

Aquarium Christmas Ornament

Materials:

Betta Fish (ie from local pet store) – see care sheet
Plastic Screw Top Ornament Orb (ie Hobby Lobby sku# 865261)
Cordless Drill with 1/8 Bit
Red/Green/Blue Aquatic Stones or Shells
Water
Aquarium Net
Scissors
Ruler
Red/Green/Blue/White Ribbon
Betta Food (small sandwich bags as a starter kit)
Reference for Betta Fish Care



Steps:

1. With the cap still on the orb, carefully drill a hole in the middle of the screw top and also drill 4 holes about equal distant from each other around top of orb near the screw top.
2. Remove the cap and place a few aquatic stones or shells into the orb to just cover the bottom of the orb.
3. Since the fish should have come in its own container, use a net or your own hands to scoop the fish into the orb and without too much hesitation, place water into the orb to fill the container.
4. Cut about 20 cm's of ribbon and tie a triplet knot at one end. String the ribbon through the hole that was made earlier from under the lid. Ties extra knots to insure the ribbon will not pull through if necessary. Use the remaining ribbon to create a loop.
5. Note the care sheet and the starter-up food container; be sure to buy more food for later.
6. Screw the lid back onto the orb and enjoy your living ornament.



Betta Fish Care

Care:

Water

Because the betta fish breathes at the surface of the water, the water does not need to be aerated either. In fact, aeration and circulation may create too much flow for your betta, who are not accustomed to having to swim very hard.

Tap water is generally safe for your betta fish, but should be left standing for 24 hours in order to condition it and bring it to room temperature. If your city has especially hard water, you may want water treatment chemicals to remove chlorine and other contaminants.

Bottled water varies as much as tap water does, and if you choose to use it, be sure to stick to one particular brand. If you do decide to change brands, make the change gradual, adding a bit of the new water to the old water over a couple of days. Using betta conditioners is still a good idea.

The *PH level* of your water source is important to measure and adjust as needed (betta buffers do this for you). The betta fish prefers as close to neutral water as possible, 7.0, but can manage in water that is between 6.5 and 7.5

The temperature of the water is also important, as the betta fish is considered a tropical fish. Water between 72 and 82 degrees Fahrenheit is ideal but the betta can adapt to lower or higher temperatures as long as the change is gradual.

Feeding

Adult betta fish should be fed once a day and babies should be fed twice a day. It is extremely important not to overfeed the fish. Keep an eye on them as they eat and remove any food that is uneaten when they are done. Generally, a betta fish should take about two to five minutes to fill up, so avoid feeding them more than they can eat in that time.

Betta fish prefer live food, but feeding them freeze dried food is a more convenient and affordable alternative. There is special betta food available for daily staple feeding, but always supplement with freeze-dried mosquito larvae - called "bloodworms", or brine shrimp.

The betta fish, as most fish, can go a couple days without eating, so don't worry about leaving for the weekend. But if you leave for a longer period of time, be sure to have someone feed the fish (or use a time-release food block, or automatic feeder) and clean their water (if smaller than 5 gallons it will need cleaning at least once a week).

It is good practice to skip a day of feeding once a week, as it gives the betta fish's digestive system time to recover and clean itself out.

Cleaning

If you are keeping them in an unfiltered bowl or tank over a gallon, change 25% of the water once a week (if smaller, change all the water 3-7x/week - it's nearly impossible to change the water too often in a bowl of that size). You should also remove any debris or uneaten food immediately between feedings.

1. Draw enough tap water to refill the tank 24 hours in advance.
2. Remove your fish from his tank with a net and place him in a tall glass filled with the old tank water.
3. Drain the tank. Wipe down the sides of the tank, removing any buildup.
4. Rinse gravel thoroughly and replace.
5. Rinse the tank thoroughly if you used any cleaners or soap.
6. Refill the tank and gently reintroduce the betta fish.



Bacteriophage Ornament

A bacteriophage is a type of virus that infects bacteria. In fact, the word "bacteriophage" literally means "bacteria eater," because bacteriophages destroy their host cells. All bacteriophages are composed of a nucleic acid molecule that is surrounded by a protein structure. A bacteriophage attaches itself to a susceptible bacterium and infects the host cell. Following infection, the bacteriophage hijacks the bacterium's cellular machinery to prevent it from producing bacterial components and instead forces the cell to produce viral components. Eventually, new bacteriophages assemble and burst out of the bacterium in a process called lysis. Bacteriophages occasionally remove a portion of their host cells' bacterial DNA during the infection process and then transfer this DNA into the genome of new host cells. This process is known as transduction.

Method

Apparatus

Plastic Bottle (ie Hobby Lobby 7-8 oz craft versions) = protein head / capsule

Curled Hair Cords (Hobby Lobby 5218516) = viral nucleic acid (DNA / RNA)

Plastic Bottle Cap (w/ prep-made hole for chenille stem) = neck / collar

LifeSavers Candy = protein tail sheath

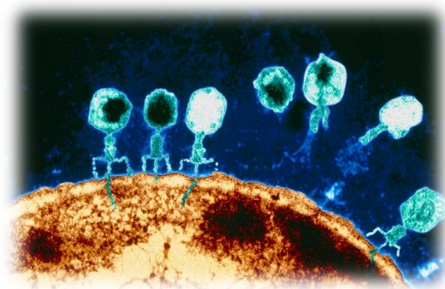
Chenille Stems (ie. red and green); (Hobby Lobby 158667 (red)) = whiskers / tail fibers

