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Space medicine research of the Life Sciences Division, located within the Office of Space Science and Applications of the National Aeronautics and Space Administration, was established to investigate the major physiological, medical, and psychological problems encountered by man as he undertakes space flight. Research in this area seeks to obtain a better definition of each problem and understanding of its underlying mechanisms, and ultimately, a means of resolution and prevention. Programs that support this research are: Space Physiology and Countermeasures, including the disciplines of cardiopulmonary, musculoskeletal, neuroscience, and regulatory physiology; Space Human Factors; Environmental Health; Radiation Health; and Clinical Medicine.

This bibliography contains publications published in 1987 and 1988 resulting from ground-based and flight research supported by these programs. This is the fifth edition in a series of bibliographies of space medicine research. Previous editions in this series cover the years 1980-1982 (NASA CR 3587), 1982-1983 (NASA CR 3739), 1983-1984 (NASA CR 3860), and 1984-1986 (NASA CR 4184).

As part of our continuing interaction with the scientific extramural community, we are pleased to present this bibliography in an effort to stimulate an exchange of information and ideas among scientists working in the different areas of the programs.

We would like to thank the investigators for their cooperation in submitting lists of their publications. We would also like to thank Janice S. Wallace, Janet V. Powers, Katherine J. Dickson, April C. Roy, and F. Ronald Dutcher of GWU for their editorial and technical expertise in the compilation of this bibliography.

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INTRODUCTION

The objective of NASA's Life Sciences programs in space medicine research is to understand — and ultimately to overcome — the physiological, psychological, and sociological obstacles to extended human space flight. The development of suitable countermeasures to physiological deconditioning, protocols to optimize crew performance and productivity, and operational life support systems is critical to achieving this goal.

Programs in this area are Space Physiology and Countermeasures, Space Human Factors, Environmental Health, Radiation Health, and Clinical Medicine. This research is targeted towards four major problems that could threaten to limit the duration of human stays in space: physiological deconditioning, exposure to space radiation, human factors issues inherent in long-term flight, and maintenance of a habitable environment. Basic and applied research is conducted using human subjects, animal models, computer modeling and analog environments and is focused on determining the mechanism of action of space-related effects.

The overall objective of the Space Physiology and Countermeasures Program is to understand the effects of microgravity on the various physiological systems and to develop countermeasures to ameliorate detrimental effects. The program is subdivided into four research disciplines: cardiopulmonary, musculoskeletal, neuroscience, and regulatory physiology. The goals of the cardiopulmonary discipline are to understand the mechanisms of cardiovascular changes that occur in real and simulated weightlessness and upon return to the gravitational environment, and to develop countermeasures, where desirable, to these changes. Specific changes include orthostatic intolerance and aerobic deconditioning upon return to gravity, and a potential increased frequency of cardiac arrythmias during space flight. Research in the musculoskeletal discipline is designed to understand the mechanisms of musculoskeletal changes that occur with real and simulated weightlessness, including muscle atrophy and bone demineralization; to determine acute and long-term responses and health consequences of exposure to microgravity; and to develop and verify countermeasures to reduce the effects of microgravity on the musculoskeletal system and facilitate readaptation to Earth's gravity. The principal objectives of the neuroscience discipline are to understand how sensory information from biological transducers is converted to neural impulses, how these impulses are processed, and how they lead to a motor (behavioral) output. Understanding is sought of acute and long-term neurosensory adaptation to space, in order to develop adequate physiological and performance countermeasures. Ground-based research in support of these goals includes study of mechanisms of the otoliths, semi-circular canals, related reflexes, central nervous system function, and postural control. Research is also being conducted on the causes and correlation of space motion sickness. The regulatory physiology discipline seeks to determine and understand the integrative mechanisms regulating responses to space flight in the following areas: circadian rhythms, fluids and electrolytes, endocrinology, pharmacodynamics, metabolism and nutrition, hematology, and temperature regulation. Research is designed to investigate operational factors and basic mechanisms of adaptation to space flight and to develop possible countermeasures for impaired adaptation.

The goals of the Space Human Factors Program are to develop the knowledge base required to understand behavioral adaptation to space flight — both acute and long-term — and the capabilities and limitations of the crewmembers in the unique environments that will be encountered on future long-duration missions. This requires an in-depth understanding of psychological and behavioral adaptation to space and the ways in which adaptive behaviors influence or affect performance. Particular attention has been paid to identifying and optimizing psychological, psychophysiological, social and behavioral factors which affect the attainment of mission objectives. The program also develops and validates system design requirements, protocols, and countermeasures that ensure the psychological well-being, safety, and enhanced productivity of
space crewmembers. Another area of focus has been the collection of anthropometric data on performance and the integration of such data into models that can predict performance in space. The Environmental Health Program conducts research in three areas: toxicology, microbiology, and pressure and gas compositions. The focus is on both risk assessment and characterization of the spacecraft environment for air and water quality as well as microbial and chemical contamination, all of which may affect crew health.

The Radiation Health Program is designed to understand the biological effects of space radiation and improve evaluation of radiation-induced risks to crew members. Specific areas being studied include molecular-level mechanisms involved in radiation-induced cell transformation and the relationship between mutations and lethal damage caused by radiation. In addition, protection from radiation hazards is being investigated.

The Clinical Medicine Program's goals are to ensure the health and safety of flight crewmembers, prevent an unnecessary rescue, and to increase the probability of success of a necessary rescue. These objectives are being pursued through longitudinal retrospective and prospective studies which attempt to relate changes in physiology and/or pathology to specific factors associated with individual traits of the astronauts and occupational exposure and through a modular inflight medical system known as the Health Maintenance Facility which will provide preventive, diagnostic, and therapeutic capabilities for Space Station.
SPACE PHYSIOLOGY AND COUNTERMEASURES PROGRAM
Cardiopulmonary
Abbond, S.; Cohen*, R.J.; Selwyn, A.; Ganz, P.; Sadeh, D.; Friedman, P.L.
Detection of transient myocardial ischemia by computer analysis of standard and signal-averaged high-frequency electrocardiograms in patients undergoing percutaneous transluminal coronary angioplasty. 

Amano, J.; Thomas, J.X., Jr.; Lavallee, M.; Mirsky, I.; Glover, D.;
Manders, W.T.; Randall, W.C.; Vatner*, S.F.
Effects of myocardial ischemia on regional function and stiffness in conscious dogs.

Arieli, R.; Farhi*, L.E.
Gravity-induced hyperventilation is caused by a reduced brain perfusion.
Respiration Physiology 69: 237-244, 1987. (GWU 10636)

Wagner*, P.D. (West, J.B. = P.I.)
Effects of altitude acclimatization on the alveolar-arterial PO2 difference (A-aPO2) in man (Abstract).

Bender, P.R.; Groves, B.M.; McCullough, R.E.; McCullough, R.G.; Huang, S.Y.;
Hamilton, A.J.; Wagner*, P.D.; Cymerman, A.; Reeves, J.T. (West, J.B. = P.I.)
Chronic hypoxia increases arterial O2 content and decreases exercise leg blood flow (Abstract).

Berger, R.D.; Saul, J.P.; Albrecht, P.; Stein, S.P.; Cohen*, R.J.
Respiratory effects on arterial pressure: A novel signal analysis approach.

Blamick, C.A.; Goldwater*, D.J.; Convertino*, V.A.
Leg vascular responsiveness during acute orthostasis following simulated weightlessness.

Brooks, V.L.; Blakemore, L.J.; Keil*, L.C.
Intravenous vasopressin infusion decreases plasma ACTH concentration in conscious dogs.

Brown, D.R.; Knapp*, C.F.; Randall, D.C.
Microcomputer based nerve traffic analysis system (Abstract).

Buckey*, J.C.; Beattie, J.M.; Nixon, J.V.; Gaffney*, F.A.; Blomqvist*, C.G.
Right and left ventricular volumes in vitro by a new nonegmentometric method.

Buckey*, J.C.; Goble, R.L.; Blomqvist*, C.G.
A new device for continuous ambulatory central venous pressure measurement.

*Asterisk denotes Principal Investigator
Harvey, W.T.; Blomqvist*, C.G.
A new device for ambulatory central venous pressure measurement (Abstract).

Buckey*, J.C.; Peshock, R.M.; Blomqvist*, C.G.
Deep venous contribution to hydrostatic blood volume change in the human leg.

Blomqvist*, C.G.
Effect of physical fitness on the cardiovascular responses to adrenergic agonists (Abstract).

Bungo*, M.W.; Charles*, J.B.; Wolf, D.A.; Seddon, M.R.
Similarity of echocardiographic parameters measured during space flight to preflight supine and standing values (Abstract).

Bungo*, M.W.; Goldwater*, D.J.; Popp*, R.L.; Sandler*, H.
Echocardiographic evaluation of space shuttle crewmembers.

Chan, A.Y.M.; Cheng, M.-L.L.; Keil*, L.C.; Myers, B.D.
Functional response of healthy and diseased glomeruli to a large, protein-rich meal.

Charles*, J.B.; Bungo*, M.W.; Ammerman, B.; Kreutzberg, K.L.; Youmans, E.M.
Hemodynamic alterations during the space shuttle prelaunch posture (Abstract).

Charles*, J.B.; Elton, K.F.; Holt, T.A.; Bungo*, M.W.
Acute hemodynamic responses to weightlessness in humans (Abstract).

Cohen*, R.J.
Noninvasive assessment of cardiorespiratory function and regulation by mathematical analysis of periodic waveforms (Abstract).

Future directions: The theoretical modeling of arrhythmias (Abstract).

Convertino*, V.A.
Aerobic fitness, endurance training, and orthostatic intolerance.
Convertino*, V.A.
Fluid shifts and hydration state: Effects of long-term exercise.

Convertino*, V.A.
Potential benefits of maximal exercise just prior to return from weightlessness.

Convertino*, V.A.; Doerr, D.F.; Eckberg*, D.L.; Fritsch, J.M.; Vernikos-Danellis*, J.
Carotid baroreflex response following 30 days exposure to simulated microgravity (Abstract).

Convertino*, V.A.; Doerr, D.F.; Flores, J.F.; Hoffler*, G.W.; Buchanan*, P.
Leg size and muscle functions associated with leg compliance.

Convertino*, V.A.; Doerr, D.F.; Flores, J.F.; Hoffler*, G.W.; Buchanan*, P.
Physical and physiological factors associated with compliance of the leg (Abstract).

Crenshaw, A.G.; Hargens*, A.R.; Gershuni, D.H.; Rydevik, B.
Wide tourniquet cuffs more effective at lower inflation pressures.

Crenshaw, A.G.; Hargens*, A.R.; Mubarak, S.J.
A new fiber optic ‘transducer-tipped’ catheter for measuring intramuscular pressures (Abstract).

Duling, B.R.; Hogan, R.D.; Langille, B.L.; Lelkes, P.; Segal, S.S.; Vatner*, S.F.; Weigelt, H.; Young, M.A.
Vasomotor control: Functional hyperemia and beyond.

Site-dependent central effects of aldosterone in rats.

Evans, J.M.; Funk, J.N.; Charles*, J.B.; Randall, D.C.; Knapp*, C.F.
Endurance training in dogs increases vascular responsiveness to an α1-agonist.

Farhi*, L.E.
Exposure to stressful environments: Strategy of adaptive responses.
Cardiac volumes in trained older men during lower body negative pressure measured via gated blood pool scanning (Abstract).

Frey*, M.A.B.
Considerations in prescribing preflight aerobic exercise for astronauts.
_Aviation, Space, and Environmental Medicine_ 58(10): 1014-1023, 1987. (GWU 8658)

Frey*, M.A.B.
Impedance cardiography for space physiology (Abstract).

Frey*, M.A.B.; Hoffler*, G.W.
Association of sex and age with responses to lower-body negative pressure.

Frey*, M.A.B.; Lightfoot, J.T.; Lasley, M.L.; Mathes, K.L.; Tomaselli, C.M.; Convertino*, V.A.
Responses to lower-body negative pressure in men of varying strength and aerobic fitness (Abstract).
_Aviation, Space, and Environmental Medicine_ 58(5): 483, 1987. (GWU 8819)

Frey*, M.A.B.; Mathes, K.L.; Hoffler*, G.W.
Aerobic fitness in women and responses to lower body negative pressure.
_Aviation, Space, and Environmental Medicine_ 58(12): 1149-1152, 1987. (GWU 8649)

Fridén, J.; Sfakianos, P.N.; Hargens*, A.R.; Akeson, W.H.
Residual muscular swelling after repetitive eccentric contractions.

Fritsch, J.M.; Kasting, G.A.; Eckberg*, D.L.
Quantification of human carotid baroreceptor-cardiac reflex responses in space (Abstract).

Fritsch, J.M.; Rea, R.F.; Eckberg*, D.L.
Pharmacologic arterial pressure changes rapidly reset human carotid baroreceptor-cardiac reflexes (Abstract).

Fujii, A.; Gelpi, R.; Mirsky, I.; Vatner*, S.
Systolic and diastolic dysfunction during atrial pacing in conscious dogs with left ventricular hypertrophy (Abstract).

Fujii, A.M.; Gelpi, R.J.; Mirsky, I.; Vatner*, S.F.
Systolic and diastolic dysfunction during atrial pacing in conscious dogs with left ventricular hypertrophy.
Fujii, A.M.; Vatner*, S.F.
Baroreflex mechanisms buffering α-adrenergic agonists in conscious dogs.

Gaffney*, F.A.
Spacelab life sciences flight experiments: An integrated approach to the study of cardiovascular deconditioning and orthostatic hypotension.

Geelen, G.; Kravik, S.E.; Hadj-Aissa, A.; Vincent, M.; Sem-Jacobsen, C.W.; Greenleaf*, J.; Gharib, C.
Renal effects of anti-gravity suit inflation in man in relation to cardiovascular and hormonal changes.

Gelpi, R.; Fujii, A.; Vatner*, S.
Augmentation of left ventricular function during the development of hypertension in conscious dogs (Abstract).

Gelpi, R.J.; Hittinger, L.; Fujii, A.M.; Crocker, V.M.; Mirsky, I.; Vatner*, S.F.
Sympathetic augmentation of cardiac function in developing hypertension in conscious dogs.

Goldwater*, D.J.; Convertino*, V.A.
+3Gz tolerance in aerobically-trained and sedentary men after shuttle flight simulation (Abstract).

Goldberger*, A.L.
Nonlinear dynamics, fractals, and sudden cardiac death: New approaches to cardiac monitoring (Abstract).

Goldberger*, A.L.; Rigney, D.R.
Nonlinear dynamics, periodic attractors, and bifurcation behavior in sudden cardiac death syndromes (Abstract).
*Biophysical Journal* 53: 399a, 1988. (GWU 8594)

Goldberger*, A.L.; Rigney, D.R.; Mietus, J.; Antman, E.M.; Greenwald, S.
Nonlinear dynamics in sudden cardiac death syndrome: Heart rate oscillations and bifurcations.

Golin, R.; Gotoh, E.; Keil*, L.; Ganong, W.F.
Role of sympathetic nervous system and circulating vasopressin in the renin response to immobilization in rats (Abstract).

Gott, S.A.; Hargens*, A.R.; Garfin, S.R.; Rydevik, B.L.; Brown, M.D.
Swelling pressure of nucleus pulposus from herniated and intact human intervertebral discs (Abstract).

Greenleaf*, J.E.
Physiology of prolonged bed rest.

Greenleaf*, J.E.
(NASA-TM-101010) (GWU 10675)

Maintenance of peak O$_2$ uptake during 30-day bed rest deconditioning with isotonic and isokinetic exercise training (Abstract).

Effect of longitudinal physical training and water immersion on orthostatic tolerance in men.
*Aviation, Space, and Environmental Medicine* 59(2): 152-159, 1988. (GWU 8677)

Greenleaf*, J.E.; Hinghofer-Szalkay, H.G.
Measurement of human blood and plasma volumes: The use of radioiodine can be avoided.

Effect of vasopressin blockade on blood pressure during water deprivation in intact and baroreceptor-denervated conscious dogs.

Gregory, L.C.; Quillen, E.W., Jr.; Keil*, L.C.; Reid, I.A.
Effect of baroreceptor denervation on the inhibition of renin release by vasopressin.

Guy*, H.J.; Prisk*, G.K.; West*, J.B.
Pulmonary function in microgravity: Spacelab 4 and beyond.

Guy*, H.J.B.; Prisk*, G.K.; Reed, J.W.; West*, J.B.
Intrabreath respiratory exchange ratio during head-out water immersion (Abstract).
Guy*, H.J.B.; Prisk*, G.K.; West*, J.B.
Spacelab lung function test system (Abstract).
In: *Space Life Sciences Symposium: Three Decades of Life Science Research in Space*, Washington, DC, June 21-26, 1987, p. 84. (GWU 8430)

Limitation of O2 uptake in working muscle due to the presence of carbon monoxide in blood (Abstract).

Hargens*, A.R.
Comparative aspects of interstitial fluid balance.

Hargens*, A.R.
New fiber optic "transducer-tipped" catheter for optimizing exercise of antigravity muscles (Abstract).
*Aviation, Space, and Environmental Medicine* 59(5): 482, 1988. (GWU 9333)

Hargens*, A.R.; Akeson, W.H.; Mubarak, S.J.
Tissue fluid pressures: From basic research tools to clinical applications (Abstract).

Hargens*, A.R.; Mahmood, M.
Decreased swelling pressure of rat nucleus pulposus associated with simulated weightlessness (Abstract).

Harris, R.T.; Dudley, G.A. (Convertino, V.A. = P.I.)
The distribution of ammonia and of lactate in blood is altered with exercise (Abstract).

Harrison, M.H.; Silver, J.; Keil*, L.; Wade, C.E.; Greenleaf*, J.E.
Plasma volume and endocrine responses to water immersion with intermittent positive-pressure breathing in men.

Hilton, F.; Lightfoot, T.; Fortney*, S.
Correlation between VO2 max and change in leg circumference during lower body negative pressure (Abstract).

Hilton, F.; Lightfoot, T.; Tankersley, C.; Ehrlich, W.; Fortney*, S.
Leg circumference dynamics during repeated lower body negative pressure (Abstract).

Hinghofer-Szalkay, H.; Greenleaf*, J.E.
Continuous monitoring of blood volume changes in humans.

Hinghofer-Szalkay, H.; Harrison, M.H.; Greenleaf*, J.E.
Early fluid and protein shifts in men during water immersion.
Hinghofer-Szalkay, H.; Kravik, S.E.; Greenleaf*, J.E.
Effect of lower-body positive pressure on postural fluid shifts in men.

Hinghofer-Szalkay, H.G.; Haas, G.M.; Greenleaf*, J.E.
Influence of changing Focell-ratio on computed mass density of fluid exchanged between intra- and extravascular spaces (Abstract).

Hoffler*, G.W.; Frey*, M.A.; Convertino*, V.A.
Hydration effects on the cardiovascular system (Abstract).

Hoffler*, G.W.; Frey*, M.A.B.; Convertino*, V.A.
Effect of hydration on hemodynamic responses to lower body negative pressure (Abstract).

Hogan, M.C.; Roca, J.; Wagner*, P.D.; West*, J.B.
Effect of severe hypoxemia on skeletal muscle metabolism and function during maximal work (Abstract).

Hogan, M.C., Roca, J.; Wagner*, P.D.; West*, J.B.
Evidence for peripheral tissue oxygen diffusion limitation of maximal oxygen uptake in in-situ isolated dog gastrocnemius (Abstract).

Hogan, M.C., Roca, J.; Wagner*, P.D.; West*, J.B.
Limitation of maximal oxygen uptake and performance by acute hypoxia in dog muscle in situ.

Hogan, M.C.; Roca, J.; Wagner*, P.D.; West*, J.B.
Muscle fatigue and acid-base balance during equal O₂ delivery but different blood flows in canine gastrocnemius in situ (Abstract).

Microvascular adaptation to chronic hydralazine administration in the unanesthetized rat (Abstract).

Hutchins*, P.M.; Marshburn, T.H.; Smith*, T.L.; Osborne, S.W.; Lynch, C.D.; Maultsby, S.J.
Correlation of macro and micro cardiovascular function during weightlessness and simulated weightlessness.

Joyner, M.J.; Tipton*, C.M.; Overton, J.M.
Influence of simulated weightlessness on select cardiovascular parameters: Preliminary results (Abstract).
Kapitan, K.S.; Wagner*, P.D.
Information content of multiple inert gas elimination measurements.

Kaplan, D.T.; Smith, J.M.; Rosenbaum, D.S.; Cohen*, R.J.
On the precision of automated activation time estimation.

Kaplan, D.T.; Smith, J.M.; Saxberg, B.E.H.; Cohen*, R.J.
Nonlinear dynamics in cardiac conduction.

