

2010-2011 WHRO VideoClassroom Preview

Series Title:	Biotechnology In The 21st Century
Curriculum Area:	Science
Grades:	7-12
# of Programs/Length:	4/25:00 minute programs

Biotechnology is revolutionizing life in the 21st century, but with every breakthrough comes controversy. Do the benefits of stem cell technology, gene-splicing, and other advances outweigh the risks? Using interviews with experts, footage of scientists at work, 3-D animations, and on-screen text, this balanced four-part series introduces viewers to a field of science—and the pressing issues associated with it—that is rapidly changing the world.

1.) Bioinformatics, Genomics, & Proteomics: Getting The Big Picture (Preview Title)

If the 20th century was the era of physics and nuclear fission, the 21st belongs to the life sciences. Moving from gene, to genome, to genetically based diseases, this program provides an overview of the interrelated fields of genomics, proteomics, and bioinformatics, with an emphasis on practical applications of biotechnology to the field of medicine. Are genetically personalized drugs around the next corner? Commentary is provided by Bob Forgey, of ProNAi Therapeutics; Bill Worzel and Jeanne Orhnberger, of Genetics Squared; and Drs. Brian Athey and Elliott Hill, of the University of Michigan.

2.) Biotechnology & Your Health: Pharmaceutical Applications

Scientists have come a long, long way since Alexander Fleming's discovery of penicillin, the wonder drug of the 20th century. This program explains the function of infection-fighting antibiotics; vaccinations and insulin, crucial to the prevention of diseases such as smallpox and the management of diabetes; recombinant drugs, treatments involving genetically engineered DNA; and stem cells, those chameleon-like building blocks of the body. Commentary is provided by Drs. James Baker, Brian Athey, and Elliott Hill, of the University of Michigan; Susanne Kleff, of MBI International; and Bob Forgey, of ProNAi Therapeutics.

3.) Biotechnology On The Farm & In The Factory: Agricultural & Industrial Applications

As the world's population and overall standard of living continue to increase, the growing demand for food, fuel, and consumer products has reached unprecedented levels. This program examines how biotechnology is helping to meet those needs through genetic engineering to increase crop yields and improve the nutritional value of key staple foods; animal agriculture, founded on selective breeding and edging toward lab-based genetic engineering; and industrial applications of biotech in the manufacturing of chemicals, textiles, beverages, and fuel. Commentary is provided by Steve Pueppke and Len Fleck, of Michigan State University; Farzaneh Teymouri and Susanne Kleff, of MBI International; Jeanne Orhnberger, of Genetics Squared; and Bob Forgey, of ProNAi Therapeutics.

4.) The Ethics of Biotechnology

The Nuclear Age—sprung upon the world with the atomic bomb—remains a bitter memory. How biotechnology, with its power to change life on Earth at the most fundamental level, will be viewed in the decades to come depends on decisions being made right now. This program confronts viewers with some of the ethical and moral implications of cloning, stem cell research, and animal testing. Commentary is provided by Jeanne Orhnberger, of Genetics Squared; Bob Forgey, of ProNAi Therapeutics; Drs. Elliott Hill, Brian Athey, and James Baker, of the University of Michigan; Len Fleck, of Michigan State University; and Susanne Kleff, of MBI International