Button (perhaps festive) (Hobby Lobby 838342) = base plate / tail pin

Command Strip Hook

Scissors

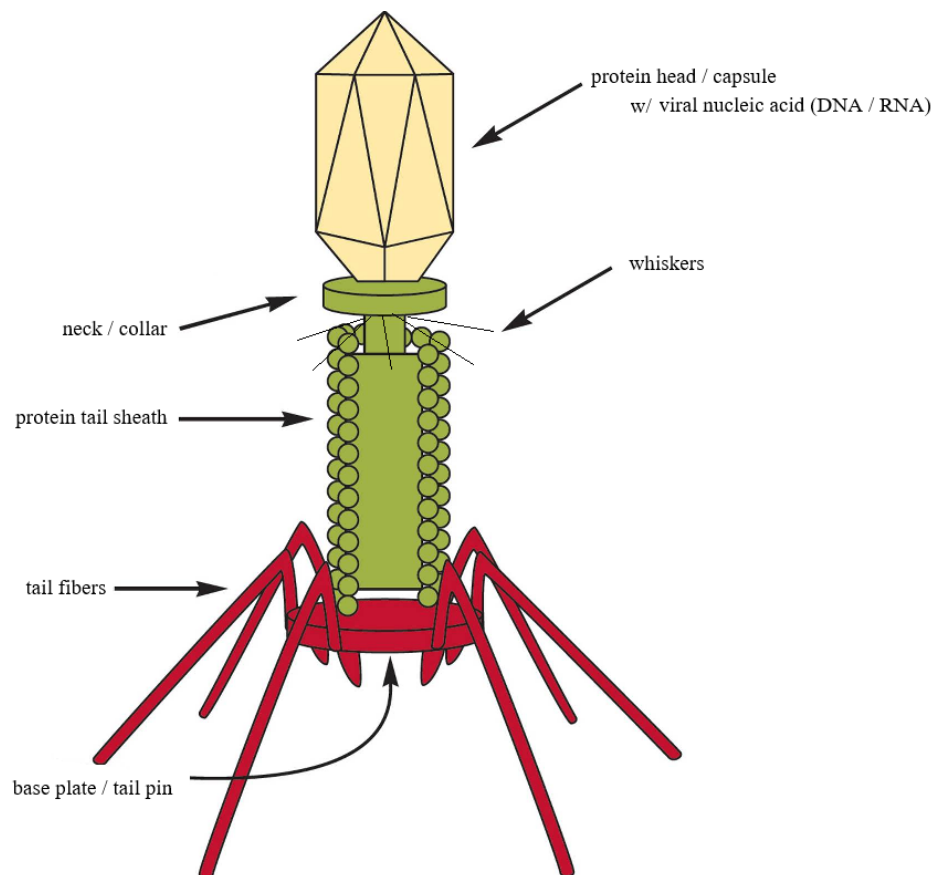
Decorative Stickers



Procedure:

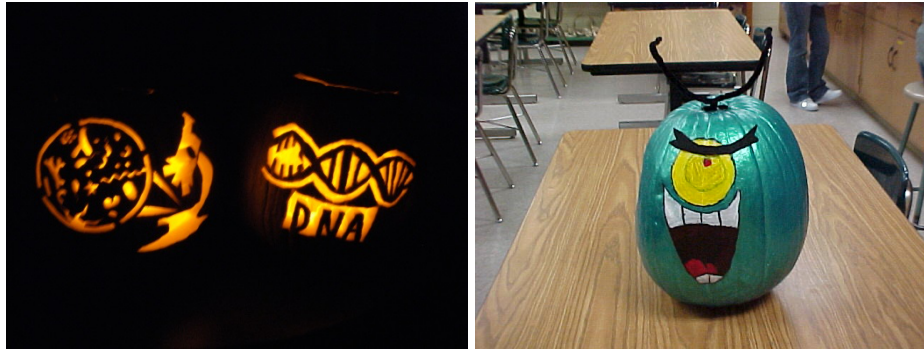
1. Gather all necessary materials as directed.
2. Remove and discard any stickers on the plastic bottle (capsule).
3. Be sure that a hole has been created in the bottle cap (neck), if not let the teacher know.
4. Tie a knot at the end of a chenille and thread the stem through the hole from inside a bottle cap.
5. Remove the only the wrapping from each end of the lifesaver candy (sheath).

6. Tread the chenille through the lifesaver candy holes.
 7. Thread the end of the chenille through the button (base plate) and wrap it around a couple times.
 8. Cut off any excess chenille stem that was just wrapped around the button.
 9. Obtain (3) chenille stems and at midway down each stem wrap the stem once around the button.
Note: There should be (6) fairly evenly created $\frac{1}{2}$ chenille stems below the button.
 10. Obtain (2) chenille stems and cut them evenly in half.
 11. At midway down each stem wrap the stem once around the bottom of the bottle cap.
Note: There should be (6) fairly evenly created $\frac{1}{4}$ chenille stems below the bottle cap.
 12. Place a command strip hook (used to hang the virus) on the bottom of the plastic bottle.
 13. Cut off any excess command hook tabs with a pair of scissors.
 14. Place the hair cord (nucleic acid (DNA/RNA)) into the plastic bottle and screw on the lid.
 15. Remove the wrapper from the lifesaver candy totally and discard.
- Optional: Feel free to decorate the plastic bottle with decorations and/or stickers provided.





Biology Pumpkin Carving or Decorating Activity



Using a pumpkin, tools, paint, decorations provided. Carve or decorate a pumpkin with a biology theme or topic. Use any resources to find an image or information.

The Biology and History of Pumpkins

A pumpkin is not a vegetable; it's a fruit! In fact, it's a berry. Pumpkins belong to the family Cucurbitaceae, which includes cucumbers, melons, squash, and gourds. Within this family is the genus Cucurbita which includes gourds, winter and summer squash, and all varieties of pumpkin. There are four species that are considered "pumpkins," but only one is the species most people would recognize as the traditional pumpkin used for carving jack-o-lanterns and baking pies.

For most of the general population it is known as Halloween and is a night for dressing up, telling ghost stories, having spooky parties, trick-or-treating and pumpkin carving. What most people don't know is that Halloween is actually based on an ancient Celtic holiday known as Samhain (pronounced "sow wan"), which means "summer's end".

It was the end of the Celtic year, starting at sundown on October 31st and going through to sundown November 1st. It was a night to honor loved ones that had passed on since the veil between their realm and ours is at its thinnest on that night.

