

Odysseyware®

SUPPLY LIST

Biology



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UNIT 1: BIOLOGY: THE STUDY OF LIFE

Assignment	Summary	Video Demo	Supplies
Project: Characteristics of Life	You've learned that there are many common characteristics an object must possess in order to be considered alive. In this project, you'll choose those qualities of life and compare them to a given object. According to your evaluation, you'll decide if the object is alive or not.	No	<ul style="list-style-type: none"> an object of your choice
Project: The Scientific Method	The scientific method is a process that many scientists use to prove or disprove natural phenomena. It starts with scientific inquiry or questions that arise from an observation. For this project, observe your natural environment, and come up with a question that you would like to test using the scientific method.	No	<ul style="list-style-type: none"> research resources
Project: Classifying Fruit	For this project, you will classify different pieces of fruit by responding to dichotomous questions.	No	N/A
*Project: Keying Plants	Use your five senses and any of the previously mentioned tools to observe flowers and construct a key.	No	N/A
*Project: Keying Animals	Construct a dichotomous key for the animals you choose.	No	N/A
*Special Project	Use this Special Project template to create your own assignment for this unit.	N/A	N/A

UNIT 2: BIOCHEMISTRY

Assignment	Summary	Video Demo	Supplies	
Experiment: Static Electricity	In this experiment you will learn about static electricity using balloons	Yes	<ul style="list-style-type: none"> two inflated balloons piece of material (nylon, wool, or fur) 	<ul style="list-style-type: none"> thread nylon stocking string piece of white paper
Experiment: Water Properties	This experiment you will conduct an experiment that demonstrates some of the key properties of water which include adhesion and cohesion, solubility and capillary action.	No	Part 1: <ul style="list-style-type: none"> 2 small clear plastic cups 2 plastic spoons vegetable oil water salt Part 2: <ul style="list-style-type: none"> penny two eye droppers 	Part 3: <ul style="list-style-type: none"> cup of water small amount of dish detergent 12 oz glass stalk of celery red food coloring water knife
Experiment: pH Indicators	During this lab you will use the juice from a red cabbage to find the pH of a variety of substances.	No	<ul style="list-style-type: none"> safety goggles clear plastic or glass cups (or beakers) red cabbage sauce pan strainer food processor knife Baking soda – dissolved in distilled water 	<ul style="list-style-type: none"> any liquid bathroom cleaner vinegar lemon juice milk soft drink(clear) distilled water apple juice
Experiment: Sugar and Starch	In this experiment you will test for sugars and starch in various fruits and vegetables.	Yes	<ul style="list-style-type: none"> powdered starch (use either potato or corn starch) glucose test strips beakers or tumblers 	<ul style="list-style-type: none"> iodine (do not use clear nonreactive iodine) several fruits and vegetables sugar (Karo syrup) Distilled Water

Experiment: Enzyme Action	In this experiment, you will determine whether carrot plants contain the enzyme catalase and analyze the effect of high heat or low pH on the function of the catalase enzyme.	No	<ul style="list-style-type: none"> • Carrot puree • 3% hydrogen peroxide • 5 small clear drinking glasses • Vinegar (acid solution) • 3 teaspoons (one for each: water, vinegar, and peroxide) 	<ul style="list-style-type: none"> • Paper cup • Labeling tape (masking tape) • Marker • Stove or heat source such as a Bunsen burner or hot plate • Pot
*Special Project	Use this Special Project template to create your own assignment for this unit.	N/A		N/A

UNIT 3: CELLS

Assignment	Summary	Video Demo	Supplies
Project: Introducing the Microscope	Write a 125 word summary of what you have learned in "Introducing the Microscope"	No	N/A
Project: Plant, Animal, and Algae Cells	In this project, you will observe an animal cell—a human cheek cell, a plant cell - Elodea, and two algae cells - Spirogyra and Chlamydomonas. Explore and make drawings of these different cells and identify the different structures of the cells that you observe.	No	<ul style="list-style-type: none"> • Compound Light Microscope • Prepared slides of: <ul style="list-style-type: none"> ○ Cheek Cells ○ Elodea ○ Spirogyra ○ Chlamydomonas
Project: Virtual Lab - Osmosis	Analyze how different concentrations of solutes in a solution can affect organism's cells.	V-Lab	N/A
Experiment: Osmosis	In this experiment you will explore the process of osmosis.	Yes	<ul style="list-style-type: none"> • beaker • ring stand • rubber band or string • sucrose (table sugar) • thistle tube • semipermeable membrane (sausage skin) • clamp

Project: Homeostasis	In this project, you'll see how your body adjusts to maintain a steady state when you exercise.	No	<ul style="list-style-type: none"> • thermometer • mirror • clock or stopwatch • paper and pen
*Special Project	Use this Special Project template to create your own assignment for this unit.	N/A	N/A

