**Name** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**LAB 1: Fossil Preservation and Organosedimentary Structures**

This exercise is an overview of the different modes of fossilization of vertebrates, invertebrates, bacteria, algae, and higher plants

**Cyanobacteria and Algae**

1. These specimens are examples of Cambrian organosedimentary structures formed by the trapping and binding of filamentous cyanobacteria. In situ precipitation of CaCO3 can also occur in these structures.
	1. What do we specially call these laminated structures? Look carefully at the laminations. Draw a sketch of the laminations? Are they wavy or flat? Why?
	2. Would you expect to find traces of the original organisms in this rock? Why or why not?
2. A thin–section and cut slab of a ~2.0 billion year old stromatolite. What can you see in this thin-section? Under what circumstances would you expect the preservation of the original organic material?
3. These specimens are modern organosedimentary structures also, which type would you call them and why? How does the structure or fabric of these specimens differ from specimen #1? What is responsible for this textural difference?
4. Various circular or oval microbialites are shown here? How do these spherical and concentrically accreted structures form? What can they tell us about the depositional environment in which they were forms?
	1. What would you call this one?
	2. How about this one?
	3. And last but not least, what are these called?
5. Here you see *Halimeda* and *Penicillus* which are both calcareous green algae found in modern subtropical environments (e.g., South Florida) What is their preservation potential in the fossil record? Explain?
6. What kind of fossils are these? Indicate the mode of preservation found in these specimens? Give reasons to justify your answer.
7. What kind of fossils are these? Indicate the type of preservation and again justify your answer?
8. What are these fossils? What can you tell me about their preservational history?
9. List the types of preservation or molds indicated by the designated specimens and be as specific as you can?
	1. )
	2. )
	3. )
10. List the preservation types represented by these two specimens and justify your choices?
	1. )
	2. )
11. What type of preservation does this specimen illustrate? Does any original material from the fossil remain?
12. What type of preservation do these fossils exhibit? Outline the steps involved in their preservation?
13. Compare and contrast these two different vertebrae. What is the type of preservation in the dark vertebrae?
14. What about this bone; what type of preservation has it undergone?
15. Fish fossils from the famous Green river Formation, an Eocene lacustrine sequence from the U.S. Western Interior. Discuss the origin and type of fossilization of these fish fossils?
16. What type of fossil preservation has these corals undergone?
17. Preservation in amber. Why is it an excellent mode of preservation? Do you think this insect was embedded rapidly or slowly? Why?
18. What are these two objects? Are they true fossils? Why or why not?
19. Observe and take a guess at these two objects? What are they and how do they differ?
20. Explain the preservational history of these two objects as best you can?