

History of life on earth activity

Directions: complete the following worksheet using

<https://www.biointeractive.org/classroom-resources/deep-history-life-earth>

You may also consult your book.

- 1) What three pieces of evidence do we have for early life, and how old are they? (geological period and age)?
 - a.
 - b.
 - c.
- 2) Which domains of life could have left behind these signatures?
- 3) What is unique about cyanobacteria and what evidence do we have for their origin?
- 4) How did cyanobacteria change the planet?
- 5) What was the key event leading to the origin of eukaryotes and when did it occur? Draw a sketch of how it happened.
- 6) Why is endosymbiosis illustrated as a dashed diagonal line in the tree of life?
- 7) What kind of organism is the oldest eukaryotic fossil and when did it live?

- 8) How and when did chloroplasts originate? Illustrate it as a continuation of your drawing from #5
- 9) The origin of chloroplasts is a synapomorphy for the clade containing:
- 10) *Bangiomorpha* is the first fossil of a complex multicellular organism, but multicellularity may have originated even earlier. What is *Bangiomorpha* and what feature does it have that likely contributed to diversification of eukaryotes?
- 11) Summarize the three key evolutionary innovations that occurred during the Proterozoic *following the oxygen revolution*:
- 12) When do animals first occur in the fossil record? Does genetic evidence support this?
- 13) What is the name of the era when animal life diversified rapidly? What environmental factor contributed to this diversification? What are two groups that originated during this time?
- 14) During which era did life colonize land?