

THE
UNIVERSITY OF TEXAS MEDICAL BRANCH
AND
NASA JOHNSON SPACE CENTER



SPACE MEDICINE FELLOWSHIP

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INTRODUCTION

The University of Texas Medical Branch (UTMB) is beginning its second century of service and excellence in medical research and education. The NASA Lyndon B. Johnson Space Center (JSC), Medical Sciences Division is beginning its fourth decade of excellence and innovation in space biomedical research and operations. Many faculty at UTMB have been involved in numerous aspects of space biomedicine at the Johnson Space Center. Together, the outstanding NASA physicians and research scientists and their colleagues on the UTMB faculty represent a comprehensive expertise in space medicine and research.

The formation of an accredited Space Medicine Fellowship, and the commitment by NASA and UTMB represents the desire by both organizations to develop the premier university-based space medical research institution in the United States. The Space Medicine Fellowship offers an opportunity to bring together the research and operational capabilities of the NASA-JSC Medical Sciences Division and the excellent faculty of UTMB who already contribute substantially to clinical and research efforts in the space environment. By uniting this expertise, the Space Medicine Fellowship will have a natural focal point around which it can continue to build.

The exploration of space is surely the most important contribution to world history by the twentieth century. Space medicine is and will be an essential component of human exploration and colonization of the universe. Supporting the development of a multidisciplinary Space Medicine Fellowship at UTMB and NASA to train future space medicine specialists and space biomedical researchers is a continuation of the century-old UTMB tradition and a realization of the NASA efforts to create a formal space medicine training program.

OBJECTIVES

The objectives of the Fellowship are to:

1. Train and prepare physicians to become accredited experts with knowledge and experience in space medicine and space biomedical research;

2. Facilitate the development of a new generation of space medical researchers who have a comprehensive background in clinical space medicine and the operational environment of space;
3. Support the development (from concept to funding) of research in space medicine;
4. Support the U.S. Space Program by developing operational and research expertise that will facilitate human health and performance for advanced space missions.

PARTICIPATING INSTITUTIONS

Roles and Responsibilities

University of Texas Medical Branch (UTMB)

UTMB has the following responsibilities:

- Coordination of administrative aspects of Program as they affect UTMB
- Authority and control of Fellows
- Implementation of curriculum at UTMB in coordination with NASA
- Full-time faculty participating in curriculum
- Recruitment of Fellow applicants in conjunction with NASA
- Interview & Selection of Fellows in conjunction with NASA
- Participating in the review and approval of all Fellow research proposals
- Providing academic credit/certification for Fellowship
- Salaries for 2 Fellows each year
- Fellow offices in Hyperbaric facility
- Arranging for all Fellowship supervision
- Faculty development and certification

NASA Johnson Space Center (JSC)

JSC has the following responsibilities:

- Coordination of administrative aspects of Program as they affect NASA
- Authority and control of Fellows
- Recruitment of Fellow applicants in conjunction with UTMB

- Interview & Selection of Fellows in conjunction with UTMB
- Implementation of curriculum at NASA in coordination with UTMB
- Training of Fellows in space medicine
- Inclusion of Fellows into JSC biomedical research activities
- Clinical supervision of Fellows while at JSC or participating in JSC activities
- Badging and flight physical examinations
- Recruiting and training JSC personnel to be adjunct faculty
- Participating (by appropriate adjunct faculty) in the Advisory Committee
- Participating in the review and approval of all Fellow research proposals
- Identification of relevant research and operations needs in which the Fellows shall participate

Brooks AFB School of Aerospace Medicine

Brooks Air Force Base School of Aerospace Medicine participates in the Fellowship training program in the following areas:

- Training of Fellows in the Primary Aerospace Medicine Course at USAF School of Aerospace Medicine
- Participation of appropriate adjunct faculty members in Advisory Committee
- Supervision of Fellows who participate in research at the School of Aerospace Medicine

Universities Space Research Association Division of Space Life Sciences (DSLS)

DSLS participates in the Fellowship training program in the following areas:

- Assist NASA management in the coordination and management of fellowship activities occurring at JSC
- Coordinate all Executive/Selection/and Advisory Committee meetings
- Provide office space for Fellows while they are on JSC rotations or activities

- Coordinate participation of faculty from other universities or settings
- Assist in disseminating information about the Fellowship to other Universities or settings
- Facilitate the participation of medical students, residents, staff, and faculty from other University-members of USRA
- Participate on the Executive Board

