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Joe McRoberts
Headquarters, Washington, D.C.
(Phone: 202/755-3680)

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LIFE SCIENCE INVESTIGATIONS CHOSEN FOR SPACE FLIGHTS

NASA has selected 78 life science areas of investigation -- 74 proposals from the United States and four from three foreign nations -- for two life science Spacelab/Space Shuttle flights planned between 1983 and 1985.

Specific investigations will be selected for each mission about two years prior to flight.

The 78 were chosen from about 370 proposed experiments.

The selected investigations include the following:

- Behavior and Performance
- Bioengineering/Technology
- Plant Physiology

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December 13, 1979

- Cellular Biology, Biophysics, Biochemistry, Immunology, Virology and Microbiology
- Developmental Biology, Embryology and Gerontology
- Endocrinology, Metabolism and Nutrition
- Musculo-skeletal and Physiology
- General Physiology and Pharmacology
- Renal, Fluid and Electrolyte Physiology
- Hematology
- Cardiopulmonary and Stress Physiology
- Cardiovascular Physiology and Clinical Medicine
- Vestibular System and Neurophysiology

The 78 principal investigators are from U.S. and foreign universities, private and government organizations and the NASA scientific staff. Foreign countries involved are Australia, Switzerland and the United Kingdom. Each country is responsible for funding its own investigators.

Spacelab is a pressurized Space Shuttle system element designed to be operated by a payload specialist team of up to four persons. It is estimated that 15 to 20 investigations can be accommodated in each life science Spacelab mission. The two missions are planned with an 18-month launch interval. The first launch is scheduled for mid-1983. A few additional life science investigations are expected to go on other Shuttle missions during the same time period.

The life science investigations must comply with flight safety requirements and engineering and management practices specified in NASA guidelines.

Spacelab, funded and built by the European Space Agency, will be carried to and from orbit by the Space Shuttle and remain attached to the orbiter throughout each flight. Spacelab will serve as a laboratory for life science and other investigations in near-Earth orbit for a period of one week to 10 days.

With the advent of the Space Shuttle and availability of standard, space-qualified hardware which can be placed in orbit, repaired, retrieved or replaced, NASA plans to use this capability to reduce payload costs, while making space flight more accessible to a wider range of users.

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Note to Editors:

A list of life science investigators is attached.

PRINCIPAL INVESTIGATORS

Principal Investigator	Area of Investigation
*C. D. Dunn, Ph.D. University of Tennessee, Knoxville	Regulation of Erythropoiesis
D. L. Eckberg, M.D. Virginia Commonwealth University, Richmond	Autonomic Cardiovascular Controls
C. A. Fuller, Ph.D. University of California, Riverside	Thermoregulation in Primates
D. E. Parker, Ph.D. Miami University Oxford, Ohio	Motion Perception Evoked by Oscillating Linear Accelerator
Anne McLaren University College, London	The Role of Gravity in Early Mammalian Development
D. G. Heathcote, Ph.D. University College of South Wales, Cardiff, United Kingdom	The Influence of Zero Gravity on Nutation
R. G. Lindberg, Ph.D. University of California, Los Angeles	Stability of Biorhythms During Weightlessness
J. S. D'Arrigo, Ph.D. University of Hawaii, Honolulu	Decompression Sickness
**Nello Pace, Ph.D. University of California, Berkeley	Metabolism, Body Composition and Cardiovascular Function in Primates
M. P. Hlastala, Ph.D. University of Washington, Seattle	Influence of Gravity on Pulmonary Gas Exchange and Control of Lung Function

*Three experiments in area of investigation.
**Two areas of investigation.

