NASA SBIR 2004 Phase I Solicitation

B1.02 Gravitational Effects on Biotechnology

Lead Center: MSFC

Participating Center(s): ARC

NASA is interested in the development of science and experiments that support strategic aspects of exploration, as well as develop the technologies to extend humanity’s reach to the Moon, Mars, and beyond. Preparing for exploration and research will accelerate the development of technologies that are important to the economy and national security, as well as accelerate critical technologies such as biotechnology.

Plans are to support research and development to investigate the influence of the space environment, radiation, and reduced gravity on biotechnology processes, and human factors at the biomolecular level. Areas of interest include factors that influence bone and muscle biochemistry, protein crystal growth and structural analysis techniques, separation science and technology, and biomaterials. Examples of the types of research include but are not limited to:

- Technologies designed to improve our understanding of the effect of gravity on expression of biological macromolecules.
- Technologies to determine the relationships between material substrates, bone and muscle tissue and cell culture conditions, and subsequent cell protein expression and differentiation.
- Development of high-throughput technologies to determine gene and protein expression and differentiation.
- Biotechnology and instrumentation to help enable safe human exploration beyond Earth orbit for extended periods.
- Environmental monitoring and control for human life support.