

Mars for Earthlings

LESSON 18: The Origin of Life**In-Class Activity 1***Miller-Urey Experiment***What is life?**

1. In your own words, define “life”:
2. What are some requirements for life?

The Miller-Urey Experiment

View the following YouTube animation of the Miller-Urey Experiment:

<http://www.youtube.com/watch?v=iahBQolXQH8>

3. Describe at least 4 conditions of the experiment.
4. What was “applied” after the gases travelled through the horizontal tube?
5. Was O₂ gas an important component of the experiment? Why or why not?
6. Did the experiment accurately represent a scale model of early Earth? Did they set up the conditions of early Earth properly?

The Experiment on Mars

7. Would this experiment be applicable to early Mars?
8. How would you modify the experiment to represent what might have occurred on Mars? Would you modify the experiment?



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NASA NAI-Astrobiology

9. Visit NASA's NAI-Astrobiology website and explore the various "headlines."
<https://astrobiology.nasa.gov/nai/> List at least 2 ongoing investigations that have applicability to researching the "origin of life."
10. Read "About NAI" on the website. Are investigations into the origin of life a NAI focus? Why or why not?
11. When you consider the present and/or past environment of Mars, could you find all the requirements for life?



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In-Class Activity 2

Origin of Life

Mars Life: Through the Lens of Curiosity

Purpose: Students will become familiar with the Curiosity's mission as it pertains to finding life on other planets.

The Mission of Curiosity

View the following video from NASA regarding the mission of MSL Curiosity and answer the following questions:

<http://www.youtube.com/watch?v=oHLbXT0aw7w&feature=relmfu>

1. What type of "life" are scientists looking for?
2. Can instruments on the MSL Rover Curiosity detect life?
3. What compound is associated with all life?
4. What element is necessary for life?
5. Why would the layering of rocks at Gale Crater be of interest? What might that layering imply?

Looking for Life

1. Does Curiosity have any instruments that can directly test for life?
2. What are some of the challenges related to directly testing for life?

