

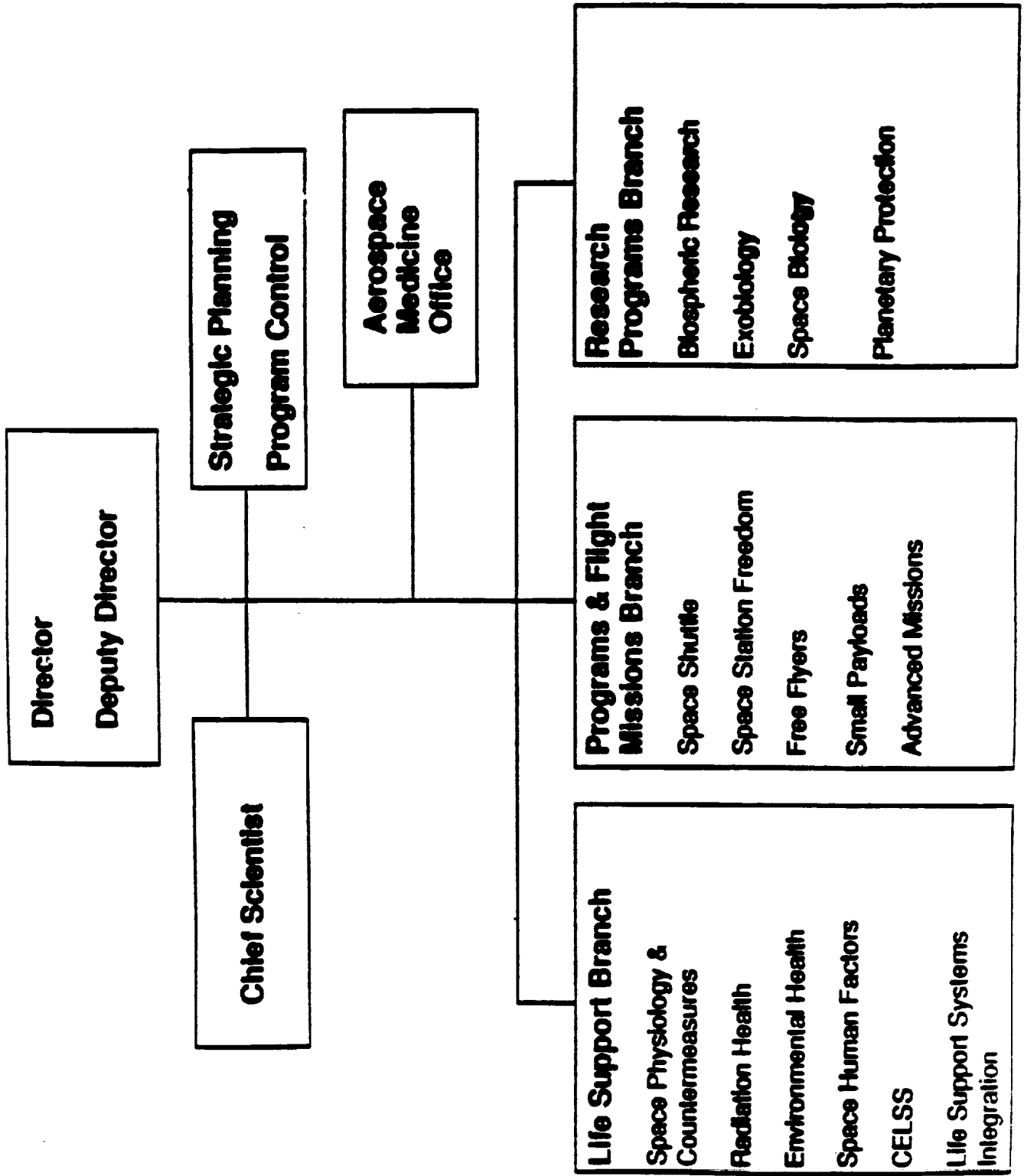
NASA/NSF Antarctic Science Working Group



Dr. Janis H. Stoklosa
Program Manager
October 11-12, 1990
Washington, D.C.

