HOLLINGSWORTH SCIENCE EDUCATION CENTER
HOUSTON INDEPENDENT SCHOOL DISTRICT

LIVING SPECIMENS AND RESOURCES

(Care and Maintenance)

Written Fall 1998/2009

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Many specimens will grow and reproduce only under special, controlled, environmental conditions. They can, however, be kept alive for classroom and laboratory study for long periods of time by following the suggestions listed below.

I. Care of Specimens When Received

a. Uncap the containers as soon as they arrive.
b. Store with the container caps ajar to prevent excessive dust accumulation but still provide ventilation.
c. Store in a cool place (approximately 70 ° F). In the cool, fall or winter, the classroom is suitable. During the hot weather, store cultures in an air-conditioned room. Never place in the refrigerator. Drosophila becomes sterile above approximately 83°F.
d. Store all specimens except algae in the dark or in subdued light. The algae should be placed in north window-strength light. Overheating by intense illumination is disastrous. If bright sunlight falls on a closed container, it can elevate the internal temperature 10 to 20 degrees above the room temperature.
e. Examine the containers of Hydra for specimen that may have attached to the caps in shipping. Both brown and green Hydra may be seen easily with the unaided eye.
f. Planaria should be kept in clean water. Exchange it with pond water or aged aquarium water as needed.
g. Daphnia should NOT be aerated. Air becomes trapped beneath the carapace, and they will rise to the surface and die.
h. Madagascar Hissing Cockroaches (*Gromphadorhina portentosa*) are large, wingless, live-bearing cockroaches. They are great food items for reptiles, large tarantulas, and large centipedes. They generally live 2 to 3 years as adults, but some adults can live for up to 5 years.

Babies and adults eat romaine lettuce, red leaf lettuce, apples, carrots, and other fruits and vegetables. Babies can live in a clear plastic container with air holes. Adults can liven in a 2.5 to 15 gallon tank, depending on the number of cockroaches. They require 1 to 2 inches of peat moss or potting soil for their flooring. Cork bark, live plants, and driftwood make ideal hiding places for the Madagascar Hissing Cockroaches.

Important: The Madagascar Hissing Cockroach is a strong animal that likes to wander; therefore, you must tightly secure the lid of your container or the cockroach will escape.

When handling the Madagascar Hissing Cockroach, pick it up very gently around the thorax (the hard section behind the head). Be careful not to jerk—the legs have sticky pads and hooks that grip tightly, and if you pull too hard you may injure the insect. It does not move very fast. It does not bite. It however does need to be handle in a gently manner.

i. Walking Sticks (*Phasmatodea*) are long thin animals which hang down from their food plants to shed their skins. It is therefore important that the cage has sufficient depth to allow this. In general, the cage should be three times as high as the adult length of the Walking Sticks that are kept in it.

Most stick insects come from tropical or semi-tropical environments and are happiest in temperatures between 17°C - 25°C. Heating is best achieved by maintain a whole room at the desired temperature, if this is not possible an electric light bulb can be used over small cages. It is important to make sure the stick insects can not reach the light bulb as they will burn themselves. A red bulb should be used during the hours of darkness as this disturbs the Walking Sticks far less than ordinary light bulbs.

The Walking Sticks eat the leaves of bramble/blackberry/Rubus/ Oak/ and Hawthorn. We feed our Walking Sticks Romaine lettuce. They must have plenty of fresh food. To maintain the humidity level, we mist the cages with rain water or 2 day old tap water.

Great care must be taken when handling Walking Sticks. They tend to lose their legs very easily. Some species other than the ones that we provide will pinch, bite or even emit a defensive chemical spray when mishandled.

II. Taking Samples of Live Specimens from the Containers

a. Allow Amoeba cultures to be undisturbed for 30 minutes to settle to the bottom. Take samples from the bottom of the jar.
b. Shake a diatom or desmid container prior to taking samples for distribution to students as diatoms settle to the bottom of their containers on standing.
c. Use clean pipettes (eyedroppers) for each culture. Never allow students to use a pipette from one culture to another.

