OVERVIEW OF NASA ASTROBIOLOGY INSTITUTE EDUCATION AND PUBLIC OUTREACH

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Astrobiology is the scientific study of the origin, distribution, and future of life in the universe. This is an intriguing and engaging topic for students and the public in general. NASA Astrobiology Institute (NAI) members have proposed and are carrying out innovative Education and Public Outreach (E/PO) initiatives to keep students and the public informed and involved with new research and future mission possibilities.

The NASA initiative in astrobiology is a broad science effort embracing basic research, technology development, and flight missions. These activities are conducted at several NASA Centers and academic and industrial communities. The NAI is a 'virtual' consortium of eleven collaborative institutes connected by advanced telecommunications and electronic interaction. This consortium of scientists focuses on interdisciplinary research, student training, and sharing the adventure of exploration with the public.

The E/PO philosophy of NAI stresses including the public in every aspect of this adventure of understanding the living universe. "We wouldn't dream of going exploring without taking the kids along." The NAI E/PO office is located at Ames Research Center and is led by Dr. Rosalind Grymes. The Astrobiology web site is: <http://astrobiology.arc.nasa.gov/education.html>.

NAI Member Research and Education Profiles

The NASA Astrobiology Institute, with eleven core members and numerous affiliated organizations, will coordinate and integrate the cross-disciplinary investigations fundamental to the field of Astrobiology.

NASA Ames Research Center initially will integrate research related to the contribution of organic matter to planets, the formation and evolution of habitable planets, the origins of key metabolic pathways in primitive cells, the structure, function and biological markers of microbial ecosystems, and the effects of rapid environmental changes on ecosystem properties.

Outreach highlights include collaboration on curriculum for high school and college level courses and various public exhibits.

Arizona State University will conduct research into the cosmochemistry of meteorites and organosysnthesis within hydrothermal systems, the origin of early photosynthetic systems, microbial fossilization processes, complex ecosystems of extreme environments, and exploring for habitable environments elsewhere in the Solar System.

Outreach activities will connect with existing programs in Mars education, develop undergraduate courses, and produce public science articles.

Carnegie Institution of Washington will investigate aspects of hydrothermal systems, integrating laboratory studies with observational analyses of the Solar System and other planetary systems and with predictive and theoretical models.

Their outreach program will continue existing associations with schools and summer interns to develop and deliver educational packets and videos.

Harvard University will conduct research on the coevolution of the Earth and its biota through time, integrating the stratigraphy, geochemistry, paleontology, microbiology, and geochronology of major evolutionary and environmental transitions in our planet's history.

Outreach will include educator workshops, campus lectures, and collaboration with various museums.

Jet Propulsion Laboratory will develop credible biosignatures of life, and use these biosignatures to study the distribution of life on Earth, with the

goal of detecting life in samples returned from extraterrestrial environments. These studies will be combined with studies of planetary geology / geochemistry to further our understanding of both early and present day environments of Earth and Mars.

The outreach activities will emphasize pre-service teacher education and collaborative curriculum development.

NASA Johnson Space Center along with US and foreign Co-Investigators will concentrate on biomarkers, specific properties in a rock which indicate that biological activity is occurring or has occurred. The research includes analysis of meteorites from Mars and some of the oldest rocks on Earth.

Outreach highlights include classroom activity development through teacher-scientist partnering, educator and student training, material distribution, as well as sample distribution.

Marine Biological Laboratory will study microbial biodiversity through molecular biological techniques, focusing on the evolution of eukaryotes and of complex systems in simple organisms.

The outreach program will build on existing classroom activities and videos for K-12 and workshops for university level students.

Pennsylvania State University will focus on the connection between the changes in the environment and the changes in Earth's biota primarily during the early stages of our planet's evolution.

Outreach highlights include K-12 workshops for students and educators, expanded university level courses, and computer-based exhibits.

Scripps Research Institute and the University of California, Riverside will combine efforts to study the emergence of self-replicating systems and the nature of pre-biotic worlds, exploring early precursors to replication on Earth.

The outreach program will focus on popular science articles, public speaking events, and Internet discussions.

University of California, Los Angeles will undertake multidisciplinary research on the paleomicrobiology of Earth's early life, the metabolic evolution of early ecosystems, and the development of instruments aimed at detecting life in the galaxy and the solar system.

The outreach program will concentrate on university courses and public policy impacts of Astrobiology.

University of Colorado will address the origin of stars and planets, the development of habitable planets, the "RNA world" and the origins of life, biological evolution on Earth, the energetics of life on other planets, and the philosophical aspects of astrobiology and the search for life elsewhere.

Outreach will highlight educator partnering and workshops for K-12, university course work, and public speaking events.