Animal Kingdom Investigation through Dissections

**Questions:**

1. How have animals descended from earlier forms through the process of evolution?
2. How do the structures of animals allow them to obtain essential materials and eliminate waste?

**Copy these questions into your BILL**. Keep the above questions in mind throughout this entire process. As a group we will work to investigate and answer these questions by focusing on animal organisms and their four major body systems. The systems we will study are the circulatory, respiratory, digestive and reproductive systems.

**Knowledge Probe:** Use the following questions to help you get started to think about how our animal kingdom has evolved over time and why. You should add more than what is asked. **Record your responses in your BILL.**

1. What traits define animals?
2. What do you know about the four systems we will focus on?
3. What do you know about how animals have evolved over time?

**Investigation Plan:** This activity will span a couple of weeks. Be sure to stay on top of where you are in the process.

Part I: Initial Animal Dissection **– Animal group – Dissection Guidelines & External Anatomy Chart**

1. In your table group you will dissect the same species. You will work in pairs, two people per specimen.
2. Before you start, determine who will focus and become the “expert” on one of the following body systems. You will want to keep this system in mind as you dissect your organism.
	1. Circulatory System
	2. Respiratory System
	3. Digestive System
	4. Reproductive System
3. Before you dissect your organism complete the external anatomy chart in your BILL under the heading of “observations”.
4. Use the dissection guide in your lab manual to help you dissect your specimen.
5. As you go complete the dissection guide handout that corresponds to the organism you were assigned.
6. Also fill in the external anatomy and embryology animal comparison for evolution table for your organism only.

**Knowledge Probe – Animal Group – Dissection Discussion Guide & System Animal Comparison Chart**

1. Complete the *Dissection Discussion Guide* questions for the system you are focusing on in your BILL under the heading of “Knowledge Probe” all guides can be found in the lab notebooks and all answers need to be in complete sentences.
	1. Use the links above the table for your system and your book to further investigate your animal body system.
2. After completing that research fill in the System Animal Comparison for Evolution table for your organism only.
3. Create a temporary mini poster for your system on your animal you dissected to share the important information from your table with your expert group. *You need to include information on the external anatomy chart and the system animal comparison chart.*
4. You will break out into systems experts groups to share what you have found and to learn about their animals system. Ex: everyone focusing on the digestive system will be in one large group.

Part II: **System Experts** – **Application –Expert Group – Finish External Anatomy & System Animal Comparison Chart**

1. Within your system expert groups you will share the external anatomy of your organism using your mini poster. Be sure to fill in other organisms that you did not dissect in your external anatomy and embryology table and also on your system table.
2. In your expert group you will complete the *System Animal Comparison for Evolution* handout in your BILL.
	1. Fill in the table sharing the information each person found out about their organism during their dissection. Explain how your animal performs the process of your focus system using your mini poster. You must talk about your animal not just copy each other’s information.
	2. Take notes on each of the other animals that were dissected. You DO NOT need all the details they have but a basic understanding.
3. Using the table created, discuss a possible evolutionary trend for your focus in animals. Use a white board to brainstorm your group’s trends. Then use these to make a cladogram for your system. At each branch be sure to include what adaptation is novel to cause the separation from the ancestor. Include external anatomy and embryology on your cladogram.
4. Copy your group’s final cladogram in your BILL to indicate significant evolutionary developments for your system to indicate where each animal branched off from the common ancestor to all animals.
5. Provide an explanation to the question at the top of the *System Animal Comparison for Evolution handout*. Use the cladogram you have created to help provide the Claim, Evidence and Reasoning. Follow the guide on your table to write your explanation.
6. Remove the papers from your temporary mini poster and make a new one with your group’s cladogram on it and your explanation.

**Part III – Bringing the Systems Together – Evolution of Animals Based on All Four Systems**

1. Return to your animal group. Refer to the *Evolution of Animals Based on All Four Systems* handout in the lab notebooks.
2. Place the four mini posters side by side on your lab table.
3. Each person shares their system question, cladogram created by their system group as well as a summary of their explanation using their mini poster. Record each question, cladogram and **note differences and similarities** in your BILL. You DO NOT need their whole explanation. Just notes on what they are talking about.
4. Complete the Prediction, Explanation and Evaluation as they are described in the directions in your BILL.

**Part IV – New Animal Organism – Animal Dissection Guides & Dissection of Second Animal**

1. In your table group you will dissect the same species. You will work in pairs, two people per specimen.
2. Answer all questions, label diagrams and also trace the four systems in the new organism.

**Part V – Animal Dissection and Evolution Mini Poster Presentation**

1. You will create a poster highlighting your second animals evolutionary story. You may want to take pictures during this dissection to use in your poster. See rubric for details.
2. Dissect this organism using proper procedures and following the instructions.
3. After your dissection, ONE member in your group will create a Google Doc of *the Dissection of Second Organism and Evolution Relationship* handout. This will either be shared with you or can be found on Moodle.
4. The group member who created the document will share it with the rest of the members. **Do not share it with your teacher**.
5. **All** of the group members will put this new Google Doc in their shared folder.
6. Complete the Google Doc by completing the system (circulatory, respiratory, digestive or reproductive) that you are an expert on.
7. Add the other research as indicated on the rubric to this Google Doc
8. Create a poster on your new organism **using the rubric**. This will be completed in pairs. Determine who will be responsible for what parts of your project and turn in one rubric to your teacher.
9. Once all posters have been created we will conduct a gallery walk. Complete your gallery walk notes in your BILL.