International Space University(ISU)

ISU will participate in the Fellowship program in the following areas:

- Facilitate participation of ISU Faculty & Fellows in the program
- Provide training for Fellow through their summer or regular courses

NASA Life Sciences Contractors

Aerospace industry support contractors such as Krug Life Sciences, Rockwell, McDonnell Douglas, etc. for NASA JSC will be involved in the following:

- Participate in orienting Fellows to aerospace industry operations in space medicine
- Recruitment of adjunct faculty for the program
- Possible rotations for Fellow

TRAINING PROGRAM IN SPACE MEDICINE

Program Overview

The training program is a two year program with the first 6-9 months providing the Fellow with a solid foundation in aerospace physiology in general and space medicine in particular. Operational courses at both the Johnson Space Center and Brooks Air Force Base will support the development of skills necessary to understand the operational constraints of the aerospace environment for research activities. From the beginning of the program the Fellow is required to identify a potential mentor and advisor in those areas of aerospace medicine he or she is particularly interested in. The Fellowship is designed so that Fellows may focus on either operational space medicine or space biomedical research. The Fellow will choose the operational or research track by the completion of the first year, and working closely with the mentor and the Advisory Committee, the Fellow will be expected to develop a research project. By the start of the second year of the Fellowship, the research project will have been

scientific thesis, suitable for publication on the topic of the research. The Fellow will also learn about research and experimental design, particularly in operational environments such as space; and have had experience in grant writing and application. See Table 1 for an overview of the entire 2-year curriculum.

Didactic Curriculum (Core Space Medicine Courses)

YEAR 1

ORIENTATION TO NASA JOHNSON SPACE CENTER - The objective of this orientation is to familiarize the Fellow with the NASA JSC history, culture, facilities and organizations. The Fellow will take the JSC course orienting new employees; participate in facilities tours; receive lectures on NASA culture and organization; be introduced to key individuals at the Center; and become familiar with the Life Sciences industry contractors. Location: JSC TIME: Summer, 2-4 weeks in July of 1st year.

Instructor(s): Chuck Lloyd, Ph.D., NASA JSC

INTRODUCTION TO AEROSPACE MEDICINE- I

An overview of the history and challenges of the specialty of Aerospace Medicine will be presented in lecture/seminar format during twice weekly sessions in the first two months of the fellowship. Emphasis will be given to medical support and participation in manned spaceflight operations and research. Lectureers and seminar facilitators will be Space Medicine Fellowship faculty and invited guests with experience or significant expertise in the topic of the day. Location: UTMB; TIME: Summer, 2 - 3 hours per week for 6-12 weeks.

Instructor(s): Clarence Jernigan, M.D., Associate Professor, UTMB

SPACE PHYSIOLOGY

An in-depth study of aerospace physiology topics with a focus on space physiology and our current understanding of human adaptation to the zero-gravity environment. Students will have the opportunity to meet with NASA experts in various aspects of space physiology. Two months will be spent in each discipline area, with required reading, lab orientation, and discussion sessions with experts. Location: UTMB/NASA; TIME: yearlong course in the first year; Summer, Fall/Winter, Spring

Instructor(s): Suzanne Fortney, Ph.D., NASA JSC

SELECTED TOPICS "GRAND ROUNDS" IN SPACE MEDICINE AND MEDICAL RESEARCH

This course has a "grand rounds" format and meets twice a month, alternating at UTMB and at NASA/JSC. TIME: 2 hours once a month; *Fall, Winter/Spring*

Instructor(s): Patrick McGinnis, M.D., Instructor, UTMB

INTRODUCTION TO AEROSPACE MEDICINE - II (PRIMARY COURSE IN AEROSPACE MEDICINE)

This operationally-focused course is 7 weeks long and takes place at the School of Aerospace Medicine at Brooks AFB in San Antonio. Students must pass a class III physical examination for participation in the survival training, flight training, hyperbaric chamber, and centrifuge included in the course. At the end of the 6-week course, students receive their Flight Surgeon Wings. Optional additional 2-week course in Hyperbaric Medicine. Fellows who already have taken this course or the equivalent may develop an elective for this time period at NASA or UTMB. Location: Brooks AFB, San Antonio; TIME: 7 weeks; *Fall, Winter/Spring*

