

2010-2011 WHRO VideoClassroom Preview

Series Title:	Cracking The Code
Curriculum Area:	Science
Grades:	4-9
# of Programs/Length:	5/15:00 minute programs

<http://www.geneticstv.org/>

A comprehensive resource for teaching the history and new science of genetics. Featuring lively animations and clever analogy, the programs present complex science information in a way that positively affects student attention and retention. The pop band, Moxy Früvous, performs songs that assist students to recall key concepts and information. Both the history and social context of genetics is highlighted, so that viewers see the real-life applications of scientific endeavor. Appropriate for high school, yet rigorous enough to support post-secondary study, this series will be a popular addition to your science collection.

1.) **Peas In A Pod**

This episode introduces the concepts of genetics and its origin. The idea of code itself and how it relates to the study of genetic structure is touched upon, and a lighthearted view of the history of how gender and heredity have been explained throughout the ages is presented. As the program progresses through history, we meet several luminaries in the world of genetics, including Carolus Linnaeus, lauded as the Father of Classification; Josef Kölreuter, known for his experimentation with hybridization of plants, their fertilization, and development; Charles Darwin, a pioneer in the concepts of evolution who pursued and categorized heredity and inheritance; and the man considered to be the father of modern genetic theory, Gregor Mendel.

2.) **Microscopes & Mutants**

In this episode viewers explore the early days of genetics as a science. Gregor Mendel's original work is viewed through the colored lenses of hindsight and through the enhanced lenses of microscopes. Microscopy permits clear imagery of the cellular events of mitosis and meiosis. The episode concludes by examining one of the early ethical issues that emerged along with the science of genetics: eugenics.

3.) **The DNA Obsession**

This episode focuses on both the biological and chemical processes central to the transfer of genetic material. The story starts in the middle of the nineteenth century and turns into a mad race in the late 1940s. As in a crime novel, the main characters—scientists in Europe and America—zero in on their prime suspect: the DNA molecule. They are sure that the structure of DNA is the key to understanding the transfer. The rivalries and collaborations among a handful of scientists heat up as they compete to be the first to determine the actual structure of the molecule. In the end, James Watson, a brash young biologist, and Francis Crick, a post-graduate physicist, discover the now famous double-helix structure of the DNA molecule.

4.) **The Gene Machine**

This episode takes an historic look at the Central Dogma governing all life's processes. The content begins with a discussion of the 1953 publication of Watson and Crick's pivotal paper in *Nature* describing the structure of DNA and hinting at the role that DNA likely plays in heredity—and ends by recounting events and the fears precipitated by Cohen and Boyer's discoveries using plasmids and restriction enzymes to produce recombinant bacterial DNA.

5.) **Seeds Of A New Era (Preview Title)**

This episode examines the controversies surrounding genetically modified organisms (GMOs) in agriculture, including those dealing with domestic and international foods. The video explains the process of modification using crown gall disease and *agrobacterium tumefaciens* as models to demonstrate how genetic engineering works in plants. The episode explores the use of marker genes, DNA constructs, and real-world agricultural applications of transgenic plants. Positive applications and the controversy of genetic engineering in plants are both explored.