BIOLOGY LAB BUNDLE

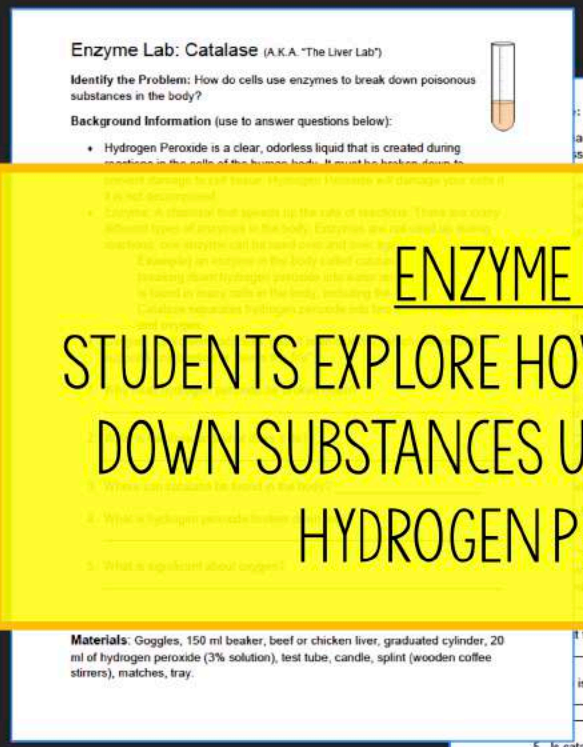
Labs, models, and simulations A total of 21 different hands-on activities to use in biology class. Pick and choose or use them all.

Topics included: biochemistry, cells, cell transport, DNA, mutations, meiosis, genetics, photosynthesis, cellular respiration, ecology, evolution, and classification.

✓Answer keys included!



Biochemistry



Enzyme Lab: Catalase (A.K.A. "The Liver Lab")

Identify the Problem: How do cells use enzymes to break down poisonous substances in the body?

Background Information (use to answer questions below):

- Hydrogen Peroxide is a clear, odorless liquid that is created during

Materials: Goggles, 150 ml beaker, beef or chicken liver, graduated cylinder, 20 ml of hydrogen peroxide (3% solution), test tube, candle, splint (wooden coffee stirrers), matches, tray.

ad your materials out on the table. Place the small beaker on your tray
signed workstation.

t two products are formed when hydrogen peroxide breaks down?

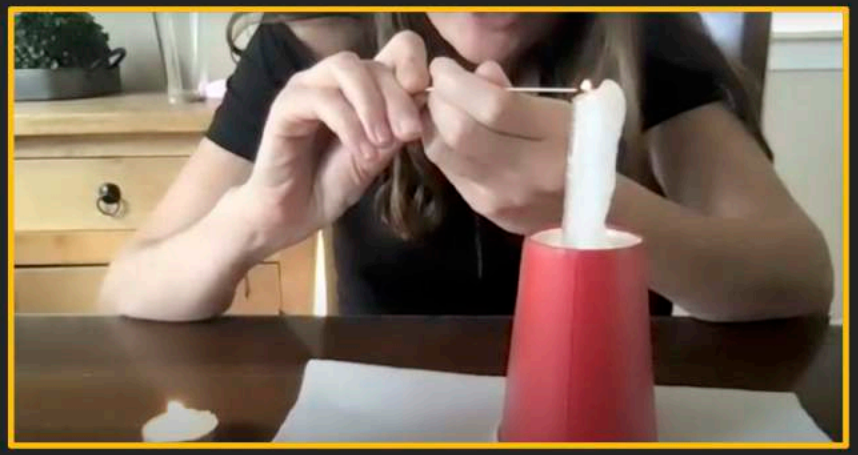
is catalase important in this reaction?

5. Is catalase reusable? Explain your reasoning: _____

ENZYME LAB

STUDENTS EXPLORE HOW ENZYMES BREAK DOWN SUBSTANCES USING LIVER AND HYDROGEN PEROXIDE





Cells

Name: _____ Date: _____

Comparing Plant and Animal Cells

Introduction: This lab further investigates the differences between plant and animal cells at a microscopic level. We will be using a compound light microscope to perform this lab.

Plant Cell Procedure

1. Make a wet mount of a piece of onion skin.
   a. peel a very th
   b. place the onic
   c. put one drop
   d. place one dro
   e. drop the cove

an angle, as this reduces

2. Examine the slide und

3. Draw what you see in

4. LABEL the cell wall, cy

5. Repeat steps 3-4 unde

LOW P

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cells.
microscope slide.
k around the inside of your cheek. Mix the tip of the
in order to make the animal cells visible under the
lip on the top of the cells.
er of the microscope
below (make sure you are drawing cells!)

e 2-part questions. Be sure to answer BOTH parts!

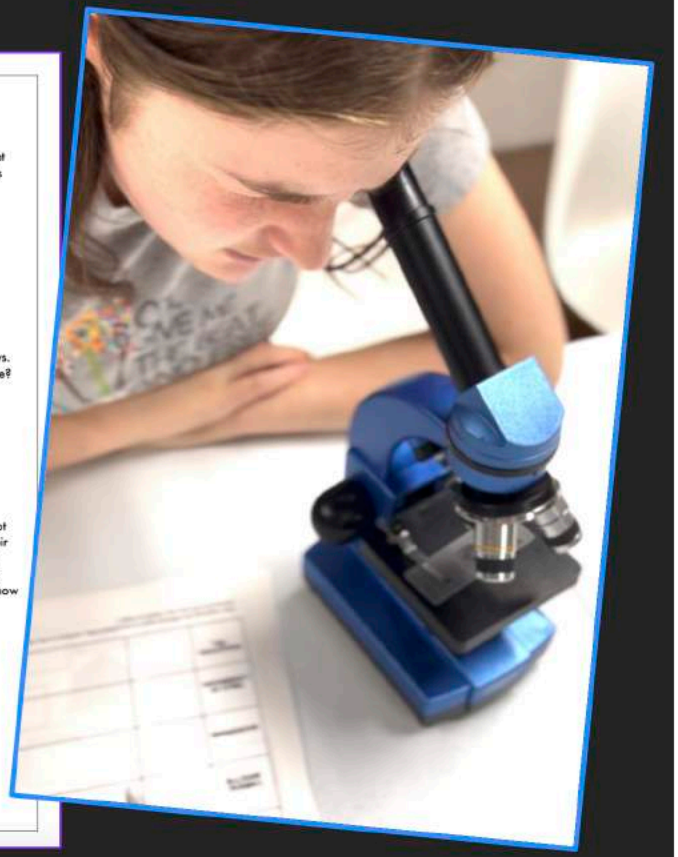
pe of plant cells to the general shape of animal cells. Using what
ces among the two types of cells, what structure gives plant cells

t and animal cells. Look at your
ning of the nucleus in plant cells vs.
sible for pushing the nucleus aside?