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Life Sciences Division Organization



Tentative Schedule for Space Exploration*

Space Station	1997-2003
Humans Return to the Moon	2004
Lunar Presence	2005
Lunar Habitat	2007-2009
Humans Land on Mars	2018

* Schedule currently under scrutiny by various outside Advisory Committees

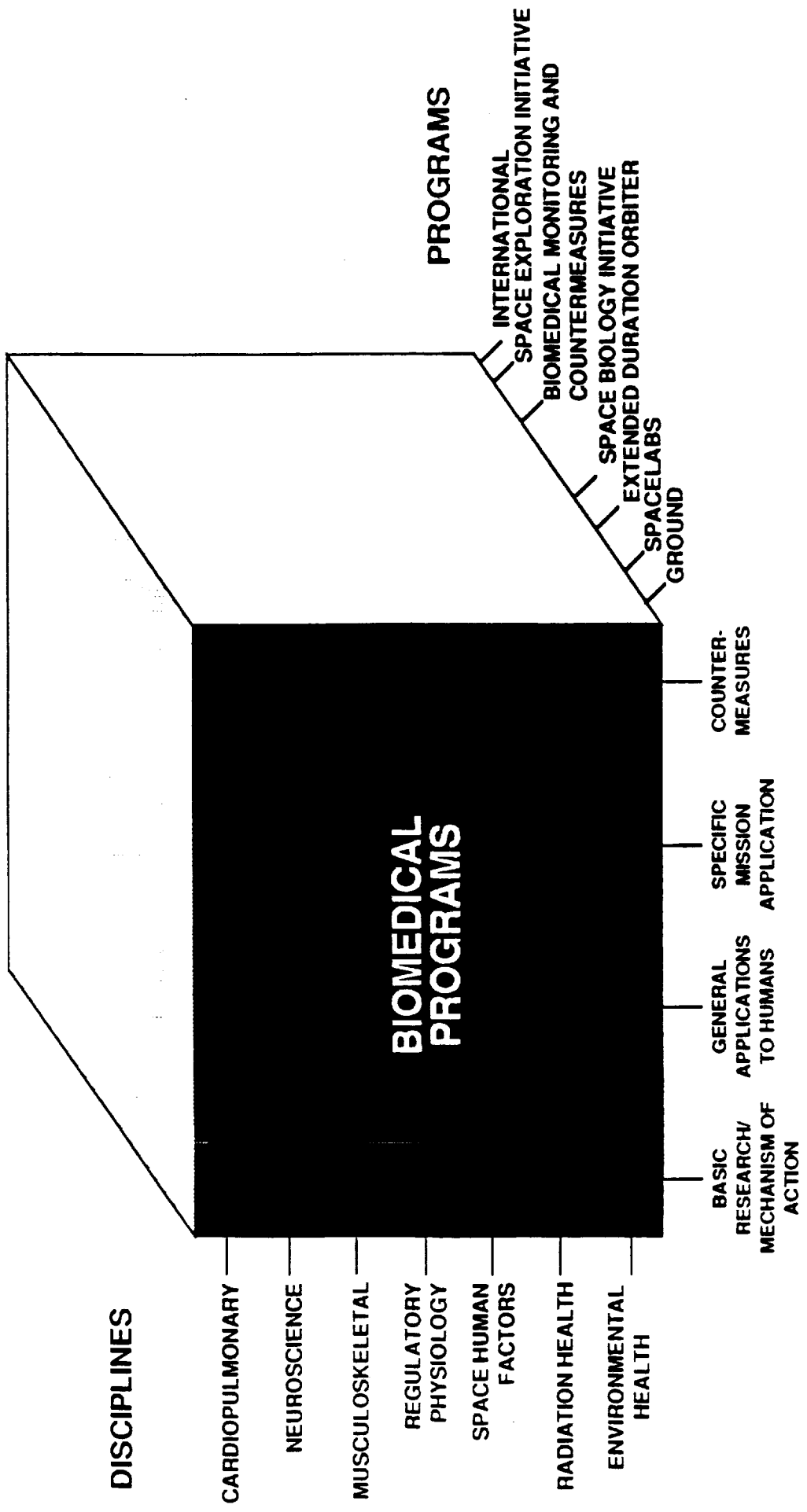
Biomedical Programs

Goals

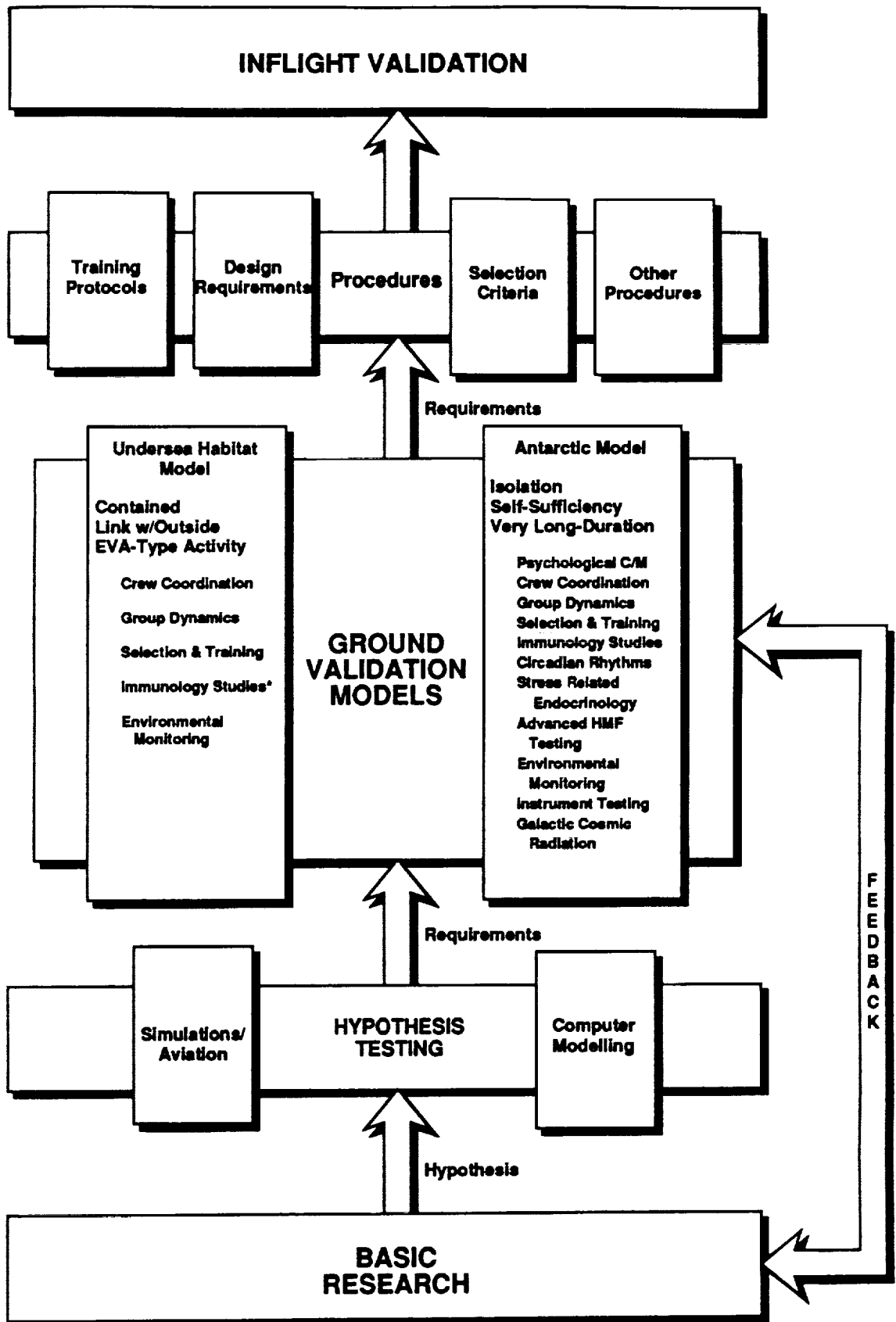
- **Develop an understanding of the physiological, psychological and behavioral adaptation to space**
- **Ensure the health, well-being, and performance of humans in space and on return to Earth's gravity**
- **Promote the application of biomedical research to improve the quality of life on Earth**

Objectives

- **Determine the acute and long-term physiological and behavioral adaptation to space**
- **Determine the psychological and sociological implications of space flight**
- **Determine the crew performance and mission consequences of the physiological, psychological and behavioral adaptation to space**
- **Develop adequate monitoring techniques and countermeasures**
- **Verify adequate models and/or analogs for space**



RESEARCH ELEMENTS



* If longer than 2 weeks

Justification for Using the Antarctic as an Analog

- **Similarities Between Extended Duration Space Missions and Antarctica Conditions**
 - **Long Duration**
 - **Extreme Environments**
 - **Isolated Location**
 - **Delayed Communications**
 - **Confinement**
 - **Small Group Dynamics**
 - **Diverse skill mix**
 - **Various Nationalities**

NASA Proposed Biomedical Research in the Antarctic

Goal

- To use the Antarctic as an analog for space exploration to study human behavior and performance, physiology under stress, and environmental health.