Celebrated for centuries by the Celts of old, Witches and many other nature based religions, it is the most magical night of the year. It is the Witches' New Year, and the Last Harvest. Although the religious significance of it has passed for the general public, Halloween is a "magical" night for all!

On this magical night, glowing jack-o-lanterns, carved from turnips or gourds, were set on porches and in windows to welcome deceased loved ones, but also to act as protection against malevolent spirits. Burning lumps of coal were used inside as a source of light, later to be replaced by candles.

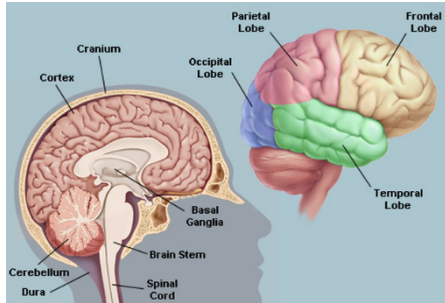
When European settlers, particularly the Irish, arrived in America they found the native pumpkin to be larger, easier to carve and seemed the perfect choice for jack-o-lanterns. Halloween didn't really catch on big in this country until the late 1800's and has been celebrated in so many ways ever since!

Pumpkins are indigenous to the western hemisphere and were completely unknown in Europe before the time of Columbus. In 1584, the French explorer Jacques Cartier reported from the St. Lawrence region that he had found "gros melons", which was translated into English as "pumpions," or pumpkins. In fact, pumpkins have been grown in America for over 5,000 years. Native Americans called pumpkins "isquatersquash."



Cupcake Brains

The brain is one of the largest and most complex organs in the human body. It is made up of more than 100 billion nerves that communicate in trillions of connections called synapses. The brain is surrounded by a layer of tissue called the meninges. The skull (cranium) helps protect the brain from injury. The brain is made up of many specialized areas that work together:



- The cortex is the outermost layer of brain cells. Thinking and voluntary movements begin in the cortex.
- The brain stem is between the spinal cord and the rest of the brain. Basic functions like breathing and sleep are controlled here.
- The basal ganglia are a cluster of structures in the center of the brain. The basal ganglia coordinate messages between multiple other brain areas.
- The cerebellum is at the base and the back of the brain. The cerebellum is responsible for coordination and balance.

The brain is also divided into several lobes:

- The frontal lobes are responsible for problem solving and judgment and motor function.
- The parietal lobes manage sensation, handwriting, and body position.
- The temporal lobes are involved with memory and hearing.
- The occipital lobes contain the brain's visual processing system.

<https://www.webmd.com/brain>

Method

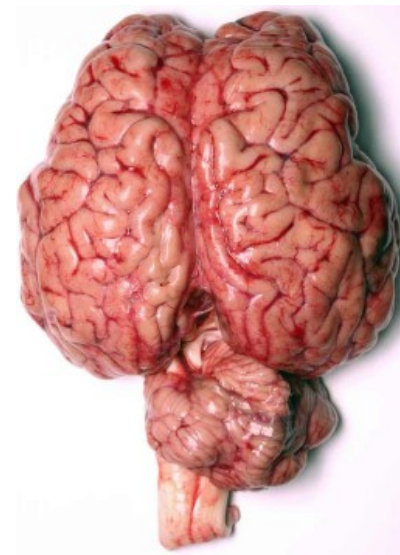
Materials

Per Student

- 1 Pink Cupcake (pre-made from cake mix)
- Halloween Paper Cup
- Pink Frosting
- Tube of Pink Frosting w/ Decorating Cap
- Tube of Red Frosting Gel
- Knife
- Decoration (ie candy hatchet/knife/etc... to put into brain)

Procedure

1. Using a knife, frost the cupcake with a base coat of frosting.
2. Using a tube of frosting, create a mass of squiggles (aka gyri) on the top of the cupcake.
3. Using the red frosting gel, make squiggles blood vessels over the cupcake.
4. Add a candy hatchet/knife/etc... to the brain (optional)





DNA Snow Globe

Introduction

DNA, or deoxyribonucleic acid, is the hereditary material in humans and almost all other organisms. Nearly every cell in a person's body has the same DNA. Most DNA is located in the cell nucleus (where it is called nuclear DNA), but a small amount of DNA can also be found in the mitochondria (where it is called mitochondrial DNA or mtDNA).

The information in DNA is stored as a code made up of four chemical bases: adenine (A), guanine (G), cytosine (C), and thymine (T). Human DNA consists of about 3 billion bases, and more than 99 percent of those bases are the same in all people. The order, or sequence, of these bases determines the information available for building and maintaining an organism, similar to the way in which letters of the alphabet appear in a certain order to form words and sentences.

DNA bases pair up with each other, A with T and C with G, to form units called base pairs. Each base is also attached to a sugar molecule and a phosphate molecule. Together, a base, sugar, and phosphate are called a nucleotide. Nucleotides are arranged in two long strands that form a spiral called a double helix. The structure of the double helix is somewhat like a ladder, with the base pairs forming the ladder's rungs and the sugar and phosphate molecules forming the vertical sidepieces of the ladder.

