



NASA Astrobiology Program

LIFE IN THE UNIVERSE

Why is Astrobiology so useful in education?

- Astrobiology tugs on those age-old questions that are buried deep in our DNA, and builds on our natural curiosity.
- The collaborative essence of astrobiology lends itself perfectly to working and learning in teams.
- The inherent challenges of exploration are ideal scenarios for problem-based learning.
- Astrobiology scoffs at the notion that 'everything is already known' and offers students a tangible sense that they can discover something and make an authentic contribution.





NASA Astrobiology Program

LIFE IN THE UNIVERSE

Educational Materials in Astrobiology

<http://astrobiology.nasa.gov/classroom-materials/>

Some created by NASA, some created by trusted partners:

- Educator Guides with hands-on activities, curricula, lesson plans and units
- Card games, “board” games
- Videos: from short talks to full length PBS broadcasts
 - FameLab! <http://famelab.arc.nasa.gov>
- Radio show segments, podcasts
- Web-interactives
- Posters, “trading” cards, graphic novels



NASA Astrobiology Program

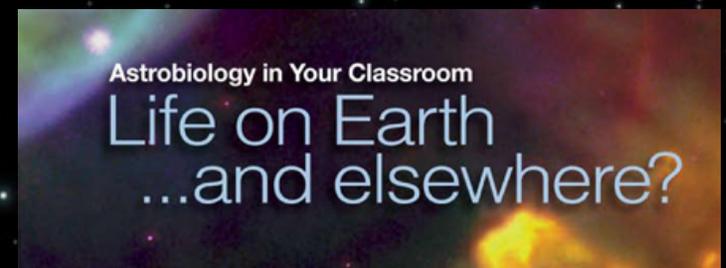
LIFE IN THE UNIVERSE

Educational Materials in Astrobiology

<http://astrobiology.nasa.gov/classroom-materials/>

Educator Guides with hands-on activities, curricula, lesson plans and units:

- Life on Earth...and Elsewhere? (~grades 5-8)
- Rising Stargirls Activity Book (STEAM)
- ExoPlanet Activity Guide (ASP)
- Exploring Ice in the Solar System (grades K-5)
- Voyages Through Time (9th grade/year long)
- Astrobiology: An Integrated Approach (9th grade/year long)





NASA Astrobiology Program

LIFE IN THE UNIVERSE

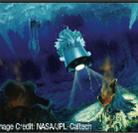


Educational Materials in Astrobiology

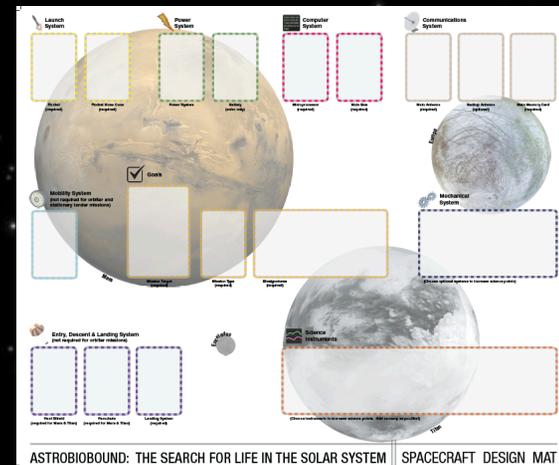
<http://astrobiology.nasa.gov/classroom-materials/>

Card Games and "Board Games"

- AstroBio-Bound! (MS and HS)
- Extrem-o-philés in the Classroom (MS and HS)

