

Searching for Life – LPI via NASA

Materials:

- 3 (clean) plastic cups (5–8 oz.), clear if available
- $\frac{3}{4}$ to 1 cup of sand, enough to fill each cup $\frac{1}{4}$ full
- 3 teaspoons (tsp.) sugar
- 1 teaspoon (tsp.) instant active dry yeast
- 1 tablet of crushed (as finely as possible) Alka-Seltzer® or comparable fizzing tablets
- hot water, enough to cover the sand in each cup (not hot enough to kill the yeast)
- 1 pitcher, carafe, or other appropriate container for the hot water
- optional: library books related to the topic (suggested book list below)
- optional: a variety of colorful Post-It® notes
- pencils
- activity sheets

Resources:

<https://www.lpi.usra.edu/education/explore/LifeOnMars/activities/searchingForLife/>

Facilitator guide, activity pages, info sheets, shopping list, and preparation guide.

Learning Goals:

- When scientists look for life, the signs are not always easy to determine.
- Natural chemical reactions could be confused with evidence for life.
- Scientists need to use *multiple* tests and characteristics to define life.
- One basic definition of life is that it does something, and that it keeps on doing it.

Intro (example): In this activity, we are going to discuss how we define life and conduct an experiment to test for the signs of life (much like a rover on Mars may do) – creating a group definition of life to use in later activities. Having a clear definition is important for scientists, too. In order for a rover, like the Curiosity rover on Mars, to find signs of life, scientists need to have a clear understanding of what to look for — how to identify living versus non-living!

Steps:

1. Examine your samples — look and even smell the samples (do not taste them). Fill in the first observation on your observation page. Do you detect any visible evidence of life?
2. Add hot water to the samples, filling the cups halfway up. (Careful handling hot water!) What do you notice right away? What do you notice as it sits a couple minutes?
3. Discuss the definition of life together, while the water continues to react with the materials in the cups. Discuss the scientific perspective on life, and consider how life might be different on other planets.
4. Observe any further changes in the “alien” samples. What do you see, smell, and feel? What is the evidence of life? Are any of the cups showing something happening and continuing to happen?

Reflection (throughout): What are some examples of living things? Non-living things? What tells you something is alive? How can you tell that it is alive?