An important property of DNA is that it can replicate, or make copies of itself. Each strand of DNA in the double helix can serve as a pattern for duplicating the sequence of bases. This is critical when cells divide because each new cell needs to have an exact copy of the DNA present in the old cell (*reference: ghr.nlm.nih.gov/primer/basics/dna*)

Method

Apparatus

(1) Quart Glass Jar with Lid [ie 161126 Hobby Lobby]
Aluminum Wire (Various Colors / Pattern) [ie 330118 Hobby Lobby]
or Pipe Cleaners [ie tensile type]
Twinkle Flakes [ie 0743831 Hobby Lobby]
Pony Beads (Blue, Red, Green, Yellow, Pink, and White)
Stick-On Decorations (optional)
Wire Cutters
Baby Oil
Ruler



Procedure

1. Using a wire cutter and ruler, cut (4) pieces of wire of your choice about 6 inches long each.
2. Using a wire cutter and ruler, cut (10) pieces of wire of your choice about 3 inches long each.
3. Thread (5) sugar and (5) phosphate group beads in an altered manner along the 6-inch wire. Wrap the ends of the wires into a small knot/ball to prevent the beads from slipping off.
4. Thread (2) pony beads onto (5) of the 3-inch wires; however, the (2) colors must match each time to represent "base pairing":

Sugar (Deoxyribose) = White
Phosphate Group = Pink

Adenine = Blue with Thymine = Red
Guanine = Green with Cytosine = Yellow

5. Hook and wrap the ends of the 3-inch wires through only the sugars to make a ladder.
6. Repeat steps 3-5; however, make the 2nd DNA have the "same base pairing pattern" to create (2) homozygous DNA molecules.
7. Place the DNA's into the jar, add a few pinches of "twinkle flakes", and water to the top. Seal with a lid.
Note: Keep jar upright.

Options: 1. Add decorations behind or around the jar.

2. If soft-snow/snowflakes settle too fast, remove a little water and add some baby oil.



Easter Bird Basket

One excellent method to appreciate wildlife from the coziness of your residence involves observing the avian visitors to your garden. You will be astounded by the diverse range of feathered creatures you will encounter throughout the seasons, particularly if you cultivate indigenous flora that not only nourishes the birds but also supports the insects vital to their diets. Many individuals opt to enhance their gardens with bird feed as well. Nevertheless, experts hold differing opinions on whether this type of residential bird feeding actually benefits bird populations significantly, with studies suggesting it may even interfere with migration patterns or upset population balances. Conversely, supplementary feeding may aid individual birds in your vicinity, especially when native plants are not abundant (humanesociety.org).

Materials:

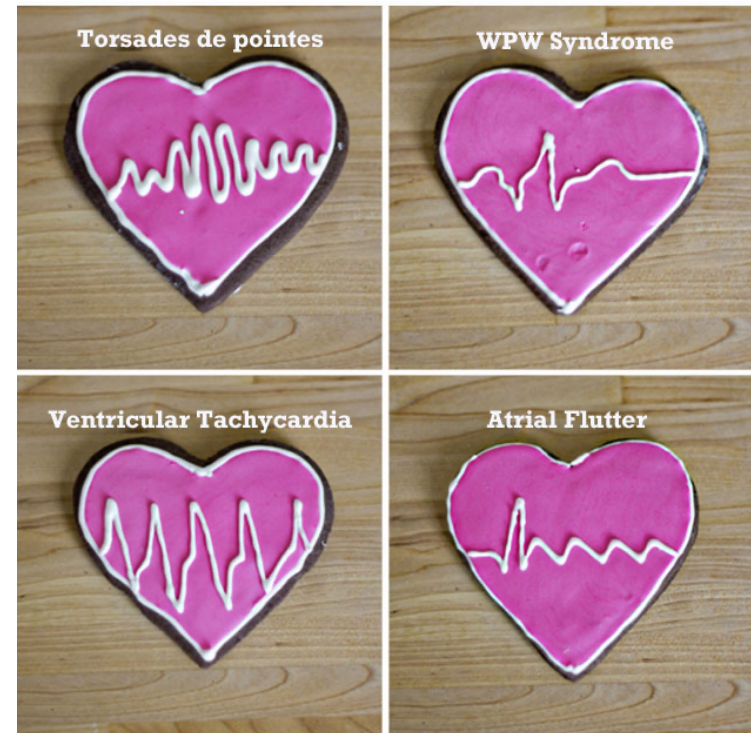
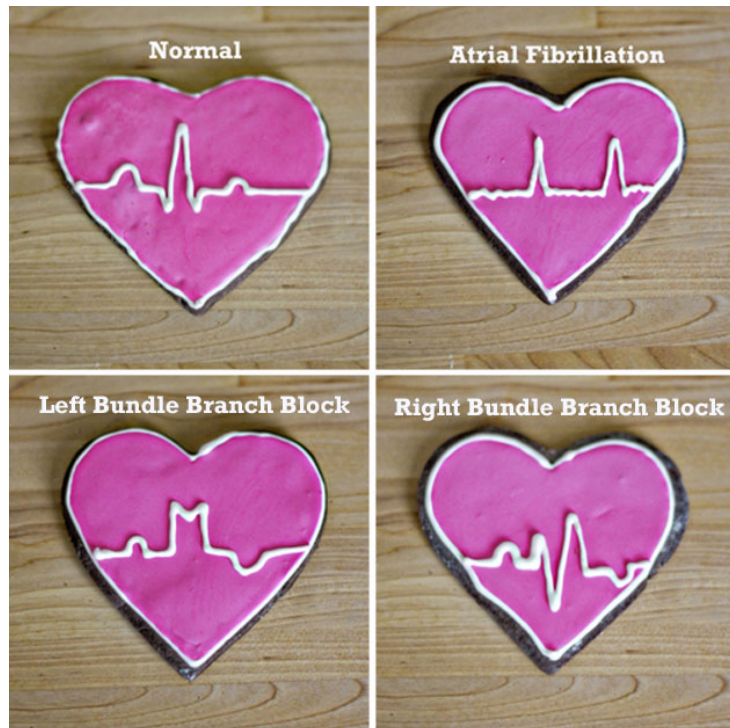
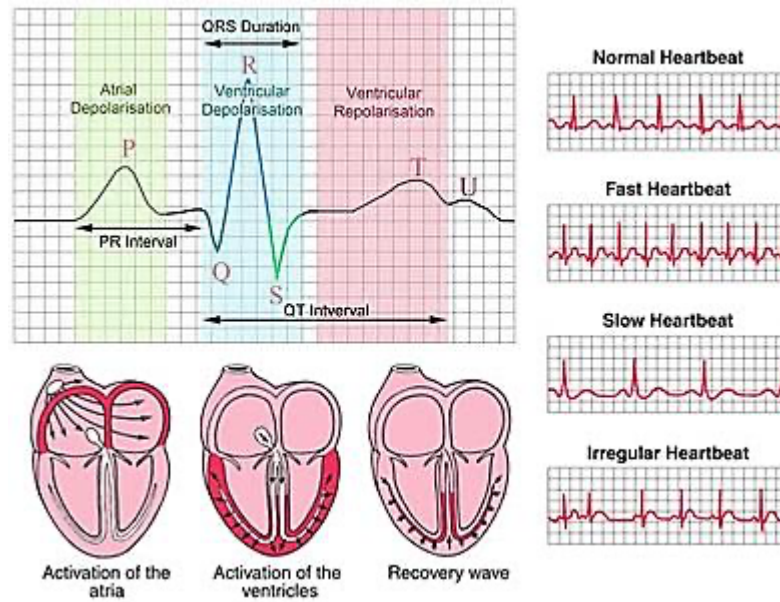
Easter Basket (small)
Pinecones
Peanut Butter
Bird Seed
Dried Mealworms
Suet Dough (non-melting type)
Coconut Fibers / Natural Bedding
Butter Knife



