

Science DesCartes: General Science - Biology

Skills: Understand the Cell is the Basis of Form and Function for All Living Things and How Living Things Carry Out Their Life Functions

Students:	DesCartes Skills: (Highlight the skills related to your chosen standard/concept)	
	RIT Above 240: <ul style="list-style-type: none"> • Describes the structures, functions, and processes used by the cell in enabling cellular movement (unicellular organisms) • Draws conclusions from data relating to osmosis in cells and cell models 	<ul style="list-style-type: none"> • mutations • Describes patterns of inheritance seen for single gene traits • Determines the parents involved in a monohybrid cross, given the outcome of that cross and the genotype and/or phenotype of the other parent • Predicts patterns of inheritance for simple-dominant recessive alleles in dihybrid crosses (Mendelian inheritance) • Predicts probabilities of inheritance for sex-linked alleles • 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 • Analyzes the structures, functions, and processes used by the cell in information feedback • Describes ways materials enter the cell • Compares features of plant and 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) • Defines homeostasis
	RIT 231-240: <ul style="list-style-type: none"> • Describes the major function of a plant's leaves • Describes the purpose for the germination of pollen and growth of pollen tubes • Describes the relationship between structure and function at the tissue level of organization • Gives examples of environmental conditions that may influence the characteristics of an organism • Evaluates the importance of mutation in producing genetic variation • Predicts probabilities of inheritance for simple dominant-recessive alleles in monohybrid crosses (Mendelian inheritance) • Describes incomplete dominance • Classifies given characteristics as examples of phenotype • 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 • 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) 	RIT 211-220: <ul style="list-style-type: none"> • Recognizes that the function of a plant's stem is to carry water, minerals, and food to other parts of the plant • Identifies the external structures that perform particular functions in animals • Recognizes that photosynthesis/energy capture occurs within a plant's leaves • Describes the structure and function of the organs making up a flower (e.g., stigma, anthers, petals, pistil) • 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 digestive system • Recognizes that the nervous system interacts with other systems of the body • Identifies examples of inherited traits • Defines mutation • Predicts patterns of inheritance for simple-dominant recessive alleles in dihybrid crosses (Mendelian inheritance) • Explains that sex chromosomes determine the gender of a human (two copies of the X
	RIT 221-230: <ul style="list-style-type: none"> • Understands that a plant's roots generally do not produce food via photosynthesis • Recognizes that the ovary of a plant will develop into a fruit • Recognizes that seeds contain embryos • 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 • Recognizes that replication is the cellular process in which DNA is copied • Classifies examples of mutations as inversions, deletions, substitutions and point 	

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<p>chromosome produce a female, one copy of X plus one copy of Y produce a male)</p> <ul style="list-style-type: none"> • Explains that the sex of a child is determined by the presence or absence of a Y chromosome in the sperm • Defines fertilization • Recognizes that all single cells have differences which allow specialization of function • Recognizes that a microscope must be used to observe something as small as a cell • 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 organelle 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 • Describes the process of embryo growth and differentiation • 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) 	<ul style="list-style-type: none"> • Recognizes the components which make up the digestive system • Traces the path that food takes as it is digested • 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) • Recognizes that egg and sperm unite to produce a new individual • 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
<p>RIT 201-210:</p> <ul style="list-style-type: none"> • Recognizes that the function of a plant's stem is to carry water, minerals, and food to other parts of the plant • Identifies the external structures that perform particular functions in animals • Explains that the major functions of a plant's root are to carry absorbed water and minerals and to provide support • Infers that a plant may not be able to live if its roots cannot absorb minerals • Relates structures involved in embryonic and fetal development to their functions • Describes the structure and function of the organs making up a flower (e.g., stigma, anthers, petals, pistil) • 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 	<p>RIT 191-200:</p> <ul style="list-style-type: none"> • Recognizes that a flower will turn into the fruit and produce seeds • Describes seed dispersal in plants • Describes the basic structures which make up a seed (e.g., seed coat) • Describes the function of the backbone in vertebrates • 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 • 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
<p>RIT 181-190:</p> <ul style="list-style-type: none"> • Identifies characteristics of organisms • Describes functions of structures of animals • Describes the large scale external anatomy of humans • Explains that the function of a plant's root is to absorb water • 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 • Predicts how life forms will maintain homeostasis through particular changes 	<p>RIT 171-180:</p> <ul style="list-style-type: none"> • Identifies external parts of plants • Describes the large scale external anatomy of humans • 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: