



**Switched-On**  
SCHOOLHOUSE

# 2015 Science Supply List

Biology

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UNIT 1: TAXONOMY: KEY TO ORGANIZATION

Assignment Title	Project Summary	Video Demo	Materials Needed
Experiment: Fruit	In this experiment, you will create and utilize a dichotomous key to classify a variety of fruits.	No	<ul style="list-style-type: none"> <li>reference materials</li> </ul>
*Activity: Keying Plants	In this assignment, you will select ten flowers to make a dichotomous key.	No	(Optional) <ul style="list-style-type: none"> <li>Microscope</li> <li>magnifying glass</li> <li>razor blade</li> <li>tweezers</li> <li>dissecting needles</li> </ul>
*Activity: Keying Animals	In this assignment, you will select ten to twenty animals to construct a dichotomous key.	No	<ul style="list-style-type: none"> <li>related pictures</li> </ul>
Project: Research	In this assignment, you will write a report on the origin of life.	No	<ul style="list-style-type: none"> <li>reference materials</li> </ul>
*Project: Origins	In this assignment, you will choose one of three projects on origins to complete.	No	<ul style="list-style-type: none"> <li>related materials</li> </ul>
*Special Project	Special Project assignments are used by teachers to create their own projects if needed.	No	N/A

\*indicates alternate project/experiments

UNIT 2: CHEMISTRY OF LIFE

Assignment Title	Project Summary	Video Demo	Materials Needed
Experiment: Static Electricity	In this assignment, you will perform an experiment of ionic bonding.	Yes	<ul style="list-style-type: none"> <li>two inflated balloons</li> <li>piece of material (nylon, wool, or fur)</li> <li>thread</li> <li>nylon stocking</li> <li>string</li> <li>piece of white paper</li> </ul>
*Experiment: Temperature Control	In this experiment, you will investigate water as a temperature control.	Yes	<ul style="list-style-type: none"> <li>two flat aluminum cake pans (disposable)</li> <li>a liter measure</li> <li>sand</li> <li>aluminum foil</li> <li>thermometer</li> </ul>
Experiment: Water Properties	In this investigation, you will observe what happens to two different solutes when added to water and then filtered.	Yes	<ul style="list-style-type: none"> <li>chalk</li> <li>calcium hydroxide</li> <li>filter paper</li> <li>phenolphthalein</li> <li>heat source</li> <li>two Pyrex beakers</li> </ul>
*Experiment: Indicators	In this experiment, you will determine acidity and basicity of common household products utilizing indicators.	Yes	<ul style="list-style-type: none"> <li>litmus paper</li> <li>vinegar</li> <li>bicarbonate of soda</li> <li>fruit juice</li> <li>tomato juice</li> <li>other varied household liquids</li> <li>soup</li> </ul>
*Experiment: Starch	In this experiment, you will perform investigations for presence of starch or sugar.	Yes	<ul style="list-style-type: none"> <li>powdered starch</li> <li>Glucose test strips (The kind that are used to test glucose in urine.)</li> <li>beakers, tumblers, or small disposable cups</li> <li>iodine</li> <li>fresh fruits and vegetables</li> <li>fruit juices</li> <li>processed food: soft drinks, diet soft drinks, salad dressings, baby food, vinegar, and sauces</li> <li>sugar (Karo syrup)</li> </ul>
*Experiment: Digestion	In this experiment, you will perform investigations to explore the action of enzymes on digestion.	Yes	<ul style="list-style-type: none"> <li>two jars with lids</li> <li>crackers</li> <li>diluted hydrochloric acid</li> <li>cornstarch</li> <li>ground beef (raw)</li> <li>Glucose test strips</li> <li>iodine</li> </ul>
*Special Project	Special Project assignments are used by teachers to create their own projects if needed.	No	N/A

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UNIT 3: CELLS

Assignment Title	Project Summary	Video Demo	Materials Needed
Experiment: Introducing the Microscope	Write a 125 word summary of what you have learned in "Introducing the Microscope".	No	N/A
Experiment: 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.	No	N/A
*Experiment: The Onion Cell	In this experiment, you will prepare and observe a slide of onion cells.	No	<ul style="list-style-type: none"> <li>• microscope</li> <li>• single-edged razor blade or exacto knife</li> <li>• coverslip</li> <li>• medicine dropper</li> <li>• iodine stain</li> <li>• forceps</li> <li>• onion slide (clear)</li> <li>• paper towel</li> <li>• water</li> </ul>
Experiment: Osmosis	In this experiment, you will perform an experiment that demonstrates osmosis.	No	<ul style="list-style-type: none"> <li>• 3 eggs</li> <li>• 4 cups vinegar</li> <li>• 2 cups tap water</li> <li>• 2 cups corn syrup</li> </ul>
*Experiment: Tissues	In this experiment, you will observe several types of tissue cells using a microscope.	Yes	<ul style="list-style-type: none"> <li>• microscope</li> <li>• prepared slides of tissues</li> </ul>
*Special Project	Special Project assignments are used by teachers to create their own projects if needed.	No	N/A

\*indicates alternate project/experiments

UNIT 4: CELL DIVISION AND REPRODUCTION

Assignment Title	Project Summary	Video Demo	Materials Needed
Experiment: Mitosis	In this experiment, you will observe slides of onion root and whitefish blastula for mitosis.	Yes	<ul style="list-style-type: none"> <li>microscope</li> <li>prepared slide of onion (<i>Allium</i>) root stained to show chromosomes</li> <li>prepared slide of whitefish blastula stained to show chromosomes</li> </ul>
*Experiment: Regeneration	In this experiment, you will perform an experiment of regeneration on flatworms.	Yes	<ul style="list-style-type: none"> <li>a small glass jar or a culture jar</li> <li>a razor blade, a scalpel, or a very sharp knife</li> <li>a dissection microscope or a good hand lens</li> <li>eight or ten individual <i>Planaria</i> or flatworms</li> <li>a small piece of fresh liver about 2 cm on a side placed in fresh water which is just the depth of the height of the liver</li> <li>blunt ended tweezers or forceps</li> </ul>
*Experiment: Bulb Structure	In this experiment, you will using an onion, make observations of a bulb.	No	<ul style="list-style-type: none"> <li>a hand lens or dissection microscope</li> <li>a knife or razor blade</li> <li>a fresh onion or some other kind of bulb</li> </ul>
*Experiment: Cuttings	In this experiment, you will perform investigations of different types of cuttings.	No	<ul style="list-style-type: none"> <li>one glass jar of 16-ounce, or larger, size</li> <li>two or more flower pots of 4-inch, or larger, diameter</li> <li>rich loamy soil or potting mix</li> <li>toothpicks</li> <li>a sweet potato</li> </ul>
*Experiment: Sexual Reproduction	In this experiment, you will make observations of an egg cell and a sperm cell using prepared slides.	Yes	<ul style="list-style-type: none"> <li>a compound microscope</li> <li>one or more prepared slides of egg cells from an animal</li> <li>one or more prepared slides of animal sperm, preferably from the same species as the slides of the egg cell</li> </ul>
Experiment: Tissue Structure	In this experiment, you will observe different types of cells.	Yes	<ul style="list-style-type: none"> <li>microscope</li> <li>prepared slide of erythrocytes, or leukocytes (from blood)</li> <li>prepared slide of some internal organ such as the kidney, liver, or heart</li> <li>prepared slide of muscle tissue</li> </ul>
*Experiment: Ferns And Pines	In this experiment, you will prepare a slide of sporangia from a fern leaf and observe.	Yes	<ul style="list-style-type: none"> <li>hand lens or dissection microscope</li> <li>forceps</li> <li>microscope</li> <li>medicine dropper</li> <li>fern leaves with sori</li> <li>clean glass slides</li> <li>pine cone (green and unopened would be best)</li> <li>coverslip</li> </ul>

**UNIT 4: CELL DIVISION AND REPRODUCTION (CONTINUED)**

Assignment Title	Project Summary	Video Demo	Materials Needed
*Experiment: Flowers	In this experiment, you will examine a variety of flowers and identify the parts.	Yes	<ul style="list-style-type: none"> <li>• microscope</li> <li>• razor blade or sharp knife</li> <li>• hand lens or dissection</li> <li>• microscope</li> <li>• medicine dropper</li> </ul> <ul style="list-style-type: none"> <li>• microscope</li> <li>• clean glass slides</li> <li>• teasing needle</li> <li>• coverslips</li> <li>• several kinds of fresh flowers</li> </ul>
*Special Project	Special Project assignments are used by teachers to create their own projects if needed.	No	N/A

\*indicates alternate project/experiments

**UNIT 5: GENETICS: GOD'S PLAN OF INHERITANCE**

Assignment Title	Project Summary	Video Demo	Materials Needed
Experiment: Probability	In this experiment, you will perform an experiment on probability.	No	<ul style="list-style-type: none"> <li>• 2 Coins</li> </ul> <ul style="list-style-type: none"> <li>• box (shoebox will work)</li> </ul>
Experiment: Molecular Genetics	In this experiment, you will perform an experiment on molecular genetics.	No	<ul style="list-style-type: none"> <li>• 60 radish seeds</li> <li>• 2 petri dishes or flat covered containers</li> </ul> <ul style="list-style-type: none"> <li>• sand-peat mixture</li> <li>• medicine dropper</li> <li>• box to cover 1 petri dish</li> </ul>
*Special Project	Special Project assignments are used by teachers to create their own projects if needed.	No	N/A

