

Science DesCartes: General Science – Life and Environmental Sciences

Skills: Cells, Tissues, Organs and Organ Systems

Students:	DesCartes Skills: (Highlight the skills related to your chosen standard/concept)	
	<p>RIT Above 240:</p> <ul style="list-style-type: none"> • Describes the structures, functions, and processes used by the cell in enabling cellular movement (unicellular organisms) • Describes how mRNA is transcribed from DNA • Draws conclusions from data relating to osmosis in cells and cell models • Differentiates between biomolecules in terms of structure and function within the cell 	<ul style="list-style-type: none"> • all living organisms • Describes the unique features of viruses that allow them to be classified as living or non-living at different times • Describes the idea that cells of multicellular organisms have specialized functions • Infers that most cell functions involve chemical reactions • Analyzes the structures, functions, and processes used by the cell in information feedback • Describes ways in which materials enter the cell • Compares features of plant, animal cells • Compares plant and animal cells in terms of the organelles found in each • Describes the function of the ribosome • Describes the functions of the nucleus within the cell • Identifies the chromosomes when given their function within the cell • Identifies the cell membrane when given its function within the cell • Describes the composition of plant cell walls • Describes how homologous chromosomes are separated during meiosis, to produce sex cells containing half as many chromosomes as a somatic cell • Describes how sex cells are produced (meiosis) • Describes the role of enzymes in cellular reactions • Describes the structure and mechanism of action of enzymes • Describes the chemical reactions used by the cell in respiration • Compares respiration in plant and animal cells • Compares the process of anaerobic respiration in different organisms • Compares the processes of photosynthesis and respiration • Recognizes that hormones are chemical messengers • Defines homeostasis
	<p>RIT 231-240:</p> <ul style="list-style-type: none"> • Describes the relationship between structure and function at the tissue level of organization • Compares the function of mitochondria and chloroplast within the cell • Describes the structures, functions, and processes used by the cell in enabling cellular movement (unicellular organisms) • Determines the function of a cell based on the presence and abundance of organelles found in that cell • Orders the molecules and organelles involved in the stages of protein synthesis • Describes characteristics of the cell membrane that allow it to regulate import and export of cellular materials • Identifies the mitochondrion when given its function within the cell • Describes the function of the mitochondrion within the cell • Identifies the ribosome when given its function within the cell • Describes the makeup of cytoplasm • Analyzes the structures, functions, and processes used in cellular reproduction • Recognizes that in mitosis, the daughter cells produced contain the same number of chromosomes as the parent cell (both parent and daughter cells are diploid) • Describes how homologous chromosomes are separated during meiosis, to produce sex cells containing half as many chromosomes as a somatic cell • Relates errors in meiosis to disorders caused by nondisjunction (e.g., Klinefelter's syndrome) • Compares photosynthesis and respiration in terms of reactants and products • Describes the structure of lipids • Describes the structure of amino acids and proteins 	
	<p>RIT 221-230:</p> <ul style="list-style-type: none"> • Describes the structure and specialization of function of the cells and tissues found within a typical plant leaf • Describes transpiration in plants • Describes the function of tissues within the respiratory system • Defines neuron • Describes the characteristics shared by 	<p>RIT 211-220:</p> <ul style="list-style-type: none"> • Sequences the levels of organization in an organism to relate the parts to each other and to the whole • Describes the relationship between structure and function at the organ's level of organization • Describes the organization seen within the plant reproductive system • Recognizes structures of the respiratory system • Describes the structure and function of the cells and tissues which make up the circulatory system • Describes the structure and function of a plant's reproductive system • Describes the function of the digestive system • Recognizes that the nervous system interacts with other systems of the body

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<ul style="list-style-type: none"> • Recognizes that all single cells have differences which allow specialization of function • Describes the cell theory • Recognizes that cells are the fundamental units and building blocks of life (the cell is the smallest unit which can reproduce itself) • Gives examples of cells which perform specialized functions • Contrasts active transport and osmosis • Describes features common to all cells • Compares plant and animal cells in terms of the organelles found in each • Uses analogies to represent the function of organelles within the cell • Differentiates between the functions of the nucleus and the nucleolus • Identifies the cell membrane when given its function within the cell • Identifies the plant cell wall when given its function within the cell • Identifies the chloroplast when given its function within the cell • Identifies the chloroplast in a cell diagram when given its function only • Compares the process of meiosis with the process of mitosis • Describes how somatic cells are produced (mitosis) • Recognizes that the outcome of mitosis is production of two genetically identical daughter cells • Describes how sex cells are produced (meiosis) • Defines metabolism as the sum of chemical reactions in the body • Describes the role of enzymes in digestion • Explains that cells obtain food and oxygen from the outside environment • Describes the process of photosynthesis in terms of its location within the cell, reactants, and products • Recognizes that oxygen is an essential product of photosynthesis • Gives examples of carbohydrates • Classifies biomolecules as carbohydrates 	<ul style="list-style-type: none"> • Describes the events that take place as food is digested • Describes the structure and function of the excretory system • Describes the structure and function of the nervous system (large scale) • Describes the idea that in complex, multi-cellular organisms, cells have specialized functions, communicate with each other, and are mutually dependent • Identifies the nucleus when given its function within the cell • Identifies the nucleus in a cell diagram when given its name only • Identifies DNA when given its function within the cell • Identifies the cell membrane in a cell diagram when given its function only • Identifies the cell membrane in a cell diagram when given its name only • Predicts how oxygen and carbon dioxide levels within a system are affected by respiration • Recognizes that photosynthesis is the process plants use to produce food using the energy of the Sun • Gives examples of lipids
<p>RIT 201-210:</p> <ul style="list-style-type: none"> • Recognizes that the function of a plant leaf is to take in light and air • Describes the structure and function of the respiratory system • Describes the structure and function of the human reproductive system • Describes the structure and function of the muscular system • Describes the function of skeletal muscle • Recognizes that the skeletal system's functions include production of red blood cells, support, protection of organs and movement • Orders the organs of the digestive system to show how food travels within it • Recognizes the components which make up the digestive system • Traces the path that food takes as it is digested 	<p>RIT 191-200:</p> <ul style="list-style-type: none"> • Recognizes that one function of a plant root is support • Predicts how a change to one organ or system will affect another organ or system • Describes the function of the circulatory system • Recognizes the components which make up the digestive system • Describes how things feel to the touch • Infers the type of resources needed for an animal to survive • Recognizes that all living organisms are made up of cells • Explains why cells are called "building blocks" • Infers that a cell is a plant cell because it contains chloroplasts and a cell wall • Recognizes that energy is required for the chemical reactions in cells to occur <p>RIT 181-190:</p> <ul style="list-style-type: none"> • Recognizes that the heart acts as a pump • Describes the structure and basic functions (movement and support) of the skeletal system • Describes characteristics of each of the human senses • Describes how tools enhance the senses • Compares basic needs of different organisms in their environment • Recognizes the importance of oxygen to the survival of animals • Sorts organisms and objects as living or non-living • Differentiates among living and nonliving things • Predicts how life forms will maintain homeostasis through particular changes

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	RIT 171-180: <ul style="list-style-type: none">• Describes functions of specific organs
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Lesson Title:

Standard/Concept for All:

Introduction: (Get Attention; Connect to Prior Knowledge)

For Students Ready for a Challenge:

Lesson/Activity:

Resources:

Means of Assessment:

For Most Students:

Lesson/Activity:

Resources:

Means of Assessment:

For Students Needing Extra Support:

Lesson/Activity:

Resources:

Means of Assessment:

Closure/Summary for All:

