**Module 9 Lab:**

**Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 ***This report is my original work.***

**Module 9 Lab**

**Lab Part 1A: Introduction to Fish**

Fish Notes – Biology Corner <https://www.biologycorner.com/bio2/notes_fish.html>

Notes/PP: Fish C12 Fish Biology Corner

<https://docs.google.com/presentation/d/1XRfwRw0STKRZMOKCZhMnOhPEccsI2rfAGWgfcBj99Nk/edit#slide=id.g2cdab6d39e_0_64>

Fish Notes / Anatomy [**https://www.youtube.com/watch?v=fNlQzE5QVoo&t=18s**](https://www.youtube.com/watch?v=fNlQzE5QVoo&t=18s) Review: Video/Notes: Vertebrate Diversity: The Fish Craig Savage 15.16 min

**Objectives:**

* What are Fish?
* Identify and give the functions of the structures and tissues of fish.
* Match the organisms to their correct phylum and class.

**Procedure:** Carefully read and follow instructions as you work through the lab.

1.Direct your browser to the links above in the order they are listed. Read the information, watch the videos or slides, take notes, and study the information in each link.

2. Use the Fish Notes – Biology Corner <https://www.biologycorner.com/bio2/notes_fish.html> to identify the fins (**anal fin, caudal fin, dorsal fin, pectoral fin, and pelvic fin**) of the fish below:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_1. The fin (C) on the side of the fish just behind its head

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_2. The fin (A) that runs along the middle of the dorsal or upper surface of the fish

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_3. The “<” shaped fin (B) on the tail or posterior end of the fish

|  |  |
| --- | --- |
|  |  |

3. Use the [Notes/PP: Fish C12 Fish Biology Corner](https://docs.google.com/presentation/d/1XRfwRw0STKRZMOKCZhMnOhPEccsI2rfAGWgfcBj99Nk/present?ueb=true&slide=id.g2cdab6d39e_0_64) **(The kidney and muscle are mislabeled/reversed on the Digestive System slide in this link.)**

[**https://docs.google.com/presentation/d/1XRfwRw0STKRZMOKCZhMnOhPEccsI2rfAGWgfcBj99Nk/present?ueb=true&slide=id.g2cdab6d39e\_0\_64**](https://docs.google.com/presentation/d/1XRfwRw0STKRZMOKCZhMnOhPEccsI2rfAGWgfcBj99Nk/present?ueb=true&slide=id.g2cdab6d39e_0_64)

The organs and structures already labeled on the diagram below are correct. Complete the diagram by identifying the fish organs and structures (**anus or vent, liver, intestine, stomach, kidney, heart**)

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 4. The pink organ or structure behind the gills

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 5. The long, dark organ or structure (A) above the swim bladder indicated by a line from the box above the center of the fish diagram

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 6. The organ or structure indicated by a line from the leftmost box (B) nearest the tail and just below the fish diagram on the left side.

Resources for this lab were modified from Biology Corner. <https://www.biologycorner.com/worksheets/dragonfly/30-2_fishes.html>

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4. Multiple Choice: Put the letter of the correct answer in the blank to the left of the question.

\_\_\_\_\_\_\_7. The part of the brain that is responsible for voluntary activities is the:
a. medulla oblongata b. olfactory lobe c. cerebrum d. cerebellum

\_\_\_\_\_\_\_8. In fish circulation, blood moves from the atrium to:
a. the rest of the body b. the ventricle c. the gills d. the liver

Resources for this lab were modified from Biology Corner. <https://www.biologycorner.com/worksheets/dragonfly/30-2_fishes.html>

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**Lab Part 1B: Introduction to Amphibians**

Amphibian Notes – Biology Corner<https://www.biologycorner.com/bio2/notes_amphibians.html>

Amphibian Notes / Anatomy[**https://www.youtube.com/watch?v=L2i8zPRLf-c**](https://www.youtube.com/watch?v=L2i8zPRLf-c): Video/Notes: Vertebrate Diversity: Amphibians Craig Savage 14.31 min

**Objectives:**

* What are Amphibians?
* Identify and give the functions of the structures and tissues of amphibians.
* Match the organisms to their correct phylum and class.

**Procedure:** Carefully read and follow instructions as you work through the lab.

1.Direct your browsers to the two links above in the order they are listed. Read the information, watch the videos or slides, take notes, and study the information in each link.

2. Direct your browser to the **Alternative to the Frog Dissection – Biology Corner** <https://www.biologycorner.com/worksheets/frog_alternative.html> and scroll down to the section called **Gallery 1 - External Anatomy of the Frog.** (Click on the left icon to show captions, you may need to pause and advance manually)

3. Direct your browser to the **Glencoe** **Virtual Frog Dissection** link: <http://glencoe.mheducation.com/sites/dl/free/0078802849/383954/BL_16.html> and go over the external anatomy of the frog.

## **4. Answer the External Anatomy of the Frog Journal Questions below:**

**External Anatomy Question 1**. Describe the dorsal and ventral surface of the frog.

**External Anatomy Question 2**. What is a tympanic membrane and where is it located on a frog?

**External Anatomy Question 3**. Describe the front and back limbs of the frog.

5. Direct your browser to the **Alternative to the Frog Dissection – Biology Corner** <https://www.biologycorner.com/worksheets/frog_alternative.html> and scroll down to the section called **Gallery 2 – Frog Dissection.** (Click on the left icon to show captions, you may need to pause and advance manually)

6. Direct your browser to the **Glencoe** **Virtual Frog Dissection** link: <http://glencoe.mheducation.com/sites/dl/free/0078802849/383954/BL_16.html> and go over the internal anatomy of the frog.

**When the abdominal cavity of the frog is opened, many organs of the digestive, respiratory, and urogenital systems can be observed.  Read the descriptions of the organs below, answer the journal questions, and label the diagram as you work through the dissection.**

* Leading from the mouth is a tube (**esophagus)** that connects to the stomach.
* The **lungs** are located above the liver on each side of the heart.
* The largest organ is the **liver**, and it consists of multiple lobes (**right lobe of the liver, left anterior lobe of the liver, left posterior lobe of the liver**). The liver has several jobs related to digestion and detoxification.
* Tucked under the liver is the **gall bladder**, which stores bile that is produced by the liver.
* The gall bladder connects to the **duodenum** of the small intestine.
* The duodenum connects to the curly part of the small intestine known as the **ileum**. The ileum is where nutrients are absorbed into the blood.
* The **spleen** is an organ that has an immune function and is found within the coils of the intestine.
* The ileum connects to the large intestine and the cloaca.  Water is reabsorbed in the **large intestine** and wastes are stored at the**cloaca** before exiting the **anus**.
* At the lowest part of the abdominal cavity is a thin pouch (**urinary bladder**) for storing urine.
* The **stomach** can be viewed if you lift the liver and is often curved, this is the first site of chemical digestion in the frog.
* Within the curve of the stomach is a gland called the **pancreas**.  The pancreas is involved in the digestion and the uptake of sugars.
* The coils of the small intestine are held together by a thin membrane called the **mesentery**.
* A female frog will have tiny curling tubes (**oviducts**) deep in the abdominal cavity that carry eggs.
* Also deep within the cavity are bean shaped organs, the **kidneys** which filter wastes from the blood, creating urine which is then stored in the bladder.

**7. Match the organs listed in bold above to the corresponding number on the diagram below:**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_3.**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_9.**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_11. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_13.**



## **7. Answer the Internal Anatomy of the Frog Journal Questions below:**

## **Internal Anatomy Question 1.** Describe the inside of the frog's mouth. What structures are visible and what are their functions?

**Internal Anatomy Question 2** – after reading each description below, write down the name of the structure or organ in the space to the left of the description.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   Carries eggs in female frogs

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   First site of chemical digestion

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Stores solid waste, eggs, sperm

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Filters blood, makes urine

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Digestion, uptake of sugar
Publisher: [Biologycorner.com](https://google.com/%2Bbiologycorner); Resources for this lab were modified from Biology Corner

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**Lab Part 2A: Introduction to Birds**

Bird Notes – Biology Corner<https://www.biologycorner.com/bio2/notes_birds.html>

Bird Notes / Anatomy<https://www.youtube.com/watch?v=aOlGsH-ZpOo> Review: Video/Notes: Vertebrate Diversity: The Birds Craig Savage 16.02 min

**Objectives:**

* What are Birds?
* Identify and give the functions of the beaks and feet of birds.

**Procedure:** Carefully read and follow instructions as you work through the lab.

**1.**Direct your browser to the links above in the order they are listed. Read the information, watch the videos or slides, take notes, and study the information in each link.

**2.** You can also use this [Google Slides](https://docs.google.com/presentation/d/1yP1QxVkWCIcZeDg7Ek93kzv9k9jklW6_NufzMdc-CMg/edit?usp=sharing) document which shows photos of these birds and video clips.