Procedure:

1. Place bedding in an Easter basket.
2. Using a butter knife, place peanut butter between a cone and dip it in bird seed; put in basket.
3. Scoop up enough suet dough to mold 1-3 balls into egg shapes; put in basket.
4. Sprinkle a fair amount of dry mealworms in the basket.
5. Hang the basket in a tree well off the ground for the birds to enjoy.

ECG Valentine's Day Cookies





Atrial
Fibrillation

Atrial
Flutter

Bundle Branch
Block

Normal

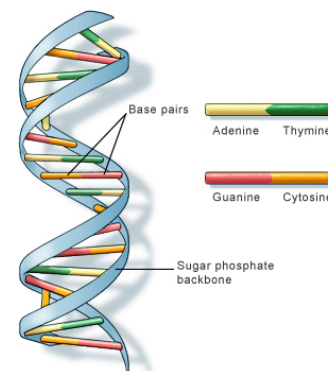
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Extracting DNA from a Pumpkin

Introduction

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An important property of DNA is that it can replicate, or make copies of itself. Each strand of DNA in the double helix can serve as a pattern for duplicating the sequence of bases. This is critical when cells divide because each new cell needs to have an exact copy of the DNA present in the old cell.

Method

Materials

Orange Pumpkin (pre-made)*: chunks “to fill a typical blender” of pumpkin blended (pureed “not too long”) with ~475 mL (~2 cups) of “distilled” water and ~30 grams (4 tablespoon) of “canning” salt. Then add 60 ml (1/4 cup) of Liquid Soap (ie Dawn “non-fragrant or additives”) – stir do not blend

90% + Isopropyl alcohol “cooled”
Halloween Sticker(s)

Per Student:

Dixie Cup
Plastic/Glass Jar with Lid (~3-6 oz)
Pre-Cut Cheesecloth (~5x5 in sq piece)



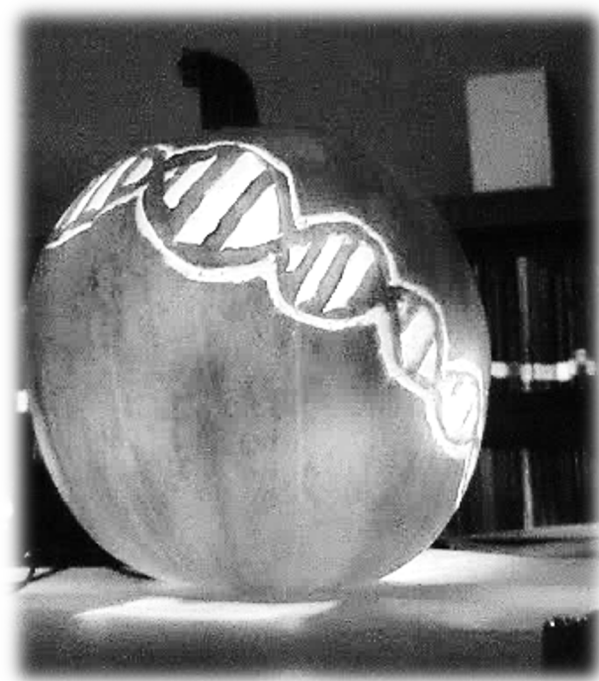
* Pre-made and contained if done outside of the classroom

Procedure

Pumpkin is made of water, sugars, proteins, salts, and DNA. To extract the DNA, you need to get the nucleic acid out of the pumpkin cells and then separate the material from the rest of the cellular components.

1. Placing the pumpkin into a blender helps to break up cellulose fibers (complex sugar) to allow the salt and detergent access through the tough plant cell walls. Below the cell wall is the cellular bi-layered membrane (made mainly of fats and proteins). The salt and detergent molecules will help breakup the cell walls further and help pull apart (like how soap emulsifies oils/grease) the cellular “and” nuclear membranes in order for DNA to escape.
2. Using the Dixie cup provided, collect the pumpkin solution that was made in order to fill the cup about 3/4 way. Place “and” hold just one layer of cheese cloth tightly over the opening of your jar.
3. Slowly pour the pumpkin solution through the cheese cloth and into your jar. ONLY allow the jar to fill about 1/2 way of filtrate. Remove and discard the cheese cloth.
4. Using the cool/chilled isopropyl alcohol, slowly pour the alcohol along the side of the 1/2 filled beaker / glass to the near top of the beaker / glass. After a few minutes, the DNA will appear stringy or cloudy in the alcoholic window created because DNA and the alcohol have the same density. The material at the bottom of the beaker / glass is just cellular residue and other organic molecules. The longer you wait the more DNA will appear.

You will have separated pumpkin DNA from its tissues. Use the stickers to decorate your jar.