III. Specimens Descriptions

a. Amoeba – Allow cultures to be undisturbed for 30 minutes prior to examination. Find amoeba as white, star shapes on the bottom. Use a dark background.
b. Paramecium – Freely swimming in the media and appear as silvery rods in strong light.
c. Blepharisma – Usually on the bottom of an unshaken culture. Move slowly and have a pinkish color when viewed against a white background.
d. Stentor – Free swimming, or attached to the bottom and sides of container. Have a bluish color when viewed against a white background.
e. Diatoms – Desmids – Settle to the bottom of the container on standing. Shake the container prior to taking samples for examination. High power (45X) objectives will be necessary for examination of diatoms, but lower magnification will be adequate for desmids.
f. Eudorina – Volvox – Free swimming in the media. Green colonies will be near the surface in undisturbed cultures.
g. Hydra – Usually attached to the bottom of the container. Will be contracted if the container was recently shaken. Recap and shake the container to dislodge.
h. Vinegar Eels (Turbatrix Aceti) – Thin, hair-like, wiggling worms. Free swimming and light in color.
i. Daphnia – Freely swim in the fluid with a fast, jerky motion.
j. Rotifer – One type has beating cilia on a rotating wheel while the other resembles a horseshoe crab.
k. Fern Prothallia – Moss Protonema – These tiny plants tend to grow in a "clumped" mat. If we tease them apart with forceps and probe, they re-clump in shipment. You will need to tease into individual plants prior to viewing.

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Brine Shrimp Eggs

Place 4 tablespoons of any brand ice cream freezer (rock salt) in ½ gallon of water. Place in a warm, sunlit window. Sprinkle ¼ teaspoon of brine shrimp eggs over the surface and within a few days the brine shrimp eggs should begin to hatch and appear as pink-colored shrimp, less than ½ millimeter in length. These can then be seined out of the dish with a fine mesh net, washed in fresh water, and fed to hydra. Do not put brine shrimp eggs in a hydra culture as a food source.

At normal room temperature, incubation will occur in about 48 hours. At 80°F, incubation will occur in about 24 hours.

Potato Dextrose Agar

Place jars of potato dextrose agar upright in a container of water and heat to completely melt the agar. Pour into sterile Petri dishes. Each jar of agar will fill four to five Petri dishes. If possible, keep both the jars of agar and/or the Petri dishes filled with agar in a refrigerator until ready to use.

Nutrient Agar

Place jars of nutrient agar upright in a container of water and heat to completely melt the agar. Pour into sterile Petri dishes. Each jar of agar will fill four to five Petri dishes. If possible, keep both the jars of agar and/or the Petri dishes filled with agar in a refrigerator until ready to use.

Instant Drosophila Media

Instant Drosophila Media is an excellently balanced diet for the rapid culture of healthy Drosophila. Any sterile wide-mouth vial is suitable for Drosophila culture as long as its mouth will permit plugging with cotton or sponge rubber to allow filtered gas exchange.

Instructions:

1. To each culture vial, add 15 ml (1 tablespoon) of the dry media.
2. Add an equal volume of water. Less water will make a less soupy mixture.
3. Add a pinch of dry yeast and plug the vial.
4. After a few minutes, the prepared vials may be inoculated with flies.

This liter package of concentrate will set up approximately 70 cultures.
Note: Instant Drosophila Media is for laboratory use **only**. It is **not** for human consumption!

Ingredients: Oat, wheat, corn, barley flour, malt flour, calcium phosphate (dibasic), iodized salt, reduced iron, niacin amid, thiamine mononitrate, riboflavin, mold inhibitor, and brewers yeast.

References:

http://www.amentsoc.org/insects/caresheets/stick-insects.html
http://www.petbugs.com/caresheets/G-portentosa.html

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LIVING SPECIMENS AND RESOURCES

(Ordering Instructions)

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When placing orders, the charts below should provide you with some information regarding the approximate amounts of specimens that you receive per class. Every specimen available is not listed. Again, this is a generalized listing of our living specimens. If you have a unique request or concern, contact Denise, Gary or Pat at the HISD- Hollingsworth Science Center website: scicent@houstonisd.org.

Note: A class is considered as consisting of approximately 24 students.

Specimens	Quantity of Material		
Protozoans/Algaes	2 oz. jar/1-5 classes	6 oz. jar/6-15 classes	12 oz. jar/16-30 classes
Bacteria/Fungi	1 tube/class		
Daphnia	6 oz. jar/1-3 classes	12 oz. jar/4-5 classes	
Drosophila	1 vial/class		
Duckweed	2 oz jar/1-5 classes	6 oz jar/6-15 classes	12 oz jar/16-30 classes
Elodea	8 sprigs/class	1 sprig/gallon of water	
Fern Leaves (Frond)	8 leaves/class		
Fern Prothallia	2 oz. jar/1-5 classes	6 oz. jar/6-15 classes	
Goldfish	3/class		
Gambusia	10/class		
Guppies	10/class		
Joseph's Coat Plant	3-5 stems/class		
Moss Protonema	2 oz. jar/1-5 classes	6 Oz. jar/6-15 classes	
Planaria	10/class		
Rain Lily Bulbs	4-8 bulbs/class		
Snails	8/class		
Succulent Leaves	8 leaves/class		
Tenebrio (mealworms)	12 oz. jar/Elementary class		6 oz. jar/Secondary class
	(3 or more of each development stage is provided in the jar)		
Tradescantia Plant	4-8 stems/class		