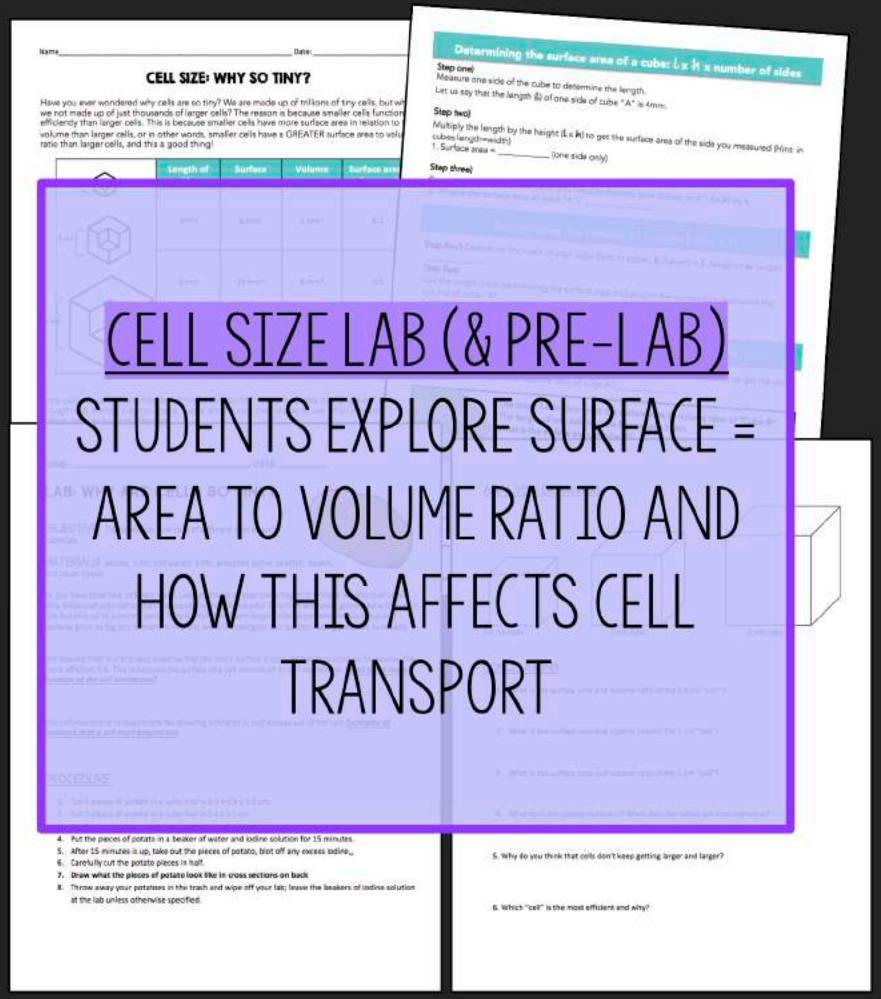
that the cells we examined are not
d in plant cells that gives them their
articular cells of the onion bulb?
ing organelle", why does it make
ed it? (Hint: Think about where/how

