

HOW TO DISSECT

NAME _____ SCHOOL _____

DATE STARTED _____ DATE COMPLETED _____

PREREQUISITES: Knows how to keep a notebook for investigations. Microscope Basics, Circulation of the Blood recommended.

HOW TO DO THIS COURSE: Do the steps one at a time, in order. When you finish a step, put your initials and the date on the sign-off line on the right. A split line means get a pass (and an initial) from another student (or your supervisor if it says that). A * means get a checkout. All written work is turned in to the supervisor.

PURPOSE: Learn to dissect an animal specimen properly, and accurately identify names and functions of the various parts of a frog or similar animal.

ESTIMATED TIME: 10 hours.

MATERIALS NEEDED TO DO THIS COURSE

Preserved frog, apron, gloves (waterproof), notebook, dissection kit (scalpel, scissors, forceps, probes and T-pins), dissecting microscope (or a strong magnifying glass), labeled illustrations/photographs of frog anatomy. (These are available from biological suppliers. One source is BioCam Communications, Inc., 250 H Street, Blaine, WA 98230, 1-800-667-3316, www.biocam.com)

Frog Flash Card Sets #1 and #2, available from Heron Books.

Data Sheet #5386 Supervisor Notes for How to Dissect.

Heron study booklet with this Data Sheet (DS): 5387

Exam: 5388

NOTE TO SUPERVISOR

Before proceeding, read DS # 5386 Supervisor Notes for How to Dissect.

A. THEORY ON DISSECTION

1. READ: Data Sheet #5387 How to Dissect, Part 1. _____
2. ESSAY: Write two reasons why you might want to dissect something. _____
3. READ: Data Sheet #5387, Part 2. _____
4. DEMONSTRATE: Find these dissecting instruments in a dissecting kit.
scalpel ____ needle probe ____
forceps ____ scissors ____
blunt probe ____ T-pins ____ _____
5. DRILL: Have someone name each of the dissecting instruments. You show him the instrument he names. Do this until you know the name of each instrument. _____
- *6. READ: Data Sheet #5387, Part 3. _____

7. DEMONSTRATE (with whatever objects you wish to use): How to use each of the dissecting instruments. _____
8. DRILL: Get a coach to point to one of the dissecting instruments. Tell him the name of the instrument and what it is and what it is for. Repeat this with each instrument until you can rapidly give the name of each instrument and can tell what it is used for. _____
9. DEMONSTRATE: Show someone how to hold a scalpel and cut with it. _____
10. READ: Data Sheet #5387, Part 4. _____
11. DEMONSTRATE: Show someone how you should care for your dissection tools each time that you use them. _____
12. READ: Data Sheet #5387, Part 5. _____
13. DRILL: Get Frog Flash Cards Set #1 External Anatomy. A coach should show you the description side of each card, and you should name the body part (written on the other side of each card). Drill each card until you can give the name of each part from the description of what it does. _____
14. DRILL: Using Frog Flash Cards Set #1, have a coach show you the name of a body part. You tell him what the part does. Drill each card until you can say what each body part does when you are given the name of the body part. _____
15. DRILL: Have a coach name a body part shown in Illustrations 3 or 4. Point to it on the illustration. Repeat this until you can easily find each body part on the illustrations. _____
16. DRILL: Have a coach point to body parts shown in Illustrations 3 and 4, and cover the label when he points to a part. Tell him the name of the part and what it does. Repeat the drill until you can easily name each body part and tell what it does. _____
17. DRILL: Get Frog Flash Cards Set #2 Internal Anatomy. A coach should show you the description side of each card and you should name the body part (written on the other side of the each card). Drill each card until you can give the name of each part from the description of what it does. _____
18. DRILL: Using the Frog Flash Cards Set #2, have a coach show you the name of each body part. You tell him what the part does. Repeat the drill until you can quickly tell what each part does. _____

19. DRILL: The coach calls out the names of the body parts shown in Illustrations 5, 6, 7 and 8. The student finds each one as he calls it out and points to it on the illustration. The coach should skip from one illustration to the next so that the student has to decide which illustration should be used. The student repeats the drill until he can quickly find each body part. _____
20. DRILL: The coach points to a body parts shown in Illustrations 5–8 and covers the label of any part he points out. The student tells him the name of the part and what it does. The student repeats the drill until he can quickly name each part and tell what it does. _____
21. READ: Data Sheet #5387, Part 6. _____
22. DEFINE: specimen _____
23. READ: Data Sheet #5387, Part 7. _____
24. DRILL: Using a frog and dissection kit, show all the steps you should go through at the end of each lab session if you have not completely finished the dissection. _____

B. PRACTICAL APPLICATION SECTION: FROG DISSECTION

In this section you should refer to the drawings in Data Sheet #5387 for pictures of the frog parts. You should also use other labeled pictures or photographs of frog anatomy.