UNIT 4: CELL ENERGY

Assignment	Summary	Video Demo	Supplies
Project: Energy Laws	For this project, write about the first two laws of thermodynamics or energy, define each law and provide an example to help explain it using at least 175 words.	No	<ul style="list-style-type: none"> • research resources
Experiment: Photosynthesis Reactions	In this experiment, you will make a terrarium in order to grow some green plants and formulate the different processes that are taking place during photosynthesis.	No	<ul style="list-style-type: none"> • large glass or Plexiglas container • washed gravel, sand, and/or rock • aquarium charcoal • potting soil • water • a few assorted plants
Project: Respiration in Muscles	In this project, you'll conduct an activity that involves oxygen and the cellular respiration process.	No	N/A
Project: Energy Flow in Ecosystems	In this project, you will make a pyramid to help you understand who the producers and consumers are.	No	<ul style="list-style-type: none"> • research resources
*Special Project	Use this Special Project template to create your own assignment for this unit.	N/A	N/A

UNIT 5: CELL DIVISION AND REPRODUCTION

Assignment	Summary	Video Demo	Supplies
Experiment: Asexual Plant Reproduction	In this lab you will look at a few ways plants can be reproduced asexually.	No	<ul style="list-style-type: none"> • research resources • stock plants • small pots • sterile potting soil or medium • rooting compound • pot labels • pruners or knives
Project: Reproduction Research	For this project, you will conduct research and present information on a sexual reproducing organism and an asexual reproducing organism.	No	<ul style="list-style-type: none"> • research resources
Project: Fragmentation	Planaria have the ability to regenerate and in the following experiment you will see this amazing ability.	Yes	<ul style="list-style-type: none"> • a small glass jar or culture jar • a razor blade, scalpel, or very sharp knife • a dissection microscope or a good hand lens • eight or ten individual <i>Planaria</i> (flatworms) • a small piece of fresh liver (about 2 cm) placed on a side of the jar in fresh water (depth of water should equal the height of the liver) • blunt-ended tweezers or forceps
Project: Stages of Mitosis	For this project, you will identify these stages in both a plant and animal cell, and briefly describe what occurs in each stage.	Yes	<ul style="list-style-type: none"> • microscope • prepared slide of onion root stained to show chromosomes • prepared slide of roundworm or white fish blastula stained to show chromosomes
Project: Stem Cell Research	Write one or two paragraphs of 300 words to answer your questions about stem cell research.	No	<ul style="list-style-type: none"> • research resources
*Special Project	Use this Special Project template to create your own assignment for this unit.	N/A	N/A

UNIT 7: GENETICS AND HEREDITY

Assignment	Summary	Video Demo	Supplies	
Project: Building DNA	For this project, you will build a DNA molecule by placing its basic parts together like pieces of a puzzle.	No	N/A	
Project: Karyotypes	For this project, you will create and analyze a karyotype.		N/A	
*Experiment: Molecular Genetics	In this project, you will complete the investigation to determine to what extent the genotype and environment influence the phenotype.	No	<ul style="list-style-type: none"> • 60 radish seeds • 2 Petri dishes or flat covered containers • sand-peat mixture 	<ul style="list-style-type: none"> • medicine dropper • box to cover 1 Petri dish
Project: Punnett Squares	For this project, you'll predict the genotypes and phenotypes of a fictional family.	No	N/A	
Project: Testing Probability	In this project, you will experiment with probabilities.	No	<ul style="list-style-type: none"> • 2 coins • cardboard shoebox 	
Project: Natural Selection	You have learned that natural selection is a mechanism of evolution. Organisms well adapted to their environment are naturally selected to survive and reproduce more often than organisms poorly adapted. In this project, you will simulate natural selection.	No	<ul style="list-style-type: none"> • construction paper in four different colors • scissors • blanket with a colorful pattern (a sheet or comforter will also work) 	<ul style="list-style-type: none"> • plastic cup • plain paper • pencil or pen
Project: Morphology	In this project, you will compare the forelimbs of seven different animals.	No	N/A	
*Special Project	Use this Special Project template to create your own assignment for this unit.	N/A	N/A	