Instructor(s): USAFSAM Instructors

SPACE MEDICINE RESEARCH (MMSC #6097)

Fellows are expected to develop a specific research project from concept to protocol writing, budget development, etc. Each Fellow will be assigned a mentor during the first 6 months and will meet with the mentor weekly until a committee for the Fellow's project is composed. Location: UTMB; TIME: 1 1/2 hours per week; *Fall, Winter/Spring, Summer*

Instructor(s): Patricia A. Santy, M.D. and Thomas Blackwell, M.D., Associate Professors, UTMB

RESEARCH DESIGN AND SCIENTIFIC THINKING

Fundamentals of research/experimental design, including: design of experiments; data collection; data analysis; ethical issues in medical research. Location: UTMB; TIME: *Summer*

Instructor(s): Sheryl Bishop, Ph.D., Assistant Professor, UTMB

SPACE MEDICINE - I

This course is held in January - March of the first year. The objective to develop an understanding of the operational practice of space medicine. The course includes a 1 month rotation in the Flight Medicine Clinic at JSC; a case presentation to the Aerospace Medicine Board; and discussion sessions with experts in crew selection, crew certification, mission support, aeromedical transport, EMS, Training and simulations, EVA, and U.S.- Russian space perspectives, space countermeasures, dental, ENT, and ophthalmology. The Fellow will become familiarized with Shuttle and Station Operations. Location: NASA-JSC; TIME: *Winter*, 3 months, Jan-Feb of first year.

Instructor(s): Michael Barratt, M.D., NASA JSC

BIOSTATISTICS AND EPIDEMIOLOGY - I and II

This course is specially designed for Fellows to follow the Research Design and Scientific Thinking course, and will provide the Fellow with a basic understanding and use of state of the art statistical techniques in the study of health and biomedical problems; as well as providing an introduction to the theory and practice of epidemiology. Location: UTMB; TIME: *Fall/Winter, Spring*

Instructor(s) - James Hokanson, Ph.D. and Elbert Whorton, Ph.D., Professors, UTMB.

PHYSIOLOGICAL TRAINING AND ENVIRONMENTAL MEDICINE

The Fellow will complete the physiological training course and develop an understanding of issues and concerns for space environmental medicine. The course includes familiarization with the JSC WETF and KC-135 zero-gravity flights, as well as discussions with experts in hyperbaric medicine and diving medicine. Location: NASA JSC; TIME: *Spring*

Instructor(s): Charles Lapinta, M.D. and William Norfleet, M.D., NASA JSC

SPECIAL PROBLEMS IN SPACE LIFE SCIENCES RESEARCH DESIGN

The course will deal with the unique problems of designing experiments for the space environment, including operational constraints on research; small subject size etc. Methods of resolving these problems and strengthening the external validity of the research will be discussed. Location: UTMB or NASA/JSC; TIME:

Spring

Instructor(s): Sheryl Bishop, Ph.D., Assistant Professor, UTMB

YEAR 2

ADVANCED TOPICS IN SPACE MEDICAL RESEARCH

Course will be taught by active researchers in space medicine. Fellows will be exposed to the most recent advances in space medical research. The course will be a series of advanced seminars (2 hours each) focusing on specialty areas of space medicine, including: neurovestibular changes in space; musculoskeletal concerns; cardiovascular; psychological and behavioral; life support; Environmental Health; Hypobaric medicine; Surgery and Trauma in space.

Location: NASA; TIME: *Winter/Spring*

Instructor(s): NASA Faculty

OPERATIONAL SPACE MEDICINE-II

This course is offered to those Fellows whose primary focus is on space medical operations or operational research. For 6 months during the second year of the Fellowship, the student will work at the Johnson Space Center Flight Medicine Clinic and participate in actual space missions and flight crew medical care. Only those Fellows with an operational focus will be expected to take this course.

