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

December 13, 1979
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

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

*Three experiments in area of investigation.  
**Two areas of investigation.
L. E. Farhi, M.D.
State University of New York,
Buffalo

F. W. Booth, Ph.D.
University of Texas,
Houston

A. F. Ryan, Ph.D.
University Hospital Medical
Center, San Diego, Calif.

R. R. Martin, M.D.
Baylor College of Medicine,
Houston

P. K. Bhagat, Ph.D.
University of Kentucky,
Lexington

R. T. Dowell, Ph.D.
University of Oklahoma,
Oklahoma City

G. L. Gottlieb, Ph.D.
Rush College of Health Sciences,
Chicago

P. M. Hutchins, Ph.D.
Bowman Gray School of Medicine,
Winston-Salem, N.C.

X. J. Musacchia, Ph.D.
University of Louisville,
Kentucky

D. F. Proctor, M.D.
Johns Hopkins University,
Baltimore

M. J. Correia, Ph.D.
University of Texas,
Galveston

Cardiovascular Deconditioning
Deconditioning of Anti-
gravity Muscles
Effect of Weightlessness on
Fluid Physiology of the
Inner Ear
The Effects of Weightlessness
on Leukocyte Chemotaxis
Lower Limb Volume Measurements
Cardiovascular Deconditioning
Correlated With Biochemical
and Histological Indices of
Cardiac Muscle Function
The Myotatic Reflex
Correlation of Macro- and
Micro-circulatory Alterations
During Weightlessness
Renal and Musculo-skeletal
Responses to Weightlessness
Respiratory Tract Particle
Deposition and Clearance in
the Space Environment
Anatomical and Electrophysio-
logical 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.

J. Miguel, Ph.D.
NASA Ames Research Center

M. D. Ross, Ph.D.
University of Michigan,
Ann Arbor

Augusto Cogoli, Ph.D.
Laboratorium fur Biochemie,
Zurich, Switzerland

M. J. Kluger, Ph.D.
University of Michigan,
Ann Arbor

Yoong Hoh, Ph.D.
University of Sydney,
Australia

V. P. Popovic, D.Sc.
Emory University,
Atlanta, Ga.

D. R. Young, Ph.D.
NASA Ames Research Center

R. R. Martin, M.D.
Baylor College of Medicine,
Houston

W. R. Loewenstein, Ph.D.
University of Miami,
Florida

A. R. Hargens, Ph.D.
University of California,
San Diego

J. W. Tremor, Ph.D.
NASA Ames Research Center

The Influence of Space Flight on Red Cell Production

Effects of Weightlessness on Drosophila Reproduction, Development and Aging

Effects of Space Travel on Mammalian Gravity Receptors

Lymphocyte Proliferation in Weightlessness

Febrile Responses During Space Flight

Skeletal Myosin Isoenzymes

Cardiovascular Adaptation to Decreased Gravity

Skeletal Changes During Space Flight

Effects of Space Flight on Polymorphonuclear Leukocyte Function

Effects of Space Flight on Intercellular Phenomena

Tissue-Fluid Shifts and Muscle Function During Weightlessness

The Effects of Weightlessness on the Development of Amphibian Eggs

**Two areas of investigation.
R. E. Herron, Ph.D.  
Baylor College of Medicine,  
Houston

J. D. Fabricant, Ph.D.  
University of Texas,  
Galveston

D. E. Parker, Ph.D.  
Miami University,  
Oxford, Ohio

J. S. Petrofsky, Ph.D.  
Wright State University,  
Dayton, Ohio

M. F. Reschke, Ph.D.  
NASA Johnson Space Center,  
Houston

A. D. LeBlanc, Ph.D.  
Technology, Inc.  
Houston

R. J. Gowen, Ph.D.  
South Dakota School of Mines and Technology,  
Rapid City

B. S. Criswell, Ph.D.  
NASA Johnson Space Center

T. D. Stein, Ph.D.  
University of Pennsylvania,  
Philadelphia

K. M. Baldwin, Ph.D.  
University of California,  
Irvine

W. G. Walker, M.D.  
Johns Hopkins University,  
Baltimore

L. D. Montgomery, Ph.D.  
LDM Associates  
San Jose, Calif.

Biostereometric Analysis of Body Volume Changes During Sustained Weightlessness

Influence of Space Flight on Cytogenics and Mutagenicity

Behavioral and Physiological Changes as a Function of Postural Orientation/Motion Sickness in Space