1. DEMONSTRATE: Put on an apron and gloves. Get a preserved frog from your supervisor. Find the following parts of the frog's anatomy:

mouth	_____	opening of windpipe	_____
teeth	_____	opening of esophagus	_____
tongue	_____	nostrils	_____
eyes	_____	trunk	_____
eardrums	_____	skin	_____
fore limb	_____	anus	_____
digit	_____	hind limb	_____
adhesive pad	_____	web	_____

2. DEMONSTRATE: Make these drawings:

- a) A half-page drawing in your lab book showing what the inside of the frog's mouth looks like. _____

b) A detailed full-page drawing showing the top view of the whole frog.

Label each of the parts listed in item 1. Write an overall label for each of your drawings. _____

3. PRACTICAL APPLICATION:

a) Pin the frog on its back in the dissecting pan. Using scissors and forceps, make incisions in the skin as shown in Illustration 9. Cut the connective tissue holding the skin to the armpits and waist. Pull the flaps of skin down with the forceps, and pin them to the dissecting pan. ____

b) Using scissors and forceps, cut the muscle as shown in Illustration 10. Cut carefully so that you don't damage the organs lying under the skin. When you get to the part of the chest near the arms, you will find the ribs and collar bone. You may have to cut hard with the scissors to cut through these. Lift off the section of muscle that you cut loose. ____

Make a large detailed drawing in your notebook of what you see under the muscle. ____

c) Using a blunt probe and forceps try to find the following parts of the frog's anatomy (+ = may be hard to find):

heart	_____	rectum	_____
lungs	_____	cloaca	_____
liver	_____	bladder +	_____
gall bladder	_____	kidneys	_____
stomach	_____	fat body	_____
pancreas +	_____	testes/ovaries	_____
intestine	_____	tubules/oviduct	_____
mesentery	_____	backbone	_____
spleen	_____	spinal nerves	_____

d) Label each of the parts in the drawing you made in step b. ____

e) Push the tip of your blunt probe down the wind pipe of the frog. Put it down the esophagus. See which organ your probe tip goes to when you do. Pull the heart gently with your forceps and cut the vessels holding it in the body with your scissors. Remove the heart and look at it under a dissecting microscope. Cut it in half and look at it again. Put the heart aside. ____

- f) Remove each of the two lungs in the same way that you removed the heart. Cut one in half. Look at the two lungs under the dissecting microscope. Put the lungs aside. ____
- g) Remove the lobes of the liver as carefully as possible. Find the gall bladder attached to one of the lobes. Poke it with the needle probe to see that it is a sack. Cut a lobe of liver in half and look at it under the dissecting microscope. Put the liver and gall bladder aside. ____
- h) Pull gently on the yellow fat bodies. Cut where they attach to the body. Look at them under the microscope and put aside. ____
- i) If you have a female frog, carefully remove the egg masses with your forceps and scalpel. Try not to cut the egg masses into pieces. Look at the eggs under the microscope and put them aside. ____
- j) Draw a detailed half-page picture of the abdominal cavity with the liver and egg masses removed. Label each part you see and make an overall label. ____
- k) Cut the esophagus above the stomach and pull gently on the stomach with your forceps. With your scalpel, carefully cut the mesentery as you pull the intestines out of the body cavity. When the digestive tract is fully stretched out, cut across the cloaca and remove the digestive tract completely. Make a cut in the stomach and look at the inside of it under the microscope. Put the digestive tract aside. ____
- l) Draw a detailed half-page drawing of the back of the abdominal cavity. Label each part you see and make an overall label. ____
- m) Find the testes and the tubules (if you have a male frog or the oviducts if you have a female frog) and remove them. Examine and put aside. ____
- n) See if you can find the tube carrying the urine from the kidneys to the bladder. Remove the kidneys and look at them under the microscope. Put them aside. ____
- o) Find anything else you haven't yet found on the list in step c. ____
- p) Unpin the frog and turn it over so that its back is facing you. Remove the eyelid above one of the frog's eyes. Carefully grip the eye with the forceps and cut the connections of the eye with your scissors. Look at the eye under the microscope. Cut it in half and look at the retina and the lens under the dissecting microscope. Put the eye aside. ____

q) Cut a large oval of skin off the top of the frog's head between the eyes, nose and neck. With your scalpel, carefully carve off pieces of the skull until you can see the brain. Be careful not to cut the brain. Cut around the brain as much as you can. ____

r) Put the frog under the microscope and look at its brain. Make a half-page drawing of what you see. Label the parts and make an overall label. _____

4. DRILL: Organize the parts of the frog into a display on a clean sheet of paper. Write the name of each part next to the part. _____

5. PRACTICAL APPLICATION: Give a presentation to 3 or more classmates describing why a person would want to dissect something, how you dissected the frog, and what each part is and does. If you know how the parts are similar or different to the human body, tell about that too. Make sure that you ask if there are any questions and try to answer them. Thank the other students for coming. **Supervisor pass.** _____

6. DRILL: Put the frog, loose parts of the frog and waste scraps into a plastic bag. Seal the bag and put it in the garbage can. Then do the usual cleanup that you do each day after a dissection session. _____

I have completed the steps of this course. I understand what I studied and can use it.

Student _____ Date _____

The student has completed the steps of this course and knows and can apply what was studied.

Supervisor _____ Date _____

This student has passed the exam for this course.

Examiner _____ Date _____