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L. E. Farhi, M.D. State University of New York, Buffalo	Cardiovascular Deconditioning
F. W. Booth, Ph.D. University of Texas, Houston	Deconditioning of Anti-gravity Muscles
A. F. Ryan, Ph.D. University Hospital Medical Center, San Diego, Calif.	Effect of Weightlessness on Fluid Physiology of the Inner Ear
**R. R. Martin, M.D. Baylor College of Medicine, Houston	The Effects of Weightlessness on Leukocyte Chemotaxis
P. K. Bhagat, Ph.D. University of Kentucky, Lexington	Lower Limb Volume Measurements
R. T. Dowell, Ph.D. University of Oklahoma, Oklahoma City	Cardiovascular Deconditioning Correlated With Biochemical and Histological Indices of Cardiac Muscle Function
G. L. Gottlieb, Ph.D. Rush College of Health Sciences, Chicago	The Myotatic Reflex
P. M. Hutchins, Ph.D. Bowman Gray School of Medicine, Winston-Salem, N.C.	Correlation of Macro- and Micro-circulatory Alterations During Weightlessness
X. J. Musacchia, Ph.D. University of Louisville, Kentucky	Renal and Musculo-skeletal Responses to Weightlessness
D. F. Proctor, M.D. Johns Hopkins University, Baltimore	Respiratory Tract Particle Deposition and Clearance in the Space Environment
M. J. Correia, Ph.D. University of Texas, Galveston	Anatomical and Electrophysiological Studies of the Effects of Weightlessness on the Vestibular Apparatus

**Two areas of investigation.

H. A. Leon, Ph.D. NASA Ames Research Center Mountain View, Calif.	The Influence of Space Flight on Red Cell Production
J. Miguel, Ph.D. NASA Ames Research Center	Effects of Weightlessness on Drosophila Reproduction, Development and Aging
M. D. Ross, Ph.D. University of Michigan, Ann Arbor	Effects of Space Travel on Mammalian Gravity Receptors
Augusto Cogoli, Ph.D. Laboratorium fur Biochemie, Zurich, Switzerland	Lymphocyte Proliferation in Weightlessness
M. J. Kluger, Ph.D. University of Michigan, Ann Arbor	Febrile Responses During Space Flight
F. Yoong Hoh, Ph.D. University of Sydney, Australia	Skeletal Myosin Isoenzymes
V. P. Popovic, D.Sc. Emory University, Atlanta, Ga.	Cardiovascular Adaptation to Decreased Gravity
D. R. Young, Ph.D. NASA Ames Research Center	Skeletal Changes During Space Flight
**R. R. Martin, M.D. Baylor College of Medicine, Houston	Effects of Space Flight on Polymorphonuclear Leukocyte Function
W. R. Loewenstein, Ph.D. University of Miami, Florida	Effects of Space Flight on Intercellular Phenomena
A. R. Hargens, Ph.D. University of California, San Diego	Tissue-Fluid Shifts and Muscle Function During Weightlessness
J. W. Tremor, Ph.D. NASA Ames Research Center	The Effects of Weightlessness on the Development of Amphibian Eggs

**Two areas of investigation.

R. E. Herron, Ph.D. Baylor College of Medicine, Houston	Biostereometric Analysis of Body Volume Changes During Sustained Weightlessness
J. D. Fabricant, Ph.D. University of Texas, Galveston	Influence of Space Flight on Cytogenics and Mutagenicity
D. E. Parker, Ph.D. Miami University, Oxford, Ohio	Behavioral and Physiological Changes as a Function of Postural Orientation/Motion Sickness in Space
J. S. Petrofsky, Ph.D. Wright State University, Dayton, Ohio	Isometric Exercise Performance Under Zero-Gravity Conditions
M. F. Reschke, Ph.D. NASA Johnson Space Center, Houston	Sensory Conflict as an Etiological Factor in Space Sickness
A. D. LeBlanc, Ph.D. Technology, Inc. Houston	Bone Growth and Repair
R. J. Gowen, Ph.D. South Dakota School of Mines and Technology, Rapid City	Segmental Fluid Shifts in Humans
B. S. Criswell, Ph.D. NASA Johnson Space Center	The Effects of Space Flight on the Cellular Immune Response of Man
T. D. Stein, Ph.D. University of Pennsylvania, Philadelphia	Protein Metabolism During Space Flight
K. M. Baldwin, Ph.D. University of California, Irvine	Effect of Zero-Gravity Exposure on Biochemical and Metabolic Properties of Skeletal Muscle
W. G. Walker, M.D. Johns Hopkins University, Baltimore	Effects of Weightlessness on Diurnal Pattern on Renin, Aldosterone, and Electrolyte Excretion
L. D. Montgomery, Ph.D. LDM Associates San Jose, Calif.	Decreased Orthostatic Tolerance Accompanying Weightlessness

