes on television.

You'll find that we do cover these important and controversial subjects and we cover them in a thoroughly scientific manner, which you can tell your students or your students' parents genuinely does not attempt to get them to believe anything. What it tries to do is get them to understand the scientific perspective on these issues and to use that understanding to inform their thinking."
—Joe Levine

One of the controversial topics covered in Miller & Levine Biology is stem cells. In Chapter 10, the authors use the following approach to explore this topic.

First, students use the text and digital resources to gather scientific information. They will look for answers to these questions:

- What are stem cells?
- What are the types of stem cells?
- How are stem cells currently being used?

Next, they will gain science perspectives by examining the ethical issues and potential benefits regarding the use of embryonic stem cells.

Finally, they will learn to evaluate media such as newspaper articles. Chapter 10 features an exercise in Study Workbook A that encourages students to read critically while looking for valid conclusions, author bias, and distorted facts.

To find out more about controversial topics in biology, please watch the Ken Miller videos about Evolution and Stem Cell Research. They are available on this Web site.

Review

This guide discussed the latest biology topics, discoveries, and controversies that are included in the Miller & Levine Biology program. It explained that many recent headlines and discoveries are included in textbook features like Chapter Mysteries, Analyzing Data, Lab Experiences, and Feature Pages.

Using controversial topics in biology instruction grabs students' attention and shows them that biology is relevant to their lives. When studying controversial topics, the goal is to help students gather scientific data, gain a scientific perspective, and evaluate media coverage.