Kasting, G.A.; Eckberg*, D.L.; Fritsch, J.M.; Birkett, C.L.
Continuous resetting of the human carotid baroreceptor-cardiac reflex.

Kato, K.D.; Philpott*, D.; Stevenson, J.
A simple method to improve heart fixation with ice water (Abstract).

Kirby, D.A.; Vatner*, S.F.
Enhanced responsiveness to carotid baroreceptor unloading in conscious dogs during development of perinephritic hypertension.

Klingbeil, C.K.; Keil*, L.C.; Chang, D.; Reid, I.A.
Effects of CRF and ANG II on ACTH and vasopressin release in conscious dogs.

Knight, D.; Shen, Y.T.; Young, M.; Vatner*, S.
Cholinergic coronary vasoconstriction in conscious calves (Abstract).

Knight, D.R.; Shen, Y.T.; Thomas, J.X., Jr.; Randall, W.C.; Vatner*, S.F.
Sympathetic activation induces asynchronous contraction in awake dogs with regional denervation.

Knight, D.R.; Thomas, J.X., Jr.; Randall, W.C.; Vatner*, S.F.
Effects of left circumflex coronary flow transducer implantation on posterior wall innervation.

Knight, D.R.; Vatner*, S.F.
Calcium channel blockers induce preferential coronary vasodilation by an \( \alpha_1 \)-mechanism.

Kravik, S.E.; Geelen, G.; Hadj-Aissa, A.; Sem-Jacobsen, C.N.;
Greenleaf*, J.E.; Gharib, C.
Effects of anti-gravity suit inflation on kidney function (Abstract).

Kregel, K.C.; Taylor, J.A.; Tipton*, C.M.; Seals, D.R. 
Thermoregulatory and cardiovascular (CV) responses to passive heating in Fisher 344 rats (Abstract). 

Kreutzberg, K.L.; Charles*, J.B.; Bungo*, M.W. 
Evaluation of a device for noninvasive estimation of central venous pressure during space flight (Abstract). 

Eckberg*, D.L.; Blomqvist*, C.G. 
Physical fitness and orthostatic tolerance: The role of the carotid baroreflex (Abstract). 

Ludwig, D.A.; Convertino*, V.A.; Goldwater*, D.J.; Sandler*, H. 
Logistic risk model for the unique effects of inherent aerobic capacity on +Gz tolerance before and after simulated weightlessness. 

Madwed, J.B.; Albrecht, P.; Mark, R.G.; Cohen*, R.J. 
Low frequency (0.05 Hz) oscillations (LFO) in arterial blood pressure (ABP) and heart rate (HR): A simple computer model (Abstract). 

Martin, W.H., III; Montgomery, J.; Snell, P.G.; Corbett, J.R.; Sokolov, J.J.; 
Buckey*, J.C.; Maloney, D.A.; Blomqvist*, C.G. 
Cardiovascular adaptations to intense swim training in sedentary middle-aged men and women. 

Increased synthesis and release of atrial peptide during DOCA escape in conscious dogs. 
Metzler, C.H.; Keil*, L.C.; Ramsay, D.J.
Atrial peptide (AP) infusion does not inhibit the water intake (WI) or vasopressin (AVP) responses to hypertonic saline infusion in conscious dogs (Abstract).

Moore, T.P.; Thornton*, W.E.
Space shuttle inflight and postflight fluid shifts measured by leg volume changes.
*Aviation, Space, and Environmental Medicine* 58(9, Suppl.): A91-A96, 1987. (GWU 8091)

Morita, H.; Nishida, Y.; Motochigawa, H.; Uemura, N.; Hosomi, H.; Vatner*, S.F.
Opiate receptor-mediated decrease in renal nerve activity during hypotensive hemorrhage in conscious rabbits.

Mubarak, S.J.; Hargens*, A.R.; Karkal, S.S.
Coping with the diagnostic complexities of the compartment syndrome.

Cardiac nerves prevent functional desensitization to norepinephrine in the intact, conscious dog (Abstract).

Olszowka*, A.J.; Rahn, H.
Alveolar and mixed venous oxygen tensions during rapid loss of aircraft cabin pressure (Abstract).

Overton, J.M.; Joyner, M.J.; Tipton*, C.M.
Reductions in blood pressure after acute exercise in hypertensive rats.

Overton, J.M.; Stump, C.S.; Beaulieu, S.; Tipton*, C.M.
Influence of single-hindlimb weight bearing on iliac blood flow during simulated weightlessness (Abstract).

Overton, J.M.; Tipton*, C.M.

Overton, J.M.; Tipton*, C.M.
Influence of simulated weightlessness on maximal VO₂ of untrained rats.
*Physiologist* 30(1, Suppl.): S96-S97, 1987. (GWU 9503)

Overton, J.M.; Tipton*, C.M.
Simulated weightlessness effects on hemodynamic responses of rats to submaximal exercise (Abstract).

The study of ventilation distribution in D-2 mission (Abstract).
Parra, B.; Buckey*, J.; DeGraff, D.; Gaffney*, F.A.; Blomqvist*, C.G.
Echocardiographic measurements of left ventricular mass by a non-geometric method.
*Aviation, Space, and Environmental Medicine* 58(9, Suppl.): A64-A68, 1987. (GWU 8094)

Intra-articular pressure during continuous passive motion: Evidence of physiologic compartmentalization within the human knee (Abstract).

The curved tourniquet cuff allows lower inflation pressure for arterial occlusion and may decrease tourniquet morbidity.

Pendergast, D.R.; Bascom, D.; Farhi*, L.E.
Cardiovascular responses to six hours of head down tilt (Abstract).

Pendergast, D.R.; Farhi*, L.E.
Cardiovascular responses to a simulated shuttle launch profile (Abstract).

Pendergast, D.R.; Claybaugh, J.; Farhi*, L.E.
Cardio-renal-hormonal integration during head down tilt (Abstract).

Pendergast, D.R.; Olszowka*, A.J.; Rokitka*, M.A.; Farhi*, L.E.
Gravitational force and the cardiovascular system.

Pendergast, D.R.; Olszowka*, A.J.; Rokitka*, M.A.; Farhi*, L.E.
Biomedical support of man in space.

Poole, D.C.; Mathieu-Costeillo, O.; West*, J.B.
Effect of exercise training on capillary orientation (Abstract).

Popovic*, V.
Adaptation to restraint in the rat.
*Physiologist* 31 (1, Suppl.): S65-S66, 1988. (GWU 9295)

Popovic*, V.; Honeycutt*, C.
Chronic cannulation of aorta and of ventricle of the right heart in rats: Eighty four day study (Abstract).
Popovic*, V.; Honeycutt*, C.
Plasma stress hormones in resting rats: Eighty four day study (Abstract).

Prisk*, G.K. (West, J.B. = P.I.)
Matching of mass spectrometer and flowmeter signals (Abstract).

Prisk*, G.K.; Guy*, H.J.B.; West*, J.B.
Acute changes in lung function caused by head-out water immersion (Abstract).

Prisk*, G.K.; Guy*, H.J.B.; Reed, J.W.; West*, J.B.
Blood redistribution during head-out water immersion (Abstract).

Prisk*, G.K.; McKinnon, A.E. (West, J.B. = P.I.)
Estimation of amount of stationary pulmonary blood from carbon monoxide uptake measurements.

Prisk*, G.K.; McKinnon, A.E. (West, J.B. = P.I.)
A modeling approach to the estimation of CO diffusing capacity.

Ramsay, D.J.; Thrasher, T.N.; Keil*, L.C.
Neurohumoral influences on vasopressin.

Vasopressin, the renal nerves, and renin secretion.

Tissue diffusion limitation of VO2 max in normal man (Abstract).

Optimizing tourniquet design for orthopedic surgery in bloodless field (Abstract).

Altered cardiac repolarization in some victims of sudden infant death syndrome.
Sandier*, H.; Krotov, V.P.; Hines, J.; Magadev, V.S.; Benjamin, B.A.; Badekeva, A.M.; Halpryn, B.M.; Stone, H.L.; Krilov, V.S.

Sandier*, H.; Krotov, V.P.; Hines, J.; Magedov, V.P.; Halpryn, B.; Arnautov, L.N.; Illyin, E.A.; Gazenko, O.G.
Blood pressure (BP) and flow (BF) to the head during Cosmos 1667 (Abstract). *Aviation, Space, and Environmental Medicine* 58(5): 491, 1987. (GWU 9693)

Sandier*, H.; Popp*, R.L.; Harrison, D.C.

Saul, J.P.; Albrecht, P.; Berger, R.D.; Cohen*, R.J.


Saul, J.P.; Rea, R.F.; Berger, R.D.; Eckberg*, D.L.; Cohen*, R.J.

Scheuer, D.A.; Thrasher, T.N.; Keil*, L.C.; Ramsay, D.J.

Severs, W.B.; Keil*, L.C.; Wurpel, J.N.D.; Dundore, R.L.
Cerebrospinal fluid pressure of conscious rats: Effects of artificial CSF, angiotensin, and vasopressin infusions.

Aspects of cerebrospinal fluid pressure control in conscious rats during central infusions of angiotensin and vasopressin.

Shannon, R.P.; Hittinger, L.; Gelpi, R.; Mirsky, I.; Vatner*, S.F.
Inotropic response to prenalterol is preserved despite increased wall stress early in hypertension (Abstract). *Physiologist* 31(4): A70, 1988. (GWU 10792)
Sheehan, D.W.; Klocke, R.A.; Farhi*, L.E.
Non-invasive on-line measurement of regional pulmonary hypoxic vasoconstriction in the conscious animal (Abstract).

Shen, Y.-T.; Knight, D.R.; Thomas, J.X., Jr.; Vatner*, S.F.
Cardiac receptors do not play a role in mediating enhanced plasma renin activity during hemorrhage in conscious dogs (Abstract).
*Physiologist 31(4): A175, 1988. (GWU 10813)

Effects of ischemic zone cardiac denervation on non-ischemic zone flow and function in conscious dogs (Abstract).

Responses to coronary artery occlusion in conscious dogs with selective cardiac denervation.

Shen, Y.-T.; Knight, D.R.; Vatner*, S.F.; Thomas, J.X.
Ventricular sympathectomy fails to preserve regional myocardial function and improve myocardial blood flow during coronary artery occlusion in conscious dogs (Abstract).

Shykoff, B.E.; Swanson, H.T. (Farhi, L.E. = P.I.)
A model-free method for mass spectrometer response correction.

Electrical alternans and cardiac electrical instability.

Smith, J.M.; Rosenbaum, D.S.; Cohen*, R.J.
Variability in surface ECG morphology signal or noise?

Smith, M.L.; Welch, W.J.; Rea, R.F.; Bauernfeind, R.A.; Eckberg*, D.L.
Sympathetic nerve responses to single premature ventricular beats in humans (Abstract).

Snell, P.G.; Martin, W.H.; Buckey*, J.C.; Blomqvist*, C.G.
Maximal vascular leg conductance in trained and untrained men.

Srinivasan, R.; Charles*, J.B.; Leonard*, J.I.
Computer simulation analysis of the effects of countermeasures for re-entry orthostatic intolerance (Abstract).
Srinivasan, R.; Leonard*, J.I.; Charles*, J.B.
Complementary role of mathematical modelling in the study of spaceflight cardiovascular physiology.

Starcevic, V.P.; Morrow, B.A.; Farner, L.A.; Keil*, L.C.; Severs, W.B.
Long-term recording of cerebrospinal fluid pressure in freely behaving rats.

Starcevic, V.P.; Morrow, B.A.; Keil*, L.C.; Farner, L.A.; Severs, W.B.
Cerebrospinal fluid pressure (CSF-p) of conscious adult rats (Abstract).

Stewart, D.E.; Guy*, H.J.B.; Prisk*, G.K.; West*, J.B.
High gas mixing efficiency in normal humans (Abstract).

Sud, V.K.; Bungo*, M.W.; Charles*, J.B.; Srinivasan, R.
Computer simulation of the human cardiovascular system under lower body negative pressure.

A porcine model of cauda equina nerve root compression: Electrophysiologic and histologic changes with graded compression.

Tankersley, C.; Smolander, J.; Fortney*, S.
Skin blood flow (SkBF) responses in young (YM) and older men (OM) during exercise in the heat (Abstract).

Tankersley, C.G.; Smolander, J.; Rowe, S.; Drinkwater, D.; Chin, M.; Fortney*, S.
Thermoregulatory responses during short-term exercise in younger and older men with similar maximal aerobic capacities (Abstract).

Thornton*, W.E.; Moore, T.P.; Pool*, S.L.
Fluid shifts in weightlessness.
Aviation, Space, and Environmental Medicine 58(9, Suppl.): A86-A90, 1987. (GWU 8092)

Thrasher, T.N.; Keil*, L.C.
Regulation of drinking and vasopressin secretion: Role of organum vasculosum laminae terminalis.

Thrasher, T.N.; Keil*, L.C.; Ramsay, D.J.
Drinking, oropharyngeal signals, and inhibition of vasopressin secretion in dogs.
Tipton*, C.M.; Overton, J.M.; Joyner, M.J.; Hargens*, A.R.
Local fluid shifts in humans and rats: Comparison of simulation models with actual weightlessness.
*Physiologist* 30(1, Suppl.): S117-S120, 1987. (GWU 9433)

Tomaselli, C.M.; Frey*, M.A.B.; Kenney, R.A.; Hoffler*, G.W.
Hysteresis in response to descending and ascending lower-body negative pressure.

Tomaselli, C.M.; Hoffler*, G.W.; Frey*, M.A.B.
Effect of hydration level on resting systolic and diastolic time measurement (Abstract).

Tomaselli, C.M.; Kenney, R.A.; Frey*, M.A.B.; Hoffler*, G.W.
Cardiovascular dynamics during the initial period of head-down tilt.

Tomaselli, C.M.; Loffek, S.P.; Freeman, M.A.; Frey*, M.A.B.
Relationship of age and cardiovascular response to postural stress (Abstract).

Influence of collateral ventilation on single-breath washout curves.

Gravitational independence of single-breath washout tests in recumbent dogs.

Desensitization to norepinephrine and isoproterenol in conscious dogs (Abstract).

Effects of chronically elevated plasma levels of norepinephrine on cardiac β-adrenergic receptors (Abstract).

One hour of myocardial ischemia in conscious dogs increases β-adrenergic receptors, but decreases adenylate cyclase activity.
*Journal of Molecular and Cellular Cardiology* 20(1): 75-82, 1988. (GWU 8687)

Impaired cardiac muscarinic receptor function in dogs with heart failure.
Vernikos-Danellis*, J.; Dallman, M.F.; Van Loon, G.; Keil*, L.C.
9 α-fluorohydrocortisone and atropine/D-amphetamine as a countermeasure for post-bedrest orthostatic intolerance (Abstract).

Vernikos-Danellis*, J.; Keil*, L.C.; Dallman, M.F.; Van Loon, G.
Comparison of endocrine and autonomic responses to provocative tests (Abstract).
_Aviation, Space, and Environmental Medicine_ 59(5): 467, 1988. (GWU 9911)

Acute hormonal responses to head-down tilt versus supine posture (Abstract).

Wagner*, P.D. (West, J.B. = P.I.)
Tissue diffusion limitation of maximal O2 uptake: The relationship between maximal VO2 and effluent muscle venous PO2 (Abstract).

Effects of fentanyl on vasopressin secretion in human subjects.

West*, J.B.
Assessing pulmonary gas exchange.

West*, J.B.
A century of physiology of extreme altitude (Abstract).

West*, J.B.; Balgos, A.B.; Willford, D.C.
Does polycythemia impair pulmonary gas exchange? (Abstract)

Williams, D.A.; Convertino*, V.A.
Circulating lactate and FFA during exercise: Effect of reduction in plasma volume following exposure to simulated microgravity.
_Aviation, Space, and Environmental Medicine_ 59(11): 1042-1046, 1988. (GWU 9398)

Influences of simulated weightlessness and chemical sympathectomy on the VO2 max of rats (Abstract).

Woodman, O.L.; Vatner*, S.F.
Coronary vasoconstriction mediated by α1 and α2-adrenoceptors in conscious dogs.

Regional cerebral glucose utilization during vasopressin-induced barrel rotations or bicuculline-induced seizures in rats.
Younans, E.M.; Charles*, J.B.; Santy*, P.A.
The relationship between preflight underwater training and space motion sickness (Abstract).

Young, M.; Knight, D.; Shen, Y.T.; Vatner*, S.
Neurally-mediated parasympathetic coronary constriction with nicotine in conscious calves (Abstract).

Young, M.A.; Knight, D.R.; Vatner*, S.F.
Parasympathetic coronary vasoconstriction induced by nicotine in conscious calves.

α-Adrenergic vasoconstriction and receptor subtypes in large coronary arteries of calves.

Young, M.A.; Vatner*, S.F.
Blood flow- and endothelium-mediated vasomotion of iliac arteries in conscious dogs.

Chronic alterations of pial microvasculature by the calcium channel blocker nimodipine (N) (Abstract).
Musculoskeletal


Babij, P.; Booth*, F.W.

Babij, P.; Booth*, F.W.

Banes, A.J.; Link, G.W.; Peterson, H.D.; Yamauchi, M.; Mechanic*, G.L.

Barnett, J.G.; Ellis*, S.

Block, J.E.; Genant*, H.K.; Brooks, G.; Wilmont, C.; Steiger, P.
Models of bone hypertrophy due to intense physical fitness and bone atrophy due to immobilization (Abstract).

Bodwell, C.E.; Stein*, T.P.; Leskiw, M.J.; Judd, J.T.; Schatzhin, A.
Effects of low vs. high fat diets on whole body protein turnover and glucose production in adult men (Abstract).

Booth*, F.W.

Booth*, F.W.; Babij, P.; Muller, G.; Morrison, P.R.
Skeletal muscle gene expression in either suspended or immobilized rat hindlimbs (Abstract).

Buchanan*, P.
Bone and muscle: The structural system in long duration space missions.

Buchanan*, P.; Convertino*, V.; Dudley, G.; Flores, J.F.; Frey*, M.A.B.; Duvoisin, M.
Electrical stimulation to leg muscles in ambulatory and leg casted subjects (Abstract).

Buchanan*, P.; Flores, J.F.; Frey*, M.A.B.; Duvoisin, M.
Electrical stimulation to leg muscles in ambulatory subjects (Abstract).
Cann*, C.E.; Oganov, V.S.
Direct measurement of spinal muscle atrophy in long term spaceflight (Abstract).

Carter*, D.R.; Fyhrie, D.P.; Whalen, R.T.
Trabecular bone density and loading history: Regulation of connective tissue biology by mechanical energy.

Carter*, D.R.; Fyrhrie, D.P.; Whalen, R.T.; Orr, T.E.; Schurman, D.J.; Rapperport, D.J.
Control of chondro-osseous skeletal biology by mechanical energy (Abstract).

Cavanaugh, D.J.; Cann*, C.E.
Bone mineral content in postmenopausal females before and after a 52 week walking program (Abstract).

Chalmers, G.R.; Roy, R.R.; Edgerton*, V.R.
Normal succinate dehydrogenase activity in motoneurons six months after spinal isolation (Abstract).

Chatzidakis, C.; Merritt, J.; Tang, F.C.; Stein*, T.P.
Substrate cycles in obese and lean Zucker rats (Abstract).

Colliander, E.B.; Dudley, G.A.; Tesch, P.A. (Convertino, V.A. = P.I.)
Skeletal muscle fiber type composition and performance during repeated bouts of maximal, concentric contractions.

D'Amelio, F.; Daunton*, N.G.; Fast, T.; Grindeland*, R.
Preliminary findings in the neuromuscular junctions of the soleus muscle of adult rats subjected to simulated weightlessness. Light and electron microscopy (Abstract).

Dillaman*, R.M.; Roer, R.D.; Rutherford, E.
Fluid dynamics in bone (Abstract).

Dudley, G.A. (Convertino, V.A. = P.I.)
Metabolic consequences of resistive-type exercise.

Dudley, G.A.; Gollnick, P.D.; Convertino*, V.A.; Buchanan*, P.
Changes of muscle function and size with bedrest (Abstract).
Dunbar*, B.; Elk, J.; Drake, R.; Gabel, J.; Laine, G.
Analysis of gut lymph flow during portal venous hypertension (Abstract).

Duvoisin, M.R.; Reed, H.E.; Doerr, D.F.; Dudley, G.A.; Buchanan*, P.
A newly developed EMS unit: Some preliminary results demonstrating its efficacy.
(GWU 9349)

Some factors that influence the neuromuscular response to spaceflight and simulation models of spaceflight (Abstract).

Elk, J.; Drake, R.; Dunbar*, B.; Gabel, J.; Laine, G.
Elevation of lymphatic outflow pressure alters lymph composition within the thoracic duct (Abstract).

Ellis*, S.; Riley*, D.A.; Bain, J.L.W.; Barnett, J.G.
Consideration of proteolytic mechanisms of myofilament deletion observed in rat soleus muscle after real and simulated microgravity (Abstract).

