

Preparing for life on Mars

Session 2

MARK DUEWIGER
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DISCUSSION NOTES TAKEN BY LISA TRIZANO

- ✓ **Within 20 years, humans will live on Mars.**
- ✓ **What Time is it on Mars**

Session 1

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- "Growing" Houses out of Fungi**
 - Venus too Hot, Mars too Cold, Earth Just Right**

Session 2



Preparing to Live on Mars – Session 2

“Growing” Houses out of Fungi

- The Living Tech We Need to Support Human Life on Other Planets - What would it take to settle Mars? In a talk about the future of space exploration, Lynn Rothschild reviews the immense challenges to living elsewhere in the universe and proposes some bold, creative solutions to making a home off planet Earth -- like "growing" houses out of fungi or using bacteria to help generate electricity.

https://www.ted.com/talks/lynn_rothschild_the_living_tech_we_need_to_support_human_life_on_other_planets

Notes

- Can't be dependent on earth
- This ties in with synthetic biology.
- Radiation will be an issue
- We have been using plants and animals to help us for centuries.
 - Evasive species
 - ? We are going to terraform a planet for the first time
- It costs around \$10,000 to launch a can of Coke.
- They stated that only the root system of the Fungi is used to build walls.
 - The mushroom part will make lots of pizzas

Musk says he can do it
For \$5,000



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"Growing" Houses out of Fungi - Discussion

- ✓ Someone asked how long to get to Mars? If you travel when Earth and Mars are closest it takes 8 months
- ✓ Earth and Mars are closest ever 2 years.
- ✓ It takes 8 minutes for a radio signal to reach Mars when it is closest to earth.
 - Mars day is 24 hours 40 minutes.

- ✓ Lynn stated that her solution to the limited material that can be sent by rocket is life.
- ✓ Bring small amount of material and grow more.
- ✓ One can design new life forms to meet needs on Mars.
- ✓ Structures can be built of fungi.
 - How long does it take fungi to grow?
- ✓ There exist fungi that can survive the harsh environments

- ✓ Extract metals from biological materials
- ✓ Material for 3D printing can be found on Mars
- ✓ Rockets are now being 3D printed
- ✓ Group believes that sugar is needed to grow – on the news today (11/21/19) they have found sugar on Mars.
- ✓ Materials most likely came from other sources in universe.

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"Growing" Houses out of Fungi - Discussion

- ✓ There is water on Mars
- ✓ Once you are on Mars you are on your own.
- ✓ Shipments come every 2.5 years.
- ✓ Will the life we bring to Mars be attacked by Mars life? Or will our life attack Mars life?
- ✓ Musk says he can get some one to Mars in 2025, NASA says 2049
- ✓ The question asked is the first trip one way or round trip?
 - Problem is return vehicle, fuel....
 - Could return trip use solar energy.

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What a Planet Needs to Sustain Life

"Venus is too hot, Mars is too cold, and Earth is just right," says planetary scientist Dave Brain. But why? In this pleasantly humorous talk, Brain explores the fascinating science behind what it takes for a planet to host life -- and why humanity may just be in the right place at the right time when it comes to the timeline of life-sustaining planets.

https://www.ted.com/talks/dave_brain_what_a_planet_needs_to_sustain_life

Notes

- ✓ Scientists just divulged that a test for life on Mars was positive.
 - Test never repeated, to verify.
- ✓ Magnetic field may be key to why we are here
- ✓ Planets change
- ✓ In 20 years went from no known planets to more than can be counted.

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What a Planet Needs to Sustain Life - Discussion

- ✓ Earth Has a magnetic field
 - Venus and Mars do not
- ✓ Earth is the only place we know of that has life
 - But that may change soon.
 - Earth has 8. million species
- ✓ We believe that every star has at least one planet that could sustain life.
- ✓ Escape velocity is the speed needed to escape earth.
 - Strongest gravity of 3 is earth by far.
- ✓ Every planet is loosing atmosphere. Some more than others.
- ✓ Every several thousand years earths north and south poles flip

Additional Information

- Ted Books

<https://www.ted.com/read/ted-books/ted-books-library/how-we-ll-live-on-mars>

- Play Lists

- https://www.ted.com/playlists/live_out_your_sci_fi_dreams