Location: NASA/JSC; TIME: *Summer, Fall/Winter, Spring* (for 6 months)

Instructor(s): NASA Faculty

SPACE MEDICINE THESIS (MMSC #6396)

All Fellows are required to write a thesis summarizing their research. This course is taken throughout the second year to assist the Fellow in focusing on organizing and writing the thesis. Location: UTMB; TIME: *Summer, Fall/Winter, Spring*

Instructor(s): Thomas Blackwell, M.D. and Patricia A. Santy, M.D., Associate Professors, UTMB

Didactic Curriculum, General Catalog Courses (optional)

STATISTICAL METHODOLOGY I (PMCH #6443)

Course objective is to provide the student with a basic understanding of the use and interpretation of classical and state-of-the-art statistical techniques particularly in the study of health and biomedical problems. Location: UTMB *Fall/Winter*

Instructor(s): James Hokanson, Ph.D. and Elbert Whorton, Ph.D., Professors, UTMB

STATISTICAL METHODOLOGY II (PMCH #6344)

Continuation of the first course with emphasis on the statistical design and analysis of experiments. Course will be individualized for the Space Medicine Fellows. Location: UTMB *Spring*

Instructor(s): James Hokanson, Ph.D. and Elbert Whorton, Ph.D., Professors, UTMB

INTRODUCTION TO EPIDEMIOLOGY (PMCH #6330)

This course provides an introduction to the theory and practice of epidemiology. The historical development of epidemiologic research, theories of disease causation, epidemics and their prevention, measures of disease frequency, etc. Location: UTMB *Spring*

Instructors: UTMB, Faculty

Other Training Activities

Fellows will have the opportunity of traveling to the Kennedy Space Center to witness and possibly participate in activities prior to launch; and to Edwards Air Force Base for landings. This will all be arranged at appropriate times during the two years. Fellows will also be able to attend the NASA JSC Flight Surgeon Training Course.

Fellows will also be expected to attend the Aerospace Medical Association meetings which are held in May of every year.

Participation in the International Space University Summer Session is optional during the 2nd summer. Other activities with the ISU will be developed.

Also, there are a number of optional UTMB courses available to the interested Fellow, including Environmental Toxicology, Environmental Health etc. These courses can be found in the UTMB General Catalog in the Department of

Preventive Medicine and Community Health (PMCH). Each Fellow will work closely with his or her advisor to determine any appropriate electives which will enhance the Fellow's experience.

An outline of the first and second years is presented in Table 1.

Space Medicine Faculty

All Individuals responsible for teaching Fellowship courses will have an academic appointment at the University of Texas Medical Branch. Faculty are listed in Table 2.

Visiting Faculty to support the Fellowship courses will be recruited from the following sources:

- UTMB Full Time and Part-Time Faculty
- NASA Johnson Space Center Medical Research and operations; Man-Systems division
- Brooks AFB School of Aerospace Medicine and affiliated Faculty
- Other University-affiliated faculty
- International space community lecturers

Texts and Reading Material

The following texts and journals are recommended:

1. Fundamentals of Aerospace Medicine. DeHart, R.L. (ed.), Lea & Febiger, Philadelphia, 1985.
2. Aerospace Medicine. Armstrong, H.G. (ed.), The Williams & Wilkins Company, Baltimore, 1961.
3. Space Physiology and Medicine. Nicogossian, A.E. (ed.) Lea & Febiger, Philadelphia, Second Edition, 1989.
4. Foundations of Space Biology and Medicine, Calvin M. and Gazenko, O.G. (eds.), National Aeronautics and Space Administration, Washington, 1975, Volume 1.
5. *Aviation, Space and Environmental Medicine* (Journal published monthly by the Aerospace Medical Association).
6. Assorted publications and Journal articles, TBD.

UTMB Clinical Rotations for Fellows

All Fellows will have clinical responsibilities and assignments at UTMB throughout the two years of the Fellowship. These assignments will vary in the amount of time per week (with a minimum of 1/2 day). Assignments will be determined individually with each Fellow, based on his or her preferences, expertise, and interests. The purpose of the clinical assignments is to ensure that the Space Medicine Fellows retain clinical expertise in their specialty area during the Fellowship. Assignments may include (but are not limited to):

- Emergency Medicine
- Hyperbaric Medicine
- Internal Medicine (Clinical Research Center)
- Adult Psychiatry (Clinical Research Center)
- Psychiatric Crisis Clinic
- Outpatient Surgical Clinic
- Outpatient Medicine Clinic
- Outpatient Family Medicine Clinic
- Other specialty clinic

Requirements for completion of the Fellowship

- application to and acceptance in the Graduate Program in Biomedical Sciences at UTMB
- completion of the requirements for the Masters of Medical Science within the Graduate program
- completion of all courses in the Fellowship
- Completion of a thesis based on the original research that the Fellow developed and initiated during the program
- Passing the aerospace physiologist certification exam (AsMA)

