

Frontiers of Medicine

Teacher's Reference Material

Program Terminology

Those terms indicated in boldface are included in the "Terms to Define" section of the Student Guide. Additional terminology that you may want, or need, to explain to your students is provided below.

- **AIDS**
- **alternative medicine**
- **antibiotic**
- autonomic nervous system -- portion of the peripheral nervous system that controls involuntary actions; comprised of the sympathetic and parasympathetic nervous systems
- AZT -- azidothymidine; first effective drug therapy developed for the treatment of AIDS; interferes with the life cycle of the HIV virus by inhibiting reverse transcriptase; must be taken on a consistent basis, has decreased efficacy against mutated forms of the virus, and has severe side effects; now often used in combination with other drugs, such as protease inhibitors
- **bacteria**
- **chromosome**
- **clone**
- cystic fibrosis -- genetic disease that affects the function of the mucus and sweat glands, often resulting in chronic breathing difficulties and lung infections; most patients do not live to adulthood
- diabetes -- disease in which the pancreas either does not produce, or does not produce enough, insulin, the hormone that enables glucose to be absorbed by cells
- **diseases of lifestyle**
- **DNA**
- Ebola -- highly infectious virus, also known as Ebola fever or Ebola hemorrhagic fever; originated in the Ebola region of Africa; symptoms include vomiting, diarrhea, and hemorrhagic rash; patient often bleeds from the mouth and rectum; death rate is approximately 90%
- **embryologist**
- **gene**
- *Helicobacter pylori*
-- the bacteria, discovered by Dr. Barry Marshall, that causes duodenal ulcers, and most gastric ulcers; some

- people harbor the bacteria but do not develop ulcers
- **HIV**
 - homeopathy -- treatment of disease using microquantities of agents that would actually produce the disease symptoms if given to healthy recipients
 - **host factors**
 - **immune system**
 - muscular dystrophy -- group of genetic disorders that causes muscles to atrophy, or waste away; most common form is Duchenne's muscular dystrophy; can be fatal
 - **mutation**
 - pandemic -- outbreak of disease that affects a large percentage of a population and is widespread, geographically
 - Parkinson's disease -- a brain disorder in which deterioration of brain cells causes coordination and motion difficulties; patient usually exhibits shaking of extremities, muscle rigidity, and shuffling feet when walking; depression and dementia may accompany the disease
 - **placebo**
 - prophylactic -- medical therapies used to prevent, rather than treat, disease; for example, physicians may prescribe a daily dose of aspirin for older patients, to reduce the likelihood of suffering a stroke or heart attack
 - protease inhibitor -- substance that inhibits the action of an enzyme, protease, which is utilized by HIV to create mature viruses; effectively stops the replication of HIV
 - psychosomatic -- disease processes for which the physical symptoms appear to have a mental or emotional etiology
 - **RNA**
 - SIV -- simian immunodeficiency virus; retrovirus found in wild African monkeys, as well as Asian macaques held in captivity; very similar to HIV-2, which is the strain of virus commonly found in the human population of West Africa
 - **somatic cell**
 - **stem cell**
 - **ulcer**
 - **vaccine**

Integration Guidelines

The program content and associated explorations map to the following disciplines and topics.

- BIOLOGY

- advances in genetic engineering
- understanding of, and treatments for, emerging infectious diseases
- role of infection in chronic disease processes
- function of the immune system
- effect of the mind upon immune system functioning
- long-term and generational effects of genetic manipulations

- HISTORY/SOCIAL STUDIES/ETHICS

- relationship between science and religion
- the roles of science and technology in society
- the decision-making process within societies
- values and quality of life
- access to medical care
- achievement and its attributes

Correlation to National Standards

Content of this episode of Achievement Television correlates to the national education standards, grades 5-12, which have been developed for history, science, and social studies. Link to the standards themselves for more information.

- [National Standards for United States History](#) (National Center for History)
 - ⌘ Era 10, Standard 2C: The student understands recent developments in foreign and domestic policies. The students should be able to demonstrate understanding of changing religious diversity and its impact on American institutions and values, by analyzing the position of major religious groups on political and social issues.
- [National Standards for World History](#) (National Center for History)
 - ⌘ Era 6, Standard 1C: The student understands the consequences of the worldwide exchange of flora, fauna, and pathogens.
 - ⌘ Era 8, Standard 3C: The student understands the interplay between scientific or technological

the interplay between scientific or technological innovations and new patterns of social and cultural life between 1900 and 1940.

- ✘ Era 9, Standard 2A: The student understands how population explosion and environmental change have altered conditions of life around the world.
- ✘ Era 9, Standard 2E: The student understands major worldwide scientific and technological trends of the second half of the 20th century.

- [Expectations of Excellence: Curriculum Standards for Social Studies](#) (National Council for the Social Studies)

- ✘ Science, Technology and Society, Strand VIII: Social studies programs should include experiences that provide for the study of relationships among science, technology, and society. There should be opportunities to confront such issues as the consequences of using robots to produce goods, the protection of privacy in the age of computers and electronic surveillance, and the opportunities and challenges of genetic engineering, test-tube life, and medical technology with all their implications for longevity and quality of life and religious beliefs.

- [National Science Education Standards](#) (National Research Council)

- ✘ Grades 5–8, Content Standard C: All students should develop understanding of structure and function in living systems.
- ✘ Grades 5–8, Content Standard C: All students should develop understanding of reproduction and heredity.
- ✘ Grades 5–8, Content Standard C: All students should develop understanding of diversity and adaptations of organisms.
- ✘ Grades 5–8, Content Standard F: All students should develop understanding of risks and benefits.
- ✘ Grades 5–8, Content Standard F: All students should develop understanding of science and technology in society.

- ✘ Grades 9–12, Content Standard C: All students should develop understanding of the molecular basis of heredity.
- ✘ Grades 9–12, Content Standard C: All students should develop understanding of biological evolution.
- ✘ Grades 9–12, Content Standard C: All students should develop understanding of the interdependence of organisms.
- ✘ Grades 9–12, Content Standard F: All students should develop understanding of population growth.
- ✘ Grades 9–12, Content Standard F: All students should develop understanding of science and technology in local, national, and global challenges.
- ✘ Grades 9–12, Content Standard G: All students should develop understanding of science as a human endeavor.
- ✘ Grades 9–12, Content Standard G: All students should develop understanding of historical perspectives.