**P.C. Johnson, M.D. NASA Johnson Space Center, Houston	Countermeasures for Reducing Post-Flight Orthostatic Intolerance
**P.C. Johnson, M.D. NASA Johnson Space Center	Regulation of Blood Volume During Space Flight
D. J. Horrigan, Jr. NASA Johnson Space Center	The Effect of Null Gravity on Nitrogen Washout/Prevention of Decompression Sickness
C. S. Leach, Ph.D. NASA Johnson Space Center	Fluid - Electrolyte Regulation During Space Flight
E. M. Holton, Ph.D. NASA Ames Research Center, Mountain View, Calif.	Effects of Space Flight on Bone Growth
P. S. Cowings, Ph.D. NASA Ames Research Center	Autogenic-feedback Training as a Preventive Method for Space Motion Sickness
S. Abraham, Ph.D. Children's Hospital Medical Center, Oakland, Calif.	Effects of Microgravity on Carbohydrate-Lipid Interconversion
J. B. West, Ph.D. University of California, San Diego	Pulmonary Function During Weightlessness
J. Oyama, Ph.D. NASA Ames Research Center	Mammalian Neonatal Development in Weightlessness
J. T. Jackson NASA Johnson Space Center	Static and Dynamic Anthropometry
H. L. Stone, Ph.D. University of Oklahoma, Oklahoma City	Mechanisms Underlying Fluid Volume Shifts in Zero Gravity
H. Sandler, M.D. NASA Ames Research Center	Cardiovascular Effects of Weightlessness
G. M. Reaven, M.D. Veterans Administration Hospital Palo Alto, Calif.	Insulin Resistance in Space Flight/Effect of Exercise Training

**Two areas of investigation.

G. L. Searle, Ph.D. Veterans Administration Hospital San Francisco	Insulin and Glucose Metabolism in Man
M. C. Moore-Ede, M.D. Harvard Medical School, Boston	Fluid and Electrolyte Homeostasis
A. H. Brown, Ph.D. University of Pennsylvania, Philadelphia	Gravitrophic Response of Plants
D. E. Philpott, Ph.D. NASA Ames Research Center, Mountain View, Calif.	Inflight Monitoring of Retinal and Cerebral Circulation
W. B. Severs, Ph.D. Milton S. Hershey Medical School Hershey, Pa.	Angiotension-Related Changes in Body Hydration
C. A. Mitchell, Ph.D. Purdue University, West Lafayette, Ind.	Influence of Mechanical Vibration on Plant Growth and Development Under Hypogravity Conditions
J. W. Campbell, Ph.D. Rice University, Houston	Adaptive Characterization of Enzymes of Nitrogen Metabolism
C. G. Blomquist, M.D. University of Texas, Dallas	Cardiovascular Adaptation to Zero Gravity
R. L. Popp, M.D. Stanford University, Stanford, Calif.	Cardiovascular Effects of Weightlessness
**S. Ellis, Ph.D. NASA Ames Research Center	Electron Microscopy, Electromyography, and Protease Activity of Mammalian Muscles
**S. Ellis, Ph.D. NASA Ames Research Center	Excretion of 3-Methyl Histidine in Man During Space Flight
A. Bhattacharya, Ph.D. University of Kentucky, Lexington	Prevention of Cardiovascular Deconditioning

**Two areas of investigation.

**Nello Pace, Ph.D. University of California, Berkeley	Effects of Body Size on Mammalian Metabolism in Weightlessness
D. M. Wiberg, Ph.D. University of California, Los Angeles	Pulmonary Blood Flow
L. O. Green, Jr., Ph.D. NASA Ames Research Center, Mountain View, Calif.	Occulomotor Changes in Primates During Prolonged Weightlessness
E. M. Holton, Ph.D. NASA Ames Research Center	Pre- and Post-Natal Development of Stress-Sensitive Skeletal Structures
C. A. Bowles, Ph.D. Hazelton Laboratories America, Inc. Vienna, Va.	Studies of the Immune System Under Weightless Conditions
A. D. Krikorian, Ph.D. State University of New York, Stony Brook	The Effects of Hypogravity on Critical Cellular Events in Plant Development
R. E. Grindeland, Ph.D. NASA Ames Research Center	Effects of Space Flight on Neuroendocrine Functions
M. Tavassoli, M.D. Scripps Clinic and Research Foundation, La Jolla, Calif.	Bone Marrow Repair During Weightlessness

**Two areas of investigation.

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(Index: 20, 22, 36, 37, 39)