FELLOWSHIP PROGRAM ORGANIZATION

Program Directors

The Program Directors are in charge of all activities in the Fellowship. They chair the Executive/Selection Committee and are responsible for the implementation of the curriculum. UTMB Program Director(s) will be a member

of the Full-time UTMB faculty. At least one Program Director will be appointed from the NASA-JSC Medical Sciences Division. They will function as co-chairs. UTMB Program Directors are Thomas Blackwell, M.D., Associate Professor in the Department of Internal Medicine, and Patricia A. Santy, M.D., M.S., Associate Professor in the Department of Psychiatry and Behavioral Sciences. NASA JSC Program Directors are Sam L. Pool, M.D. and Roger Billica, M.D.

Executive Committee/Selection Committee

The Executive Committee is composed of two full-time UTMB Faculty members; two JSC Space and Life Sciences Directorate, MSD representatives, and one USRA representative. The Executive Committee is responsible for developing and/or changing the curriculum each year. Members are also responsible for programmatic or administrative difficulties among the member institutions. The Executive Committee will meet at least twice a year at the direction of the Program Directors.

In January of each year, members of the Executive Committee will serve as the selection committee and arrange for interviews of all the applicants. Members will be responsible for the evaluations and selection of the Fellows. As the Selection Committee, members may designate other individuals from their respective institution to participate in the interview and selection process.

Advisory Committee

The Advisory Committee members will function as the primary advisors for Fellows. Members will review and make recommendations relating to the Fellows' research projects, coursework, and thesis. This committee will be composed of 3-5 faculty members (either UTMB or NASA, or both).

FELLOWSHIP APPLICATION

Requirements for Application

All applicants must be U.S. citizens* (or have a permanent resident visa) with an M.D. or D.O. degree, who have completed clinical residency training. This may include but is not limited to Medicine, Surgery, Emergency Medicine,

Medicine, Psychiatry, Family Practice etc. They must have a license to practice medicine in Texas, or be eligible for an institutional permit by passing the ECFMG. They must be in good health generally, and if they intend to participate in the NASA and USAF portions of the program, they must be able to pass a Class III physical examination (NASA and USAF).

Applicants are expected to have an interest in space biomedical research as well as in academic medicine.

* NOTE: we anticipate that non-U.S. citizens or non-physicians may eventually be able to participate in some aspects of the Fellowship in later years.

Application procedures

Applications for the Fellowship may be obtained by writing:

Thomas Blackwell, M.D.
 UTMB Space Medicine Fellowship Program Director
 Department of Internal Medicine
 UTMB, Galveston 77550
 (409) 772-2654

Fellows supported by Institutions other than UTMB

Any participating institution (e.g., NASA, the Department of Defense, Industry, or any other USRA-affiliated university) may choose to support additional Fellows during the two year course of training. The organization may nominate candidates for the Fellowship directly to UTMB and those individuals will be given priority in selection. Details about financial support and medical-legal requirements for Fellows supported by other organizations will be determined on an individual basis by the Fellowship Director and Executive Committee.

Selection procedures

All applications will be reviewed by the Selection Committee, composed of representatives from UTMB, JSC, and DSLS. Interviews for qualified applicants

will be arranged annually for a start on July 1. Deadline for application will be December 31 of the preceding year. Candidates may submit an application up to two years in advance. Those applications will be kept on file and updated annually, but will not be considered until the year of anticipated matriculation.

Applications will be reviewed by a joint UTMB-NASA Committee and up to five candidates will be invited to come to the Houston area for a two-day interview. One day will be spent at the Johnson Space Center and the other at UTMB. Applicants will be financially responsible for travel and accommodations for the interview. DSLS will assist applicants in making arrangements if necessary.

Finalists will be notified by March 1. If, for any reason they are unable to accept the Fellowship position after it is offered, it will be offered to an alternate. The applicant must then submit another application for subsequent consideration.

Stipend & Benefits

The current salary and benefits for the Fellowship will be those of a PGY-IV (\$29,775 plus insurance and benefits).

Housing for Fellows

Fellows may choose to live in UTMB housing, if available. This expense is the Fellow's responsibility. While at SAM, the Fellow's living expenses will be paid for by the sponsoring institution.

FELLOWSHIP INSTITUTIONAL REQUIREMENTS

Space/Facilities

Fellowship offices will be located in the UTMB Hyperbaric Medicine facility. When Fellows are taking a course or doing research at the Johnson Space Center, office space will be provided by USRA DSLS.