Fell, R.D.; Steffen, J.M.; Mook, K.A.; Musacchia*, X.J.
Effect of exercise on rat skeletal muscle exposed to disuse (Abstract).

Fell, R.D.; Steffen, J.M.; Musacchia*, X.J.
Whole body suspension in the rat: Muscle, fluid and cardiovascular effects (Abstract).

Functional changes in single muscle fibers with disuse atrophy (Abstract).

Fitts*, R.H.; Heywood-Cooksey, A.L.
Single fiber enzyme shifts with muscle atrophy (Abstract).

Gardetto, P.R.; Schluter, J.M.; Fitts*, R.H.
Single muscle fiber function following hindlimb suspension (Abstract).

Genant*, H.K. (Ed.)

30
Genant*, H.K.; Steiger, P.; Block, J.E.; Gluer, C.C.; Ettinger, B.; Harris, S.T. 

Geoghegan, T.E.; Ringle, L.M.; Steffen, J.M. (Musacchia, X.J. = P.I.)
Alpha and β-actin mRNA levels in rat hindlimb muscles subjected to suspension disuse (Abstract). 

Glüer, C.C.; Relser, U.J.; Davis, C.A.; Rutt, B.K.; Genant*, H.K.
Vertebral mineral determination by quantitative computed tomography (QCT): Accuracy of single and dual energy measurements. 

Gogia, P.P.; Schneider*, V.S.; LeBlanc*, A.D.; Krebs, J.; Kasson, C.; Pientok, C.
Bed rest effect on extremity muscle torque in healthy men. 

Grindeland*, R.E.; Fast, T.N.; Vasques, M.; Satyanaranyana, T.; Ruder, M.
Does altered growth hormone physiology play a role in muscle atrophy of simulated weightlessness? (Abstract)

Changes in pituitary growth hormone cells prepared from rats flown on Spacelab-3. 

Grindeland*, R.E.; Lundgren, P.R.; Vasques, M.; Fast, T.N.; Buckendahl, P.; Callahan, P.X.
Body composition of rats of two sizes after 7 days exposure to microgravity (Abstract). 

Harris, B.A.; Silver, B.; Greenleaf*, J.E.; Arnaud*, S.B.
Alterations in intracellular calcium during bedrest with and without exercise (Abstract). 

Harris, B.A., Jr.; Fujii, M.; Schneider*, V.
Exercise and the musculoskeletal system: Future considerations for extended space flight (Abstract). 

Hatfaludy, S.; Shansky, J.; Vandenburgh*, H.H.
Glucose uptake and lactate efflux during stretch-relaxation activity of cultured skeletal myotubes (Abstract). 

Hatfaludy, S.; Shansky, J.; Vandenburgh*, H.H.
Skeletal muscle cell growth and creatine kinase release during stretch/relaxation activity in tissue culture (Abstract). 
Hauschka, E.O.; Roy, R.R.; Edgerton*, V.R.
Periodic weight support effects on rat soleus fibers after hindlimb suspension.

Hauschka, E.O.; Roy, R.R.; Edgerton*, V.R.
Size and metabolic properties of single muscle fibers in rat soleus after hindlimb suspension.

Herbert, M.E.; Roy, R.R.; Edgerton*, V.R.
Influence of one-week hindlimb suspension and intermittent high load exercise on rat muscles.

Herbert, M.E.; Roy, R.R.; Hodgson, J.A.; Edgerton*, V.R.
Influence of one week hindlimb suspension and intermittent high load exercise on rat muscles (Abstract).

Hoyt, R.W.; Stein*, T.P.; Egler, J.M.; O'Toole, M.L.; Hiller, W.D.B.
A comparison of the effects of 8 hours of exercise on blood metabolite levels in males and females (Abstract).

Hutton, R.S.; Roy, R.R.; Edgerton*, V.R.
Electrical activation of rat lateral gastrocnemius-soleus (LGS) and tibialis anterior (TA) muscles by simulating temporal patterns observed during treadmill locomotion: Does co-contraction influence step cycle frequency? (Abstract) 

Effect of long term endurance and strengthening exercises on slow and fast muscles of the rat (Abstract).
*Archives of Physical and Medical Rehabilitation* 68(9): 662, 1987. (GWU 8123)

Influence of brief isometric training on isometric and isokinetic strength of the human quadriceps muscle (Abstract).

Doppler evaluation of blood flow velocity in the spinal cord injured subjects (Abstract).
*Archives of Physical and Medical Rehabilitation* 68(9): 657, 1987. (GWU 8956)

Jaweed, M.M.; Hume, E.L; Herbison*, G.J.; Perlmutter, M.N.
Weight lifting induced fasicular pathology in the rat soleus (Abstract).

Jee*, W.S.S.
The dynamic nature of the weight-bearing function of the skeleton (Abstract).


LeBlanc*, A.; Gogia, P.; Schneider*, V.; Krebs, J.; Schonfeld, E.; Evans, H.  
Calf muscle area and strength changes after five weeks of horizontal bed rest.  

LeBlanc*, A.; Schneider*, V.; Krebs, J.; Evans, H.; Jhingran, S.; Johnson*, P.  
Spinal bone mineral after 5 weeks of bed rest.  

LeBlanc*, A.D.; Schonfeld, E.; Schneider*, V.S.; Evans, H.J.; Taber, K.H.  
The spine: Changes in T2 relaxation times from disuse.  

Lee, P.L.; Selzer*, R.H.  
Best estimate of luminal cross-sectional area of coronary arteries from angiograms.  

Lee, P.L.; Selzer*, R.H.; Ellis*, S.  
Determination of leg muscle volume by magnetic resonance imaging (Abstract).  

Levesque, M.J.; Nerem*, R.M.  
The proliferation of sub-confluent endothelial cell monolayers exposed to shear stress (Abstract).  

Newton, T.H.; Duh, Q.Y.; Arnaud*, C.D.; Siperstein, A.E.; Zeng, Q.H.; Clark, O.H.  
Localizing studies in patients with persistent or recurrent hyperparathyroidism.  
*Surgery 102: 917-925, 1987. (GWU 11349)  

Loughna, P.T.; Goldspink, D.F.; Goldspink*, G.  
Effects of hypokinesia and hypodynamia upon protein turnover in hindlimb muscles of the rat.  
*Aviation, Space, and Environmental Medicine 58(9, Suppl.): A133-A138, 1987. (GWU 8671)  

Markowitz, M.E.; Arnaud*, S.; Rosen, J.F.; Thorpy, M.; Laximinarayan, S.  
Temporal interrelationships between the circadian rhythms of serum parathyroid hormone and calcium concentrations.  

Markowitz, M.E.; Rosen, J.F.; Arnaud*, S.; Thorpy, M.  
Interrelationships between circadian rhythms of serum parathyroid hormone (PTH), ionized calcium (Ca), total calcium (CaT) and phosphate (Pi) concentrations (Abstract).  

Martin*, R.B.; Morey-Holton*, E.R.; Sharkey, N.A.; Maese, A.C.  
Spacelab 3 simulation: Bone strength study (Abstract).  

Martin*, R.B.; Paul, H.A.; Bargar, W.L.; Dannucci, G.A.; Sharkey, N.A.  
Effects of estrogen deficiency on the growth of tissue into porous titanium implants.  
Martin, T.P.; Edgerton*, V.R.; Grindeland*, R.E.
Influence of spaceflight on rat skeletal muscle. 

Martinez, D.; Grindeland*, R.; Vailas*, A.C.
Acute adaptation of the cortical bone matrix to weightlessness (Abstract). 

Mechanic*, G.L.; Farb, R.M.; Henmi, M.; Ranga, V.; Bromberg, P.A.; Yamauchi, M.
Structural crosslinking of lung connective tissue collagen in the blotchy mouse. 

Mechanic*, G.L.; Katz, E.P.; Henmi, M.; Noyes, C.; Yamauchi, M.
Locus of a histidine-based, stable trifunctional, helix to helix collagen cross-link: Stereospecific collagen structure of type I skin fibrils. 

Cardiac muscle ultrastructure and cyclic AMP reactions to altered gravity conditions. 

Electrical stimulation as an effective prophylaxis for DVT in SCI subjects (Abstract). 
Archives of Physical and Medical Rehabilitation  68(9): 652-653, 1987. (GWU 8121)

IV glutamine preserves gut smooth muscle and decreases 3-methyl histidine excretion in TPN rats (Abstract). 

Merritt, J.; Witkowski, T.A.; Schluter, M.; Stein*, T.P.
The effect of lipid pre-adaptation on alanine production and nitrogen balance post-trauma in a rat model (Abstract). 

Miller, S.C.; Jee*, W.S.S.
The bone lining cell: A distinct phenotype? 

Mondon, C.E.; Rodnick, K.; Dolkas*, C.; Reaven, G.
Muscle atrophy and decreased sensitivity to insulin during hindlimb suspension (Abstract). 

Mondon, C.E.; Rodnick, K.J.; Dolkas*, C.B.; Reaven, G.M.; Azhar, S.
Decreased insulin sensitivity in suspended rats: Impaired insulin binding and kinase activity in receptors from soleus but not plantaris muscle (Abstract). 
Mook, K.A.; Fell, R.D. (Musacchia, X.J. = P.I.)
Effect of electrical stimulations on atrophying rat skeletal muscle (Abstract).

Nissenson, R.H.; Arnaud*, C.D.
Vitamin D metabolites and bioactive parathyroid hormone levels during Spacelab 2.

Morris, G.S.; Fiore, P.V.; Hamlin, R.L.; Baldwin*, K.M.; Sherman, W.M.
The effects of cocaine and training on cardiac metabolism and isomyosin expression (Abstract).

Morrison, P.R.; Booth*, F.W.
c-myc expression in adult skeletal muscle regrowing from atrophy (Abstract).

Morrison, P.R.; Montgomery, J.A.; Wong, T.S.; Booth*, F.W.
Cytochrome c protein-synthesis rates and mRNA contents during atrophy and recovery in skeletal muscle.

Morrison, P.R.; Muller, G.W.; Booth*, F.W.
Actin synthesis rate and mRNA level increase during early recovery of atrophied muscle.

Murakami, K.; Etlinger*, J.D.
Degradation of proteins with blocked amino groups by cytoplasmic proteases.
Biochemical and Biophysical Research Communications 146(3): 1249-1255, 1987. (GWU 8969)

Musacchia*, X.J.
Endocrine regulation of carbohydrate metabolism in hypometabolic animals.

Musacchia*, X.J.; Steffen, J.M.; Fell, R.D.
Biochemical and histochemical observations of vastus medialis from rats flown in Cosmos 1887
(Experiment K608) (Abstract).

Musacchia*, X.J.; Steffen, J.M.; Fell, R.D.
Disuse atrophy of skeletal muscle: Animal models.

Musacchia*, X.J.; Steffen, J.M.; Fell, R.D.; Dombrowski, M.J.
Comparative morphometry of fibers and capillaries in soleus following weightlessness (SL-3) and
suspension.
Physiologist 31(1, Suppl.): S28-S29, 1988. (GWU 9265)

Musacchia*, X.J.; Steffen, J.M.; Fell, R.D.; Dombrowski, J.
Physiological comparison of rat muscle in body suspension and weightlessness.
Physiologist 30(1, Suppl.): S102-S105, 1987. (GWU 10539)
Covalent labeling of a high-affinity, guanyl nucleotide sensitive parathyroid hormone receptor in canine renal cortex.

Oswald, T.; Riley*, D.A.
Peripheral nerve carbonic anhydrase activity and chronic acetazolamide treatment of rats.

Patterson-Buckendahl, P.; Arnaud*, S.B.; Mechanic*, G.L.; Martin*, R.B.; Grindeland*, R.E.; Cann*, C.E.
Fragility and composition of growing rat bone after one week in spaceflight.

Patterson-Buckendahl, P.E.; Grindeland*, R.E.; Shakes, D.C.; Morey-Holton*, E.R.; Cann*, C.E.
Circulating osteocalcin in rats is inversely responsive to changes in corticosterone.

Philpott*, D.E.
Production of contamination-free apertures (Abstract).

Immunogold labeling of protein kinase in muscle cells (Abstract).

Ultrastructure and cyclic AMP-mediated changes in heart muscle under altered gravity conditions (Abstract).
*Journal of Molecular and Cellular Cardiology* 19(Suppl. IV): S61, 1987. (GWU 8713)

Philpott*, D.E.; Kato, K.; Stevenson, J.; Sapp, W.; Papova, I.; Serova, L.
Myocardial degeneration in rats exposed to 12.5 days of microgravity (Abstract).

Comparative cellular changes in cardiac muscle and salivary glands due to altered gravity (Abstract).

Pierotti, D.J.; Roy, R.R.; Flores, V.; Edgerton*, V.R.
Influence of one week hindlimb suspension and intermittent low load on rat muscles (Abstract).

Polig, E.; Jee*, W.S.S.; Dell, R.B.; Johnson, F.
Microdistribution and local dosimetry of 226Ra in trabecular bone of the beagle.

Rakhmanov, A.S.; Oganov, V.S.; Ternovoy, S.K.; Cann*, C.; Genant*, H.
Mineral density of man's skeletal bones during antioorthostatic hypokinesia (Abstract).
Richards, T.L.; Davis, C.A.; Barker, B.R.; Beinert, W.D.; Genant*, H.K.
Lipid/water ratio of bone marrow measured by phase-encoded proton nuclear magnetic resonance spectroscopy.
Investigative Radiology 22(9): 741-746, 1987. (GWU 8110)

Riley*, D.A.; Bain, J.L.W.; Ellis*, S.; Haas, A.L.
Quantitation and immunocytochemical localization of ubiquitin conjugates within rat red and white skeletal muscles.

Riley*, D.A.; Ellis*, S.; Bain, J.L.W.
Catalase-positive microperoxisomes in rat soleus and extensor digitorum longus muscle fiber types.

Riley*, D.A.; Ellis*, S.; Slocum, G.R.; Satyanarayana, T.; Bain, J.L.W.; Sedlak, F.R.
Hypogravity-induced atrophy of rat soleus and extensor digitorum longus muscles.

Riley*, D.A.; Ellis*, S.; Slocum, G.R.; Slocum, G.R.; Sedlak, F.R.
Segmental necrosis of muscle fibers in the soleus muscles of normal, immunized, and Spacelab-3 rats (Abstract).

Riley*, D.A.; Sanger, J.R.; Matloub, H.S.; Yousif, N.J.; Bain, J.L.W.; Moore, G.H.
Identifying motor and sensory myelinated axons in rabbit peripheral nerves by histochemical staining for carbonic anhydrase and cholinesterase activities.

Riley*, D.A.; Slocum, G.R.
Contraction-free, fume-fixed longitudinal sections of fresh frozen muscle.

Roer, R.D.; Dillaman*, R.M.; Rutherford, E.
Effects of tail suspension on bone growth and calcium balance in juvenile rats (Abstract).

Roer, R.D.; Dillaman*, R.M.; Rutherford, E.
Molecular marker distribution and computer modeling of rat bone fluid dynamics (Abstract).

Roy, R.R.; Bello, M.A.; Bouissou, P.; Edgerton*, V.R.
Size and metabolic properties of fibers in rat fast-twitch muscles after hindlimb suspension.

Roy, R.R.; Hauschka, E.O.; Edgerton*, V.R.
Fiber size and succinate dehydrogenase activity in the rat soleus following hindlimb suspension and periodic mechanical loading (Abstract).
EMG amplitude patterns in rat soleus muscle and medial gastrocnemius following seven days of hindlimb suspension.

Roy, R.R.; Marini, J.F.; Flores, V.; Edgerton*, V.R.
Mechanical and metabolic adaptations in rat fast muscle following seven days of functional overload (Abstract).

Roy, R.R.; Pierotti, D.J.; Baldwin*, K.M.; Edgerton*, V.R.
Effects of cyclical passive stretch in maintaining cat soleus mechanical properties (Abstract).

Salem, G.; Zernicke, R.; Vailas*, A.; Martinez, D.
Biomechanical and biochemical changes in lumbar vertebrae of rapidly growing rats (Abstract).

Sapp, W.; Philpott*, D.; Williams, K.; Kato, K.; Stevenson, J.; Serova, L.
Preliminary report of a comparative study of seminiferous tubular epithelium from rats flown on Cosmos 1887 and SL-3 (Abstract).

Satyanarayana, T.; Grindeland*, R.E.; Vasques, M.; Fast, T.N.
Comparison of growth hormone receptors of male rat livers and muscles (Abstract).

Searle, G.; Hsu, F.; Arnaud*, C.; Clark, O.; Feingold, K.
Lactate kinetics in hyperparathyroidism (Abstract).

effects of a 1-wk spaceflight on morphological and mechanical properties of growing bone.

Mechanical, morphological and biochemical adaptations of bone and muscle to hindlimb suspension and exercise.

Sheng, H.P.; Abrams, S.A.; Schanler, R.J.; Judge, D.; Evans, H.J.; LeBlanc*, A.; Garza, C.
Total body calcium and bone mineralization are compromised in calcium-restricted piglets (Abstract).

Silver, B.B.; Harris, B.A.; Arnaud*, S.B.
A sensitive technique for monitoring intracellular calcium and electrolytes (Abstract).
Silver, B.B.; Harris, B.A.; Greenleaf*, J.E.; Arnaud*, S.B.
Intracellular ion concentrations in bed rest subjects treated with exercise (Abstract).

Sprague, E.A.; Steinbach, B.L.; Nerem*, R.M.; Schwartz, C.J.
Influence of a laminar steady-state fluid-imposed wall shear stress on the binding, internalization, and degradation of low-density lipoproteins by cultured arterial endothelium.

Noninvasive determination of ulnar stiffness from mechanical response: In vivo comparison of stiffness and bone mineral content in humans.

Steffen, J.M. (Musacchia, X.J. = P.I.)
Glucose, glycogen, and insulin responses in the hypothermic rat.

Steffen, J.M.; Fell, R.D.; Musacchia*, X.J.
Muscle atrophy in suspended adult rats: Comparison with juveniles and spaceflight (Abstract).

Steffen, J.M.; Fell, R.D.; Musacchia*, X.J.
Physiological responses during whole body suspension of adult rats.
Physiologist 30(1, Suppl.): S94-S95, 1987. (GWU 8617)

Steffen, J.M.; Musacchia*, X.J.
Disuse atrophy, plasma corticosterone, and muscle glucocorticoid receptor levels.

Steffen, J.M.; Steffen, M.C.; Geoghegan, T.E.; Musacchia*, X.J.; Milsom, W.K.; Burlington, R.F.
Observations of skeletal muscle from a hibernator, Spermophilus lateralis (Abstract).

Steiger, P.; Block, J.E.; Friedlander, A.; Genant*, H.K.
Precise determination of paraspinous musculature by quantitative CT.

Steiger, P.; Genant*, H.K.; Steiger, S.; Block, J.E.; Smith, R.
Quantitative image evaluation techniques for quantitative computed tomography in longitudinal studies (Abstract).

Steiger, P.; Steiger, S.; Ruegsegger, P.; Genant*, H.K.
Two- and three-dimensional quantitative image evaluation techniques for densitometry and volumetrics in longitudinal studies.
Thomason, D.B.; Biggs, R.B.; Booth*, F.W.
Rapid protein synthesis decrease and transient protein degradation increase in atrophying soleus muscle (Abstract).

Thomason, D.B.; Herrick, R.E.; Baldwin*, K.M.
Activity influences on soleus muscle myosin during rodent hindlimb suspension.

Thomason, D.B.; Herrick, R.E.; Surdyka, D.; Baldwin*, K.M.
Time course of soleus muscle myosin expression during hindlimb suspension and recovery.

Thomason, D.B.; Herrick, R.E.; Surdyka, D.; Baldwin*, K.M.
Time course of soleus muscle myosin expression during hindlimb suspension and recovery (Abstract).

Tsika, R.W.; Herrick, R.E.; Baldwin*, K.M.
Effect of anabolic steroids on overloaded and overloaded suspended skeletal muscle.

Tsika, R.W.; Herrick, R.E.; Baldwin*, K.M.
Effect of anabolic steroids on skeletal muscle mass during hindlimb suspension.

Tsika, R.W.; Herrick, R.E.; Baldwin*, K.M.
Interaction of compensatory overload and hindlimb suspension on myosin isoform expression.

Tsika, R.W.; Herrick, R.E.; Baldwin*, K.M.
Subunit composition of rodent isomyosins and their distribution in hindlimb skeletal muscles.

Tsika, R.W.; Herrick, R.E.; Baldwin*, K.M.
Time course adaptations in rat skeletal muscle isomyosins during compensatory growth and regression.

Underwood, J.L.; Arnaud*, S.B.; Fung, P.; Young, D.R.
25 hydroxyvitamin D,1α hydroxylase (1-OH-lase) activity in rhesus monkeys.