Areas of Research Interest

- Space Human Factors
- Human Physiology
- Environmental Health

NASA Proposed Biomedical Research in the Antarctic (Continued)

- **Space Human Factors**
 - **Crew Selection and Training**
 - **Isolation**
 - **Psychological Support/Countermeasures**
 - **Human-Machine Interactions**
 - **Work Station/Habitability Requirements**
 - **Workload**
 - **Small Group Dynamics**
 - **Command and Control Structure**
 - **Crew Composition: Gender, Nationality, Skill Mix**

- **Human Physiology**
 - **Stress-Related Endocrinology/Immunity issues**
 - **Circadian Rhythms and Sleep Disorders**
 - **Sedentary Issues Related to General Fitness/Motivational Aspects of Exercise**

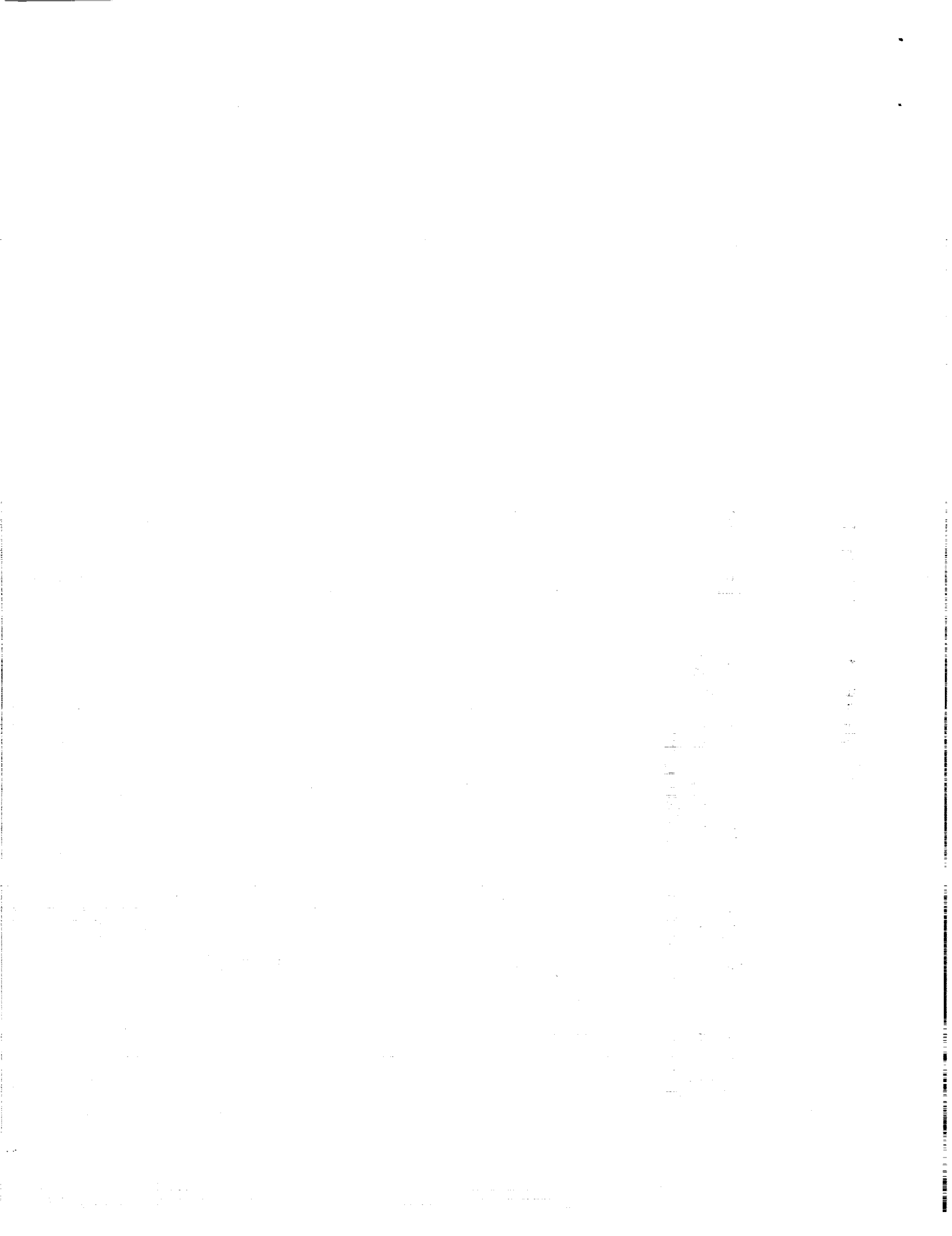
- **Environmental Health**
 - **Microbiology and Toxicology Issues**
 - **Epidemiology of Infectious Diseases**

Science Working Group Schedule of Events

Initial Meeting of the Science Working Group	October 11-12, 1990
First Draft of NASA/NSF Research Announcement	January 2, 1991
NASA/NSF Research Announcement Release	March 1, 1991
Proposal Submission Deadline	June 1, 1991
Investigation Selection	Summer 1991
Investigation Initiation	Fall 1991 (FY92)

Charge to the Committee

The NASA/NSF Science Working Group is charged with defining specific science requirements and priorities for biomedical research to be conducted using the Antarctic as an analog for space exploration.



Attachment 9