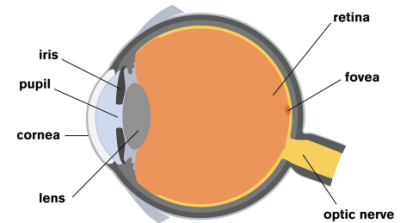


Eye Pops

Introduction

How Does the Eye Work?

- Light is focused primarily by the cornea — the clear front surface of the eye, which acts like a camera lens.
- The iris of the eye functions like the diaphragm of a camera, controlling the amount of light reaching the back of the eye by automatically adjusting the size of the pupil (aperture).
- The eye's crystalline lens is located directly behind the pupil and further focuses light. Through a process called accommodation, this lens helps the eye automatically focus on near and approaching objects, like an autofocus camera lens.
- Light focused by the cornea and crystalline lens (and limited by the iris and pupil) then reaches the retina — the light-sensitive inner lining of the back of the eye. The retina acts like an electronic image sensor of a digital camera, converting optical images into electronic signals. The optic nerve then transmits these signals to the visual cortex — the part of the brain that controls our sense of sight.



Method

Materials

Stock:

Pre-Made Cake Pop (Red Cake Dipped in Melted White Chocolate); see a recipe for creating “cake pops”

Red Colored Cake Mix
White Chocolate
Stick
Cake Pop Holder
Gel Icing (Blue, Green, Brown, etc)
Junior Mints
White Frosting
Fine Marker

Individuals:

Cake Pop (pre-made ~2-3 days prior)
Fruit Roll Up
Butter Knife



Steps

1. Choose a cake (eyeball) pop and frost the pop with white frosting (sclera) using a knife.
2. Add a little extra frosting to hold a junior mint (pupil) in place.

3. Using a gel icing color of your choice, surround the mint with a single line of the gel icing (iris)
4. Use torn up pieces of a fruit roll up (attached muscles) around the top and back side of the cake ball.
5. Place your initials on the stick with a fine tipped marker.
6. Place the creation into a refrigerator for about 20 minutes to chill.



Gymnosperm Sporophyte Christmas Cupcakes

Yield: 6 cupcakes

Prep Time: 45 min

Ingredients:

6 chocolate or vanilla cupcakes

3 cups homemade or store-bought vanilla frosting (See Notes)

2 Tablespoons green food coloring

6 ice cream sugar cones

Edible silver ball sprinkles

Powdered sugar, for dusting

Special Equipment: pastry bag or gallon-sized sealable plastic bag; small star-shaped pastry tip
(such as Wilton #18)

Directions:

If necessary, slice the tops off of the cupcakes to create a flat surface. Slather a small portion of the frosting on the cupcakes to create a base atop which to position the sugar cone tree.

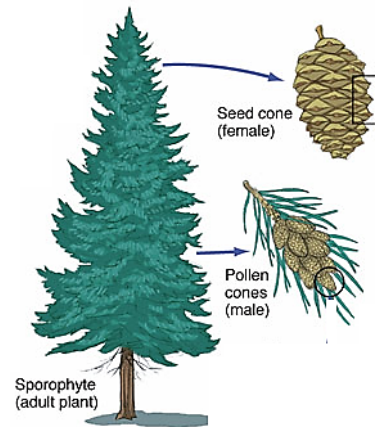
Stir the food coloring into the remaining frosting, adding more food coloring as necessary to achieve your desired green color. Apply a thin layer of frosting on the exteriors of the sugar cones. Transfer the remaining frosting to a pastry bag fitted with the star-shaped pastry tip.

Place the sugar cones atop the cupcakes then pipe leaves onto the trees. Garnish with the edible silver ball sprinkles and dust with powdered sugar.

Notes:

Three cups of frosting is equivalent to two 16-ounce cans of store-bought frosting.

The sugar cones can be decorated and stored (not on top of the cupcakes) for 1 day in an airtight container. Frost cupcakes and top with trees right before serving.





Open Heart Surgery Valentine

Procedure

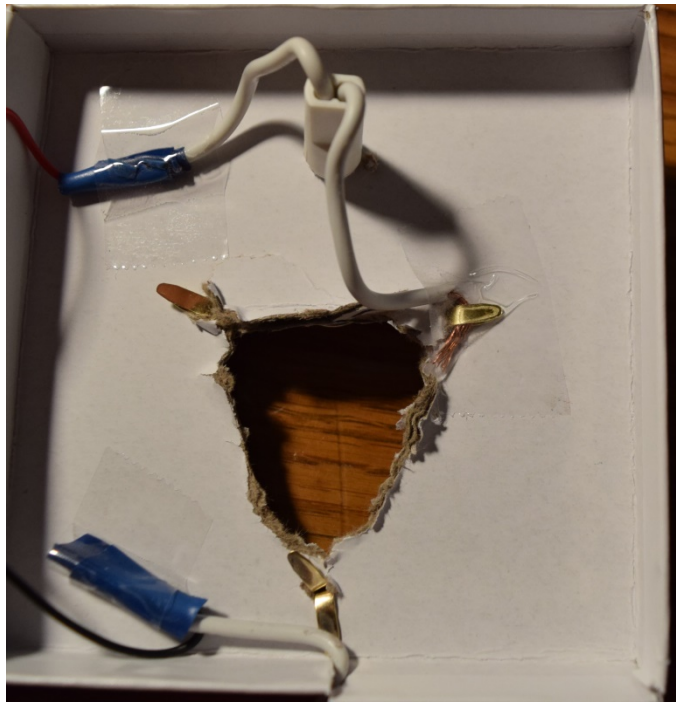
Materials:

White Cardboard Jewelry Box (3.5 x 3.5 x .875 inches (Walmart))	Scissors (Small/Sharp/Pointy)
Box of Conversational Heart Candies (.9 oz)	Razor Scalpel / Knife
9 Volt Battery (cheap / low amperage; otherwise, may burn bulb)	Ruler
9 Volt Battery Wire Clip (pre-stripped ends)	Electrical Tape
Large Paperclip	Clear Tape
Small Paper Fasteners (3)	Pen/Pencil
Large Paper Fastener	Black/Colored Marker(s)/Crayons/ Décor
Solid Wire (14 gage pre-stripped) about 6 inches	

* Pre-Made Light Assemble (ie from old Xmas lights): Untangle the wires that make up the string of lights. From about 2 inches from the bulb, cut and strip the two wires attached to the bulb to create a “pig-tail” of wires from the bulb.