Adaptation of bone and tendon to prolonged hindlimb suspension in rats.

Biochemical, morphological and mechanical characteristics of cortical bone in young growing rats exposed to 7 days of spaceflight: Results from the SL-3 flight mission (Abstract).
Vandenburgh*, H.H.
A computerized model system for studying the effects of mechanical activity on cell growth in vitro (Abstract).

Vandenburgh*, H.H.
Simulating exercise in a tissue culture model system: Studies on how tension alters skeletal muscle growth (Abstract).

Vandenburgh*, H.H.; Karlisch, P.
Longitudinal growth of muscle fibers in vitro induced by mechanical activity (Abstract).

Vandenburgh*, H.H.; Karlisch, P.; Farr, L.
Maintenance of highly contractile tissue-cultured avian skeletal myotubes in collagen gel (Abstract).

Vandenburgh*, H.H.; Karlisch, P.; Farr, L.
Maintenance of highly contractile tissue-cultured avian skeletal myotubes in collagen gel.

Vasques, M.; Grindeland*, R.; Martinelli, M.; Furlanetto, R.
Effects of 7 days of microgravity on rat plasma hormone levels (Abstract).

Wiles, H.; Lacy*, J.; Watson, E.; Stabin, M.; LeBlanc*, A.; Bricker, J.
Radiation dose estimates for adults and newborns from tungsten-178: Based on distribution data in adult and infant animals.

Winiarski, A.M.; Roy, R.R.; Alford, E.K.; Chiang, P.C.; Edgerton*, V.R.
Mechanical properties of rat skeletal muscle after hind limb suspension.

Wronska, T.J.; Morey-Holton*, E.R.
Skeletal response to simulated weightlessness: A comparison of suspension techniques.

Structure and formation of a stable histidine-based trifunctional cross-link in skin collagen.

Yamauchi, M.; Mechanic*, G.L.
Cross-linking of collagen.
Yamauchi, M.; Woodley, D.T.; Mechanic*, G.L.
Aging and cross-linking of skin collagen.
*Biochemical and Biophysical Research Communications* 152(2): 898-903, 1988. (GWU 10770)

Yamauchi, M.; Young, D.R.; Chandler, G.S.; Mechanic*, G.L.
Cross-linking and new bone collagen synthesis in immobilized and recovering primate osteoporosis.

Yip, R.K.; Riley*, D.A.
Effects of methylmercury on the motor and sensory innervation of the rat extensor digitorum longus muscle.

Zeman, R.J.; Ludemann, R.; Etlinger*, J.D.
Clenbuterol, a $\beta_2$-agonist, retards atrophy in denervated muscles.

Zeman, R.J.; Ludemann, R.; Etlinger*, J.D.
Slow to fast alterations in skeletal muscle fibers caused by clenbuterol, a $\beta_2$-receptor agonist.

Zeman, R.J.; Ludemann, R.; Silver, G.; Etlinger*, J.D.
Clenbuterol, a $\beta_2$-receptor agonist, retards denervation atrophy of slow skeletal muscle (Abstract).

Zeman, R.J.; Ludemann, R.; Silver, G.; Etlinger*, J.D.
Slow to fast alterations in skeletal muscle caused by clenbuterol, a $\beta_2$-receptor agonist (Abstract).
Anastasio, T.J.; Correia*, M.J.
A frequency and time domain study of the horizontal and vertical vestibuloocular reflex in the pigeon.  

Analysis of vertebrate eye movements following intravitreal drug injections. II. Spontaneous nystagmus induced by picrotoxin is mediated subcortically.  
*Journal of Neurophysiology* 60(3): 1022-1035, 1988. (GWU 10934)

Baird, R.A.; Desmadryl, G.; Fernández, C.; Goldberg*, J.M.
The vestibular nerve of the chinchilla. II. Relation between afferent response properties and peripheral innervation patterns in the semicircular canals.  
*Journal of Neurophysiology* 60(1): 182-203, 1988. (GWU 10763)

Bak, I.J.; Denaro, F.J.; Schneider, J.S.; McCauley, R.B.; Markham*, C.H.
Ultrastructural localization and light microscopic survey of MAO-B containing cells in cat central nervous system (Abstract).  

Baltzley, D.R.; Gower, D.W.; Kennedy*, R.S.; Lilienthal, M.G.
Delayed effects of simulator sickness: Incidence and implications (Abstract).  

Black*, F.O.; Lilly, D.J.; Fowler, L.P.; Stypulkowski, P.H.
Surgical evaluation of candidates for cochlear implants.  

Black*, F.O.; Lilly, D.J.; Peterka*, R.J.; Fowler, L.P.; Simmons, F.B.
Vestibulo-ocular and vestibulospinal function before and after cochlear implant surgery.  

Black*, F.O.; Nashner, L.M.; Peterka*, R.J.
Vestibulospinal changes following singular neurectomy for benign paroxysmal nystagmus.  

Black*, F.O.; Peterka*, R.J.; Elardo, S.M.
Vestibular reflex changes following aminoglycoside induced ototoxicity.  

Borah, J.; Young*, L.R.; Curry, R.E.
Optimal estimator model for human spatial orientation.  

Boyle, R.; Highstein, S.M.; Goldberg*, J.M.
Inputs from regularly and irregularly discharging vestibular nerve afferents to vestibulospinal neurons of the squirrel monkey (Abstract).  

Brizze*, K.R.; Dunlap, W.P.
Local brainstem glucose utilization in the squirrel monkey.  
Phenotype and age differences in blood gas characteristics, electrolytes, hemoglobin, plasma glucose and cortisol in female squirrel monkeys.

Burton, R.R.; Cohen*, M.M.; Guedry, F.E., Jr.
G-induced loss of consciousness.
Aviation, Space, and Environmental Medicine 59(1): 1, 1988. (GWU 10625)

Burton, R.R.; Cohen*, M.M.; Guedry, F.E., Jr.
G-LOC Panel: Questions, answers, and discussion.

Bush, G.A.; Perachio*, A.A.
Responses of medial vestibular nuclei (MVN) neurons during harmonic linear acceleration in decerebrate rats (Abstract).

The use of vestibular models for design and evaluation of flight simulator motion.

Calkins, D.S.; Reschke*, M.F.; Kennedy*, R.S.; Dunlop, W.P.
Reliability of provocative tests of motion sickness susceptibility.
Aviation, Space, and Environmental Medicine 58(9, Suppl.): A50-A54, 1987. (GWU 8680)

Chan, Y.S.; Kasper, J.; Wilson*, V.J.
Dynamics and directional sensitivity of neck muscle spindle responses to head rotation.

Cintron*, N.M.
Inflight assessment of renal stone risk factors.

Cintron*, N.M.
Salivary cortisol levels during the acute phases of space flight.
In: Results of the Life Sciences DSOs Conducted Aboard the Space Shuttle 1981-1986 (Bungo, M.W., Bagian, T.M., Bowman, M.A., Levitan, B.M., Eds.). Houston: NASA, Johnson Space Center, p. 31-34, 1987. (GWU 11226)

Cintron*, N.M.; Chen, Y.-M.
A sensitive radioreceptor assay for determining scopolamine concentrations in plasma and urine.

Cintron*, N.M.; Leach*, C.S.; Krauhs, J.M.; Charles*, J.B.
ANP and other fluid-regulating hormones in spaceflight (Abstract).
Abstract of paper presented at the Third World Congress on Biologically Active Atrial Peptides, New York, June 25-26, 1988, 1 p. (GWU 11357)
Cintron*, N.M.; Putcha, L.; Chen, Y.-M.; Vanderploeg, J.M.
Inflight salivary pharmacokinetics of scopolamine and dextroamphetamine.

Cintron*, N.M.; Putcha, L.; Vanderploeg, J.M.
Inflight pharmacokinetics of acetaminophen in saliva.

Cintron*, N.M.; Putcha, L.; Vanderploeg, J.M.; Chen, Y.M.
Inflight salivary pharmacokinetics of therapeutic agents.

Cohen*, B.
Representation of three-dimensional space in the vestibular, oculomotor, and visual systems.

Changes in visual and vestibular function after canal plugging in the monkey (Abstract).

Cohen*, B.; Henn, V.; Raphan, T.; Georgopoulos, A.; Soechting, J.; Hollerbach, J.
Coding and execution of movement in three dimensions (Abstract).
Society for Neuroscience Abstracts 14: 1042, 1988. (GWU 11076)

Cohen, H.; Cohen*, B.; Raphan, T.
Modification of the vestibuloocular reflex and optokinetic response (Abstract).

Cohen*, M.M.; Welch, R.B.
Hand-eye coordination during and after parabolic flight (Abstract).
Aviation, Space, and Environmental Medicine 59(5): 474, 1988. (GWU 9914)

Colombano, S.; Young*, L.; Wogrin, N.; Rosenthal, D.
Pl-in-a-box: Intelligent onboard assistance for spaceborne experiments in vestibular physiology.

Correia*, M.J.
Electrophysiological evidence for signal processing in the vestibular neuroepithelium.

Correia*, M.J.; Christensen, B.N.; Moore, L.E.
Membrane properties and potassium conductances in adult pigeon vestibular hair cells (Abstract).
Cowings*, P.S.
Autogenic-feedback training: A treatment for motion and space sickness.

Cowings*, P.S.; Naifeh, K.; Thrasher, C.

Cowings*, P.S.; Toscano, W.B.; Kamiya, J.; Miller, N.E.; Sharp, J.C.
Autogenic-feedback training as a preventive method for space adaptation syndrome on Space-lab 3 (Abstract).

Cowings*, P.S.; Toscano, W.B.; Kamiya, J.; Miller, N.E.; Sharp, J.C.

Cowings*, P.S.; Toscano, W.B.; Kamiya, J.; Miller, N.E.; Sharp, J.C.

Crampton, G. (Ed.)

Curthoys, I.S. (Markham, C.H. = P.I.)
Eye movements produced by utricular and saccular stimulation.
*Aviation, Space, and Environmental Medicine* 58(9, Suppl.): A192-A197, 1987. (GWU 8637)

Curthoys, I.S.; Oman*, C.M.
Dimensions of the horizontal semicircular duct, ampulla and utricle in the human.

D'Amelio, F.; Gibbs, M.A.; Mehler*, W.R.; Daunton*, N.G.; Fox, R.A.
 Immunocytochemical localization of glutamic acid decarboxylase (GAD) and substance P in neural areas mediating motion-induced emesis. Effects of vagal stimulation on GAD immunoreactivity.

D'Amelio, F.E.; Mehler*, W.R.; Gibbs, M.A.; Eng, L.F.; Wu, J.-Y.
Immunocytochemical localization of glutamic acid decarboxylase (GAD) and glutamine synthetase (GS) in the area postrema of the cat. Light and electron microscopy.
*Brain Research* 410: 232-244, 1987. (GWU 11340)

Daunton*, N.G.
Opportunities for vestibular research in the space station era.
Daunton*, N.G.

Daunton*, N.G.; Brizée*, K.; Corcoran, M.; Crampton*, G.; D’Amelio, F.; Elfar, S.; Fox, R.
Reassessment of area postrema’s role in motion sickness and conditioned taste aversion.

Davis, J.R.; Vanderploeg, J.M.; Stewart*, D.F.; Santy*, P.A.; Logan*, J.S.
Summary of motion sickness experience on 24 shuttle flights (Abstract).
Aviation, Space, and Environmental Medicine 59(5): 467, 1988. (GWU 9904)

Demer, J.L.; Goldberg*, J.; Porter, F.I.; Jenkins, H.A.; Schmidt, K.
Human adaptation to visual-vestibular conflict induced by telescopic spectacles (Abstract).
In: Space Life Sciences Symposium: Three Decades of Life Science Research in Space, Washington, DC,
June 21-26, 1987, p. 69-71. (GWU 9961)

Diamond, S.G.; Markham*, C.H.
Effect of changes in gravity on ocular counterrolling in upright and tilt positions (Abstract).

Diamond, S.G.; Markham*, C.H.
Ocular torsion in upright and tilted positions during hypo- and hypergravity of parabolic flight.
Aviation, Space, and Environmental Medicine 59(12): 1158-1162, 1988. (GWU 9681)

Diamond, S.G.; Markham*, C.H.; Baloh, R.W.
Ocular counterrolling abnormalities in spasmodic torticollis.
Archives of Neurology 45: 164-169, 1988. (GWU 10884)

Diamond, S.G.; Markham*, C.H.; Baloh, R.W.
Vestibular involvement in spasmodic torticollis: An old hypothesis with new data from otolith testing.

Diamond, S.G.; Markham*, C.H.; Money*, K.E.; Kirienko, N.M.; Watt*, D.G.; Johnson, W.H.
Hypo and hypergravity in parabolic flight affect ocular torsion: How do these changes relate to ocular counterrolling in Iq? (Abstract)

Dickman, J.D.; Correia*, M.J.
High frequency responses of pigeon semicircular canal afferent fibers (Abstract).

Dickman, J.D.; Correia*, M.J.
Otolith afferent polarization vectors and sensitivities in the anesthetized gerbil (Abstract).

Dickman, J.D.; Correia*, M.J.
Semicircular canal afferent response dynamics to rotational and mechanical stimulation (Abstract).
Dickman, J.D.; Reder, P.A.; Correia*, M.J.
A method for controlled mechanical stimulation of single semicircular canals.

DiZio, P.; Lackner*, J.R.
The effects of aging on the nystagmic response to impulsive changes in vestibular and optokinetic stimuli (Abstract).

DiZio, P.; Lackner*, J.R.
The effects of gravitoinertial force level and head movements on post-rotational nystagmus and illusory after-rotation.
*Experimental Brain Research* 70: 485-495, 1988. (GWU 10598)

DiZio, P.; Lackner*, J.R.
The effects of gravitoinertial force level on suppression of vestibular nystagmus by head tilts (Abstract).

DiZio, P.; Lackner*, J.R.; Evanoff, J.N.
The influence of gravitoinertial force level on oculomotor and perceptual responses to Coriolis, cross-coupling stimulation.
*Aviation, Space, and Environmental Medicine* 58(9, Suppl.): A218-A223, 1987. (GWU 8097)

DiZio, P.; Lackner*, J.R.; Evanoff, J.N.
The influence of gravitoinertial force level on oculomotor and perceptual responses to sudden stop stimulation.
*Aviation, Space, and Environmental Medicine* 58(9, Suppl.): A224-A230, 1987. (GWU 8100)

Evanoff, J.M.; Lackner*, J.R.
Influence of maintained ocular deviation on the spatial displacement component of the oculogyral illusion.

Evanoff, J.N.; Lackner*, J.R.
Some proprioceptive influences on the spatial displacement component of the oculogyral illusion.

Fernández, C.; Baird, R.A.; Goldberg*, J.M.
The vestibular nerve of the chinchilla. I. Peripheral innervation patterns in the horizontal and superior semicircular canals.

Changes in the dark focus of accommodation associated with simulator sickness (Abstract).

Fox, R.A.; Keil*, L.C.; Daunton*, N.G.; Crampton*, G.H.; Lucot, J.
Vasopressin and motion sickness in cats.
*Aviation, Space, and Environmental Medicine* 58(9, Suppl.): A143-A147, 1987. (GWU 8087)

Fox, R.A.; McKenna, S. (Daunton, N.G. = P.I.)
Conditioned taste aversion induced by motion is prevented by selective vagotomy in the rat.
Fox, R.A.; Sutton, R.L.; McKenna, S. (Daunton, N.G. = P.I.)
The effects of area postrema lesions and selective vagotomy on motion-induced conditioned taste aversion.
In: Basic and Applied Aspects of Vestibular Function (Hwang, J.C., Daunton, N.G., Wilson, V.J., Eds.).
Hong Kong: Hong Kong University Press, p. 143-149, 1988. (GWU 9457)

Gallagher*, J.P.; Lewis, M.R.; Phelan, K.D.; Shinnick-Gallagher, P.
An investigation into the cellular mechanisms underlying space motion sickness using intracellular electrophysiological recordings from the rat medial vestibular nucleus, in vitro (Abstract).

Giolli, R.A.; Blanks*, R.H.I.; Torigoe, Y.
Nonretinal afferents to the medial terminal accessory optic nucleus in the rabbit (Abstract).

Goldberg*, J.M.; Desmadryl, G.; Baird, R.A.; Fernández, C.
Functional organization of the utricular macula in the chinchilla (Abstract).

Inputs from regularly and irregularly discharging vestibular nerve afferents to secondary neurons in the vestibular nuclei of the squirrel monkey. I. An electrophysiological analysis.

Low frequency heart rate oscillations in shuttle astronauts: A potential new marker of susceptibility to space motion sickness (Abstract).

Gower, D.W., Jr.; Lilienthal, M.G.; Kennedy*, R.S.; Fowlkes, J.E.
Simulator sickness in U.S. Army and Navy fixed- and rotary-wing flight simulators.

Graybiel, A.; Lackner*, J.R.
Treatment of severe motion sickness with antimotion sickness drug injections.

Graziano, J.A.; Ombao, E.D.; DeRoshia*, C.W.; Holley, D.C.
The Kamin effect: Confounding variables (Abstract).
Abstract of paper presented at the Third Annual San Jose State University Colloquium for the Sciences, San Jose, CA, April, 1987, 1 p. (GWU 10679)
Retinal image slip and vestibulo-ocular reflex gain during locomotion and vigorous head rotation (Abstract).

Grossman, G.E.; Leigh*, R.J.; Abel, L.A.; Lanska, D.J.; Thurston, S.E.
Frequency and velocity of rotational head perturbations during locomotion.
*Experimental Brain Research* 70: 470-476, 1988. (GWU 10575)

Haddad, F.B.; Paige, G.D.; Doslak, M.J.; Tomko*, D.L.
Practical method and errors in 3-D coil eye movement measurements (Abstract).

Harm*, D.L.; Beatty, B.J.; Reschke*, M.F.
Transcutaneous oxygen as a measure of pallor (Abstract).

Harm*, D.L.; Reschke*, M.F.
Transcutaneous oxygen changes during the progression of motion sickness (Abstract).

Harm*, D.L.; Stern, R.S.; Koch*, K.L.
Tachygastria during parabolic flight (Abstract).

Hasuo, H.; Gallagher*, J.P.
Effect of phaclofen on late hyperpolarizing potentials recorded intracellularly from rat dorsolateral septal neurons (Abstract).

Hasuo, H.; Gallagher*, J.P.; Shinnick-Gallagher, P.
Disinhibitory action of acetylcholine mediated by M1 muscarinic receptor in the lateral septal nucleus of the rat *in vitro* (Abstract).

Hasuo, H.; Phelan, K.D.; Twery, M.J.; Gallagher*, J.P.
A calcium-dependent slow afterdepolarizing potential (s-ADP) recorded in rat dorsolateral septal neurons *in vitro* (Abstract).

Hayes, J.C.; Reschke*, M.F.; Manuel, K.; Erz, R.
Development of a contact lens measurement of ocular torsion (Abstract).

Helwig, D.; Cohen*, B.
L-baclofen and the VOR before and after nodulo-uvullectomy: GABA receptor hypersensitivity in the vestibular nuclei? (Abstract)
Hightstein, S.M.; Goldberg*, J.M.; Moschovakis, A.K.; Fernández, C. 
Inputs from regularly and irregularly discharging vestibular nerve afferents to secondary neurons in the vestibular nuclei of the squirrel monkey. II. Correlation with output pathways of secondary neurons. 

Himi, T.; Igarashi*, M.; Kulecz, W.B.; Kataura, A. 
Asymmetry of vertical optokinetic after-nystagmus in squirrel monkeys. 

Holden, M.K.; Ventura, J.; Lackner*, J.R. 
Influence of light touch input from the hand on postural sway (Abstract). 

Horne, D.S.; Domer, F.R.; Brizzee*, K.R. 
Local cerebral glucose utilization in conscious unrestrained rats during lithium-pilocarpine-induced status epilepticus (Abstract). 

Effects of electrical acustimulation on electrogastrographic activity and the symptoms of motion sickness (Abstract). 

Motion sickness and electrogastrographic activity as a function of speed of rotation of an optokinetic drum (Abstract). 

Huang, J.-K.; Young*, L.R. 
Influence of visual and motion cues on manual lateral stabilization. 
Aviation, Space, and Environmental Medicine 58(12): 1197-1204, 1987. (GWU 8651)

Huang, J.-K.; Young*, L.R. 
Visual field influence on manual roll and pitch stabilization. 
Aviation, Space, and Environmental Medicine 59(7): 611-619, 1988. (GWU 6539)

Hwang, J.C.; Daunton*, N.G.; Wilson*, V.J. (Eds.) 

Igarashi*, M. 
Functional recovery of posture and gait. 

Igarashi*, M. 
Neuroscience in space medicine. 
Igarashi*, M.
Vestibular-related neuroscience and manned spaceflight.