Isometric Exercise Performance Under Zero-Gravity Conditions

Sensory Conflict as an Etiological Factor in Space Sickness

Bone Growth and Repair

Segmental Fluid Shifts in Humans

The Effects of Space Flight on the Cellular Immune Response of Man

Protein Metabolism During Space Flight

Effect of Zero-Gravity Exposure on Biochemical and Metabolic Properties of Skeletal Muscle

Effects of Weightlessness on Diurnal Pattern on Renin, Aldosterone, and Electrolyte Excretion

Decreased Orthostatic Tolerance Accompanying Weightlessness

-more-
**P.C. Johnson, M.D.**  
NASA Johnson Space Center, Houston

**P.C. Johnson, M.D.**  
NASA Johnson Space Center

D. J. Horrigan, Jr.  
NASA Johnson Space Center

C. S. Leach, Ph.D.  
NASA Johnson Space Center

E. M. Holton, Ph.D.  
NASA Ames Research Center, Mountain View, Calif.

P. S. Cowings, Ph.D.  
NASA Ames Research Center

S. Abraham, Ph.D.  
Children's Hospital Medical Center, Oakland, Calif.

J. B. West, Ph.D.  
University of California, San Diego

J. Oyama, Ph.D.  
NASA Ames Research Center

J. T. Jackson  
NASA Johnson Space Center

H. L. Stone, Ph.D.  
University of Oklahoma, Oklahoma City

H. Sandler, M.D.  
NASA Ames Research Center

G. M. Reaven, M.D.  
Veterans Administration Hospital Palo Alto, Calif.

**Two areas of investigation.**

- Countermeasures for Reducing Post-Flight Orthostatic Intolerance
- Regulation of Blood Volume During Space Flight
- The Effect of Null Gravity on Nitrogen Washout/Prevention of Decompression Sickness
- Fluid - Electrolyte Regulation During Space Flight
- Effects of Space Flight on Bone Growth
- Autogenic-feedback Training as a Preventive Method for Space Motion Sickness
- Effects of Microgravity on Carbohydrate-Lipid Interconversion
- Pulmonary Function During Weightlessness
- Mammalian Neonatal Development in Weightlessness
- Static and Dynamic Anthropometry
- Mechanisms Underlying Fluid Volume Shifts in Zero Gravity
- Cardiovascular Effects of Weightlessness
- Insulin Resistance in Space Flight/Effect of Exercise Training

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

**Two areas of investigation.**
**Nello Pace, Ph.D.**
University of California, Berkeley

D. M. Wiberg, Ph.D.
University of California, Los Angeles

L. O. Green, Jr., Ph.D.
NASA Ames Research Center, Mountain View, Calif.

E. M. Holton, Ph.D.
NASA Ames Research Center

C. A. Bowles, Ph.D.
Hazelton Laboratories America, Inc.
Vienna, Va.

A. D. Krikorian, Ph.D.
State University of New York, Stony Brook

R. E. Grindeland, Ph.D.
NASA Ames Research Center

M. Tavassoli, M.D.
Scripps Clinic and Research Foundation, La Jolla, Calif.

**Effects of Body Size on Mammalian Metabolism in Weightlessness**

Pulmonary Blood Flow

Occulomotor Changes in Primates During Prolonged Weightlessness

Pre- and Post-Natal Development of Stress-Sensitive Skeletal Structures

Studies of the Immune System Under Weightless Conditions

The Effects of Hypogravity on Critical Cellular Events in Plant Development

Effects of Space Flight on Neuroendocrine Functions

Bone Marrow Repair During Weightlessness

**Two areas of investigation.**

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