Name(s)_____Period_____Date_____

Dogfish Shark Dissection

Purpose:

To locate and recognize the structure and functions of the organs of the dogfish shark.

Materials:

- Dissecting tray/pan
- Dogfish shark preserved specimen
- Dissecting probe
- Scissors/scalpel
- Gloves

Pre-Lab Questions:

Define the following vocab terms:

- Chondrichthyes –

- Cloaca –

- Claspers –

- Oviparous (**include example species**) –

- Ovoviviparous (**include example species**) –

- Viviparous (**include example species**) –

- Lateral line –

- Ampullae of Lorenzini –

- Denticles –

Answer the following pre-lab questions:

1. What is a shark's skeleton composed of **and** what is its adaptational advantage?

2. Are sharks aganthan fish or gnathostomes? Why?

Procedures:

A. External Examination

Step 1: Touch the shark! All members of the lab group should touch the shark. Pick it up, squeeze it, feel it! Slowly and carefully run your hand along the shark's body, from head to tail and vice versa. Notice the difference in texture. Remove a piece of skin and examine it under a dissecting microscope.

1. Describe the texture of the shark's skin when you run your hand in **both** directions.

2. Does it feel like the shark has hard bones similar to the bones that humans have? What is it actually made of?

3. What in the human body is similar in structure to the shark's scales?

*Step 2: **Familiarize** yourself with the following structures:*

Eyes, **External nares**, **Spiracles**, **Mouth**, **Gill slits**, **Lateral line**, **Cloaca**/**Claspers**, **Fins** (**Dorsal**, **Caudal**, **Pectoral**, and **Pelvic**), **Rostrum**, **Dorsal spines**

*Step 3: **Draw** and **label** your shark using the external structures from Step 2.*

Side View of **YOUR** Shark

4. Color the shark the appropriate coloring. Why do you think the shark is colored this way?

5. What is the function of the lateral line?

6. Describe the teeth of the dogfish shark, including orientation, number, etc.

7. How is the anatomy of the gills on the shark different from the gills of the perch?

8. Does your shark have a **homocercal** or a **heterocercal** tail? What does the tail type tell you about this shark?

9. Is your shark **male** or **female**? Explain how you know.

Step 4: Examine the eye. You may dissect it to get a better look.

10. Describe the nictitating membrane.

11. How is the shark's eye similar to the human eye? What structures do we share?

Step 5: Measure the shark. Remember to measure in cm!

12. How many **paired** fins does your shark have? _____
    Name them:

13. How many **single** fins does your shark have? _____
    Name them:

14. How **long** is your shark? _____cm

15. What is the **distance** between the 2 dorsal fins? _____cm

16. What is the **height** of the caudal fin? _____cm

17. What is the **wingspan** of the pectoral fins? _____cm

B. Dissection

1. Place your shark ventral side down to begin.
2. Remove each of the dorsal spines by cutting where it meets the body. This will prevent you from stabbing yourself unintentionally.
3. Flip your shark over onto its back. Be sure to refer to Figure 5 below as you begin cutting into the skin.
4. Make a mid-ventral incision from the cloaca towards the head to just below the jaw. Make your incisions shallow.
5. Cut laterally (outwardly) around the head, and around the pelvic fins.
6. Using the handles of your scissors or your gloved fingers, carefully peel away the skin to expose the internal organs.

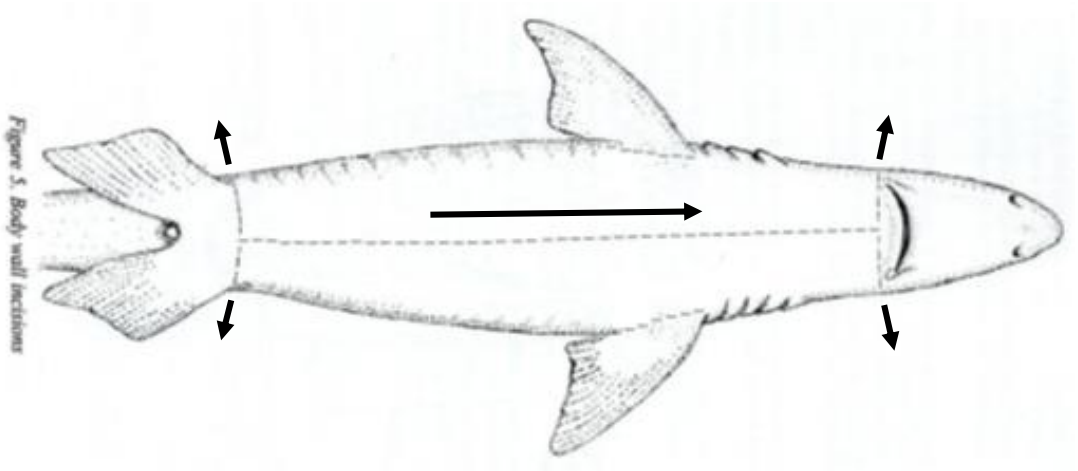


Figure 5. Body wall incisions

C. Internal Examination

*Step 1: **Familiarize** yourself with the following structures:*

Stomach, **Liver**, **Spleen**, **Spiral Valve**, **Pancreas**, **Gall Bladder**, and **Rectum**

*Step 2: **Examine** the liver. It is the largest organ lying within the body cavity.*