Igarashi*, M.; Himi, T.
Asymmetry of vertical optokinetic nystagmus and afternystagmus.

Igarashi*, M.; Himi, T.; Ishii, M.; Patel, S.; Kulecz, W.B.
The change in coefficient of variance of R-R interval and the susceptibility of sensory-conflict sickness (subhuman primate experiment) (Abstract).

Igarashi*, M.; Himi, T.; Kulecz, W.B.; Kobayashi, K.
Role of otolith endorgans in the genesis of vestibular-visual conflict sickness (pitch) in the squirrel monkey (First report).
*Aviation, Space, and Environmental Medicine* 58(9, Suppl.): A207-A211, 1987. (GWU 8099)

Igarashi*, M.; Himi, T.; Kulecz, W.B.; Kobayashi, K.
Vestibular-visual conflict training.

Igarashi*, M.; Himi, T.; Kulecz, W.B.; Patel, S.
The role of saccular afferents in vertical optokinetic nystagmus in primates. A study in relation to optokinetic nystagmus in microgravity.
*Archives of Otorhinolaryngology* 244: 143-146, 1987. (GWU 10867)

Igarashi*, M.; Ishii, M.; Ishikawa, K.; Himi, T.
Comparative effect of some neurotropic agents on balance compensation after unilateral and bilateral (two-staged) labyrinthectomy in squirrel monkeys.

Igarashi*, M.; Ishikawa, K.; Ishii, M.; Yamane, H.
Physical exercise and balance compensation after total ablation of vestibular organs.
*Progress in Brain Research* 76: 395-401, 1988. (GWU 10871)

Igarashi*, M.; Nute, K.G. (Eds.)

Igarashi*, M.; Thompson, G.C.; Thompson, A.M.; Usami, S.
Neurochemical and neuropharmacological studies on vestibular compensation/adaptation.
Autonomic effects on R-R variations of the heart rate in the squirrel monkey: An indicator of autonomic imbalance in conflict sickness.

Ito, J.; Markham*, C.H.; Curthoys, I.S.
Modification of vestibular-induced pause neuron firing during anesthesia and light sleep.

Joëls, M.; Shinnick-Gallagher, P.; Gallagher*, J.P.
Effect of serotonin and serotonin analogues on passive membrane properties of lateral septal neurons in vitro.

Kasper, J.; Schor*, R.H.; Wilson*, V.J.
Convergence of neck and vestibular influences on neurons in the vestibular nuclei of the decerebrate cat (Abstract).

Kasper, J.; Schor*, R.H.; Wilson*, V.J.
Response of vestibular neurons to head rotations in vertical planes. I. Response to vestibular stimulation.
*Journal of Neurophysiology* 60(5): 1753-1764, 1988. (GWU 9792)

Kasper, J.; Schor*, R.H.; Wilson*, V.J.
Response of vestibular neurons to head rotations in vertical planes. II. Response to neck stimulation and vestibular-neck interaction.
*Journal of Neurophysiology* 60(5): 1765-1778, 1988. (GWU 9793)

Kasper, J.; Schor*, R.H.; Yates, B.J.; Wilson*, V.J.
Three-dimensional sensitivity and caudal projection of neck spindle afferents.

Katz, E.; de Jong, J.M.B.V.; Cohen*, B.; Buettner, J.
The slow component of the VOR (velocity storage) depends on commissural connections caudal to the abducens nucleus (Abstract).

Kennedy*, R.S.; Berbaum, K.S.; Allgood, G.O.; Lane, N.E.; Lilienthal, M.G.; Baltzley, D.R.
Etiological significance of equipment features and pilot history in simulator sickness.

Kennedy*, R.S.; Berbaum, K.S.; Williams, M.C.; Brannan, J.; Welch, R.B.
Transfer of perceptual-motor training and the space adaptation syndrome.
*Aviation, Space, and Environmental Medicine* 58(9, Suppl.): A29-A33, 1987. (GWU 8936)
Kennedy*, R.S.; Lane, N.E.; Kuntz, L.A.

Kevetter, G.A.; Perachio*, A.A.
Horizontal canal afferents terminate in the lateral vestibular nucleus (Abstract).  

Ocular torsion in response to changing force magnitudes acting along the z-axis of the head (Abstract).  

Analysis of vertebrate eye movements following intravitreal drug injections. I. Blockade of retinal ON-cells by 2-amino-4-phosphonobutyrate eliminates optokinetic nystagmus.  

Koch*, K.L.; Stern, R.M.; Dwyer, A.; Vasey, M.
Relationships between the onset of gastric dysrhythmias and motion sickness in man (Abstract).  

Koch*, K.L.; Stern, R.M.; Dwyer, A.; Vasey, M.
Temporal relationships between tachygastria and symptoms of motion sickness (Abstract).  
Gastroenterology 92: 1473, 1987.  (GWU 10877)

Koch*, K.L.; Stern, R.M.; Harrison, T.; Seton, J.; Dwyer, A.; Vasey, M.
Endogenous catecholamine fluxes during vection-induced motion sickness and tachygastria (Abstract).  
Gastroenterology 92: 1474, 1987.  (GWU 10878)

Gastric myoelectrical and endogenous neuroendocrine responses to illusory self-motion in man (Abstract).  
Gastroenterology 95: 875, 1988.  (GWU 10876)

Koch*, K.L.; Stewart, W.R.; Stern, R.M.
Effect of barium meals on gastric electromechanical activity in man: A fluoroscopic-electrogastrographic study.  

Vasopressin responses in healthy subjects with vection-induced gastric dysrhythmias and nausea (Abstract).  
Gastroenterology 95: 875, 1988.  (GWU 10875)
Kohl*, R.L.
Doxepin, dexamethasone, and scopolamine plus amphetamine facilitate adaptation to chronic stressful motion (Abstract).

Kohl*, R.L.
Failure of metoclopramide to control emesis or nausea due to stressful angular or linear acceleration.

Kohl*, R.L.
Hormonal responses of metoclopramide-treated subjects experiencing nausea or emesis during parabolic flight.
Aviation, Space, and Environmental Medicine 58(9, Suppl.): A266-A269, 1987. (GWU 8104)

Kohl*, R.L.
Human catecholamine responses to stress after dexamethasone, scopolamine plus amphetamine, and placebo (Abstract).
Society for Neuroscience Abstracts 14: 1051, 1988. (GWU 11086)

Kohl*, R.L.
Mechanisms of selective attention and space motion sickness.

Kohl*, R.L.; Homick*, J.L.; Cintron*, N.; Calkins, D.S.
Lack of effects of astemizole on vestibular ocular reflex, motion sickness, and cognitive performance in man.

Kohl*, R.L.; Lewis, M.R.
Drugs can accelerate chronic adaptation to stressful motion: A model for orbital flight (Abstract).

Kohl*, R.L.; Lewis, M.R.
Mechanisms underlying the antimotion sickness effects of psychostimulants.
Aviation, Space, and Environmental Medicine 58(12): 1215-1218, 1987. (GWU 8652)

Is space motion sickness related to left-right asymmetry in the vestibular system?

Lackner*, J.R.
Sensory-motor adaptation to non-terrestrial force levels.

Lackner*, J.R.
Some proprioceptive influences on the perceptual representation of body shape and orientation.
Lackner*, J.R.; DiZio, P.
Gravitational effects on nystagmus and on perception of orientation.

Lackner*, J.R.; DiZio, P.
Visual stimulation affects the perception of voluntary leg movements during walking.
*Perception* 17: 71-80, 1988. (GWU 9594)

Lackner*, J.R.; DiZio, P.; Fisk, J.
Tonic vibration reflexes are gravitoinertial force dependent (Abstract).

Lackner*, J.R.; Graybiel* A.
Head movements in low and high gravitoinertial force environments elicit motion sickness: Implications for space motion sickness.
*Aviation, Space, and Environmental Medicine* 58(9, Suppl.): A212-A217, 1987. (GWU 8098)

Asymmetric otolith function and increased susceptibility to motion sickness during exposure to variations in gravitoinertial acceleration level.

Lackner*, J.R.; Graybiel*, A.; Kohl*, R.L.
Mechanisms of selective attention and space motion sickness.

Lane, N.E.; Kennedy*, R.S.
New methods for quantifying the severity and locus of simulator sickness (Abstract).

Leliever, W.C.; Correia*, M.J.
Further observations on the effects of head position on vertical OKN and OKAN in normal subjects.

Histamine H$_1$ and H$_2$ mechanisms may modulate motion sickness development (Abstract).

Lewis, M.R.; Gallagher*, J.P.; Shinnick-Gallagher, P.
An in vitro brain slice preparation to study the pharmacology of central vestibular neurons.

Lichtenberg*, B.K.
Vestibular factors influencing the biomedical support of humans in space.

Lichtenberg*, B.K.
Vestibular factors influencing the biomedical support of humans in space.
In: *Basic and Applied Aspects of Vestibular Function* (Hwang, J.C., Daunton, N.G., Wilson, V.J., Eds.).
Hong Kong: Hong Kong University Press, p. 175-181, 1988. (GWU 8655)
Lin, K.K.; Harm*, D.L.; Reschke*, M.F.
Estimations of power spectra of heart rate variability data.

Lin, K.K.; Reschke*, M.F.
The use of composite information for the prediction of motion sickness (Abstract).

Lin, K.K.; Reschke*, M.F.
The use of the logistic model in space motion sickness prediction.
Aviation, Space, and Environmental Medicine 58(9, Suppl.): A9-A15, 1987. (GWU 9570)

Lucot, J.B. (Crampton, G.H. = P.I.)
5-HT1A and 5-HT3 receptors differ in antiemetic profile in cats (Abstract).
In: Emesis Symposium '88, Ottawa, Ontario, Canada, November 13, 1988, p. 36. (GWU 9347)

Lucot, J.B.; Crampton*, G.H.
Buspirone blocks cisplatin-induced emesis in cats.

Lucot, J.B.; Crampton*, G.H.
Buspirone blocks motion sickness and xylazine-induced emesis in the cat.

Lucot, J.B.; Crampton*, G.H.
8-OH-DPAT and 5-HT3 antagonists differ in efficacy vs. motion-, xylazine- and cisplatin-induced emesis (Abstract).

Lucot, J.B.; Crampton*, G.H.
Pharmacology and neurochemistry of motion sickness (Abstract).

Lucot, J.B.; Crampton*, G.H.
Serotonergic mechanisms in emesis.
In: Basic and Applied Aspects of Vestibular Function (Hwang, J.C., Daunton, N.G., Wilson, V.J., Eds.).
Hong Kong: Hong Kong University Press, p. 107-111, 1988. (GWU 10641)

Lucot, J.B.; Crampton*, G.H.
Stimulation of serotonin-1A receptors prevents cisplatin-induced emesis in cats (Abstract).

Lysakowski, A.; Minor, L.B.; Fernández, C.; Goldberg*, J.M.
Physiological identification of calyx, dimorphic and bouton afferents in the vestibular nerve of the squirrel monkey (Abstract).

Maas, E.F.; Huebner, W.P.; Seidman, S.H.; Leigh*, R.J.
Behavior of human vestibulo-ocular reflex (VOR) in response to high-acceleration stimuli (Abstract).

Markham*, C.H.
Vestibular control of muscular tone and posture.

Markham*, C.H.; Diamond, S.G.; Ito, J.
Utricular dysfunction in benign paroxysmal positional vertigo.
In: *The Vestibular System: Neurophysiologic and Clinical Research* (Graham, M.D., Kemink, J.L., Eds.).

Michaud, L.; DiZio, P.; Lackner*, J.R.
Suppression of post-rotatory nystagmus depends on amplitude not final position of active head movements (Abstract).

Miller, J.D.; Brizzee*, K.R.
The anti-emetic properties of 1-sulpiride in a ground-based model of space motion sickness.

Minor, L.B.; Goldberg*, J.M.
Primary vestibular afferent inputs to the horizontal vestibulo-ocular reflex (Abstract).
*ASGSB Bulletin* 1: 26, 1988. (GWU 9494)

Mirka, A.; Peterka*, R.J.; Black*, F.O.
Vestibular pathology in the elderly versus aging of postural control (Abstract).
(GWU 10837)

Mirka, A.; Peterka*, R.J.; Horak, F.B.; Black*, F.O.
Comparison of postural control in elderly with and without subjective dizziness versus normal young subjects (Abstract).
Abstract of paper presented at the Midwinter Meeting of the Association for Research in Otolaryngology, Clearwater Beach, FL, 1988, 1 p. (GWU 10838)

Ocular torsion in response to hypogravity.

Vestibular asymmetry, space sickness and ocular torsion.
In: *Spacebound '87: First Canadian Workshop on R&D Opportunities Onboard the Space Station*.
Newlands, S.D.; Perachio*, A.A.
Recovery of activity of type II neurons in the medial vestibular nucleus (MVN) following unilateral labyrinthectomy in the decerebrate gerbil (Abstract).
Society for Neuroscience Abstracts 14: 331, 1988. (GWU 11091)

Newlands, S.D.; Perachio*, A.A.
Vestibular commissures in the gerbil (Abstract).

Niijima, A.; Jiang, Z.-Y.; Daunton*, N.G.; Fox, R.A.
Effect of copper sulphate on the rate of afferent discharge in the gastric branch of the vagus nerve in the rat.

Niijima, A.; Jiang, Z.-Y.; Daunton*, N.G.; Fox, R.A.
Experimental studies of gastric dysfunction in motion sickness: The effect of gastric and vestibular stimulation on the vagal and splanchnic gastric efferents.
In: Basic and Applied Aspects of Vestibular Function (Hwang, J.C., Daunton, N.G., Wilson, V.J., Eds.).
Hong Kong: Hong Kong University Press, p. 133-142, 1988. (GWU 9528)

Nijhawan, V.; Lichtenberg*, B.K.; Munsey, W.R.; Oman*, C.M.;
Young*, L.R.
Telesciencce space life sciences test bed.
Paper presented at the 39th Congress of the International Astronautical Federation, Bangalore, India,
October 8-15, 1988, 5 p. (IAF Paper 88-014) (GWU 11377)

Ohgaki, T.; Curthoys, I.S.; Markham*, C.H.
Anatomy of physiologically identified eye-movement-related pause neurons in the cat: Pontomedullary region.
Journal of Comparative Neurology 266: 56-72, 1987. (GWU 10883)

Ohgaki, T.; Curthoys, I.S.; Markham*, C.H.
HRP morphology of functionally identified vestibular type I neurons in the cat.
Advances in Oto-Rhino-Laryngology 41: 14-19, 1988. (GWU 10887)

Ohgaki, T.; Curthoys, I.S.; Markham*, C.H.
Intracellular injection of HRP in vestibular type I neurons in cat (Abstract).

Ohgaki, T.; Curthoys, I.S.; Markham*, C.H.
Morphology of physiologically identified second-order vestibular neurons in cat, with intracellularly injected HRP.

Oman*, C.M.
Motion sickness: A synthesis and evaluation of the sensory conflict theory.

Oman*, C.M.
Prevention and treatment of seasickness in offshore sailing.
Oman*, C.M.
The role of static visual orientation cues in the etiology of space motion sickness.

Oman*, C.M.
Spacelab experiments on space motion sickness.

Oman*, C.M.; Kulbaski, M.J.
Spaceflight affects the 1-g postrotatory vestibulo-ocular reflex.
*Advances in Oto-Rhino-Laryngology* 42: 5-8, 1988. (GWU 11101)

Oman*, C.M.; Marcus, E.M.; Curthoys, I.S.
The influence of semicircular canal morphology on endolymph flow dynamics: An anatomically descriptive mathematical model.

MIT/Canadian Spacelab experiments on vestibular adaptation and space motion sickness.

Ombao, E.D.; Graziano, J.A.; DeRoshia*, C.W.; Holley, D.C.
Factors influencing the Kamin effect (Abstract).
Abstract of paper presented at the NIH Centennial MBRS-MARC Symposium, San Jose State University, San Jose, CA, April 1987, 1 p. (GWU 11272)

Paige, G.D.; Tomko*, D.L.
Canal-otolith interactions in the vestibulo-ocular reflex (VOR) (Abstract).

Paige, G.D.; Tomko*, D.L.
Linear vestibulo-ocular reflex (LVOR) of squirrel monkey. II: Visual-vestibular interactions (Abstract).

Paige, G.D.; Tomko*, D.L.; Gordon, D.D.
Visual-vestibular interactions in the linear vestibulo-ocular reflex (VOR) (Abstract).

Paloski, W.H.; Crosier, W.G.; Reschke*, M.F.
Integrated system for performing vestibular function studies in space (Abstract).

Paloski, W.H.; West, A.K.; Reschke*, M.F.
An expert system to control vestibular studies aboard Spacelab (Abstract).

Park, W.J.; Crampton*, G.H.
Statistical analysis of censored motion sickness latency data using the two-parameter Weibull distribution.
Parker*, D.E.
Space motion sickness: Concepts for preflight adaptation training.

Parker*, D.E.; Arrott, A.P.; Reschke*, M.F.
Simulation of the stimulus rearrangement produced by weightless space flight (Abstract).

Space motion sickness: Preflight preadaptation.

Parker*, D.E.; Reschke*, M.F.
Eye movement amplitude changes following preflight adaptation training (Abstract).

Parker*, D.E.; Reschke*, M.F.
Preadaptation to the stimulus rearrangement of weightlessness: Preliminary studies and concepts for trainer designs.

Effects of proposed preflight adaptation training on eye movements, self-motion perception, and motion sickness: A progress report.
Aviation, Space, and Environmental Medicine 58(9, Suppl.): A42-A49, 1987. (GWU 8096)

Space motion sickness preflight adaptation training: Preliminary studies with prototype trainers.

Paxinos, G.; Törk, I.; Halliday, G.; Mehler*, W.R.
The human intermediate reticular nucleus (IRt) (Abstract).

Perachio*, A.A.; Dickman, J.D.; Correia*, M.J.
Morphological and functional characteristics of semicircular canal afferents sensitive to head tilt.

Peterka*, R.J.
A two-axis rotation device for tests of human vestibular and visual-vestibular function (Abstract).
Abstract of paper presented at the Midwinter Meeting of the Association for Research in Otolaryngology, Clearwater Beach, FL, February, 1988, 1 p. (GWU 10839)
Peterka*, R.J.; Black*, F.O.
Human vestibuloocular reflex dynamics in patients with vestibular disorders.
In: The Vestibular System: Neurophysiologic and Clinical Research (Graham, M.D., Kemink, J.L., Eds.).

Peterka*, R.J.; Black*, F.O.; Newell, C.D.; Schoenhoff, M.B.
Age related changes in human vestibuloocular and vestibulospinal reflex function (Abstract).
Abstract of paper presented at the Midwinter Meeting of the Association for Research in Otolaryngology,
Clearwater Beach, FL, 1987, 1 p. (GWU 10840)

Peterka*, R.J.; Black*, F.O.; Schoenhoff, M.B.
Optokinetic and vestibulo-ocular reflex responses to an unpredictable stimulus.
Aviation, Space, and Environmental Medicine 58(9, Suppl.): A180-A185, 1987. (GWU 8085)

Phelan, K.D.; Gallagher*, J.P.
The effects of cholinergic agonists on the passive membrane properties of rat medial vestibular neurons in vitro (Abstract).
Society for Neuroscience Abstracts 14: 331, 1988. (GWU 10650)

Phelan, K.D.; Hasuo, H.; Twery, M.J.; Gallagher*, J.P.
Norepinephrine alters the passive membrane properties and synaptic responses of rat dorsolateral septal neurons in vitro (Abstract).

Poon, P.W.F.; Hwang, J.C.; Daunton*, N.G.; Chan, Y.S.; Cheung, Y.M.
Spectral analysis of the spontaneous activity of tilt-sensitive units in the vestibular system of the decerebrate cat.
In: Basic and Applied Aspects of Vestibular Function (Hwang, J.C., Daunton, N.G., Wilson, V.J., Eds.).
Hong Kong: Hong Kong University Press, p. 27-33, 1988. (GWU 9533)

Putcha, L.; Cintron*, N.M.
Role of pharmacokinetics in space medicine (Abstract).

Putcha, L.; Cintron*, N.M.; Vanderploeg, J.M.; Chen, Y.; Habis, J.; Adler, J.
Effect of antiorthostatic bed rest on hepatic blood flow in man.

Rague, B.W.; Oman*, C.M.
Detection of motion sickness onset using abdominal biopotentials (Abstract).
In: Space Life Sciences Symposium: Three Decades of Life Science Research in Space, Washington, DC,
June 21-26, 1987, p. 103-105. (GWU 9970)

Rague, B.W.; Oman*, C.M.
Use of a microcomputer system for running spectral analysis of EGGs to predict the onset of motion sickness.
Raphan, T.; Cohen*, B.
Effects of gravity on the principal axes of velocity storage in three dimensions (Abstract).

