Human Health Research in Space

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National Institutes of Health (NIH)

Biotechnology Utilization Planning for the ISS National Laboratory
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National Institutes of Health (NIH)

• The world’s preeminent medical research center and steward of medical and behavioral research for the nation.

• Its goal is to acquire new knowledge to help prevent, detect, diagnose, and treat disease and disability.
Public Health Mission

- **NIH:** Uncover new knowledge that leads to better health for everyone by
  - Supporting peer-reviewed scientific research at universities, medical schools, hospitals, and research institutions throughout United States and overseas and in its own laboratories.
  - Training research investigators.
  - Developing and disseminating credible health information based on scientific discovery.
- **NIAMS:** Support
  - Research into the causes, treatment, and prevention of arthritis and musculoskeletal and skin diseases.
  - Training of basic and clinical scientists to carry out this research.
  - Dissemination of information on research progress in these diseases.
NIH ANNUAL BUDGET

• More than 80% of the NIH’s funding is awarded through almost 50,000 competitive grants to more than 325,000 researchers at over 3,000 universities, medical schools, and other research institutions in every state and around the world.

• About 10% of the NIH’s budget supports projects conducted by nearly 6,000 scientists in its own laboratories, most of which are on the NIH campus in Bethesda, Maryland.

The NIH Grant Application

- Applicant
- Solicitation FOA
- Scientific Review Group
- Funding Institute/Center IC Director
- Advisory Council
- Investigator
- Experiments on Earth
Meeting on Space-Related Health Research - December 8, 2006

• Purpose:
  – To share information across key Federal agencies about space-related health research interests and activities.
  – To identify opportunities for collaborations to facilitate research.

Meeting Participants:
  – NIH: 12 NIH Research components
  – NASA and members of the NASA Advisory Council
  – Food and Drug Administration
  – National Institute of Standards and Technology
  – National Science Foundation
  – U.S. Department of Agriculture
  – National Space Biomedical Research Institute

Memorandum of Understanding Between the NIH and NASA

• NIH will Use Reasonable Efforts to
  – Publicize, to the intramural and extramural communities, the availability of the ISS as a research environment...
  – Give careful consideration through the standard review process to well-developed, investigator-initiated extramural applications and potential intramural activities related to space-related health research...

September 12, 2007: NIH Director Dr. Elias A. Zerhouni and NASA Administrator Dr. Michael D. Griffin shake hands after signing the MOU at the U.S. Capitol while Senators Kay Bailey Hutchison and Barbara Mikulski stand by.
Examples of NIH-NASA Earth-based Activities

- **Targeted initiatives and programs**
  - National Cancer Institute
    - Fundamental Technologies in Biomolecular Sensors
    - Nanowire Arrays for Early Detection of Cancer
  - *Eunice Kennedy Shriver* National Institute of Child Health and Human Development
    - Center for Three Dimensional Tissue Culture
- **Committees**
  - NASA Advisory Council (NAC)
  - Image Guided Interventions Interagency Group
  - Multi-Agency Tissue Engineering Sciences (MATES) Working Group
  - National Science, Engineering and Technology subcommittee for the National Nanotechnology Initiative
  - Technologies for Metabolic Monitoring Program
- **Funding for NASA intramural investigators**

Examples of NIH-NASA Space-based Activities

- **Neurolab (STS-90)**
- **ISS experiments with NIH support**
  - CBOSS-01 Colon, Expedition 3 (Jessup)
  - CBOSS-02 HLT, Expedition 4 (Zimmerberg)
  - CBOSS FDI, Expeditions 7, 8, 10, 12, 13 (Jessup and Zimmerberg)
Investigator-initiated biomedical research that will use the unique microgravity and radiation environment and resources of the ISS to test innovative hypotheses that will benefit human health on Earth.
Thank you and ?

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