

Honors Biology
Text Dependent Questions
“The Oxygen Holocaust”
Carmel High/Dooner

After reading “The Oxygen Holocaust” in Microcosmos: Four Billion Years of Microbial Evolution by Lynn Margulis and Dorian Sagan, answer the following questions:

1. What are “stromatolites”? How tall were the ones in the hot springs in Saratoga, New York that were described by 19th century geologist Charles Walcott?
2. Based on the context, what is the meaning of the word “patina”(p. 113)?
3. On p 111, the authors say that if the oxygen concentration had ever risen much higher than 21%, “the fossil record certainly would reveal evidence of world-wide conflagration”. What is the meaning of the word “conflagration”?
4. How are *Chromobacterium violaceum* involved in gold-mining operations?
5. *Oscillatoria limnetica* has been described as having a “chameleon” physiology. Explain.
6. How does the percentage of carbon dioxide gas in the Earth’s atmosphere compare to the percentages of carbon dioxide gas in the atmospheres of Mars and Venus?

7. Paleobiologist J. William Schopf has stated: "The paleobiological record shows...that the advent of oxygenic photosynthesis was the singular event that led eventually to our modern environment". In what way does this statement serve as a good synopsis of the entire chapter?
8. According to the authors(p 109), why do some cyanobacteria respire only in the dark?
9. How do banded iron formations(BIFs) record the seasonal differences in the metabolic activity of ancient cyanobacteria?
10. From where has 70% of the total gold that has circulated throughout the history of civilization originated?