COMPARISON LAB

STUDENTS EXPLORE ONION CELLS AND CHEEK CELLS UNDER A MICROSCOPE

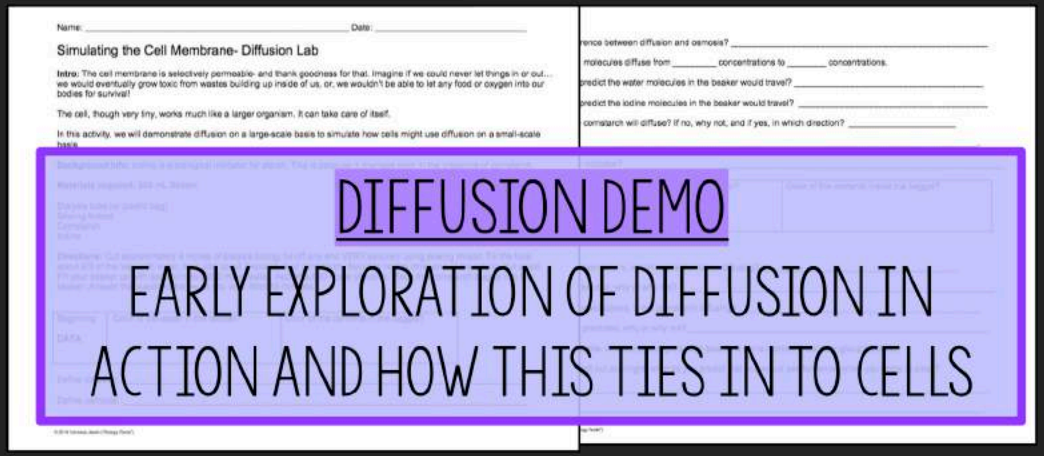


Cell Transport



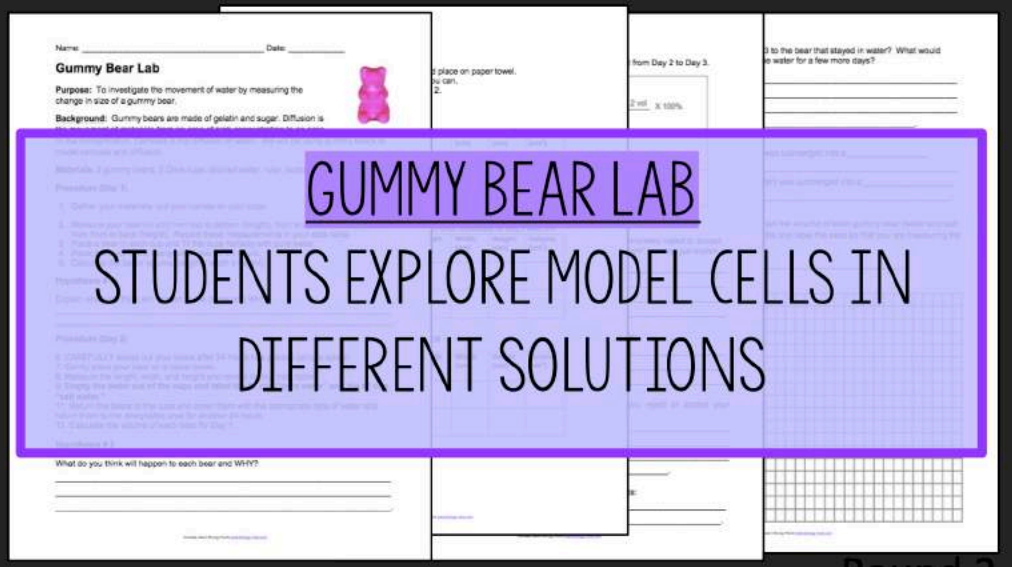
CELL SIZE LAB (& PRE-LAB)

STUDENTS EXPLORE SURFACE = AREA TO VOLUME RATIO AND HOW THIS AFFECTS CELL TRANSPORT



DIFFUSION DEMO

EARLY EXPLORATION OF DIFFUSION IN ACTION AND HOW THIS TIES IN TO CELLS

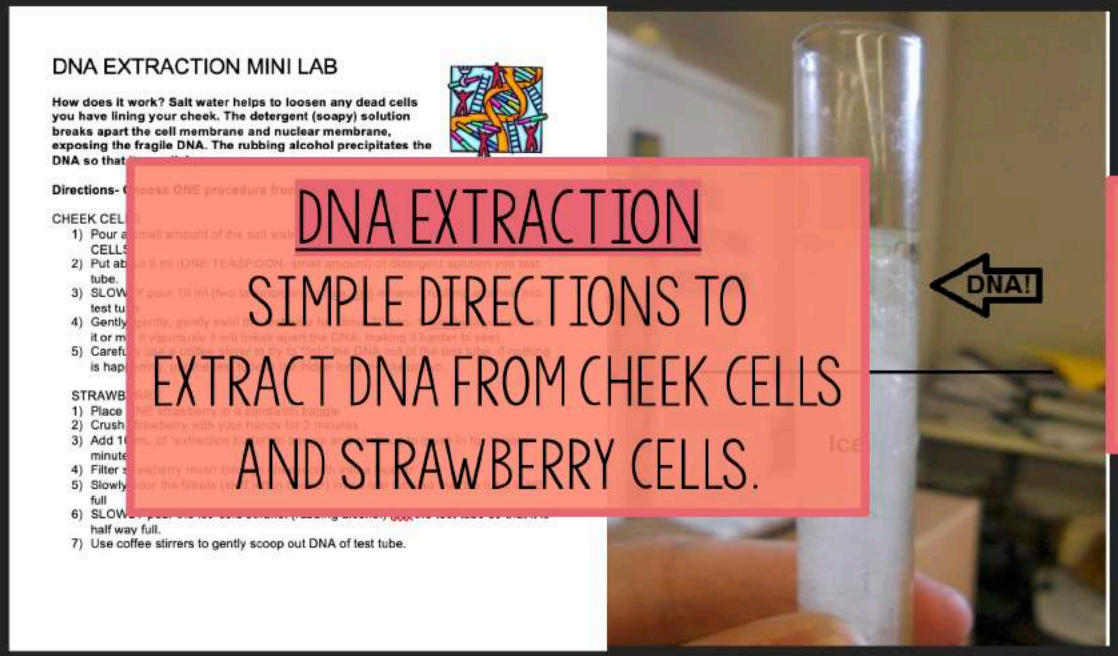


GUMMY BEAR LAB

STUDENTS EXPLORE MODEL CELLS IN DIFFERENT SOLUTIONS

Round 2

DNA



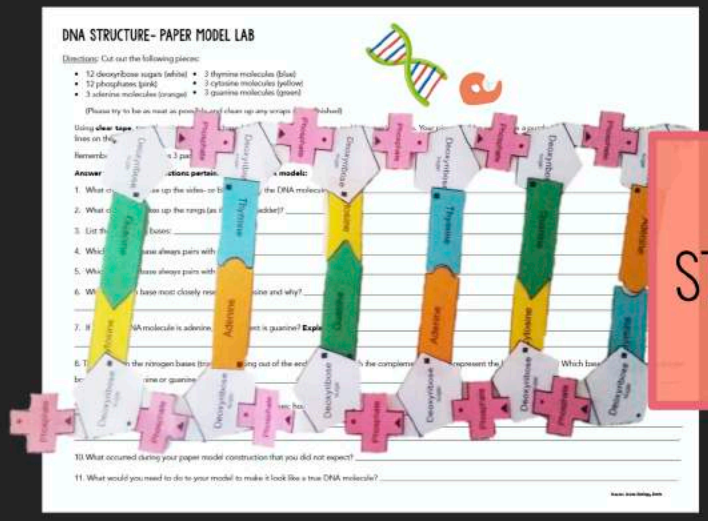
DNA EXTRACTION

SIMPLE DIRECTIONS TO EXTRACT DNA FROM CHEEK CELLS AND STRAWBERRY CELLS.