Raphan, T.; Cohen*, B.
Effects of gravity on the principal axes of velocity storage in three dimensions (Abstract).

Raphan, T.; Cohen*, B.
Organizational principles of velocity storage in three dimensions.

Reisine, H.; Raphan, T.; Cohen*, B.; Katz, E.
Signal processing in the vestibular nuclei during off-vertical axis rotation (OVAR) (Abstract).
_Society for Neuroscience Abstracts_ 14: 172, 1988. (GWU 10565)

Reisine, H.; Simpson, J.I.; Henn, V. (Cohen, B. = P.I.)
A geometric analysis of semicircular canals and induced activity in their peripheral afferents in the rhesus monkey.

Reschke*, M.F.
Microgravity vestibular investigations: Experiments on vestibular and sensory-motor adaptation to space flight.

Reschke*, M.F.; Parker*, D.E.
Effects of prolonged weightlessness on self-motion perception and eye movements evoked by roll and pitch.
_Aviation, Space, and Environmental Medicine_ 58(9, Suppl.): A153-A158, 1987. (GWU 8086)

Reschke*, M.F.; Parker*, D.E.; Harm*, D.L.; Michaud, L.
Ground-based training for the stimulus rearrangement encountered during spaceflight.
_Acta Otolaryngologica_ 460(Suppl.): 87-93, 1988. (GWU 10772)

The contribution of vestibuloocular and cervicoocular reflexes to torsional eye movements (Abstract).
_Aviation, Space, and Environmental Medicine_ 58(5): 484, 1987. (GWU 8803)

Reschke*, M.F.; Parker*, D.E.; Vanderploeg, J.M.
The investigation of ocular counterrolling during orbital flight (Abstract).

The contribution of cervical input to torsional eye movement as a function of static head position (Abstract).
_Aviation, Space, and Environmental Medicine_ 59(5): 469, 1988. (GWU 9905)
Robinson, F.R.; Fraser, M.O.; Hollerman, J.R.; Tomko*, D.L.
Yaw direction neurons in the cat inferior olive. 

Robinson, F.R.; Tomko*, D.L.
Cat vestibular neurons that exhibit different responses to active and passive yaw head rotations. 
Aviation, Space, and Environmental Medicine 58(9, Suppl.): A247-A249, 1987. (GWU 8102)

Ross*, M.D.
Implications of otoconial changes in microgravity. 

Ross*, M.D.
Mammalian macular organization: A model information network. 
Advances in Oto-Rhino-Laryngology 41: 142-145, 1988. (GWU 10595)

Ross*, M.D.
Morphological evidence for parallel processing of information in rat macula. 

Ross*, M.D.; Cutler, L.; Meyer, G.; Vaziri, P.; Lam, T.
3-D imaging of macular neural networks in preparation for space flight (Abstract). 
ASGSB Bulletin 1: 17, 1988. (GWU 9298)

Ross*, M.D.; Cutler, L.; Meyer, G.; Vaziri, P.; Lam, T.
Macular bioaccelerometers on Earth and in space. 

Ross*, M.D.; Cutler, L.; Meyer, G.; Vaziri, P.; Lam, T.; Or, W.; Black, S.
The neuroanatomical substrate for information processing in macular endorgans. 

Ross*, M.D.; Meyer, G.; Lam, T.; Or, W.; Cutler, L.
Computer-aided research into a natural neural network (Abstract). 

Schiff, D.; Cohen*, B.; Buettner-Ennever, J.
The role of the nucleus of the optic tract in production of opto-kinetic nystagmus (OKN) and after-nystagmus (OKAN) in the monkey (Abstract). 

Schmedtje, J.F., Jr.; Oman*, C.M.; Letz, R.; Baker, E.L.
Effects of scopolamine and dextroamphetamine on human performance. 

Schneider, J.S.; Markham*, C.H.
MPTP-induced dopamine depletions alter sensory processing in the caudate nucleus in the awake cat (Abstract). 
**Schor*, R.H.
Spatial transformation of horizontal linear acceleration by the cat vestibulospinal system. 

**Schor*, R.H.
Temporal transformation of signals from the otolith organs by the central nervous system of the cat. 
*Progress in Brain Research* 76: 77-81, 1988. (GWU 8593)

**Shelhamer, M.; Marino, L.A.; Young*, L.R.; Arrott, A.P.; Wiseman, J.J.
Normative study of spacetlab preflight/postflight vestibular test battery. 
*Aviation, Space, and Environmental Medicine* 58(9, Suppl): A236-A239, 1987. (GWU 8101)

**Shupert, C.L.; Horak, C.; Black*, F.O.
Abnormal postural coordination in patients with distorted vestibular function (Abstract). 

**Shupert, C.L.; Nashner, L.M.; Horak, F.B.; Black*, F.O.
Coordination of the head and body in standing posture in normals and patients with bilaterally reduced vestibular function (Abstract). 

**Solomon, D.; Cohen*, B.
Head and eye movements during circular locomotion (Abstract). 

**Solomon, D.; Cohen*, B.
Relative contributions of compensatory head and eye movements to visual stabilization during circular locomotion in light (Abstract). 

**Staab, J.P.; Wall*, C., III; Robinson, F.R.; Tomko*, D.L.
An analysis of asymmetries in cat vertical eye movements generated by sinusoidal pitch. 
*Aviation, Space, and Environmental Medicine* 58(9, Suppl): A189-A191, 1987. (GWU 8630)

**Stern, R.M.; Koch*, K.L.; Stewart, W.R.; Lindblad, I.M.
Spectral analysis of tachygastria recorded during motion sickness. 

**Stern, R.M.; Koch*, K.L.; Stewart, W.R.; Vasey, M.W.
Electrogastrography: Current issues in validation and methodology. 

**Stewart, J.J.; Wood, M.J.; Wood*, C.D.; Woods, T.W.; Mims, M.E.
Electrogastrograms after rotation-induced motion sickness (Abstract). 

**Sutton, R.L.; Fox, R.A.; Daunton*, N.G.
Role of the area postrema in three putative measures of motion sickness in the rat. 
*Behavioral and Neural Biology* 50: 133-152, 1988. (GWU 11282)
Swett, J.E.; Wikholm, P.; Torigoe, Y.; Blanks*, R.H.I.
Peripheral nerve repair: Relationship between functional recovery and the identities of regenerated motoneurons (Abstract).

Taborga, C.F.; Hinojosa, L.T.; Gott, J.L.; Holley, D.C.; DeRoshia*, C.W.; Winget*, C.M.
Alterations of the mammalian (rat) circadian system through the use of diet (Abstract).
Abstract of paper presented at the Third Annual San Jose State University Colloquium for the Sciences, San Jose, CA, April, 1987, 1 p. (GWU 10678)

Taborga, C.F.; Hinojosa, L.T.; Gott, J.L.; Holley, D.C.; DeRoshia*, C.W.; Winget*, C.M.
Use of diet to alter the mammalian (rat) circadian system (Abstract).
Abstract of paper presented at the NIH Centennial MBRS-MARC Symposium, San Jose State University, San Jose, CA, April, 1987, 1 p. (GWU 10676)

Thornton*, W.E.; Linder, B.J.; Moore, T.P.; Pool*, S.L.
Gastrointestinal motility in space motion sickness.
_Aviation, Space, and Environmental Medicine_ 58(9, Suppl.): A16-A21, 1987. (GWU 8932)

Thornton*, W.E.; Moore, T.P.; Pool*, S.L.; Vanderploeg, J.
Clinical characterization and etiology of space motion sickness.
_Aviation, Space, and Environmental Medicine_ 58(9, Suppl.): A1-A8, 1987. (GWU 8453)

Tomko*, D.L.
Sensory Analysis: The question of balance.
_Behavioral and Brain Sciences_ 11: 311, 1988. (GWU 10936)

Tomko*, D.L.; Paige, G.D.
Linear vestibulo-ocular reflex (LVOR) of squirrel monkey: I. Basic characteristics (Abstract).

Tomko*, D.L.; Wall*, C., III; Robinson, F.R.; Staab, J.P.
Gain and phase of cat vertical eye movements generated by sinusoidal pitch rotations with and without head tilt.
_Aviation, Space, and Environmental Medicine_ 58(9, Suppl.): A186-A188, 1987. (GWU 8084)

Tomko*, D.L.; Wall*, C., III; Robinson, F.R.; Staab, J.P.
Influence of gravity on cat vertical vestibulo-ocular reflex.

Torigoe, Y.; Blanks*, R.H.I.
Fastigial nucleus projections to brainstem autonomic and oculomotor nuclei in cats (Abstract).

Twery, M.J.; Gallagher*, J.P.
Synaptic transmission and passive membrane properties of neurons in rat dorsolateral septal nucleus are affected by somatostatin _in vitro_ (Abstract).
Uliano, K.C.; Kennedy*, R.S.
Simulator sickness: Some measurement issues.

Usami, S.-I.; Igarashi*, M.; Thompson, G.C.
GABA-like immunoreactivity in the squirrel monkey vestibular endorgans.

Wall*, C., III
Eye movements induced by gravitational force and by angular acceleration: Their relationship.

Wall*, C., III; Furman, J.M.R.
Dynamic otolith eye movement responses in normals: Bias and modulation components (Abstract).

Watt*, D.; Money*, K.E.
Alterations of proprioceptive function in a weightless environment (Abstract).

Watt*, D.G.D.
The vestibulo-ocular reflex and its possible roles in space motion sickness.
*Aviation, Space, and Environmental Medicine* 58(9, Suppl.): A170-A174, 1987. (GWU 9068)

Watt*, D.G.D.; Peterson, B.W.
Recovery from peripheral vestibular defects: VOR and VSR.

Watt*, D.G.D.; Tomi, L.M.; Money*, K.E.
Results of Canadian vestibular experiments in space.
In: *Spacebound '87, Proceedings of the First Canadian Workshop on R&D Opportunities on Board the Space Station*, Ottawa, Canada, May 6-8, 1987, p. 79-83. (GWU 8719)

Watt*, D.G.D.; Toy, W.; Landolt, J.P.
Enhancement of roll circularvection in the presence of a stable rim of peripheral vision (Abstract).

Welch, R.B.; Cohen*, M.M.
Adaptation to visual disarrangement: An analog to the perceptual-motor effects of parabolic flight (Abstract).

Wilson*, V.J.
Convergence of neck and vestibular signals on spinal interneurons.
*Progress in Brain Research* 76: 137-143, 1988. (GWU 9789)
Wilson*, V.J.; Kasper, J.; Yates, B.J.; Schor*, R.H.
Three-dimensional directional sensitivity of neck muscle spindle responses to head rotation (Abstract).

Wilson*, V.J.; Schor*, R.H.
Vestibular control of the cat forelimb.
In: Basic and Applied Aspects of Vestibular Function (Hwang, J.C., Daunton, N.G., Wilson, V.J., Eds.).
Hong Kong: Hong Kong University Press, p. 73-79, 1988. (GWU 10375)

Winget*, C.M.; DeRoshia*, C.W.; Ogawa, K.H.; Holley, D.C.
Significance of light and social cues in the maintenance of temporal organization in man (Abstract).

Wong, L.A.; Gallagher*, J.P.
Actions of nicotine and DMPP on limbic neurons recorded in vitro (Abstract).

Wong, L.A.; Gallagher*, J.P.
Nicotinic receptor activation of rat dorsolateral septal nucleus (DLSN) neurons recorded in vitro (Abstract).
*Society for Neuroscience Abstracts 14: 279, 1988. (GWU 11082)

Wong, L.A.; Hasuo, H.; Gallagher*, J.P.
Actions of pyridostigmine and carbachol on dorsolateral septal neurons studied intracellularly from rat septum in vitro (Abstract).

Wood*, C.D.; Manno, J.E.; Wood, M.J.; Manno, B.R.; Mims, M.E.
Comparison of efficacy of ginger with various antimotion sickness drugs.

Wood*, C.D.; Manno, J.E.; Wood, M.J.; Manno, B.R.; Redetzki, H.M.
Mechanisms of antimotion sickness drugs.
*Aviation, Space, and Environmental Medicine 58(9, Suppl.): A262-A265, 1987. (GWU 8623)

Wood*, C.D.; Wood, M.J.; Manno, J.E.; Manno, B.R.; Redetzki, H.M.
Dosage routes of antimotion sickness drugs (Abstract).
In: Space Life Sciences Symposium: Three Decades of Life Science Research in Space, Washington, DC,
June 21-26, 1987, p. 133-134. (GWU 9996)

Therapeutic effects of antimotion sickness drugs (Abstract).
*Aviation, Space, and Environmental Medicine 59(5): 467, 1988. (GWU 9912)

Wood, M.J.; Wood*, C.D.; Manno, J.E.; Manno, B.R.; Redetzki, H.M.
Nuclear medicine evaluation of motion sickness and medications on gastric emptying time.

Wood, M.J.; Wood*, C.D.; Stewart, J.J.; Manno, B.R.; Mims, M.E.
Comparison of dosage routes for antimotion sickness drugs (Abstract).
Wood, S.J.; Reschke*, M.F.; Clément, G.
Visual-vestibular interaction in parabolic flight (Abstract).
_Aviation, Space, and Environmental Medicine_ 58(5): 484, 1987. (GWU 8799)

Woodard, D.; Parker*, D.; von Gierke, H.
Effects of a visual-vestibular stimulus on the vestibulo-ocular reflex.
_Aviation, Space, and Environmental Medicine_ 58(9, Suppl.): A198-A202, 1987. (GWU 8629)

Yates, B.J.; Kasper, J.; Brink, E.E.; Wilson*, V.J.
Peripheral input to L4 neurons whose activity is modulated by neck rotation.

Yates, B.J.; Kasper, J.; Wilson*, V.J.
Descending projections of neck muscle spindle afferents in the dorsal columns (Abstract).

Young*, L.R.
Vestibular adaptation to weightlessness.

Young*, L.R.
Visual-vestibular interaction as a tool for investigating gravity effects on spatial orientation (Abstract).

Young*, L.; Leiner, B.
Telescience.
Regulatory Physiology
Acworth, I.N.; During, M.J.; Wurtman*, R.J.
Processes that couple amino acid availability to neurotransmitter synthesis and release.

Acworth, I.N.; During, M.J.; Wurtman*, R.J.
Tyrosine: Effects on catecholamine release.

Adler, G.K.; Moore, T.J.; Hollenberg*, N.K.; Williams, G.H.
Changes in adrenal responsiveness and potassium balance with shifts in sodium intake.

Barral-Netto, M.; Reed, S.G.; Sadigursky, M.; Sonnenfeld, G. (Mandel, A.D. = P.I.)
Specific immunization of mice against *Leishmania mexicana amazonensis* using solubilized promastigotes.

Exaggerated renal vasodilator response to calcium entry blockade in first-degree relatives of essential hypertensive subjects.

Breckenridge, A.M.; Hollenberg*, N.K.; Omae, T. (Eds.)
The role of serotonin in cardiovascular disease.
*Drugs* 36(Suppl. 1): 151 p., 1988. (GWU 10445)

Breslau, N.A.; Brinkley, L.; Hill, K.D.; Pak*, C.Y.C.
Relationship of animal protein-rich diet to kidney stone formation and calcium metabolism.

The circadian rhythm of plasma melatonin during the normal menstrual cycle and in amenorrheic women.

Brzezinski, A.; Lynch, H.J.; Wurtman*, R.J.; Seibel, M.M.
Possible contribution of melatonin to the timing of the luteinizing hormone surge.

Melatonin in human preovulatory follicular fluid.

Carlson, W.D.; Handschumacher, M.; Summers, N.; Karplus, M.; Haber*, E.
Models for the three-dimensional structure of renin inhibitors bound in the active site of human renin: An analysis of the properties that produce tight binding.
*Journal of Cardiovascular Pharmacology* 10(Suppl. 7): S91-S93, 1987. (GWU 9341)

Effect of exercise on protein synthesis in normal volunteers (Abstract).

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Churchill*, S.; Natale, M.E.; Moore-Ede*, M.C.
Atrial natriuretic factor (ANF) in primates exposed to lower body positive pressure (LBPP) (Abstract).

Cogoli*, A.
Cell cultures in space: From basic research to biotechnology II.

Cogoli*, A.
Cell cultures in space: From basic research to biotechnology (Abstract).

Cogoli*, A.
Space biologist’s inflight safety considerations.

Cogoli*, A.
Space biologist’s inflight safety considerations.

Cogoli*, A.; Bechler, B.; Lorenzi, G.; Gmuender, F.K.; Cogoli, M.
Cell cultures in space: From basic research to biotechnology.

Cogoli*, A.; Bechler, B.; Lorenzi, G.; Wiese, C.
Life sciences experiments on sounding rockets and balloons.

Cogoli*, A.; Bechler, B.; Müller, O.; Hunzinger, E.
Effect of microgravity on lymphocyte activation.

Cogoli*, A.; Bechler, B.; Muller, O.; Hunzinger, E.
Effect of microgravity on lymphocyte activation.

Cogoli*, A.; Gmünder, F.K.; Nordau, C.G.
Cell biology in space: From basic science to biotechnology III.
Conlay, L.A.; Evoniuk, G.; Wurtman*, R.J.
Endogenous adenosine and hemorrhagic shock: Effects of caffeine administration and caffeine withdrawal (Abstract).

Conlay, L.A.; Evoniuk, G.; Wurtman*, R.J.
Endogenous adenosine and hemorrhagic shock: Effects of caffeine administration or caffeine withdrawal.
*Proceedings of the National Academy of Sciences USA* 85: 4483-4485, 1988. (GWU 11201)

Effects of hemorrhagic hypotension on tyrosine concentrations in rat spinal cord and plasma.

Dalmeida, W.; Suki*, W.N.
Measurement of GFR with non-radioisotopic radio contrast agents.

Dluhy, R.G.; Hopkins, P.; Hollenberg*, N.K.; Williams, G.H.; Williams, R.R.
Heritable abnormalities of the renin-angiotensin-aldosterone system in essential hypertension.

During, M.J.; Acworth, I.N.; Wurtman*, R.J.
Effects of systemic L-tyrosine on dopamine release from rat corpus striatum and nucleus accumbens.

During, M.J.; Acworth, I.N.; Wurtman*, R.J.

During, M.J.; Acworth, I.N.; Wurtman*, R.J.
Phenylalanine administration influences dopamine release in the rat's corpus striatum.
*Neuroscience Letters* 93: 91-95, 1988. (GWU 10591)

Evin, G.; Galen, F.-X.; Carlson, W.D.; Handschumacher, M.; Novotny, J.; Bouhnik, J.; Ménard, J.; Corvol, P.; Haber*, E.
Characterization of five epitopes of human renin from a computer model.

Fiorotto, M.L.; Sheng, H.-P.; Evans, H.J.; LeBlanc*, A.D.; Johnson*, P.C.; Nichols, B.L.
Specific effects of weight loss, protein deficiency and energy deprivation on the water and electrolyte composition of young rats.

Frishman, W.H.; Pepine, C.J.; Selwyn, A.; Hollenberg*, N.K.
Controversies in cardiovascular care: Silent myocardial ischemia.
In: Vascular Smooth Muscle, Peptides, Autonomic Nerves, and Endothelium (van Houtte, P.M., Ed.).

Gmünder, F.K.; Cogoli*, A.
Cultivation of single cells in space.

Gmünder, F.K.; Lorenzi, G.; Bechler, B.; Joller, P.; Müller, J.; Ziegler, W.H.; Cogoli*, A.
Effect of long-term physical exercise on lymphocyte reactivity: Similarity to spaceflight reactions.
Aviation, Space, and Environmental Medicine 59(2): 146-151, 1988. (GWU 8603)

Gmünder, F.K.; Nordau, C-G.; Tschopp, A.; Huber, B.; Cogoli*, A.
Dynamic cell culture system: A new cell cultivation instrument for biological experiments in space.

Godley, B.F.; Chang, A.; Wurtman*, R.J.
Melatonin inhibits endogenous dopamine (DA) release from the rabbit retina in vitro (Abstract).

Godley, B.F.; Wurtman*, R.J.
Release of endogenous dopamine from the superfused rabbit retina in vitro: Effect of light stimulation.
Brain Research 452: 393-395, 1988. (GWU 10535)

Gould, C.L.; Lyte, M.; Williams, J.; Mandel*, A.D.; Sonnenfeld, G.
Inhibited interferon-γ but normal interleukin-3 production from rats flown on the space shuttle.

Gould, C.L.; Sonnenfeld, G. (Mandel, A.D. = P.I.)
Effect of treatment with interferon-γ and concanavalin A on the course of infection of mice with Salmonella typhimurium strain LT-2.

Gould, C.L.; Sonnenfeld, G. (Mandel, A.D. = P.I.)
Enhancement of viral pathogenesis in mice maintained in an antorthostatic suspension model: Coordination with effects on interferon production.

