NASA to Investigate Nine New Ideas for Future Missions

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NASA has selected nine studies, including one from the Jet Propulsion Laboratory in Pasadena, Calif., to investigate new ideas for future mission concepts within its Astronomical Search for Origins Program.

Some of the new mission ideas will survey one billion stars within our own galaxy; measure the distribution of galaxies in the distant universe; study dust and gas between galaxies; study organic compounds in space and investigate their role in planetary system formation; and create an optical-ultraviolet telescope to replace NASA's Hubble Space Telescope.

The products from these concept studies will be used for future planning of missions complementing the existing suite of operating missions, including NASA's Hubble and Spitzer Space Telescopes, and developmental missions such as the James Webb Space Telescope and

Terrestrial Planet Finder.

Each of the selected studies will have eight months to further develop and refine concepts for missions addressing different aspects of Origins Program science. The Origins Program seeks to address the fundamental questions: "Where did we come from?" and "Are we alone?" NASA received 26 proposals in response to this call for mission concepts.

The selected proposals and their principal investigators are:

--A Background Limited Infrared-Submillimeter Spectrograph for Spica: Revealing the Nature of the Far-Infrared Universe, Matt Bradford, JPL, Pasadena, Calif. The study will enable far- infrared spectroscopy of the galaxies that make up the far- infrared background out to distances of some of the farthest galaxies known today. Its spectral surveys will chart the history of creation of elements heavier than helium and energy production through cosmic time. (Note: Spica is a Japanese mission).

-- Origins Billion Star Survey, Kenneth Johnston, U.S. Naval Observatory, Washington. The survey will provide a complete census of giant extrasolar planets for all types of stars in our galaxy and the demographics of stars within 30,000 light- years of the Sun. Steven Pravdo of JPL is a co-investigator.

-- The Space Infrared Interferometric Telescope, David Leisawitz, Goddard Space Flight Center, Greenbelt, Md. This imaging and spectral Michelson interferometer operating in the mid- to far-infrared region of the spectrum. Its very high angular resolution in the far-infrared will enable revolutionary developments in the field of star and planet formation research.

-- Cosmic Inflation Probe, Gary Melnick, Smithsonian Astrophysical Observatory, Cambridge, Mass. The probe will measure the shape of cosmic inflation potential by conducting a space-based, near-infrared, large-area redshift survey capable of detecting galaxies that formed early in the history of the universe.

-- High Orbit Ultraviolet-visible Satellite, Jon Morse, Arizona State University, Tempe. This mission will conduct a step-wise, systematic investigation of star formation in the Milky Way, nearby galaxies and the high-redshift universe; the origin of the elements and cosmic structure; and the composition of and physical conditions in the extended atmospheres of extrasolar planets. Daniel Stern of JPL is a co-investigator.

-- Hubble Origins Probe, Colin Norman, Johns Hopkins University, Baltimore. This mission seeks to combine instruments built for the fifth Hubble servicing mission: Cosmic Origins Spectrograph and Wide Field Camera 3. This new space telescope at the forefront of modern astronomy will have a unifying focus on the period when the great majority of star and planet formation, heavy element production, black-hole growth and galaxy assembly took place.

-- The Astrobiology Space Infrared Explorer Mission: A Concept Mission to Understand the Role Cosmic Organics Play in the Origin of Life, Scott Sandford, Ames Research Center, Moffett Field, Calif. This is an mid- and far-infrared space observatory optimized to spectroscopically detect and identify organic compounds and related materials in space, and understand how these materials are formed, evolve and find their way to planetary surfaces. Michael Werner and Karen Willacy of JPL are co-investigators.

-- The Baryonic Structure Probe, Kenneth Sembach, Space Telescope Science Institute, Baltimore. The probe will strengthen the foundations

of observational cosmology by directly detecting, mapping and characterizing the cosmic web of matter in the early universe, its inflow into galaxies, and its enrichment with elements heavier than hydrogen and helium (the products of stellar and galactic evolution).

-- Galaxy Evolution and Origins Probe, Rodger Thompson, University of Arizona. The probe will observe more than five million galaxies to study the mass assembly of galaxies, the global history of star formation, and the change of galaxy size and brightness over a volume of the universe large enough to determine the fluctuations of these processes.

More information on NASA's Origins Program is available on the Internet at: origins.jpl.nasa.gov/.