DNA FRANKENSTEIN

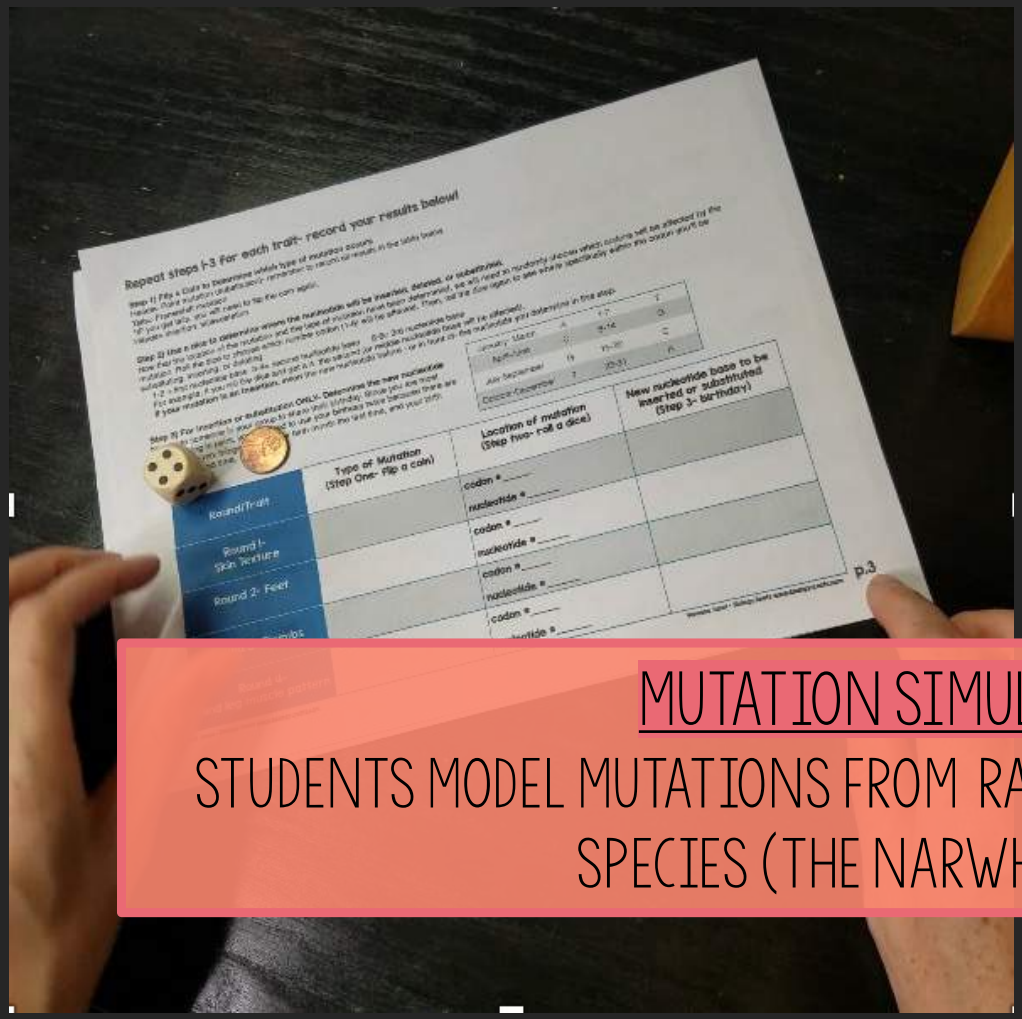
STUDENTS USE THEIR TRAITS TO BUILD A CLASS FRANKENSTEIN.