Guidi, E.; Hollenberg*, N.K.
Differential pressor and renal vascular reactivity to angiotensin II in spontaneously hypertensive and Wistar-Kyoto rats.

Guidi, E.; Hollenberg*, N.K.
Reattivita' alla angiotensina II delle arterie renali e periferiche nel ratto spontaneamente iperteso (SHR).
Effetto della inibizione del converting enzyme e della indometacina. (Italian)
Haber*, E.; Haupert, G.T., Jr.
The search for a hypothalamic Na+, K+-ATPase inhibitor.  

Haber*, E.; Hui, K.Y.; Carlson, W.D.; Bernatowicz, M.S.
Renin inhibitors: A search for principles of design.  
_Journal of Cardiovascular Pharmacology_ 10(Suppl. 7): S54-S58, 1987. (GWU 9918)

Dexamethasone for prevention and treatment of acute mountain sickness.  
_Aviation, Space, and Environmental Medicine_ 59(10): 950-954, 1988. (GWU 8125)

Handagama, P.J.; George*, J.N.; Shuman, M.A.; McEver, R.P.; Bainton, D.F.
Incorporation of a circulating protein into megakaryocyte and platelet granules.  

Hollenberg*, N.K.
Angiotensin converting enzyme inhibition and the kidney.  

Hollenberg*, N.K.
Avoiding a formulaic approach to angina therapy.  
_Complicated Cardiovascular Patient_ 1: 3, 1987. (GWU 10413)

Hollenberg*, N.K.
Calcium channel blockers in patients with hypertension.  
_American Journal of Medicine_ 82(Suppl. 3B): 1-2, 1987. (GWU 10461)

Hollenberg*, N.K. (Ed.)  

Hollenberg*, N.K.
Control of renal perfusion and function in congestive heart failure.  

Hollenberg*, N.K.
Does antihypertensive treatment reduce cardiovascular morbidity and mortality?  
_Perspectives in Hypertension and Renal Disease_ 1(1): 4-5, 1988. (GWU 10441)

Hollenberg*, N.K.
Effects of calcium channel blockers on the kidney in hypertensive patients.  

Hollenberg*, N.K.
Experience, progress, and clinical perspectives on angiotensin converting enzyme inhibition.  
_American Journal of Medicine_ 84(Suppl. 4A): 1-3, 1988. (GWU 10404)

Hollenberg*, N.K.
Focus on diuretics: Clinical effectiveness and controversies.  
Hollenberg*, N.K.
Hypertension and the kidney: Implications of the kidney for effective antihypertensive therapy.

Hollenberg*, N.K.
Implications of recent data for the treatment of hypertension.

Hollenberg*, N.K.
Initial therapy in hypertension: Quality-of-life considerations.

Hollenberg*, N.K.
The kidney: Cause or consequence in essential hypertension.
American Journal of Nephrology 7(Suppl. 1): 3-6, 1987. (GWU 10408)

Hollenberg*, N.K. (Ed.)

Hollenberg*, N.K.
Medical therapy for renovascular hypertension: A review.

Hollenberg*, N.K.
On the evolution of expectations.
Complicated Cardiovascular Patient 1: 2, 33, 1987. (GWU 10414)

Hollenberg*, N.K.
Platelet calcium and blood pressure: Effect of antihypertensive therapy.
Perspectives in Hypertension and Renal Disease 1(3): 3, 14, 1988. (GWU 10485)

Hollenberg*, N.K.
Preventing hypokalemia
Complicated Cardiovascular Patient 1: 2, 32, 1987. (GWU 10417)

Hollenberg*, N.K.
Renal perfusion and function: The implications of converting enzyme inhibition.

Hollenberg*, N.K.
Renin, angiotensin, and the kidney: Assessment by pharmacological interruption of the renin-angiotensin system.

Hollenberg*, N.K.
The role of kidney in heart failure.
Hollenberg*, N.K.
Serotonin and vascular responses.

Hollenberg*, N.K.
Serotonin, atherosclerosis, and collateral vessel spasm.

Hollenberg*, N.K.
Successful behavior changes in a man with hypertension.

Hollenberg*, N.K.
The treatment of renovascular hypertension: Surgery, angioplasty, and medical therapy with converting-enzyme inhibitors.

Hollenberg*, N.K.
Vascular injury to the kidney.

Hollenberg*, N.K.
Vasodilators, antihypertensive therapy, and the kidney.

Hollenberg*, N.K.
Vasodilators, antihypertensive therapy, and the kidney.

Hollenberg*, N.K.; Dzau, V.J.
The renin-angiotensin system.

Hollenberg*, N.K.; Frishman, W.; Mudge, G.; Zelis, R.
Is there step therapy for angina?

Hollenberg*, N.K.; Lesch, M.; Ryan, T.; Alderman, M.
Controversies in cardiovascular care: Selecting angina patients for medical or surgical therapy.

Hollenberg*, N.K.; Meyerovitz, M.; Harrington, D.P.; Sandor, T.
Influence on norepinephrine and angiotensin II on vasomotion of renal blood supply in humans.

Hollenberg*, N.K.; Monteiro, K.; Sandor, T.
Endothelial injury provokes collateral arterial vasoconstriction: Response to serotonin2 antagonist, thromboxane antagonist or synthetase inhibition.
Hollenberg*, N.K.; Williams, G.H.
Angiotensin and the renal circulation in hypertension.

Hollenberg*, N.K.; Williams, G.H.
The renal response to converting enzyme inhibition and the treatment of sodium-sensitive hypertension.

Hollenberg*, N.K., Williams, G.H.
Sodium sensitive hypertension: Renal and adrenal non-modulation in its pathogenesis.

Holtzman, E.J.; Braley, L.M.; Williams, G.H.; Hollenberg*, N.K.
Kinetics of sodium homeostasis in rats: Rapid excretion and equilibration rates.

Houpt, T.A.; Mistlberger, R.E.; Moore-Ede*, M.C.
Optic enucleation attenuates the phase shifting effects of diazepam on hamster circadian rhythms (Abstract).

Hui, K.Y.; Carlson, W.D.; Bernatowicz, M.S.; Haber*, E.
Analysis of structure-activity relationships in renin substrate analogue inhibitory peptides.

Design of rat renin inhibitory peptides.

Hwang, T.I.S.; Hill, K.; Schneider, V.; Pak*, C.Y.C.
Effect of prolonged bedrest on the propensity for renal stone formation.

Continuous flow electrophoretic separation of proteins and cells from mammalian tissues.

Irie, K.; Wurtman*, R.J.
Release of norepinephrine from rat hypothalamic slices: Effects of desipramine and tyrosine.

Jahoor, F.; Miyoshi, H.; Shangraw, R.; Neff, W.; Stuart*, C.; Herndon, D.N.; Wolfe, R.R.
Response of glucose and protein kinetics to hyperinsulinemia in burn and septic patients (Abstract).
Janicek, M.; Hollenberg*, N.K.; Lin, Y.S.; Szabo, S.
Area of congestion in angiography and rise of intravenous pressure determine the localization and extent of chemically-induced gastric mucosal injury (Abstract).

Natural history of platelet aggregation after endothelial injury assessed with In-III labeled platelets and angiography (Abstract).
Abstract of paper presented at the 35th Annual Meeting of the Society of Nuclear Medicine, San Francisco, CA, June 14-17, 1988, 1 p. (GWU 10380)

Johnson*, P.C.
Red blood cell decreases of microgravity (Abstract).

Hematological studies of animals flown in microgravity and of the suspended rat model (Abstract).

Klein, J.B.; McLeish, K.R.; Sonnenfeld, G.; Dean, W.L. (Mandel, A.D. = P.I.)
Potential mechanisms of cytosolic calcium modulation in interferon-γ treated U937 cells.
Biochemical and Biophysical Research Communications 145(3): 1295-1301, 1987. (GWU 7861)

Krauhs, J.M.; Leach*, C.S.; Johnson*, P.C.; Cintron*, N.M.
Serum lipoprotein concentrations after spaceflight (Abstract).

Hematological studies on rats flown on shuttle flight SL-3.

Comparative aspects of hematological responses in animal and human models in simulations of weightlessness and space flight.

Leach*, C.S.
Fluid control mechanisms in weightlessness.
Aviation, Space, and Environmental Medicine 58(9, Suppl.): A74-A79, 1987. (GWU 8679)

Leach*, C.S.; Chen, J.P.; Crosby, W.; Johnson*, P.C.; Lange*, R.D.; Larkin, E.; Tavassoli, M.
Hematology and biochemical findings of Spacelab 1 flight.
Leach*, C.S.; Johnson*, P.C.; Cintron*, N.M.
The endocrine system in space flight.

Leach*, C.S.; Johnson*, P.C., Jr.; Krauhs, J.M.; Cintron*, N.M.
Cholesterol in serum lipoprotein fractions after spaceflight.

Leach-Huntoo*, C.S.; Schneider, H.; Cintron*, N.M.; Landry, R.
Combined blood investigations.

Increased release of brain serotonin reduces vulnerability to ventricular fibrillation in the cat.

Lewis, M.L.; Morrison*, D.R.
Nutrient requirements and other factors involved in the culture of human kidney cells on microcarrier beads.

Lewis, M.L.; Morrison*, D.R.; Barlow, G.H.; Todd*, P.; Cogoli*, A.; Tschopp, A.
Cell electrophoresis and preliminary cell attachment investigations on STS-8 (Abstract).

Lieberman, H.R.; Wurtman*, R.J.; Emde, G.G.; Coviella, I.L.G.
The effects of caffeine and aspirin on mood and performance.

Lorenzi, G.; Bechler, B.; Cogoli, M.; Cogoli*, A.
Gravitational effects on mammalian cells.
*Physiologist* 31(1, Suppl.): S144-S147, 1988. (GWU 10618)

Lorenzi, G.; Cogoli*, A.
Is the interaction between Con A and the lymphocyte membrane gravity-dependent? (Abstract)
*Experientia* 43: 690, 1987. (GWU 8995)

Lynch, H.J. (Wurtman, R.J. = P.I.)
The mammalian circadian system and the role of environmental illumination.

Effect of behavioural and physiological variables on melatonin secretion in humans.
Meehan*, R.
Human mononuclear cell in vitro activation in microgravity and post-spaceflight.

Meehan*, R.T.
Immune suppression at high altitude.

Operation Everest II: Alterations in the immune system at high altitudes.

Meehan*, R.; Rock, P.; Taylor*, G.; Hunter, N.; Mader, T.; Cintron*, N.; Cymerman, A.
Digital image analysis of hypoxia-induced retinal vasodilatation (Abstract).

Milner, J.D.; Reinstein, D.K.; Wurtman*, R.J.
Dopamine synthesis in rat striatum: Mobilization of tyrosine from non-dopaminergic cells.
Experientia 43: 1109-1110, 1987. (GWU 10540)

Mistlberger, R.E.; Houp t, T.A.; Moore-Ede*, M.C.
Effects of nutrient restriction schedules on circadian rhythms in the rat (Abstract).

Moore-Ede*, M.C.; Houp t, T.A.
Homeostatic, entrainment and pacemaker effects of drugs that regulate the timing of sleep and wakefulness.

Morrison*, D.R.
Suspension cell culture in microgravity and development of a space bioreactor.

Morrison*, D.R.; Hymer*, W.C.; Todd*, P.; Grindeland*, R.E.
Mammalian cell culture methods in microgravity (Abstract).

Morrison*, D.R.; Lewis, M.L.; Tschopp, A.; Cogoli*, A.
Incubator cell attachment test (ICAT).

Commercial over-the-needle catheters for intravenous injections and blood sampling in rats.
Pak*, C.Y.C.
Citrate and renal calculi.

Nephrolithiasis from calcium supplementation.

Williams, G.H.
Renin suppression by saline is blunted in nonmodulating essential hypertension.
*Hypertension* 10: 404-408, 1987. (GWU 10457)

Redgrave, J.E.; Canessa, M.; Williams, G.H.; Hollenberg*, H.K.
Na-Li countertransport in non-modulating essential hypertensives (Abstract).

Rogacz, S.; Hollenberg*, N.K.; Williams, G.H.
Role of angiotensin II in the hormonal, renal, and electrolyte response to sodium restriction.

Rosa, J.P.; George*, J.N.; Bainton, D.F.; Nurden, A.T.; Caen, J.P.; McEver, R.P.
Gray platelet syndrome: Demonstration of alpha granule membranes that can fuse with the cell surface.

Sakhaee, K.; Nigam, S.; Snell, P.; Hsu, M.C.; Pak*, C.Y.C.
Assessment of the pathogenetic role of physical exercise in renal stone formation.

Schaechter, J.D.; Wurtman*, R.
Effect of tryptophan availability on release of endogenous serotonin from rat hypothalamic slices (Abstract).

Seely, E.W.; LeBoff, M.S.; Brown, E.M.; Hollenberg*, N.K.; Williams, G.H.
The calcium-channel blocker diltiazem (Dz) lowers parathyroid hormone levels *in vivo* and *in vitro* (Abstract).
*Hypertension* 10: 359, 1987. (GWU 10379)

Shangraw, R.E.; Jahoor, F.; Miyoshi, H.; Neff, W.A.; Stuart*, C.A.; Wolfe, R.R.
Regulation of protein and amino acid catabolism by insulin in septic or severely burned patients (Abstract).

Shangraw, R.E.; Miyoshi, H.; Jahoor, F.; Stuart*, C.A.; Neff, W.A.; Wolfe, R.R.
Dissociation of potassium and glucose uptake responses to hyperinsulinemia in critically ill patients (Abstract).
*Anesthesiology* 65: 129, 1987. (GWU 10344)

Shangraw, R.E.; Stuart*, C.A.; Prince, M.J.; Peters, E.J.; Wolfe, R.R.
Insulin responsiveness of protein metabolism in vivo following bedrest in humans.
Shangraw, R.E.; Stuart*, C.A.; Prince, M.J.; Wolfe, R.R.
Effect of bedrest on leucine metabolic response to insulin in normal young men (Abstract).

Sonnenfeld, G.; Williams, J.; Mandel*, A.D.
Effects of antiorthostatic suspension and spaceflight on interferon production and immunity to viruses (Abstract).

Stuart*, C.A.; Shangraw, R.E.; Peters, E.J.; Prince, M.J.; Wolfe, R.R.
Enforced bedrest in man results in decreased action of insulin on glucose metabolism primarily in muscle (Abstract).

Stuart*, C.A.; Shangraw, R.E.; Prince, M.J.; Peters, E.J.; Wolfe, R.R.

Stuart*, C.A.; Shangraw, R.E.; Prince, M.J.; Peters, E.J.; Wolfe, R.R.

Stuart*, C.A.; Shangraw, R.E.; Prince, M.J.; Peters, E.J.; Wolfe, R.R.

Taylor*, G.R.

Tilney, N.L.; Hollenberg*, N.K.

Cell bioprocessing in space: Applications of analytical cytology. Physiologist 31(1, Suppl.): S52-S55, 1988. (GWU 9486)

Whitson, P.A.; Huls, M.H.; Stuart*, C.A.; Sams*, C.F.; Cintron*, N.M.

Wiese, C.; Bechler, B.; Lorenzi, G.; Cogoli*, A.
Wilkes, B.M.; Hollenberg*, N.K.  
Protection against acute renal failure by prior acute renal failure: Differences between myohemoglobinuric and ischemic models. 

Williams, G.H.; Hollenberg*, N.K.  
Pathophysiology of essential hypertension.  

Wurtman*, R.J.  
Nutrients affecting brain composition and behavior.  

Wurtman*, R.J.  
Use of tyrosine and other nutrients to enhance and sustain performance.  

Wurtman*, R.J.; Lieberman, H.  
Melatonin secretion as a mediator of circadian variations in sleep and sleepiness.  

Wurtman*, R.J.; Maher, T.J.  
Effects of oral aspartame on plasma phenylalanine in humans and experimental rodents.  
SPACE HUMAN FACTORS PROGRAM
Badler, N.I. (Woolford, B.J. = P.I.)
Computer animation techniques.
In: 2nd International Gesellschaft fur Informatik Congress on Knowledge-Based Systems, Munich, Germany, October 1987, p. 22-34.

Badler, N.I. (Woolford, B.J. = P.I.)
Modeling and animating human figures in a CAD environment.

Badler, N.I. (Woolford, B.J. = P.I.)
Modeling and animating human task performance.

Brown*, J.W.
Human factors: Man-machine symbiosis in space.

Brown*, J.W.
The role of human factors in space (Abstract).

Chidester, T.R.; Foushee*, H.C.
Selection for optimal crew performance in aerospace environments (Abstract).

Cohen*, M.M.; Bussolari*, S.

Emurian, H.H. (Brady, J.V. = P.I.)
Programmed environment management of confined microsocieties.
Aviation, Space, and Environmental Medicine 59(10): 976-980, 1988. (GWU 7338)

Foushee*, H.C.
Dyads and triads at 35,000 feet: Factors affecting group process and aircrew performance.

Foushee*, H.C.; Helmreich*, R.L.
Group interaction and flight crew performance.
Ginnett, R.C.  (Hackman, J.R. = P.I.)
Is “the right stuff” right?: The leader’s role in crew formation and development (Abstract).

Greenisn*, M.
Data collection for human work performance in space (Abstract).

Grosso, M.; Gonda, R.; Badler, N.I.  (Woolford, B.J. = P.I.)
An anthropometric database for computer graphics human figures.

Hackman*, J.R.
The design of work teams.

Hackman*, J.R.
Group and organizational influences on crew effectiveness (Abstract).

Hackman*, J.R.
Group-level issues in the design and training of cockpit crews.

Hackman*, J.R.; Helmreich*, R.
Assessing the behavior and performance of teams in organizations: The case of air transport crews.

Helmreich*, R.L.
Exploring flight crew behaviour.
*Social Behaviour* 2: 63-72, 1987.  (GWU 10504)

Helmreich*, R.L.
Living in contained environments.

Helmreich*, R.L.
Psychology in space.

Helmreich*, R.L.
Theory underlying CRM training: Psychological issues in flight crew performance and crew coordination.
Helmreich*, R.L.; Spence, J.T.; Pred, R.S.
Making it without losing it: Type A, achievement motivation, and scientific attainment revisited.  

Helmreich*, R.L.; Wilhelm, J.A.
Evaluating cockpit resource management training.  

Helmreich*, R.L.; Wilhelm, J.A.

Helmreich*, R.L.; Wilhelm, J.A.
Personality-performance relationships in demanding environments (Abstract).  

Helmreich*, R.L.; Wilhelm, J.A.

Helmreich*, R.L.; Wilhelm, J.A.; Foushee*, H.C.
Astronaut and aquanaut performance and adjustment behavioral issues in analagous environments.  

Helmreich*, R.L.; Wilhelm, J.A.; Gregorich, S.E.
*Notes on the Concept of LOFT: An Agenda for Research.* Austin, TX: University of Texas at Austin, 14 p., 1988. (GWU 10488)

Kalita, J.K.; Shastri, L. (Woolford, B.J. = P.I.)
Generation of simple sentences in English using the connectionist model of computation.  

Lee, P.; Badler, N.I.; McCarthy, M. (Woolford, B.J. = P.I.)
Animation of human figure dynamics.  

Orlady, H.W.; Foushee*, H.C. (Eds.)

Phillips, C.; Badler, N.I. (Woolford, B.J. = P.I.)
Jack: A toolkit for manipulating articulated figures.  
Spence, J.T.; Helmreich*, R.L.; Pred, R.S.
Impatience versus achievement strivings in the type A pattern: Differential effects on students’ health and academic achievement.

Walters, G.; Badler, N.I. (Woolford, B.J. = P.I.)
Combining position and orientation goals in a multiple constraint-based articulated figure posing system.
ENVIRONMENTAL HEALTH PROGRAM
Adams*, J.D.
Review of space cabin and EVA suit environmental research at the School of Aerospace Medicine: Three decades (Abstract).

Brown*, H.D.; Pierson*, D.L.
Automated microbiology system for space station.

Bull*, R.J.
Potential health hazards associated with water recycling in space (Abstract).

Bull*, R.J.
Toxicological aspects of water recycle and disinfection.

Butler*, B.; Leiman, B.; Katz, J.
Positive end-expiratory pressure (PEEP) and venous air embolism (Abstract).

Butler*, B.D.; Conkin, J.; Luehr, S.
Repetitive versus continuous venous air embolism in dogs: Effects on pulmonary hemodynamics, extravascular lung water and bubble longevity (Abstract).
*Undersea Biomedical Research* 15: 18, 1988. (GWU 10139)

Butler*, B.D.; Davies, I.; Drake, R.E.
Changes in alveolar lysophosphatidylcholine (LPC) and extravascular lung water after ischemia/reperfusion (I/R) (Abstract).

