



Astrobiology

Careers in Astrobiology?

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How do you become an astrobiologist? What is the attraction of being an astrobiologist? During our interviews with several prominent figures working in the field of astrobiology, we asked them these questions; without a doubt, they can answer it better than we can, being on the cutting-edge of the science...

Professor Dan Werthimer,
chief scientist of the SETI@Home project and SERENDIP Project Director

"When I was a kid I built a huge telescope and read books by [Carl] Sagan and [Isaac] Asimov. In high school I joined the home brew computer club - a bunch of kids building microcomputers in our garages. My friends in that club became filthy rich (Steve Wozniak and Steve Jobs, two of the members in that club, started Apple...), but I started thinking about how to use microcomputers for SETI and remained relatively poor.

This is the best path for kids interested in SETI: study science, especially physics, astronomy, and math, and learn how to program computers."

Download the full interview with Professor Dan Werthimer about the SETI@Home project and optical SETI from Astrobiology.



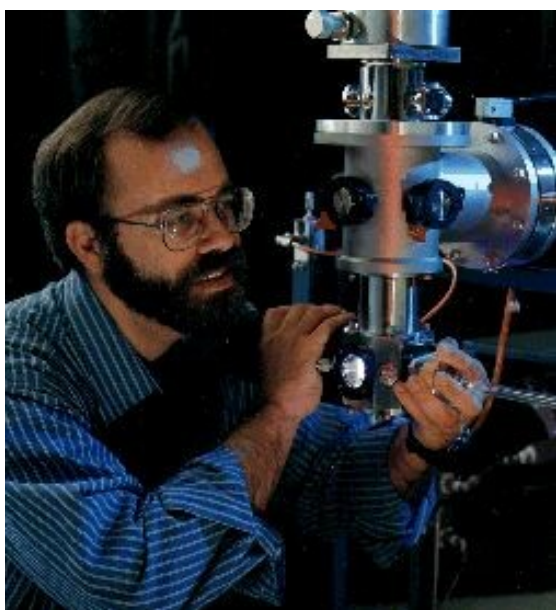
Professor Dan Werthimer with the SERENDIP IV system at Arecibo. Photograph Copyright Ron Hipschman.



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Dr. Scott Sandford, NASA astrochemist, co-investigator of the STARDUST Mission, member of Ames Astrophysics Branch and co-leader of NASA Ames Astrochemistry Laboratory



Dr. Scott Sandford, posing with an astrophysical environment simulation chamber. Courtesy Dr. Sandford.

"People shouldn't feel like they have to get a degree in astrobiology or astrochemistry. For example, over the years our lab has been extremely productive and a lot of fun for everyone involved and has discovered all kinds of things. We've done that by having a diverse group of people with a variety of backgrounds and expertises. Our group has had astronomers, physicists, biochemists, physical chemists - in other words, you don't need a degree in astrochemistry to do astrochemistry. In fact, my experience has been that people who focus their learning on a particular sub-area tend not to have broad enough experience and scientific background to tackle new problems as they come along. You need good expertise in a relevant field, but it doesn't necessarily have to be the field you think you want to work in. Everyone doing astrobiology right now comes to it from a variety of backgrounds - I'm not sure I know anyone who has a degree in astrobiology.

Chemistry, physics, math and geology are all great backgrounds if you want to go into space science. Having a good understanding of spectroscopy is important. We will never get a sample of most of the interstellar medium, we can only look at it from afar, and for this reason it is important that you are capable of analyzing that type of material from afar.

The main thing students need to do is to learn how to learn. Researchers have to learn and teach themselves all the time. Astrochemistry isn't astronomy, or physics, or chemistry - there are very few books or people concentrating on the subject exclusively. You must be able to keep an open mind and be able to accumulate new facts and techniques and expertises as you need them.

Also, to be a good scientist today you really have to have good communication skills. Some people go into science because they hate english, but the fact of the matter is that you can't be a decent scientist without being able to read, write and speak well. What good is it to discover something if you can't write a proper paper to explain it to everyone else? Once you are a scientist, nobody walks up to you and says 'Here's a pot of money, go discover something!'. The way the American system works is you have to write a proposal where you tell people what you want to do, the reasons why you want to do it, what you expect to learn, what it would cost, and why the science is worth the cost. Then you have to convince a review panel to grant you the funding. So if you can't write and argue well, you won't get any money, and you won't do any science. That is why the ability to communicate effectively is essential if you want to be a scientist."

Download the full interview with Dr. Scott Sandford, covering his role on the NASA STARDUST comet sample return mission and how the mission relates to our understanding of the origins of life from Astrobiology.



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Dr. Farid Salama, NASA astrochemist and co-leader of the Astrochemistry Laboratory of Ames Space Science Division

"Aspiring astrochemists and astrophysicists need to be highly motivated researchers who are curious, unafraid to explore unknown territories and who are very open to new ideas.

Besides, in terms of studies, the needs are a strong background in either physical chemistry, chemistry or physics and a good knowledge of astrophysics or astronomy.

Personally, I wanted primarily to understand how the universe works and to follow a rigorous and precise path towards this understanding by using scientific arguments. I also like that it is a multi-disciplinary work. You work with people from various backgrounds (chemists, physicists, astronomers, geophysicists, geochemists, etc...) so you're always learning something new.

It's a challenging task because you are usually dealing with issues that would not occur on Earth under the normal conditions of temperature and pressure. You need to simulate these conditions with a laboratory experiment and/or with calculations and that is not an easy task. One of the greatest rewards of this field of study is that you are always pushing the boundaries of scientific knowledge because you have to answer unusual questions (unusual compared to our familiar environment on earth). The field is still "young" and is continuously expanding. With time, we are learning more about space and we need to learn more about space for the future of human space exploration."

Download the full interview with Dr. Farid Salama about the possibility of life in outer space and exactly what polycyclic aromatic hydrocarbons (PAHs) are from Astrobiology.



Dr. Farid Salama, using a liquid helium cooled cryostat in his astrochemistry lab. Photo courtesy Dr. Farid Salama.