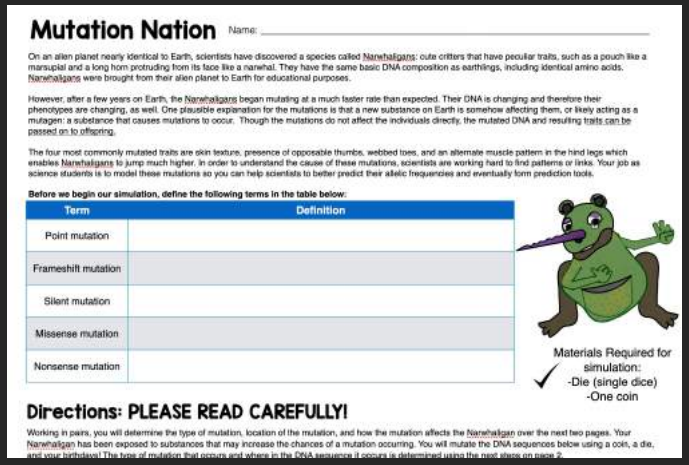


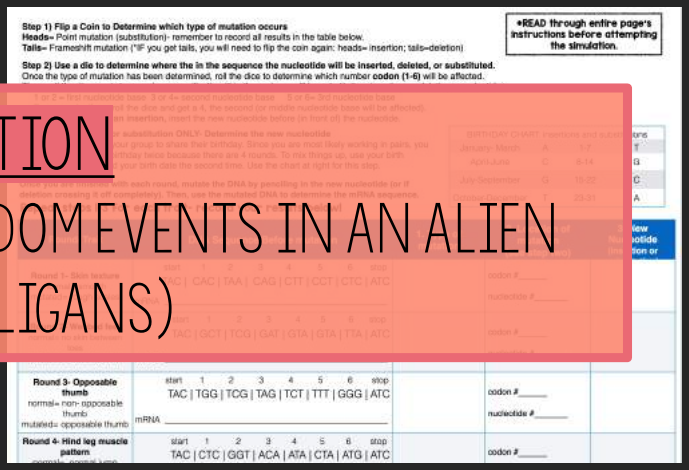
DNA PAPER MODEL

STUDENTS BUILD A DNA STRAND USING COLORED PAPER

Mutations



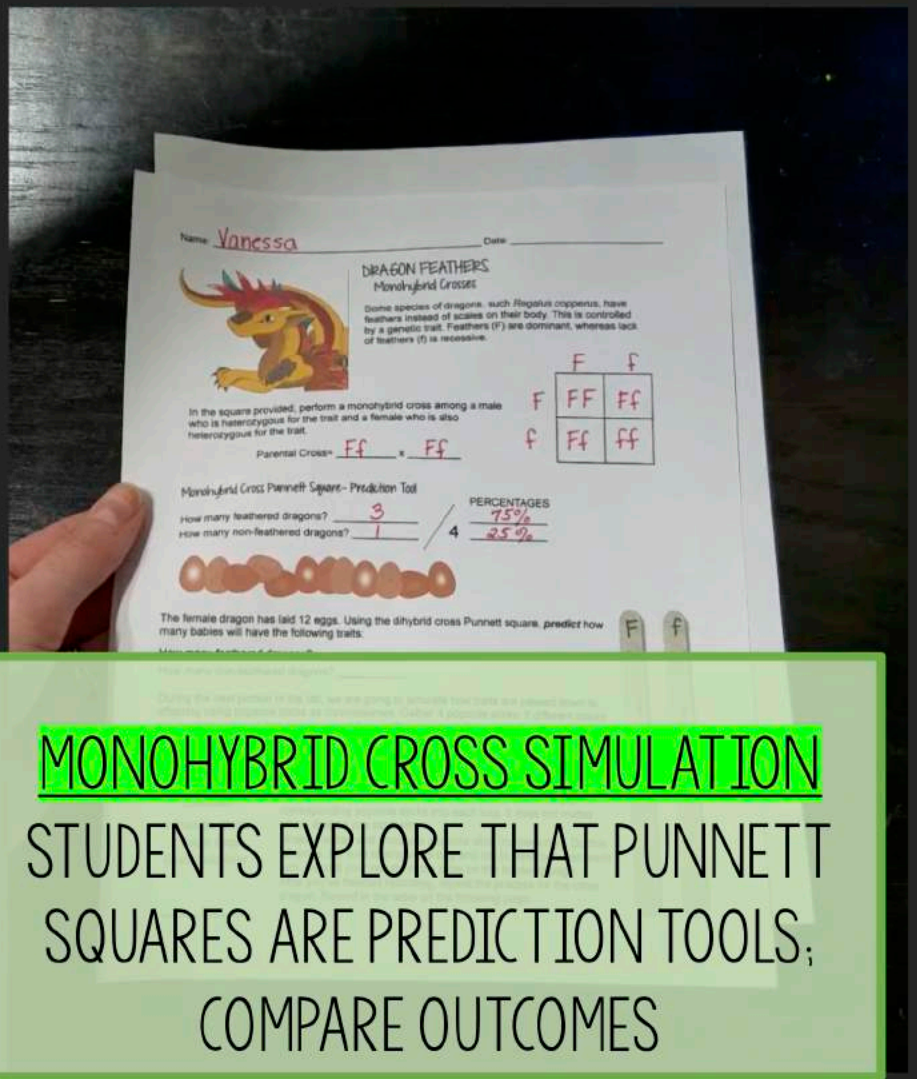




MUTATION SIMULATION

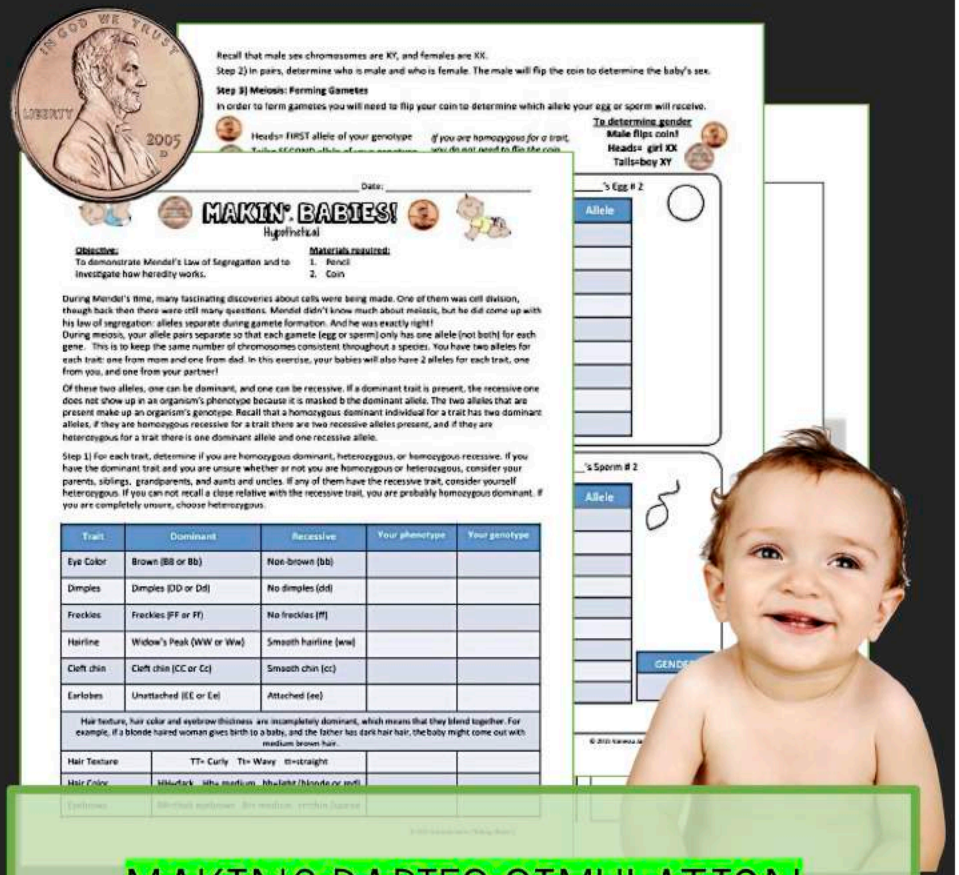
STUDENTS MODEL MUTATIONS FROM RANDOM EVENTS IN AN ALIEN SPECIES (THE NARWHALIGANS)