18. Describe your shark's liver. How is it unusual compared to other animals?

19. Look for the gall bladder. Where **specifically** did you find it?

*Step 3: **Examine** the digestive tract.*

20. What structure is the connection between the pharynx and the stomach?

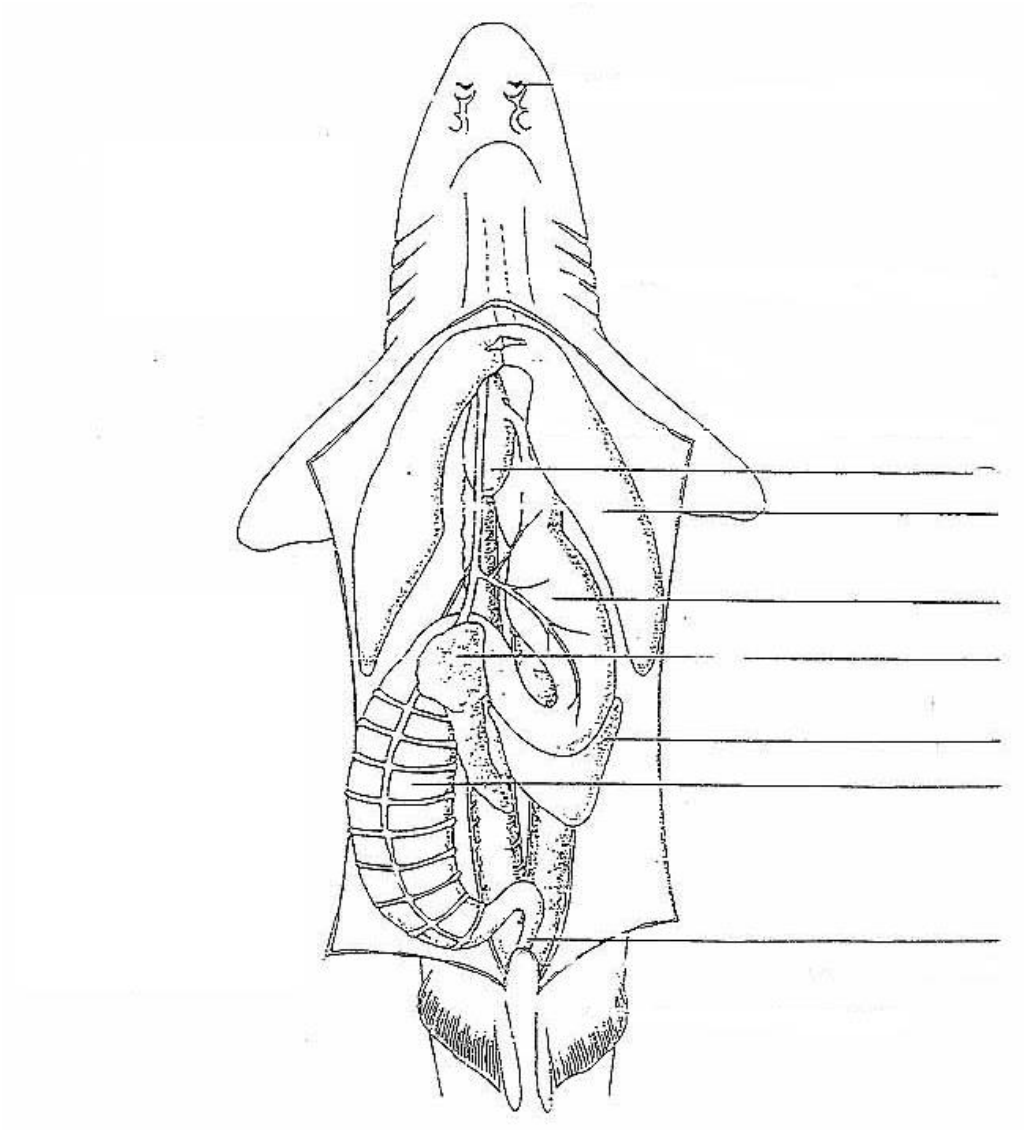
21. What did you find inside your shark's stomach? Describe the contents. What can you conclude about your shark's eating habits from this dissection?

22. What does the rugae look like? What is its function?

23. Where is the duodenum of the shark?

24. How is the shark's digestive system different from a human's?

*<u>Step 4</u>: **<u>Label</u>** the internal structures in the figure below using the word bank from Step 1.*



*Step 5: **Examine** the reproductive organs. These are located under the liver, pancreas, and spleen.*

25. Depending on your shark's gender, cut open the testes/ovaries and describe its contents.

26. Check another group who has a shark of the opposite gender and describe its contents.

Step 6: Expose the circulatory and respiratory system. Figure out a method that works best for you and your shark.

27. Describe the strategy you used to expose the region containing the heart and gills.

28. How many chambers does your shark's heart have? Name them.

29. Which chamber's muscular wall is thicker? Which is thinner? Why do you think that is?

30. Try and remove a gill raker from your shark. How does the gill raker feel? What do you think it is made of?

31. How is a shark's circulatory and respiratory system different from a human's?

Post-Lab Analysis & Conclusion Questions:

1. List 3 traits that the perch and shark shared (general fish traits).

2. List 3 traits/characteristics that were different between the perch and the shark (bony vs. cartilaginous fish traits).

3. Discuss 3 adaptations for life in the water that your shark had.

4. How does a shark maintain buoyancy (what does it use)?

5. Why do some sharks need to move continuously?