



A PILOT DVD PROJECT

MEIOSIS MISHAPS

DAVID GUTHRIE

JENNIFER RUSSELL

MIAMI BEACH HIGH SCHOOL

Lesson Plan Title: Meiosis Mishaps
HHMI Lecture: The Meaning of Sex, Genes and Gender (Nov. 2001)
Course: Biology 1, Honors Biology 1, AP Biology, Anatomy and Physiology
Goals: The student will find cause and effect relationships between errors in meiosis and various genetic disorders and syndromes.
<p>Standards: National Science Education Standards, National Committee on Science Education Standards and Assessment, National Academy of Sciences, 1996.</p> <p>Life Science 9-12, Content Standard C: The Cell: Cells have particular structures that underlie their functions (page 184). Cells store and use information to guide their functions (page 184). Cell functions are regulated (page 184). The Molecular Basis of Heredity: In all organisms, the instructions for specifying the characteristics of the organism are carried in DNA...(page 185). Most of the cells in a human contain two copies of each of 22 different chromosomes. In addition, there is a pair of chromosomes that determine sex...(page 185). Changes in DNA (mutations) occur spontaneously at low rates. Some of these changes make no difference to the organism, whereas others can change cells and organisms (page 185).</p> <p>Science and Technology 9-12, Content Standard E: Understandings About Science and Technology (page 193). Science in Personal and Social Perspectives 9-12, Content Standard F: Personal and Community Health (page 197). Science and Technology in Local, National, and Global Challenges (page 199).</p>
<p>Objectives:</p> <ul style="list-style-type: none"> ?? The student will identify genetic disorders and syndromes related to the sex chromosomes and determine their genetic causes. ?? The student will describe and draw stages of meiosis, identifying where errors occur. ?? The student will define nondisjunction and identify errors in spermatogenesis and oogenesis that produce Turner and Klinefelter syndromes. ?? The student will relate mutations in the SRY and other genes to gender identity and fertility problems. ?? The student will evaluate the ethical use of genetic technologies in gender identity and fertility.