Genetics



MONOHYBRID CROSS SIMULATION

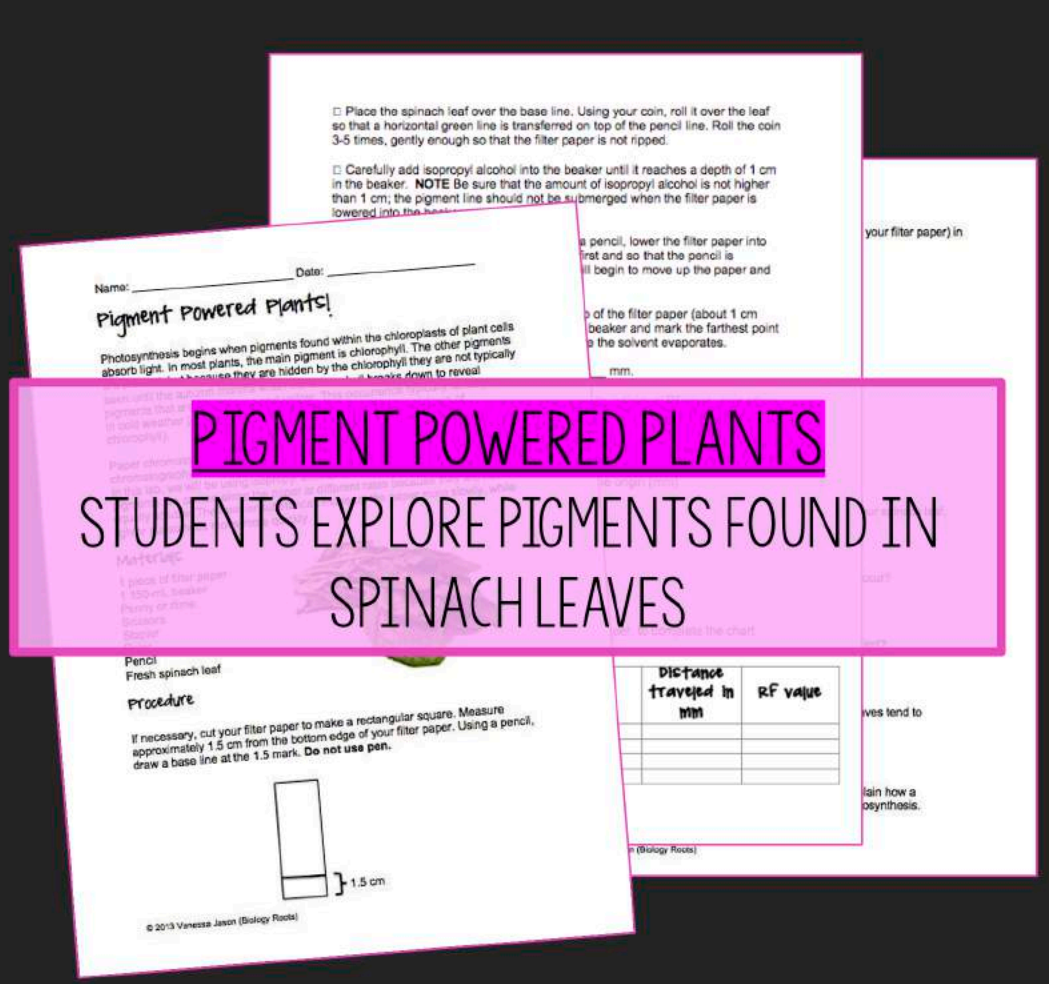
STUDENTS EXPLORE THAT PUNNETT SQUARES ARE PREDICTION TOOLS; COMPARE OUTCOMES



MAKING BABIES SIMULATION

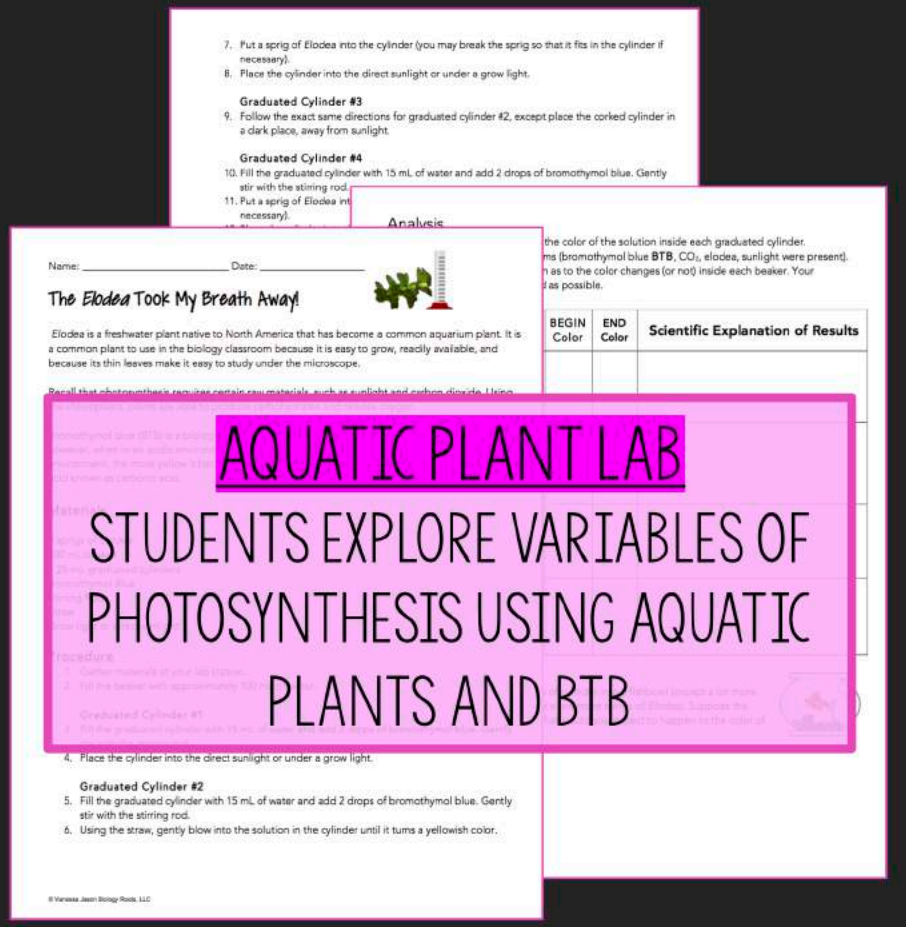
STUDENTS USE A COIN TO DETERMINE TRAITS

Photosynthesis



PIGMENT POWERED PLANTS

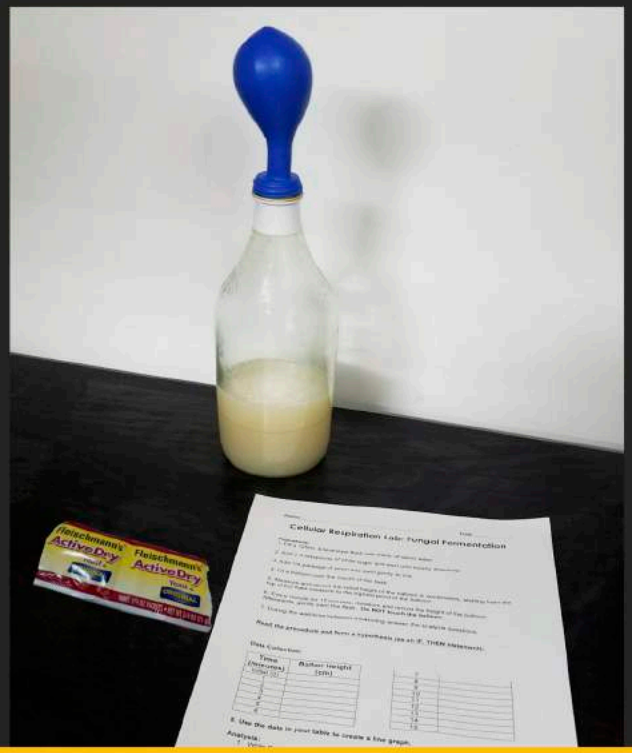
STUDENTS EXPLORE PIGMENTS FOUND IN SPINACH LEAVES



