

PHYS 122: Life in the Universe
Class Session 11, February 17, 2011

LEARNING OBJECTIVES

- 1) Describe the evidence which indicates the presence of early life (3 distinct findings) what it was and how long ago the life was thought to have existed.
- 2) List three pieces of evidence or logical arguments used by many scientists to suggest the first life which evolved into the life we see today may have formed at the base of the ocean.
- 3) Describe the chemical evolution of the earth's atmosphere, how it first formed and its chemistry and then how life (starting when and what kind of life) altered it to the chemistry we see today.

Required Textbook readings for class 10: p. 191-197, 208-214 (6.1, end of 6.3)

1. What are stromatolites? Do they exist today? How old are the oldest found fossils of these objects?
2. Why are microfossils controversial? How old are some of these?
3. How is isotopic evidence used to argue the existence of life in rock? How old are these oldest rocks?
4. What was the Earth like 3.85 b. y ago, when the earliest evidence for life exists? Where might life be safest 4 b. y. ago? How could they live there?
5. Which present day organism is closest to the 'root' or universal ancestor of all life on the tree of life?
6. What happened 550 million years ago? What drove this abrupt diversification of life?
7. What finally allowed plants and then macro animals to colonize the land?
8. Who created our Oxygen Atmosphere? How does an oxygen atmosphere allow for complex land animals?