Steps: *Read carefully before performing each procedure*

1. Spread the large paperclip apart sideways and create an indentation in order to make a heart shape.
2. Place the paperclip heart on the lower center of the jewelry box lid about a $\frac{1}{4}$ of an inch from the bottom. Using the heart to guide you, use the sharp pointy end of a pair of scissors to make three (3) small holes inside and next to the three (3) major curved areas of the paperclip heart; these holes will help place the small paper fasteners more easily through the cardboard of the jewelry box lid.
3. Keeping the paperclip heart in place put a small paper fastener into each of the holes previously made and spread the fastener tabs in order to hold the paperclip heart down on the jewelry box lid.
4. On the upper center of the jewelry box lid about a $\frac{1}{2}$ of an inch from the top, use the sharp pointy end of a pair of scissors to create a small hole big enough to insert the “glass” portion of the bulb through.
5. Using a razor scalpel / knife, carefully cut a heart shaped hole within the paperclip heart. Get close to the paperclip heart wire but DO NOT GET CLOSE TO THE PAPER FASTENERS (may cause cardboard to tear/rip releasing the fasteners).
6. Using a wire from the 9-volt battery wire clip and electrical tape, attach the wire to one of the pig-tailed wires of the pre-made light assemble.
7. Attach the other pig-tailed wire of the pre-made light assemble to the closest small paper fasteners by placing or sandwiching the wire between two tabs and pressing them both down to hold the wire and the paperclip heart. Use electrical tape to secure the wire and tabs down on the underside of the lid.
8. Attach the button end of the large paper fastener (the candy grabber) to the pre-stripped solid wire and then attach the other end of the pre-stripped solid wire to the other 9-volt battery wire clip with electrical tape.
9. Using a razor scalpel / knife or scissors, cut most of one large side of the conversational candy box away in order to expose yet still house the candies inside. Place the candy box inside the jewelry box to one side along with the 9-volt battery lying flat (the candy box and battery should be snug in the jewelry box).
10. Use clear or electrical tape to secure any wires on the bottom of the lid if necessary. If done correctly, the lid should sit on the box pretty well. Use markers/pens/phases to decorate your Open Heart Surgery Valentine!



Oh Tillandsia, Oh Tillandsia Thy Leaves are “Changing” So Urchin-fly...

Sea Urchin Tillandsia Ornaments



What kind of plant grows without soil and therefore may grow its entire life hanging in midair, or on a rock, on a dead branch or on almost any surface, can survive a month or more without water or light, has hundreds of diverse forms, blooms, can be grown as a houseplant or outside, and is easy to care for? Answer: Tillandsia Air Plants. Tillandsia air plants grow naturally in South and Central America and southern parts of the United States. They are in the Bromeliad family, and are sometimes referred to as aerophytes or "air plants." Hundreds of different varieties grow on trees, rocks, cliffs, and various types of cacti. Thin-leaf varieties grow in areas with more rain, and thick-leaf varieties in areas more subject to drought. No soil is needed to grow these unique plants. All water and nutrients are taken through the leaves. Their roots are used as wire-like anchors. Tillandsia air plants have a growth cycle starting with one plant growing to maturity and then BLOOMING! One to two months after the bloom has finished, new plants form around the base of the "mother" plant. They will then eventually mature and complete their blooming cycle in one to several years, depending upon the variety and growing conditions.

Procedure

Materials

Tillandsia (ie. www.airplants4u.com)
1 Large Craft Sea Urchin Shell (pre-drilled hole through the madreporite))
1-2 Small Craft Sea Urchin Shell(s) (pre-drilled)
Wire (22 gage/green; pre-cut length ~ 12 cms (~5in.))



Steps

1. Carefully yet firmly, press the end of the wire into and through the roots/body of the Tillandsia without bending the wire until the plant can dangle on its own. Otherwise tread the wire through the side of the plant and secure the end.
2. Thread the wire through a large sea urchin shell's madreporite (where the echinoderm draws in seawater and expels water to fuel its vascular system) from below the shell.
3. Thread the wire through a small sea urchin shell's madreporite from below the shell.
4. Bend the end of the wire to create hook.
5. See care sheet for taking care of the air plant through the plant's life time.

Tillandsia Care Sheet

Light requirements: Bright, indirect light, fluorescent office lighting or frost-protected shaded patio. Generally, no direct sun is recommended. Some varieties can handle some early morning sun - this will allow them to "blush" (change colors) before they bloom!

Water: This is a very important aspect of succeeding with Tillandsia air plants! Remove plants from their containers and spray HEAVILY, or rinse them under a faucet or hose until they are dripping wet (underneath as well as on top). Remember, they grow naturally where it rains! Frequency of watering (how many times per week) will depend on:

- * temperature variations (summer vs. winter)
- * whether it is indoors or outdoors
- * and the variety (thin or thick leaves)

Generally, with the spray or rinse method, you should water indoor Tillandsia air plants 2-3 times a week, and outdoor Tillandsia air plants 4-5 times a week. In warmer and drier conditions, an overnight soaking (12-14 hours) will rehydrate them more efficiently than spraying or rinsing. If leaf edges begin to curl in, then it is best to use the soaking method.

Fertilizer: Use Bromeliad fertilizer (17-8-22) twice a month. It is GREAT for blooming and reproduction! Other water-soluble fertilizers can be used at 1/4 strength (Rapid Grow, Miracle-Gro, etc.) if Bromeliad fertilizer is not available.