UNIT 8: MICROBIOLOGY AND BIODIVERSITY

Assignment	Summary	Video Demo	Supplies
Project: Pathogens—Bacteria or Virus?	For this project, let's see if you are aware of the many differences between bacteria and viruses.	No	N/A
Project: Protozoan Cultures	For this project, you will try to find the following protozoan cultures: amoeba, paramecium, and euglena.	Yes	<ul style="list-style-type: none"> • pond water (water from ditches and lakes may be suitable; water with green scum or algae is best) • microscope • dropper • slide • slide cover • cotton ball
Project: Algae Cultures	The first section of this project allows you to collect your own algae cultures and view them under a microscope. In the second section, you will view already prepared slides of algae. In conducting both sections of this project, you will have the opportunity to see the diversity of algae specimens.	No	<ul style="list-style-type: none"> • 6-8 jars—pint or quart size (Use jars that can be thrown away upon completion of the exercise.) • 2 small plastic bags for collecting bark with algae • a dipper tied to a long pole (very useful in collecting from ponds and lakes) • 3-4 slides—at least 2 plain slides and 1 depression slide (You can also use a plain slide and make a well or depression with petroleum jelly.) • 3-4 cover slips • collected cultures • an eye dropper for adding water • microscope • paper and pencil
Project: Fungi Cultures	In this project, you will examine some fungi and make a collection of fungi consisting of molds, mildew, and yeast.	Yes	<ul style="list-style-type: none"> • molds on jelly, fruits, and bread* • baker's yeast • sugar • Roquefort cheese (blue cheese)—keep refrigerated** • Camembert cheese—keep refrigerated** • plastic disposable tumbler • stirring spoon • needle • pair of tweezers • two clean microscopic slides • hand lens or strong magnifying glass • microscope • two cover slips • a yeast stain: methylene blue, safranin, or similar stain

Project: Plant and Animal Research	For this project, you will choose one plant and one animal to research and discuss in detail.	No	<ul style="list-style-type: none"> research resources
*Special Project	Use this Special Project template to create your own assignment for this unit.	N/A	N/A

UNIT 9: PLANTS

Assignment	Summary	Video Demo	Supplies
Experiment: Stem Transport	For this experiment, you will observe the xylem and phloem at work in a stalk of celery.	No	<ul style="list-style-type: none"> celery stalk with leaves food coloring (red or blue) dropper microscope microscope slide water tall jar or glass sharp knife metric ruler
Experiment: Flower Dissection	In this experiment, you will observe these parts and review the reproduction process in angiosperms.	No	<ul style="list-style-type: none"> magnifying glass or hand lens toothpick black paper or very dark material fresh flower knife
*Experiment: Seed Dissection	In this experiment, you will observe a plant embryo inside a seed.	No	<ul style="list-style-type: none"> magnifying glass or hand lens lima beans or corn seeds knife jar of water
*Experiment: Cones	In this experiment, you will examine male and female pine cones.	No	<ul style="list-style-type: none"> male pine cone female pine cone
Experiment: Plant Growth	Sometimes, a new plant can be grown from the living tissue of another plant. Special plant regulators help grow roots, stems, leaves, and buds. This investigation will take about two weeks.	No	<ul style="list-style-type: none"> water stem cutting of growing plant tall baby food jar
Project: Plant Usage	For this project, you will identify various uses of plants in your home.	No	N/A
*Special Project	Use this Special Project template to create your own assignment for this unit.	N/A	N/A

UNIT 10: ANIMALS AND HUMANS

Assignment	Summary	Video Demo	Supplies
Experiment: Animal Cells and Tissues	In this section of your experiment, you'll review slides of specialized animal cells and discuss their function(s). Next, review some animal cells on your own.	Yes	<ul style="list-style-type: none"> microscope prepared slides of erythrocytes, leukocytes, muscle cells, and nerve cells
Project: Animal Organ Systems	For this project, you will choose just one vertebrate animal and research one of its organ systems on your own.	No	<ul style="list-style-type: none"> research resources
*Experiment: Heart Rate	<p>Do not do this experiment if you have a heart condition or other medical problem.</p> <p>In this experiment you will speculate on some of the reasons for any differences in heart rates.</p>	No	<ul style="list-style-type: none"> a friend to measure their heart rate
Experiment: Mealworm	In this project, you will observe an insect life cycle.	No	<ul style="list-style-type: none"> baby-food jar with lid bran flakes or oatmeal potato magnifying glass mealworm knife
*Project: Animal Study	For this project, you will choose a type of mammal or insect and write a report about it.	No	<ul style="list-style-type: none"> research resources
Project: Nervous and Endocrine Disorders	<p>Choose one:</p> <p>Research a nervous system disorder and design a brochure about the disorder and one medication or treatment method used to help those that have the disorder.</p> <p>Research an endocrine disorder and write an 800 word report on the disorder, including what its symptoms are, who it can affect most, and what other issues it can cause.</p>	No	<ul style="list-style-type: none"> research resources <p>Supplies depend on project selected by the student.</p>
Project: Virtual Lab - Frog Dissection Musculoskeletal	In a brief essay discuss how frogs utilize these muscles in order to swim, jump, and do other frog things efficiently.	V-Lab	N/A