\*indicates alternate project/experiments

UNIT 6: MICROBIOLOGY

Assignment Title	Project Summary	Video Demo	Materials Needed
Experiment: Fungus All Around (Part 1)	In this experiment, you will grow and observe a number of different fungi.	No	<ul style="list-style-type: none"> <li>a compound microscope or 5X or 10X hand lens</li> <li>slice of hard cheese</li> <li>3 sealable plastic sandwich bags</li> <li>slice of bread</li> <li>sharp knife or razor blade</li> <li>microscope slide</li> <li>a flashlight or light source of some kind for observations</li> </ul>
Experiment: Fungus All Around (Part 2)	In this experiment, you will grow and observe a number of different fungi.	No	<ul style="list-style-type: none"> <li>compound microscope</li> <li>sugar</li> <li>5X or 10X hand lens</li> <li>fresh whole mushroom</li> <li>flashlight</li> <li>depression slide</li> <li>methylene blue stain</li> <li>tweezers</li> <li>medicine dropper</li> <li>pin</li> <li>cover slip</li> <li>baker's yeast packet</li> <li>cup or glass</li> <li>sharp knife or razor blade</li> <li>spoon</li> </ul>
Experiment: Protozoan Culture	In this experiment, you will grow and observe a number of different protozoans taken from a "dirty" water source.	Yes	<ul style="list-style-type: none"> <li>1 water collection container (quart jar)</li> <li>"dirty" water source</li> <li>6 grains of rice</li> <li>1 tsp rich black soil (NOT potting soil)</li> <li>4 small glass jars (baby food jars)</li> <li>handful of hay or grass clippings</li> <li>pinch of hard-boiled egg yolk</li> <li>cotton ball</li> <li>medicine dropper</li> <li>cover slips</li> <li>microscope</li> <li>depressions slide</li> <li>protozoan cultures</li> </ul>
*Experiment: Algae Observations	In this experiment, you will examine prepared slides of nostoc and spirogyra.	Yes	<ul style="list-style-type: none"> <li>microscope</li> <li>a prepared slide of nostoc (cyanobacteria)</li> <li>a prepared slide of spirogyra (green algae)</li> </ul>
*Special Project	Special Project assignments are used by teachers to create their own projects if needed.	No	N/A

\*indicates alternate project/experiments



UNIT 7: PLANTS: GREEN FACTORIES

Assignment Title	Project Summary	Video Demo	Materials Needed
Experiment: Seeds	In this experiment, you will collect four different types of seeds and perform the investigation.	Yes	<ul style="list-style-type: none"> <li>four different types of seeds (at least one grass such as corn and one bean such as a pinto bean)--at least four seeds of each kind</li> <li>magnifying glass (hand lens)</li> <li>four styrofoam cups</li> <li>razor blade (single edge)</li> <li>soil mixture: 2/3 potting soil and 1/3 sand</li> <li>water</li> </ul>
*Experiment: Terrarium	In this experiment, you will construct a terrarium	No	<ul style="list-style-type: none"> <li>Large glass or plexiglass container</li> <li>washed gravel, sand and/or rock</li> <li>aquarium charcoal</li> <li>potting soil</li> <li>A few assorted plants</li> </ul>
*Special Project	Special Project assignments are used by teachers to create their own projects if needed.	No	N/A

\*indicates alternate project/experiments

UNIT 8: HUMAN ANATOMY AND PHYSIOLOGY

Assignment Title	Project Summary	Video Demo	Materials Needed
Experiment: Heart Rate	In this experiment, you will perform and experiment on heart rate.	No	<ul style="list-style-type: none"> <li>a partner</li> <li>a clock or watch with a second hand</li> </ul>
*Experiment: Muscle Types	In this experiment, you will observe slides of the three muscle types.	Yes	<ul style="list-style-type: none"> <li>microscope</li> <li>raw chicken leg</li> <li>blunt probe</li> <li>scissors</li> <li>prepared slides of smooth muscle, skeletal muscle, and cardiac muscle</li> <li>latex gloves</li> </ul>
*Special Project	Special Project assignments are used by teachers to create their own projects if needed	No	N/A

\*indicates alternate project/experiments

**UNIT 9: ECOLOGY, POLLUTION, AND ENERGY**

<b>Assignment Title</b>	<b>Project Summary</b>	<b>Video Demo</b>	<b>Materials Needed</b>
Experiment: Habitats	In this experiment, you will select a habitat and set up a living community.	No	<ul style="list-style-type: none"> <li>gallon jar (or other large, glass container)</li> </ul>
*Experiment: Biomes	Explain what part of the ecosystem each living organism fulfills	No	<ul style="list-style-type: none"> <li>research resources</li> </ul>
*Experiment: Quadrats	In this experiment, you will choose a quadrat location and count and list different plant and animal species in the quadrat.	No	<ul style="list-style-type: none"> <li>string or twine</li> <li>meter stick</li> <li>large nails</li> </ul>
*Experiment: Inventory	This activity will give you some experience in taking an inventory and in learning about the plants and animals of your area.	No	<ul style="list-style-type: none"> <li>nearby plants and animals to observe</li> </ul>
*Special Project	Special Project assignments are used by teachers to create their own projects if needed	No	N/A

\*indicates alternate project/experiments

**UNIT 10: PRINCIPLES AND APPLICATIONS OF BIOLOGY**

<b>Assignment Title</b>	<b>Project Summary</b>	<b>Video Demo</b>	<b>Materials Needed</b>
*Special Project	Special Project assignments are used by teachers to create their own projects if needed	No	N/A

\*indicates alternate project/experiments