3. Use the bird illustrations and the descriptions of bird beaks and feet below the table to complete the table.

**What Does a Bird's Beak and Feet Tell You About Its Diet?**



**TABLE: What Does a Bird's Beak and Feet Tell You About Its Diet?**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Bird** | **Type of Feet** | **Type of Beak** | **Probable Diet** | **Probable Habitat** |
| **Chicken** |  |  |  |  |
| **Duck** |  |  |  |  |
| **Eagle** |  |  |  |  |
| **Sparrow** |  |  |  |  |
| **Flamingo** |  |  | shrimp |  |
| **Heron** |  |  |  |  |

**Short and thick** - seed cracking
**Long and thin, slightly curved** - eating nectar
**Strong, chisel like** - drilling
**Sharp, curved and pointed** - tearing flesh
**Long and flattened** - straining algae and plants
**Spear shaped** - spearing fish

**FEET**

**3 toes in front, 1 behind** - perching
**2 toes in front, 2 behind** - climbing
**Powerful curved talons** - grasping prey
**Webbed** - swimming
**Long and thin** - wading
**Thick and stout** - running

 **4. Complete the Analysis Questions below:**

Analysis Question 1. What features of a hummingbird make it adapted for its style of feeding?

Analysis Question 2. Imagine an ideal flying predator. What type of beak and feet would it have?

Analysis Question 3. Different birds may have similar beaks and diets. Loons, herons, and kingfishers, for instance, all have long sharp pointed beaks for spearing fish. Their feet, however, are quite different. Describe how the loon, heron, and kingfisher differ in the method by which they hunt for fish (use their feet to help you answer.)

Analysis Question 4. Owls have large eyes that enable them to see well at night. Both the hawk and the owl hunt similar things: small rodents or snakes. How do the hawk and the owl avoid competing with each other?

Analysis Question 5. In the two previous questions, you were asked to analyze how birds reduce competition with each other when they hunt similar prey and live in similar habitats. This idea among ecologists is known as the "**Competitive Exclusion Principle**" which suggests the no two species can occupy the same **NICHE**. Use your book other resources to define the word: niche and provide examples from this activity of a bird's niche.

 Publisher: [Biologycorner.com](https://google.com/%2Bbiologycorner); Biology Corner resources were modified for use in this lab.

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You can also use this [Google Slides](https://docs.google.com/presentation/d/1yP1QxVkWCIcZeDg7Ek93kzv9k9jklW6_NufzMdc-CMg/edit?usp=sharing) document which shows photos of these birds and video clips.

**Lab Part 2B: Animal Symmetry, Phyla and Classes**

Animal Notes - *Concepts of Biology* [*https://cnx.org/contents/s8Hh0oOc@11.1:BtKmWZ4Y@2/Introduction*](https://cnx.org/contents/s8Hh0oOc%4011.1%3ABtKmWZ4Y%402/Introduction)

**Objectives:**

* Identify the correct symmetry, phylum, and class for the organisms in the chart.

**Introduction** from *Concepts of**Biology*

**Procedure:** Carefully read and follow instructions as you work through the lab.

1.Direct your browser to the link above. Read the information, watch the videos or slides, take notes, and study the information in each link.

2. Complete the table **Animal Symmetry, Phyla, and Class**

**Animal Symmetry, Phyla, and Class**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | Animal | Symmetry | Phylum | Class |
| snail | Snail |   |   |   |
| fish | Fish |   |   |   |
| earthworm | Earthworm |   |   |   |
| anemone | Anemone |   |   |   |
| frog | Frog |   |   |   |
| elephant | Elephant |   |   |   |

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Images on this page collected from a variety of clipart sites.

**Animal Phylum Matching**

Instructions: Put the letter of the matching phylum description in the blank to the left of the phylum name.

|  |  |  |
| --- | --- | --- |
| \_\_\_\_\_Platyhelminthes |  | A.These marine animals have plates with spines and endoskeleton |
| \_\_\_\_\_Chordata |  | B. Three body parts, jointed legs, tough exoskeleton, chiton |
| \_\_\_\_\_Mollusca | C. Soft, thin, flat bodies |
| \_\_\_\_\_Arthropoda | D. Soft bodied animals usually have a shell |
| \_\_\_\_\_Echinodermata | E. Long tube-like animals divided into segments |
| \_\_\_\_\_Annelida | F. Jelly-like animals that have a bell or umbrella shape |
| \_\_\_\_\_Porifera | G. Animals that have a notochord that supports the body (or backbone) |
| \_\_\_\_\_Nematoda |  | H. Sessile filter feeding animals |
| \_\_\_\_\_Cnidaria |  | I. Slender tube-like, nonsegmented |

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