<p>Cliffbot</p>  <p>Image Credit: NASA/JPL-Caltech</p> <p>Required for accessing skylights, recurring slope lineae, and polar ice cliffs</p> <p>PROS:</p> <ul style="list-style-type: none"> • Can get to areas other rovers cannot • Medium speed and work on rocky terrain <p>CONS:</p> <ul style="list-style-type: none"> • Untested on another planet/moon, high risk <p>22</p>	<p>Cryobot</p>  <p>Image Credit: NASA/JPL-Caltech</p> <p>Required for traveling through ice</p> <p>PROS:</p> <ul style="list-style-type: none"> • Uses heat to drill through ice, no moving parts <p>CONS:</p> <ul style="list-style-type: none"> • Only works on ice • A rocky layer may stop it • Untested on another planet/moon, high risk <p>23</p>	<p>Hydrobot</p>  <p>Image Credit: NASA/JPL-Caltech</p> <p>Required for exploring subsurface water</p> <p>PROS:</p> <ul style="list-style-type: none"> • Navigate subsurface lakes or oceans <p>CONS:</p> <ul style="list-style-type: none"> • Autonomous operation only • Untested on another planet/moon, high risk • Also requires Cryobot (#23) <p>24</p>
--	--	--

<p>Mono Lake ALKALIPHILES</p>  <p>Photo Credit: Mono Lake, California, is 80 times more alkaline than the ocean. - Mike Zlotnick, Microscopist - David Patterson and co-workers. For more information visit: http://astrobiology.nasa.gov/</p>	<p>Rio Tinto ACIDOPHILES</p>  <p>Photo Credit: Rigged flow patterns at Rio Tinto, Spain - Carol Stecher, NASA Ames Research Center. <i>Ferroplasma acidiphilum</i> - Microbiology Center for Planetary Research. For more information visit: http://astrobiology.nasa.gov/</p>
---	--





NASA Astrobiology Program

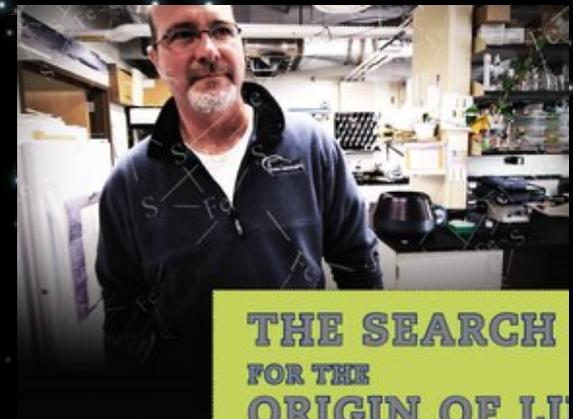
LIFE IN THE UNIVERSE

Educational Materials in Astrobiology

<http://astrobiology.nasa.gov/classroom-materials/>

VIDEOS!

- Finding Life Beyond Earth (NOVA) – also clips and lesson plans)
- Alien Planets Revealed (NOVA)
- The Search for the Origins of Life (MSU-PBS) also clips and lesson plans)
- Planetary Lake Lander series (NASA) - short clips





NASA Astrobiology Program

LIFE IN THE UNIVERSE

Educational Materials in Astrobiology

<http://astrobiology.nasa.gov/classroom-materials/>

Web-based Interactives

- Alien Safari (JPL)
- Extreme Planet Makeover (JPL)
- Virtual Field Trips (ASU)
- A Historic Timeline of the Search for Other Worlds (Planet Quest/JPL)
- A Needle in Countless Haystacks (TED-Ed)
- Coursera courses X 2!





NASA Astrobiology Program

LIFE IN THE UNIVERSE

Educational Materials in Astrobiology

<http://astrobiology.nasa.gov/classroom-materials/>

Posters, “Trading Cards,” Graphic Novels

- Astrobiology Education Poster (NASA) – with lesson plans, too
- Astrobiology Graphic Histories (NASA) issues 1-5
- Extremes of Life Trading Cards (NASA)
- Planetary Maps Designed for Children (ICA)
- Solar System Poster (NOVA)





NASA Astrobiology Program

LIFE IN THE UNIVERSE

Educational Materials in Astrobiology

<http://astrobiology.nasa.gov/classroom-materials/>

daniella.m.scalice@nasa.gov

831.247.6728