Project: Digestive, Circulatory and Respiratory Disorders	<p>Choose one:</p> <p>Research a digestive disorder and create a power point presentation on the disorder and its symptoms, along with who it can affect most, and what other issues it can cause.</p> <p>Research a circulatory disorder and design a pamphlet or brochure about the disorder and one medication or treatment method used to help those that have the disorder.</p> <p>Research a respiratory disorder and create an infomercial on your disease.</p>	No	<ul style="list-style-type: none"> • research resources <p>Supplies depend on project selected by the student.</p>
Experiment: Digesting Fats	In this experiment, you will use soap to break up oil.	No	<ul style="list-style-type: none"> • two test tubes with stoppers or two tall thin bottles (vials) with lids • twenty drops of cooking oil • four drops of liquid soap • water
Experiment: Carbon Dioxide	In this experiment, you will test for carbon dioxide and watch what happens when you exhale carbon dioxide into limewater.	No	<ul style="list-style-type: none"> • clear limewater • two soda straws • hand air pump • two small jars (preferably baby food jars)
*Project: Animal Study	For this project, you will choose a type of mammal or insect and write a report about it.	No	<ul style="list-style-type: none"> • research resources
Project: Muscle, Skeletal, and Reproductive Disorders	<p>Choose one:</p> <p>Research a muscular disorder and design a pamphlet or brochure about the disorder and one medication or treatment method used to help those that have the disorder.</p> <p>Research a skeletal disorder and create a power point presentation on what the disorder is, what its symptoms are, who it can affect most, and what other issues it can cause.</p> <p>Research a reproductive disorders and write an 800 word report on the disorder, including what its symptoms are, who it can affect most, and what other issues it can cause.</p>	No	<ul style="list-style-type: none"> • research resources <p>Supplies depend on project selected by the student.</p>

Project: Immunity and Lymphatic Disorders	Choose one: Research an immune disorders and create an infomercial on your disease. Research a lymphatic disorder and write a report on what the disorder is, what its symptoms are, who it can affect most, and what other issues it can cause.	No	<ul style="list-style-type: none"> research resources <p>Supplies depend on project selected by the student.</p>
Project: Virtual Lab - Frog Dissection Internal Organ	Explain in a brief essay how the cardiovascular system and respiratory system work with each other based on your experience and observations from this virtual lab.	V-Lab	N/A
*Special Project	Use this Special Project template to create your own assignment for this unit.	N/A	N/A

UNIT 11: ECOLOGY AND THE ENVIRONMENT

Assignment	Summary	Video Demo	Supplies
Project: Symbiosis	Choose a symbiotic relationship to research and write a 300 word report that includes the benefits of the relationship for either member, the harm done by the relationship and how this relationship has evolved.	No	<ul style="list-style-type: none"> research resources
Project: Food Webs	In this project, you will construct a food web.	No	<ul style="list-style-type: none"> poster board colored pencils or markers research resources
*Project: Habitats	For this project, you will create a habitat for organism(s).	No	<ul style="list-style-type: none"> gallon jar (or other large, glass container) <p>materials of your choice to set up your habitat:</p> <ul style="list-style-type: none"> ➤ freshwater aquarium ➤ woodland terrarium ➤ marine aquarium ➤ desert terrarium ➤ aqua-terrarium
Project: Local Ecosystems	For this project, you will examine and explore a local ecosystem.	No	<ul style="list-style-type: none"> outdoor area like a field or garden string magnifying glass thermometer popsicle sticks paper small gardening tools

*Project: Biomes	Complete the chart by determining the type of habitat, other plants and animals of that habitat, and the biome of the four organisms listed.	No	<ul style="list-style-type: none"> research resources 	
Project: Virtual Lab - Biome: Deciduous Forest	Discuss how temperature and amount of precipitation can affect the type of plants and animals found in the deciduous biome.	V-Lab		N/A
Project: Virtual Lab - Biome: Tundra	Discuss how temperature and amount of precipitation can affect the type of plants and animals found in the tundra biome.	V-Lab		N/A
Experiment: Biodegradability	For this experiment, you will determine the biodegradability of different materials.	No	<ul style="list-style-type: none"> shovel or trowel compost bin (can be purchased from a local garden or hardware store) dirt twigs and branches grass clippings or leaves 	<ul style="list-style-type: none"> food garbage (such as banana peels and apple cores) plastic cup newspaper aluminum foil tissues paper towels tin can
*Project: Stewardship	Write a three-paragraph essay totaling 500 words about how stewardship applies to the environment.	No	<ul style="list-style-type: none"> dictionary 	
Project: Virtual Lab - Biome: Rainforest	Discuss how temperature and amount of precipitation can affect the type of plants and animals found in the rainforest biome.	V-Lab		N/A
Project: Ethics in Biotechnology	For this project, you will write a persuasive essay about an ethical question in biotechnology.	No	<ul style="list-style-type: none"> research resources 	
*Special Project	Use this Special Project template to create your own assignment for this unit.	N/A		N/A

* indicates an alternative assignment