Mars for Earthlings

## LESSON 19: Extremophiles

***In-Class Activity 1***

*Tardigrades: Living Extremely*

**Purpose**: Become acquainted with the Tardigrade ("water bear") extremophile, its living conditions, and importance of its scientific study.

**Introducing the Tardigrade:**

Watch the following You Tube Tardigrade video from the SciShow:
http://www.youtube.com/watch?v=6H0E77TdYnY&continue_action=r7OE3bLJMHT8fAwevwnX9Oh_0zzl6Ajt2P3129QN588gcYR6MkEN_obkOAtaq5MUvFV4Yiq09ljbJDp8wedzPE1U417RionrJuPdT2CAALc=

As you watch the video answer the following questions:

1. What is the *Tardigrade*?

2. What type of environments can the *Tardigrade* live in?

3. What is its importance to science?

**Extremophiles**

- Acidophile- high pH
- Alkaliphile- low pH
- Anaerobe- no need for oxygen
- Endolith- lives inside rocks
- Halophile- requires salt
- Piezophile/Barophile- requires high pressures
- Thermophile- lives in 40°C or higher
- Xerophile- limited water supply
- Psychrophile- lives in 15°C or lower

Consider the above list. What classification does the *Tardigrade* belong to and why?

# Mars for Earthlings

**Where could the *Tardigrade* live on Mars?**

1. Observe a global Map of Mars. Where could the *Tardigrade* potentially live on Mars? Explain your reasoning.

2. Is studying the *Tardigrade* and other organisms like it useful to space research? Why or why not?

3. What other Extremophiles classifications (see above) could be present on Mars?