

LAB 6: FOSSILS OF THE PRECAMBRIAN & CAMBRIAN

Note: For this lab, sample images are available in the online Lab Manual. This worksheet is intended to help you organize your answers only. Refer to the Lab Manual for important additional details and context to answer the questions. This worksheet includes sample handling guidelines for in-person labs.

FOSSILS OF THE PRECAMBRIAN (4.6 BY to 542 MY)

A. Samples 121-30 & 121-29: Stromatolite- *These may be picked up, but please treat them with care.*

- a. Find the layering within these fossils. What element combines with oxygen to make the reddish layers?
- b. Are these fossils of colonial or solitary organisms? Explain your reasoning.

B. Sample F: Stromatolite- *This sample may be picked up, but please treat it with care.*

- c. This sample looks much more like a laminated sedimentary rock. Go back to Lab 5 and re-read about chemical fossils. What could you test to distinguish this stromatolite from a plain limestone? Explain your answer.

C. Samples SB6B & 121-BIF: Banded Iron Formation- *These may be picked up, but please treat them with care.*

- d. 2.5 BY ago, Earth had very little oxygen (in either the ocean or the atmosphere). What started to occur in the shallow ocean regions of Earth that allowed the iron and silica to precipitate to the ocean floor and form banded iron formations?

D. Sample SC111: Worm Trace Fossils- *This sample may be picked up, but please treat it with care.*

- e. This rock is shale, a horizontally layered sedimentary rock made up of fine clastic sediment. Noting this layering, how have the worm burrows been preserved?
- f. What kingdom did the organism that made these trace fossils come from?

THE EDIACARAN FAUNA (600-542 MY)**A. Photographs: *Fractofusus* & *Charniodiscus***

- a. These animals may both resemble fern fronds at first glance, but one is thought to have lived flat on the sea floor, like a very large, very flat caterpillar, while the other attached itself to the sea floor with a base, then stood upright in the water. Which is which? Explain your reasoning.

B. Samples B12, B7, & B5: Phylum Porifera- *These samples can be picked up but please treat them with care.*

- b. Write a full description for Sample B5 (i.e., as you might for a sedimentary rock).

- c. What was the purpose of the spicules?

FOSSILS OF THE CAMBRIAN PERIOD**A. Sample 121-31: Trilobite (Whole Individuals)- *These samples can be picked up but please treat them with care.***

- a. Draw a sketch based on 121-31 that you can use as a trilobite study guide. Include any features you would need to remember in order to identify a trilobite in the future.

B. Sample 11: Trilobite Head and Eyes- *This sample is very fragile, please do not handle it or touch it.*

- b. What is the phylum and class for the partial trilobite present in Sample 11?

C. Sample L9 & L9A: Trilobite Tails- *This sample is very fragile, please do not handle it or touch it.*

- c. What type of preservation occurred with the trilobite tails? Explain your reasoning.

D. Sample 18: Graptolites in Brown Siltstone & Black Shale- *These samples can be handled but please do not touch their surfaces where the fossils are located.*

- d. Based on their appearance, are these fossils of colonial organisms or of solitary organisms? Explain your reasoning.

E. Sample GRFLG-1: Graptolites- *Please do not touch the surface of this sample.*

- e. What is the phylum and class for the graptolites found in Sample GRFLG-1?

F. Sample FJA1: Large Rock Sample With Graptolites- *Please do not touch the surface of this sample.*

- f. What types of preservation occurred with the graptolites? Explain your reasoning.

- g. Compare the different Sample 18 specimens with GRFLG-1, FJA1, and the GIGAmacro graptolites from Lab 5. When you zoom in, you will observe the serrated or uneven edges of some of these colonies. Draw an example colony showing these features which you can use as a study guide for Class Graptolithina.