AQUATIC PLANT LAB

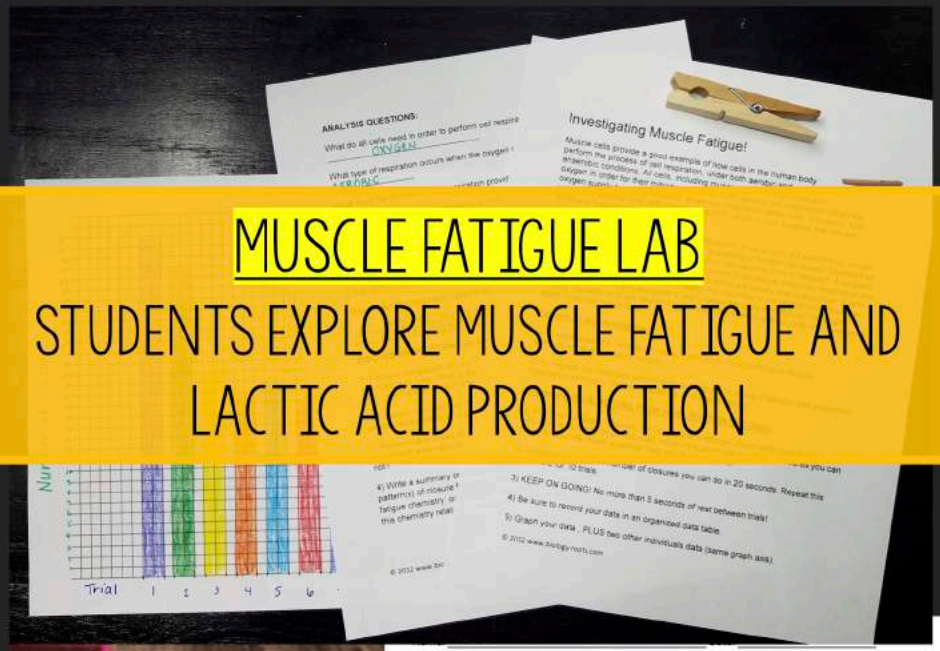
STUDENTS EXPLORE VARIABLES OF PHOTOSYNTHESIS USING AQUATIC PLANTS AND BTB

Cellular Respiration



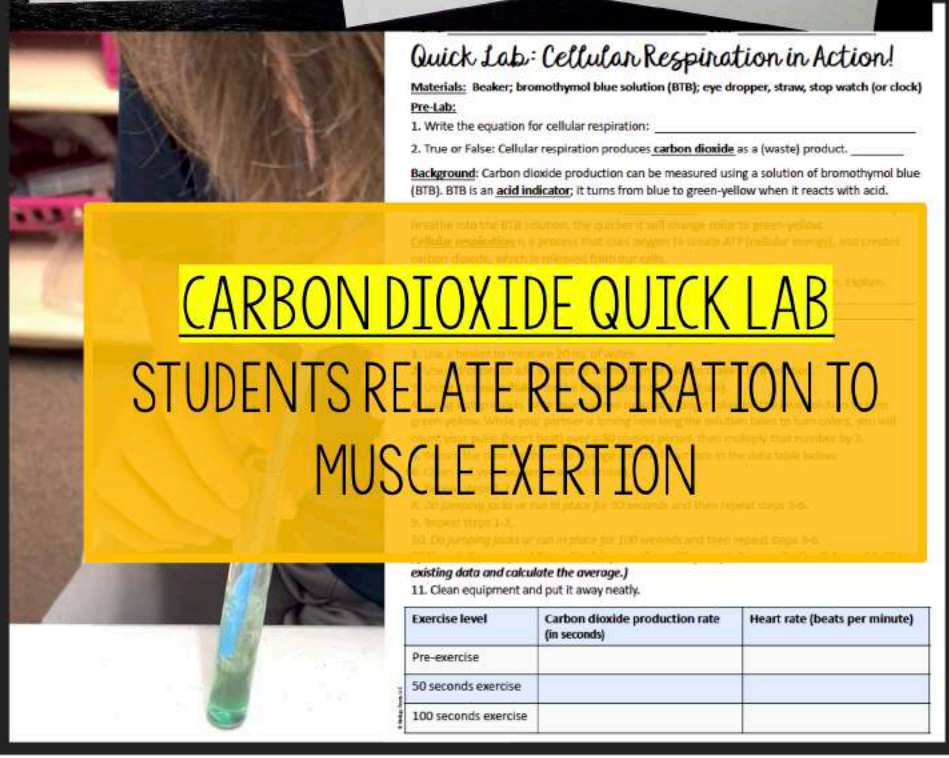
YEAST LAB

STUDENTS EXPLORE ALCOHOLIC FERMENTATION



MUSCLE FATIGUE LAB

STUDENTS EXPLORE MUSCLE FATIGUE AND LACTIC ACID PRODUCTION



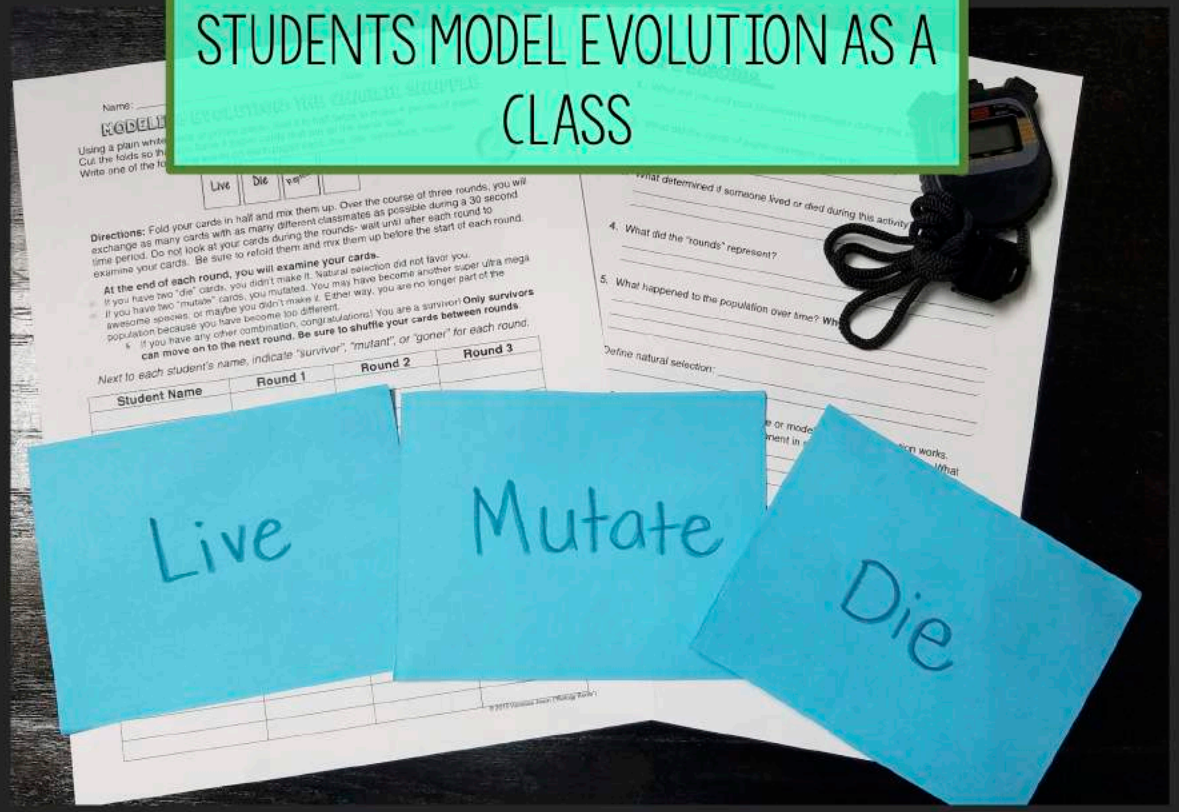
CARBON DIOXIDE QUICK LAB

STUDENTS RELATE RESPIRATION TO MUSCLE EXERTION

Evolution

CHARLIE SHUFFLE

STUDENTS MODEL EVOLUTION AS A CLASS





HUNGRY GAMES

A GAME OF NATURAL SELECTION (CLASS SIMULATION)

Ecology

4. Are there more plants or carnivores? _____
5. Which trophic level has the MOST biomass? _____
6. Which trophic level has the LEAST biomass? _____
7. In which trophic level is most of the energy would be contained? _____
8. How does biomass in a trophic level compare to the energy in a trophic level? Why might this

Name: _____ Date: _____

Modeling Energy Flow and Biomass