Do's:

- # Give tall, thin-leave varieties (T. Butzii, T. Juncea, etc.) an extra spray on their tips, as they dry out faster.
- # Place plants in containers with natural holes, as opposed to gluing them. This will make it much easier to water them, especially when you use the soaking method. And you don't have to wait for the whole container to dry before putting it back in its place!
- # Trim away any brown, dried or injured (bent) leaves (this will not harm the plant).
- # Leave pups (babies) on mother plant, as Tillandsia airplants are much heartier if left to form a colony (specimen). But, if you wish, you may cut off bloomed-out flower when its color dries up. Trim dried *mother" plant away after new plants ("pups") have formed. If more than one new plant has formed, they can be removed once they reach the size of the mother plant.

Do Not's:

- # Don't worry about roots. You can cut them off to make it easier to place them in containers (they will grow back). This also makes it easier to water them.
- # Don't leave water sitting in the crevices of big, fleshy Bromeliads - Tillandsias. Shake them off!
- # Don't put them in containers that hold moisture around the base (or, let them dry well before returning them to their containers).
- # Don't throw Bromeliad - Tillandsias away if there is any green left to the plants. Soak them for 24 hours.
- # Don't soak the flower while in bloom (prolonged periods of soaking will rot them).
- # Don't water plants in clumps as much, as clumped Bromeliad - Tillandsias hold more moisture.
- # Don't combine thick- and thin-leaf varieties in the same container, since their watering schedules will be different.
- # Don't let them freeze!

Reasons Bromeliads - Tillandsias Die

- # They were not initially cared for properly (their owner was told they need little or no water).
- # Thick- and thin-leaf varieties were combined in the same container (different watering schedules).
- # They did not get enough light (they were more than 10 feet from a bright window or skylight).
- # They were placed in DIRECT SUN. Garden windows are generally too warm unless they are shaded or facing north.



Spooky Specimens

Method

Materials

Per Student

32oz Smooth Jars with Lids

Large Plastic/Rubber Rat/Bat/Spiders/etc...

- plus a few other small biological items
- glow in the dark items are a nice addition

Water Source

Colored/Glow-in-the-Dark Stones

Food Coloring

Procedure

1. Using a jar, place a thin layer of stones at the bottom of the jar.
2. Place your choice of rubber animal and other biological items to help fill the jar.
3. Fill the jar about 3/4 full of water.
4. Add a drop or two of food into the water.
5. Place on the lid.





Fake Skin Wound

Materials:

Stock

Student: 2 per group

All-Purpose Flour

Petroleum Jelly

Red Food Coloring

Vegetable Oil

Coco Powder

(2-4) Plastic Spoons (for Flour and Jelly)

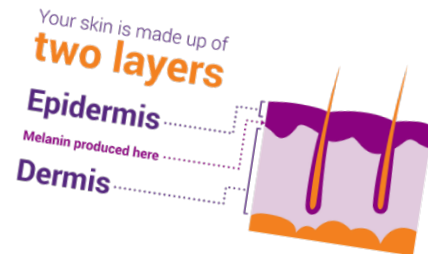
Eye Dropper(s) (for Oil)

Optional: staples, thread, rice grains

Coffee Cup

Dixie Cup

(4) Q-Tips



Steps: Note that you may do this simultaneously with your partner(s).

Skin Putty:

1. Place a spoon full flour into a coffee cup.
2. Place a moderate spoon full of petroleum jelly into the coffee cup containing the flour and using your finger, push the jelly off the spoon into your cup.
3. After returning to your table, do your best to mix the flour-jelly mixture into a paste, the “skin putty” with your fingers inside the coffee cup.
4. Once the “skin putty” looks like a solid mass, use your finger to spread the mixture onto an arm or hand; however:
 - Best to find an area without too much hair
 - Create a somewhat raised or elevated look of the “skin putty” with a mound about 1-3 inches long
 - Smooth out the sides of the “skin putty” so it is flush with the skin
5. Break a Q-tip in half and use the plastic/paper stem to create a cut or furrow down the middle of the raised “skin putty” mound.



Fake Blood:

6. Place 10 “drops” of red food coloring into a Dixie cup.
7. Pace 1-2 “drops” of vegetable oil (prevents drying and adds realism) into the same Dixie cup.
8. After returning to your table, mix the coloring and oil with a Q-tip.
9. Use the Q-tip as a paint brush and color your “skin putty”.
10. Once satisfied, use another Q-tip by simply dabbing coco powder (to darken the blood) onto the tip. Use the Q-tip to dab the powder onto the wound with a higher focus along the center cut.
12. Feel free to add any touch-ups to make the wound more realistic. Optional: ask for staples, pieces of thread, or even rice (maggots).



Please clean and put away materials as directed.

Spring Time Seed Balls

Introduction

Seed balls are a great method of reclaiming areas of a garden that have become thin or barren. The clay vessels that you create for your seeds and soil offer a fun way to plant your seeds while providing protection for the exposed seeds. The soil you wrap inside of the ball offer the seeds an immediate source of nutrients. The seeds remain inside the Seed Ball until rains soak the clay and stimulate the seeds.

Materials:

Modeling Clay

Various Seeds

Potting Soil

1/4 and 1/2 Teaspoons

Cookie Sheet or Wax Paper



Procedure:

1. Knead the clay to soften it. Once the clay is moldable, flatten and shape the clay into a disc shape.
2. On top of the clay, add 1/2-teaspoon of potting soil and 1/4-teaspoon of plant seeds.
3. Fold the clay inward, keeping the soil and seeds from spilling out. Mold the clay into a ball around the soil and seeds.
4. Mix some soil and seeds together on a flat surface.
5. Roll your clay ball through the soil and seeds. Try to get an even covering of soil and seeds on the clay.
6. Knead the soil and seeds into the clay to incorporate them into the clay ball.
7. Repeat until you have all of the Seed Balls you desire.
8. Allow the clay to dry by setting the balls on a cookie sheet or wax paper for a few days.
9. Once they've dried, take your balls outside and toss them in the areas you want your plants to grow.
10. Clean and return materials.

