COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY
CHAIRMAN LAMAR SMITH

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Statement of Chairman Lamar Smith (R-Texas)
Hearing on Astrobiology: Search for Biosignatures in our Solar System and Beyond

Chairman Smith: Good morning. The search for exoplanets and Earth-like planets is a relatively new but inspiring area of space exploration. Scientists are discovering solar systems in our own galaxy that we never knew existed.

As we learn more about these new worlds, reasonable questions to ask are: What could we find on these worlds? Do the atmospheres of these worlds provide biosignatures that would indicate the presence of some form of rudimentary life? And what would be the implications of such a discovery?

The discovery of even microbes on another planet would be the most newsworthy story in decades. It could affect the way we view our place in the universe. It could create increased interest in the core disciplines that fall under the umbrella of astrobiology, including chemistry, physics, geology and biology.

The United States pioneered the field of astrobiology and continues to lead the world in this type of research. The publication of scientific findings illustrates the field's growth and growing popularity in the past 20 years.

A sample of professional papers published in Science magazine between 1995 and 2013 shows significant growth in the field of astrobiology. In 1995, fewer than 50 papers were published on astrobiology. By 2012, that number had increased to more than 500. In 1995, fewer than 500 scientific reports cited astrobiology, but by 2012, it was almost 12,000.

Astrobiologists study the atmospheres of planets to determine whether or not some of these newly discovered planets possess possible signs of life, such as microbes or some form of vegetation. Scientists believe that such planets would produce certain gases in their atmospheres.

For example, when examined from a distance, Earth's atmosphere contains large amounts of oxygen. When looked at through a large infrared telescope, this biosignature would be detectable from a distant point in space.

Using the infrared camera on the Hubble Space Telescope, two teams of scientists from the University of Maryland, NASA's Goddard Space Flight Center and Space Science Telescope Institute announced yesterday that they found signatures of water in the atmospheres of five exoplanets.

The planets are similar to "hot" Jupiters, too large and gaseous to contain any form of known life. However, the techniques used in this case are also being used to examine the atmospheres of other planets.

Future telescopes, including the James Webb Space Telescope, the Transiting Exoplanet Survey Satellite and the Wide-Field Infrared Survey Telescope will help us discover more about the atmospheres of exoplanets and whether or not microbes or other forms of life could exist there.

I look forward to hearing how research in astrobiology continues to expand this fascinating frontier.

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