



Diseases/Biotechnology

<p>Unit Outcomes At the end of this unit, your student should be able to:</p>	<p>Key Vocabulary Terms to deepen the student's understanding</p>
<ul style="list-style-type: none"> ✓ Determine that viruses, bacteria, fungi and parasites have basic characteristics that are related to the spread, treatment, and prevention of disease. ✓ Conclude that an epidemic is when the incidence rate of a disease is higher than expected in a certain area. ✓ Conclude that a pandemic is an epidemic that spreads across a large area like a continent. ✓ Determine that there are benefits and risks associated with biotechnology. ✓ Verify that there are many careers and economic benefits associated with biotechnology. ✓ Discuss how agriculture can be affected from biotechnology. ✓ Propose that biotechnology can be controversial. 	<ul style="list-style-type: none"> ✓ Disease ✓ Virus ✓ Bacteria ✓ Fungi ✓ Parasites ✓ Unicellular ✓ Multi-cellular ✓ Host ✓ Adaptations ✓ Microbe ✓ Disorders ✓ Symptoms ✓ Protozoa ✓ Algae ✓ DNA ✓ RNA ✓ Biotechnology ✓ Cloning ✓ Ethical ✓ Human Genome ✓ Hazards ✓ Enzymes ✓ Antibiotics ✓ Binary Fission ✓ Heterotrophs ✓ Genetic recombination ✓ Allergies ✓ Mold spores ✓ Infectious disease ✓ Natural Selection ✓ Microorganism ✓ Pandemic ✓ Epidemic ✓ Toxins ✓ Outbreak ✓ Influenza ✓ Genetically Modified ✓ Transgenic organisms ✓ Disease agent
<p>Key Standards Addressed Connections to Common Core/NC Essential Standards</p>	<p>Where This Unit Fits Connections to prior and future learning</p>
<p>8.L.1.1 Summarize the basic characteristics of viruses, bacteria, fungi and parasites relating to the spread, treatment and prevention of disease</p> <p>8.L.1.2 Explain the difference between epidemic and pandemic as it relates to the spread, treatment and prevention of disease</p> <p>8.L.2.1 Summarize aspects of biotechnology including</p> <ul style="list-style-type: none"> • specific genetic information available • careers • economic benefits to NC • ethical issues • implications for agriculture 	<p>Coming into this unit, students should have a strong foundation in:</p> <ul style="list-style-type: none"> ✓ Explaining why some organisms are capable of surviving as a single cell while others require many cells that are specialized to survive ✓ Giving examples of changes in an organism's environment that are beneficial to it and some that are harmful ✓ Explaining how differences among animals of the same population sometimes give individuals an advantage in surviving and reproducing in changing habitats <p>This unit builds to the following future skills and concepts:</p> <ul style="list-style-type: none"> ✓ Explaining how specific cell adaptation help cells survive in particular environments (focus on unicellular organisms) ✓ Explaining how various disease agents (bacteria, viruses, chemicals) can influence natural selection ✓ Summarizing how transgenic organisms are engineered to benefit society ✓ Evaluating some of the ethical issues



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	<p>surrounding the use of DNA technology (including: cloning, genetically modified organisms, stem cell research and Human Genome Project)</p>
<p>Additional Resources</p> <p>Materials to support understanding and enrichment</p>	<p>“Learning Checks”</p> <p>Questions Parents Can Use to Assess Understanding</p>
<ul style="list-style-type: none"> ✓ Ck12.org online textbook: Barriers to Pathogens ✓ CK12.org online textbook: Preventing Infectious Disease ✓ CK12.org online textbook: Pathogens ✓ Ck12.org online textbook: Protists and Fungilike Protist ✓ Ck12.org online textbook: Genetic Advances ✓ Discovery Ed Lesson: Infectious Diseases ✓ Discovery Ed Video: Swine Flu: Anatomy of a Pandemic video ✓ Center of Disease Control and Prevention: information about disease, role of food and nutrition in fighting disease, and ways the immune system fights disease, http://www.bam.gov/sub_diseases/index.html ✓ Center of Disease Control and Prevention: Podcasts about diseases and staying healthy http://www2c.cdc.gov/podcasts/browse.asp?c=172 ✓ Ducksters.com: Biology for kids website with information on infectious disease, epidemics and pandemics, etc. <ul style="list-style-type: none"> ○ http://www.ducksters.com/science/biology/infectious_disease.php 	<ul style="list-style-type: none"> ✓ How do the basic characteristics of viruses, bacteria, fungi and parasites influence the treatment and/or prevention of disease? ✓ In what ways do the characteristics of viruses, bacteria, fungi and parasites affect the spread of disease? ✓ Explain how viruses can reproduce although they are not living? ✓ What is the difference between an epidemic and pandemic? ✓ What could happen that would cause a disease to shift from an epidemic to a pandemic? ✓ How long can an outbreak last? ✓ How has modern technology affected the spread of the influenza pandemic? ✓ What are some specific examples of pandemic occurrences? ✓ Is it ethical to create/design living organisms? ✓ In what ways have we benefitted from biotechnology?