Salaries

Currently two PG-IV salaries are available in the Department of Medicine for incoming Fellows in the program. Additional Fellows may be added when they are supported by other institutions.

Operations Budget

Support for Fellow's research activities and travel during the Fellowship will come out of the Fellowship operations budget. Currently support is being solicited from the Texas Space Grant Consortium and other appropriate in-house and extramural funding sources. Fellows will work with their advisors to identify funding sources for their projects early in the first year of the Fellowship.

Masters of Medical Science Degree (M.M.S.)

Fellows will receive a Masters of Medical Science/Aerospace degree at the completion of the two year Fellowship. Fellows are expected to apply and be accepted into the UTMB Graduate School of Biomedical Sciences after they begin matriculation in the Fellowship. Requirements for the M.M.S. degree include the development of a research project and the writing of a thesis. These activities will be supervised by the Space Medicine Fellowship faculty at UTMB and NASA.

Board Certification in Space Medicine

Currently Space Medicine is not a recognized specialty or sub-specialty. It is the intent of the Fellowship program, however, to pursue specialty certification in this area, so that it may be an option for the future.

TABLE 1 : Curriculum

UTMB / NASA SPACE MEDICINE FELLOWSHIP

YEAR 1

SUMMER

Research Design & Scientific Thinking
(Bishop) - at UTMB

Space Physiology
(Fortney)- at NASA

Introduction to Aerospace Medicine
(Jernigan) - at UTMB

Orientation to NASA JSC
(Lloyd) - at NASA (2-4 weeks)

FALL/WINTER

Biostatistics and Epidemiology I
(Hokanson, Whorton) - at UTMB

Space Physiology
(Fortney) - at NASA

Aerospace Medicine Short Course
(at Brooks AFB, SAM)- 7 weeks

Space Medicine-1 (Jan-Mar)
(Barratt) - at NASA

SPRING

Biostatistics and Epidemiology - II
(Hokanson, Whorton) - at UTMB

Space Physiology
(Fortney) - at NASA

Special Problems in Space Research Design
(Bishop) - at UTMB

Physiological Training & Environmental Med
(LaPlata and Norfleet) - at NASA

UTMB Clinical Rotation

UTMB Clinical Rotation

UTMB Clinical Rotation

YEAR 2

SUMMER

Space Medicine Thesis (MMSC 6398)
(Santý/Blackwell) - at UTMB

Space Medicine Research(MMSC 6097)
(Santý/Blackwell) - at UTMB

Advanced Topics in Space Medicine
(NASA TBD) - at NASA

Space Medicine-II(6 months)
(NASA TBD) - at NASA (ELECTIVE)

UTMB Clinical Rotation

FALL/WINTER

Space Medicine Thesis (MMSC 6398)
(Santý/Blackwell) - at UTMB

Space Medicine Research (MMSC 6097)
(Santý/Blackwell) - at UTMB

Grand Rounds in Space Medicine
(McGlinis) - alternate UTMB/NASA

UTMB Clinical Rotation

SPRING

Space Medicine Thesis (MMSC 6398)
(Santý/Blackwell) - at UTMB

Space Medicine Research (MMSC 6097)
(Santý/Blackwell) - at UTMB

Grand Rounds in Space Medicine
(McGlinis) - alternate UTMB/NASA

UTMB Clinical Rotation

TABLE 2

SPACE MEDICINE FELLOWSHIP FACULTY

University of Texas Medical Branch

Sheryl Bishop, Ph.D.
Thomas Blackwell, M.D.
Michael Bungo, M.D.
William Crump, M.D.
Jeffrey Davis, M.D., M.P.H.
James Hokanson, Ph.D.
Richard Honiker, M.D.
Thomas James, M.D.
Clarence Jernigan, M.D.
Jon Mader, M.D.
Hans Mark, Ph.D.
Patrick McGinnis, M.D.
Patricia Santy, M.D., M.S.

NASA Johnson Space Center

Michael Barratt, M.D.
Roger Billica, M.D.
Al Coats, M.D.
Suzanne Fortney, Ph.D.
Charles LaPinta, M.D.
Charles Lloyd, Ph.D.
William Norfleet, M.D.
Sam Pool, M.D.
Charles Sawin, Ph.D.