MODEL IT: Working with partners, come up with a food chain that includes a total of 4 organisms. Draw it in the box below. The first trophic level has the most calories.

LABEL each level (producer, etc.) and how many calories are in each trophic level.

*Each level in your food chain is called a **trophic level.**

2. In an ecosystem, which trophic level would contain most of the biomass, producers or consumers? _____
3. Judging from this model, are there more herbivores (plant eaters) or carnivores (meat eaters) in an ecosystem? _____

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ENERGY FLOW AND BIOMASS

BASIC MODELING ACTIVITY WHERE STUDENTS CREATE A FOOD WEB AND BIOMASS PYRAMID

Classification



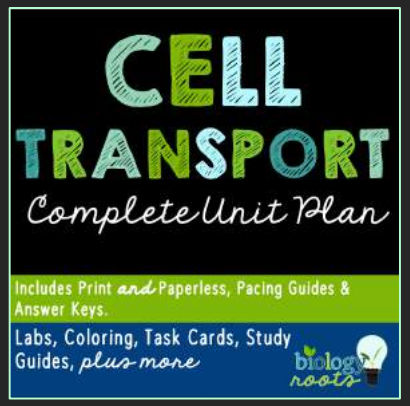
CLASSIFICATION MINI LAB PRACTICAL

STUDENTS CLASSIFY DIFFERENT SPECIMENS IN THE CLASSROOM

These labs are included in my individual units and curriculum:





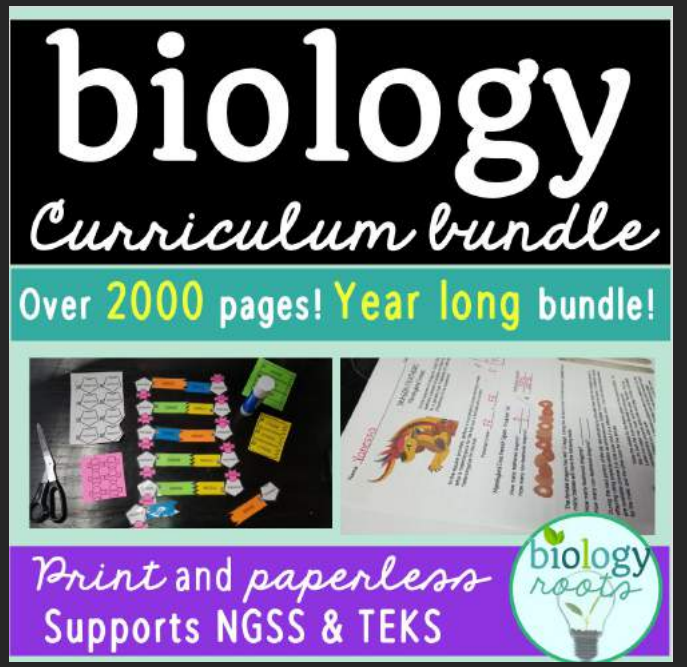








Save 40% with entire curriculum



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