



**CONNECTICUT  
CAPT Second Generation  
Life Science  
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STANDARDS	PAGE REFERENCES
<b>LIFE SCIENCE</b>	
<b>Ecosystems</b>	
As a result of studying various ecosystems:	
<b>Students understand that, while matter is recycled in an ecosystem, there is a one-way flow of energy in ecosystems.</b>	
<ul style="list-style-type: none"> <li>Describe the oxygen, carbon and nitrogen cycles and explain their significance.</li> </ul>	SE: 728-731, 733 <i>National Geographic 732</i> TWE: VL 730 IS 732 PO 733
<ul style="list-style-type: none"> <li>Explain how carbon dioxide and water are converted into energy-rich foods through an energy-capturing mechanism (photosynthesis).</li> </ul>	SE: 82, 733, 734 <i>Activity 86-87</i> TWE: UAA 82 IM 82 EX 732
<ul style="list-style-type: none"> <li>Describe the transfer of energy from the sun to the environment and back to space, through food webs consisting of producers, consumers and decomposers.</li> </ul>	SE: 734-737 TWE: IS 735 DS 735 VL 736 CH 737 AS 737
<b>Students understand how the number and variety of organisms and populations are dependent on the resources and physical factors of their environments.</b>	
<ul style="list-style-type: none"> <li>Explain how changes in resources, predation and climate can affect the growth of different populations.</li> </ul>	SE: 696-701, 703 <i>Problem-Solving Lab 699</i> <i>National Geographic 702</i> <i>Activity: Design Your Own Experiment 710-711</i> TWE: EX 702
<ul style="list-style-type: none"> <li>Explain how organisms are adapted to environmental conditions in different biomes.</li> </ul>	SE: 752-759 <i>MiniLab 756</i> <i>Field Guide 828-831</i> TWE: LD 756 DS 829 TFYI 829 UAA 757
<ul style="list-style-type: none"> <li>Explain how human activity can impact the stability of various ecosystems.</li> </ul>	SE: 753, 755, 757, 763, 786-794 <i>Activity 795</i> TWE: TFYI 755

STANDARDS	PAGE REFERENCES
<b>Genetics and Evolution</b> As a result of studying patterns of heredity and historical changes in life forms:	
<b>Students understand how each organism carries a set of instructions (genes composed of DNA) for specifying the components and functions of the organism.</b>	
<ul style="list-style-type: none"> <li>Describe how genetic materials are organized in genes and chromosomes in the cells of living organisms.</li> </ul>	SE: 98, 110-114, 126 <i>Oops! Accidents in Science</i> 119 TWE: CB 118
<ul style="list-style-type: none"> <li>Explain how the genetic information from both parents is mixed in the fertilized egg to produce an individual with new combinations of genes and traits.</li> </ul>	SE: 104, 105, 126, 639 TWE: FF 105
<ul style="list-style-type: none"> <li>Explain how genes are related to inherited traits and how genes can be manipulated by modern technologies.</li> </ul>	SE: 104, 105, 126, 141-143 TWE: VL 142 RT 143 AS 143
<b>Students understand that the basic idea of biological evolution is that the Earth's present-day species developed from earlier species.</b>	
<ul style="list-style-type: none"> <li>Explain how environmental changes can lead to the extinction and evolution of species.</li> </ul>	SE: 155-161 <i>Problem-Solving Lab</i> 157 TWE: IS 156 DS 156
<ul style="list-style-type: none"> <li>Describe how fossils and anatomical evidence provide support for the theory of evolution.</li> </ul>	SE: 163-165, 167-169 <i>Earth Science Integration</i> 167 TWE: MAM 165 VL 168
<b>Cells</b> As a result of observing and studying cells in single and multiple-celled organisms:	
<b>Students understand the basic cell structures and functions of living cells.</b>	
<ul style="list-style-type: none"> <li>Describe the basic similarities and differences found in the structures of plant, animal and bacterial cells.</li> </ul>	SE: 38-44, 189 <i>Activity</i> 46 TWE: QD 39 AC 39 VL 41 RT 45 AS 46
<ul style="list-style-type: none"> <li>Describe the structure and explain the main functions of skin, nerve, muscle and blood cells.</li> </ul>	SE: 499, 502, 557, 601, 603 TWE: MAM 557 SJ 601 AC 603
<ul style="list-style-type: none"> <li>Explain how the cell membrane helps the cell to maintain its unique internal composition.</li> </ul>	SE: 40, 74-78 <i>National Geographic</i> 79 <i>Activity</i> 80 TWE: TFYI 77 CH 78
<b>Students understand that cells divide for growth of the organism, repair and reproduction.</b>	
<ul style="list-style-type: none"> <li>Describe the process of mitotic cell division and explain how this process is important in growth of the organism and repair of tissues.</li> </ul>	SE: 96-102 <i>MiniLab</i> 101 <i>Activity</i> 103 TWE: QD 99

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<ul style="list-style-type: none"> <li>Describe the process producing reproductive cells (meiosis) in females (egg cells) and males (sperm cells).</li> </ul>	SE: 105-107 TWE: MAM 107 AC 107 RT 109
<b>Human Biology</b> As a result of studying the structure and function of the human body:	
<b>Students understand the healthy functioning of the human body and how environmental conditions, nutrition, physical activity and pathogens affect its functioning.</b>	
<ul style="list-style-type: none"> <li>Describe the structure and function of the major human organ systems (e.g., circulatory, respiratory, digestive, reproductive and nervous systems).</li> </ul>	SE: 529-535, 546-551, 574-578, 600-601, 603-605, 633-637 <i>Activity 555</i> TWE: RT 535, 608 AS 554, 582
<ul style="list-style-type: none"> <li>Explain the role of nutrients and physical activity in the functioning of the human body.</li> </ul>	SE: 518-522, 524 <i>National Geographic 523</i> TWE: DS 519 TFYI 519 IS 522 VL 524
<ul style="list-style-type: none"> <li>Explain the human body's defense system against infectious diseases and the role of antibiotics and vaccinations.</li> </ul>	SE: 658-662 <i>Activity: Design Your Own Experiment 678-679</i> TWE: TFYI 660 EX 660 AS 662

### Codes Used for TWE Pages

AC	Activity
AS	Assessment
CB	Content Background
CH	Challenge
DS	Discussion
EX	Extension
FF	Fun Fact
IM	Identifying Misconceptions
IS	Inclusion Strategy
LD	Lab Demonstration
MAM	Make a Model
PO	Portfolio
QD	Quick Demo
RT	Reteach
SJ	Science Journal
TFYI	Teacher FYI
UAA	Using an Analogy
VL	Visual Learning