Butler*, B.D.; Davies, I.; Drake, R.E.
Lysophosphatidylcholine effects of lung fluid balance in dogs (Abstract).
In: *Proceedings of the 7th International Symposium on Surfactants in Solution*, Ottawa, Canada, 1988, p. 145. (GWU 10850)

Butler*, B.D.; Katz, J.
Pulmonary hemodynamic factors leading to arterial gas embolism of venous origin (Abstract).
*Undersea Biomedical Research* 15: 25, 1988. (GWU 10140)

Butler*, B.D.; Katz, J.
Vascular pressures and passage of gas emboli through the pulmonary circulation.

Butler*, B.D.; Katz, J.
Venous gas embolism (Abstract).
Cerebral decompression sickness: Bubble distribution in dogs in the Trendelenberg position (Abstract).
*Undersea Biomedical Research* 14: 15, 1987. (GWU 10851)

Effect of the Trendelenburg position on the distribution of arterial air emboli in dogs.

Butler*, B.D.; Luehr, S.; Katz, J.
Influence of oxygen ventilation on survival of air emboli in the pulmonary vasculature (Abstract).

Butler*, B.D.; Luehr, S.; Katz, J.
Longevity of pulmonary vascular bubbles following venous air embolism (Abstract).
(GWU 10854)

Chryssanthou*, C.; Goldstein, G.; Talavera, J.
Altitude induced reversible alterations of the blood-brain and blood-lung barriers (Abstract).
*Aviation, Space, and Environmental Medicine* 59(5): 471, 1988. (GWU 9913)

Chryssanthou*, C.; Palaia, T.; Goldstein, G.; Stenger, R.
Increase in blood-brain barrier permeability by altitude decompression.

Chryssanthou*, C.P.; Goldstein, G.; Palaia, T.; Stenger, R.J.
Dysbaric disorders induced by altitude decompression (Abstract).

Empirical models for use in designing decompression procedures for space operations (Abstract).


Edwards, B.F.; Gilbert, J.H.; Horrigan*, D.J.; Waligora*, J.M.
Dynamics of whole body nitrogen washout while breathing 100% oxygen (Abstract).

Gelfand, R.; Clark, J.M.; Lambertsen*, C.J.; Pisarello, J.B.
Ventilatory response to CO₂ following hyperoxia at 1.5 ATA and 2.5 ATA in man (Abstract).

Gelfand, R.; Clark, J.M.; Lambertsen*, C.J.; Pisarello, J.B.
Ventilatory response to hypoxia following prolonged hyperoxia at 1.5 ATA in man (Abstract).
Gerth*, W.A.; Vann*, R.D.; Leatherman, N.E.
The relation of whole-body nitrogen elimination during oxygen breathing to the acquisition of decompression sickness protection (Abstract).

Gerth*, W.A.; Vann*, R.D.; Leatherman, N.E.; Feezor, M.D.
Effects of microgravity on tissue perfusion and the efficacy of astronaut denitrogenation for EVA. Aviation, Space, and Environmental Medicine 58(9, Suppl.): A100-A105, 1987. (GWU 8090)

Henney, M.R.; Scarlett, J.B.; Pierson*, D.L.; Irbe, R.M.
Microbiological evaluation of the whole body shower system (Abstract).

Horrigan*, D.J.; Waligora*, J.M.; Bufkin, A.L.; Gilbert, J.
Extravehicular activity from a lunar base: A physiological analysis based on current laboratory and operational data (Abstract).

Results of metabolic rate assessment during shuttle extravehicular activities (Abstract).

Treatment bed microbiological control.

Distribution of arterial air emboli: Effect of the Trendelenberg position in dogs (Abstract).

Krutz, R.W., Jr.; Dixon, G.A. (Adams, J.D. = P.I.)
The effects of exercise on bubble formation and bends susceptibility at 9,100 m (30,000 ft; 4.3 psia).
Aviation, Space, and Environmental Medicine 58(9, Suppl.): A97-A99, 1987. (GWU 8675)

Lambertsen*, C.J.
Background history and scope of diving table validation.

Lambertsen*, C.J.; Albertine, K.H.; Flores, D.; Pisarello, J.
Pathophysiology of spontaneous venous gas embolism: Relation to pulmonary oxygen poisoning (Abstract).

LeChevallier, M.W.; Schiemann, D.A.; McFeters*, G.A.
Factors contributing to the reduced invasiveness of chlorine-injured Yersinia enterocolitica.
Leiman, B.; Braude, B.; Glass, P.; Cronau, L.; Katz, J.; Butler*, B.; Stanley, T.
Quantitation of factors influencing efficacy of preoxygenation prior to general anesthesia (Abstract).

Mcfeters*, G.A.; Pyle, B.H.
Bacterial resistance to disinfection by iodine in water systems on spacecraft (Abstract).

Mcfeters*, G.A.; Pyle, B.H.
Consequences of bacterial resistance to disinfection by iodine in potable water.

Molina, T.C.; Pierson*, D.L.; Irbe, R.M.
Gram-staining apparatus (GSA) compatible for use in microgravity conditions (Abstract).

Olson, R.M.; Krutz, R.W., Jr.; Dixon, G.A.; Smead*, K.W.
An evaluation of precordial ultrasonic monitoring to avoid bends at altitude.
*Aviation, Space, and Environmental Medicine* 59(7): 635-639, 1988. (GWU 6696)

Pierson*, D.L.; Brown*, H.D.
Inflight microbial analysis technology.

Pierson*, D.L.; Russo*, D.M.
Environmental health monitoring onboard Space Station (Abstract).

Pyle, B.H.; McFeters*, G.A.
Effect of growth medium on sensitivity of Pseudomonads to iodine and their recovery after disinfection (Abstract).

Pyle, B.H.; McFeters*, G.A.
Iodine susceptibility of Pseudomonads grown as biofilms on stainless steel (Abstract).

Rooney*, J.A.
Ultrasonic detection of bubbles using time delay spectrometry.

Russo*, D.; Pierson*, D.
The space station environmental health subsystem (Abstract).
Sauer, R.L.; Pierson*, D.L.; Cintron*, N.M.; Russo*, D.
The space station environmental health subsystem (Abstract).

Schaefer, D.G.; Wolf*, J.E.
Common dermatologic disorders.

Sherer, T.T.; Thrall, K.K.; Bull*, R.J.
Comparison of the subchronic effects of iodine (I₂) and iodide (I⁻) (Abstract).

Singh, A.; McFeters*, G.A.
Survival and virulence of copper- and chlorine-stressed *Yersinia enterocolitica* in experimentally infected mice.

Stout, K.D.; Bull*, R.J.
Absorption and elimination of I₂ and I⁻ in the rat (Abstract).

Stout, K.D.; Bull*, R.J.
Differential uptake and distribution of radiiodide based on I₂ and I⁻ pretreatment (Abstract).

Vann*, R.D.
Exercise and circulation in the formation and growth of bubbles.
In: *International Symposium on Supersaturation and Bubble Formation in Fluids and Organisms*, Knogsvoll, Norway, June 6-10, 1988, 34 p. (GWU 9780)

Vann*, R.D.
Likelihood analysis of decompression data using haldane and bubble growth models.
In: *Proceedings of the 9th International Symposium on Underwater and Hyperbaric Physiology*, Undersea and Hyperbaric Medical Society, Bethesda, MD, 1987, p. 165-181. (GWU 11199)

Vann*, R.D.; Gerth*, W.A.; Leatherman, N.E.
The effects of exercise and body position during pre-flight oxygen breathing on decompression sickness at 4.3 psia (Abstract).
Vann*, R.D.; Gerth*, W.A.; Leatherman, N.E.; Feezor, M.D.
A likelihood analysis of experiments to test altitude decompression protocols for shuttle operations. 
*Aviation, Space, and Environmental Medicine* 58(9, Suppl.): A106-A109, 1987. (GWU 8089)

Waligora*, J.M.; Horrigan*, D.J., Jr.; Conkin, J.
The effect of extended O2 prebreathing on altitude decompression sickness and venous gas bubbles. 
*Aviation, Space, and Environmental Medicine* 58(9, Suppl.): A110-A112, 1987. (GWU 8088)

Webb, J.T.; Smead*, K.W.; Jauchem, J.R.; Barnicott, P.T.
Susceptibility to decompression-induced venous gas emboli: Hematology and biochemistry (Abstract).

Willis*, C.E.
Radiologic imaging for the space station.

Willis*, C.E.; Schultz*, J.R.
Spacecraft water system disinfection technology: Past, present, and future needs.
RADIATION HEALTH PROGRAM
Abbas, B.; Hayes, T.L.; Carr, K.E.; Ainsworth*, E.J.
Structural changes in transverse sections of mouse jejunal villi after X-ray and neon-ion radiation (Abstract).

Afzal, S.M.J.; Ainsworth*, E.J.
Radioprotection of mouse colony forming units-spleen against heavy-charged particle damage by WR 2721.

Ainsworth*, E.J.
From endotoxins to newer immunomodulators: Survival-promoting effects of microbial polysaccharide complexes in irradiated animals.

Ainsworth*, E.J.; Hanson, W.R.; Afzal, S.M.J.
Issues and strategies related to radioprotective countermeasures in space (Abstract).
In: *Abstracts, Twenty-Seventh Plenary Meeting of the Committee on Space Research*, Espoo, Finland, July 18-29, 1988, p. 276. (GWU 10351)

The Diogene 4π detector at Saturne.

Nuclear collective flow in neon-nucleus collisions at E/A = 400 and 800 MeV (Abstract).

Pion production in α-nucleus reactions from 200 to 800 A.MeV (Abstract).

Entropy per nucleon production for different combinations projectile-target at 400A.MeV.
In: *Proceedings of the Third International Conference on Nucleus-Nucleus Collisions*, Saint Malo, France, June 6-11, 1988, p. 156. (GWU 10920)
Light fragment production at small angles in Ne + nucleus collisions.

Methods for high-energy hadronic beam transport.

Atwell, W.; Beever, E.R.; Hardy*, A.C.
A parametric study of space radiation exposures to critical body organs for low earth orbit missions.
Paper presented at the Twenty-Seventh Plenary Meeting of the Committee on Space Research, Espoo, Finland, July 18-29, 1988, 23 p. (GWU 10624)

Atwell, W.; Beever, E.R.; Hardy*, A.C.
Radiation shielding analysis for the space shuttle program: An overview.

Atwell, W.; Beever, E.R.; Hardy*, A.C.
Space radiation exposure for manned polar missions: A parametric study.

Atwell, W.; Hardy*, A.C.; Beever, E.R.; Richmond, R.G.; Cash, B.L.
A comparison of space radiation dose calculations with onboard dosimeter measurements for space shuttle missions.

Badavi, F.F.; Norbury, J.W.; Wilson, J.W.; Townsend*, L.W.
Accuracy of Analytic Energy Level Formulas Applied to Hadronic Spectroscopy of Heavy Mesons.

Badavi, F.F.; Townsend*, L.W.; Wilson, J.W.; Norbury, J.W.
An algorithm for a semiempirical nuclear fragmentation model.

Benton*, E.V.; Parnell, T.A.
Space radiation dosimetry on U.S. and Soviet manned missions.

Buck, W.W.; Wilson, J.W.; Townsend*, L.W.; Norbury, J.W.
Carr, K.E.; Hayes, T.L.; Indran, M.; Bastacky, S.J.; McAlinden, G.; Ainsworth*, E.J.; Ellis*, S.
Morphological criteria for comparing effects of X-rays and neon ions on mouse small intestine.
Scanning Electron Microscopy 1(2): 799-809. (GWU 11186)

Ultraviolet mutagenesis and effects of rad-1, 3, & 7.

Ultraviolet mutagenesis of radiation sensitive mutants of the nematode Caenorhabditis elegans (Abstract).
In: Program, 10th International Congress on Photobiology, Jerusalem, Israel, October 30 - November 5, 1988, 1 p. (GWU 10364)

Ultraviolet mutagenesis of radiation-sensitive (rad) mutants of the nematode Caenorhabditis elegans.

Responses of radiation sensitive mutants to high and low LET ionizing radiation (Abstract).

Coohill, T.P.; Marshall, T.; Schubert, W.; Nelson*, G.
Genetic and developmental responses of radiation sensitive mutants of the nematode C. elegans, to ultraviolet, high and low LET radiation.

Cox, A.B.; Lee, A.C.; Lett*, J.T.
Delayed effects of proton irradiation in the lens and integument: A primate model.

Eikonal solutions to optical model coupled channel equations for 1 GeV p-12C and 1 GeV/nucleon 4He-12C scattering (Abstract).

Cucinotta, F.A.; Khandelwal, G.S.; Townsend*, L.W.; Wilson, J.W.
Correlations and density of excited states in α-particle scattering (Abstract).

Cucinotta, F.A.; Norbury, J.W.; Khandelwal, G.S.; Townsend*, L.W.

Cucinotta, F.A.; Norbury, J.W.; Townsend*, L.W.
Fry, R.J.M.; Lett*, J.T.
Radiation hazards in space put in perspective.

Fry, R.J.M.; Nachtwey*, D.S.
Radiation protection guidelines for space missions.

Fry, R.J.M.; Sinclair*, W.K.
New dosimetry of atomic bomb radiations.

Ganapol, B.D.; Wilson, J.W.; Townsend*, L.W.
Benchmark solutions for the galactic ion transport equations (Abstract).

Gosset, J.; Babinet, R.; De Marco, N.; Fanet, H.; Fodor, Z.; Lemaire, M.C.;
Alard, J.P.; Augerat, J.; Bastid, N.; Dupieux, P.; Fraysse, L.; Montarou, G.;
Parizet, M.J.; Valéro, J.; Brochard, F.; Gorodetzky, P.; Racca, C.
Collective flow effects in Ne + Pb collisions at E/A=400 and 800 MeV.

Poitou, J.; Schimmerling*, W.; Terrien, Y.; Valette, O.; Alard, J.P.; Augerat, J.;
Bastid, N.; Dupieux, P.; Fraysse, L.; Montarou, G.; Parizet, M.J.; Valéro, J.;
Brochard, F.; Gorodetzky, P.; Racca, C.
Pion emission and collective flow in neon-nucleus collisions at E/A = 800 MeV.

Guzik, T.G.; Mitchell, J.W.; Wefel, J.P.; Crawford, H.J.; Engelage, J.;
Lindstrom, P.J.; Schimmerling*, W.
The energy dependence of momentum widths in the projectile fragmentation of $^{14}$O.

Guzik, T.G.; Mitchell, J.W.; Wefel, J.P.; Crawford, H.J.; Grenier, D.E.; Engelage, J.;
Lindstrom, P.J.; Schimmerling*, W.; Symons, T.J.M.
The fragmentation of $^{16}$O nuclei in the laboratory and in the galaxy (Abstract).

Hanson, W.R.; Fry, R.J.M.; Sallese, A.R.; Frischer, H.; Ahmad, T.; Ainsworth*, E.J.
Comparison of intestine and bone marrow radiosensitivity of the BALB/c and the C57BL/6 mouse strains and their B6CF1 offspring.

Hoffmann, A.; Brechtmann, C.; Heinrich, W.; Benton*, E.V.
Search for projectile fragments with fractional charge in relativistic heavy ion collisions.
Keith, J.E.; Richmond, R.G. (Hardy, A.C. = P.I.)
Neutrons in space: Measurements aboard the space shuttle.
In: Theory and Practice in Radiation Protection and Shielding, Proceedings of the American Nuclear Society
Meeting, Knoxville, TN, April 22-24, 1987, p. 281-286. (GWU 10644)

Khan, F.; Khandelwal, G.S.; Wilson, J.W. (Townsend, L.W. = P.I.)
1s² 1S-1s np 1P transitions of the helium isoelectronic sequence members up to Z = 30.

Khan, F.; Khandelwal, G.S.; Wilson, J.W. (Townsend, L.W. = P.I.)
Static multipole polarisabilities and second-order Stark shift in francium.

Khan, F.; Khandelwal, G.S.; Wilson, J.W.; Townsend*, L.W.; Norbury, J.W.
Excitation-decay contribution to fragment production compared for the reactions (12C, 11B + P) and (16O, 15N + P) at 1.05 A GeV and 2.1 A GeV on 13C target (Abstract).

Khan, F.; Khandelwal, G.S.; Wilson, J.W.; Townsend*, L.W.; Norbury, J.W.
Excitation decay contribution of projectile and projectile fragments to (12C, 11B + P) cross section at 2.1 A GeV with 12C targets.

Khan, F.; Khandelwal, G.S.; Wilson, J.W.; Townsend*, L.W.; Norbury, J.W.
Momentum downshifts of projectile fragments in 12C fragmentation at 2.1 A GeV on Be, C, Al, Cu, Ag and Pb targets (Abstract).

Konradi, A.; Hardy*, A.C.; Atwell, W.
Radiation environment models and the atmospheric cutoff.

Krebs, W.; Krebs, I.; Merriam, G.R., Jr.; Worigu*, B.V.
The effect of accelerated argon ions on the retina.

Letaw, J.R.; Silberberg*, R.; Tsao, C.H.
Galactic cosmic radiation doses to astronauts outside the magnetosphere.

Letaw, J.R.; Silberberg*, R.; Tsao, C.H.
Radiation hazards on space missions outside the magnetosphere.
Paper presented at the Twenty-Seventh Plenary Meeting of the Committee on Space Research, Espoo, Finland, July 18-29, 1988, 6 p. (GWU 10551)

Letaw, J.R.; Silberberg*, R.; Tsao, C.H.
Radiation hazards on space missions outside the magnetosphere.
Letaw, J.R.; Silberberg*, R.; Tsao, C.H.; Benton*, E.V.
Model analysis of space shuttle dosimetry data (Abstract).
In: Abstracts, Twenty-Seventh Plenary Meeting of the Committee on Space Research, Espoo, Finland, July 18-29, 1988, p. 274. (GWU 10354)

Letaw, J.R.; Silberberg*, R.; Tsao, C.H.; Benton*, E.V.
Model analysis of space shuttle dosimetry data (Abstract).
Paper presented at the Twenty-Seventh Plenary Meeting of the Committee on Space Research, Espoo, Finland, July 18-29, 1988, 10 p. (GWU 8635)

Lett*, J.T.; Cox, A.B.; Lee, A.C.
Late cataractogenesis caused by particulate radiations and photons in long-lived mammalian species (Abstract).
Abstract of paper presented at the Twenty-Seventh Plenary Meeting of the Committee on Space Research, Espoo, Finland, July 18-29, 1988, p. 276. (GWU 10355)

Lett*, J.T.; Cox, A.B.; Lee, A.C.
Selected examples of degenerative late effects caused by particulate radiations in normal tissues.

Lett*, J.T.; Keng, P.C.; Bergtold, D.S.; Howard, J.
Effects of heavy ions on rabbit tissues: Induction of DNA strand breaks in retinal photoreceptor cells by high doses of radiation.

Exclusive measurements of mean pion multiplicities in 4He-nucleus reactions from 200 to 800 MeV/nucleon.

Maung, K.M.; Townsend*, L.W.; Deutchman, P.A.
Corrections to the impulse approximation of the first-order optical potential (Abstract).

Mitchell, J.W.; Guzik, T.G.; Wefel, J.P.; Crawford, H.J.; Engelage, J.; Lindstrom, P.J.; Schimmerling*, W.; Symons, T.J.M.
Projectile fragmentation of 16O at medium energies (Abstract).

Nachtwey*, D.S.
Radiological health considerations for a lunar base (Abstract).

Nealy, J.E.; Wilson, J.W.; Townsend*, L.W.
Nelson*, G.; Marshall, T.; Schubert, W.
Genetic effects of neutrons on C. elegans.

Nelson*, G.; Marshall, T.; Schubert, W.
Heavy ion genetic studies with the nematode C. elegans (Abstract).
In: Workshop on Biomedical and Space-Related Research With Heavy Ions at the Bevalac, Berkeley, CA, March 16-17, 1987, 1 p. (GWU 10362)

Nelson*, G.; Schubert, W.; Marshall, T.
Genetic and developmental effects of heavy ion radiation in C. elegans (Abstract).

Heavy ion radiobiology investigations with C. elegans (Abstract).

Genetic and developmental effects of heavy ion radiation in the nematode C. elegans (Abstract).
In: Abstracts, Third Workshop on Heavy Charged Particles in Biology and Medicine, Darmstadt, Germany, July 13-15, 1987, 3 p. (GWU 10365)

Radiobiology investigations with C. elegans (Abstract).
Abstract of paper presented at the Second West Coast C. elegans Meeting, Lake Arrowhead, CA, March 4-6, 1988, 1 p. (GWU 10370)

Genetic and developmental effects of high LET radiation on the nematode C. elegans.
In: Proceedings of the 27th Hanford Life Sciences Symposium, Richland, WA, October 18-21, 1988, 5 p. (GWU 10376)

Heavy ion radiobiology of the nematode C. elegans (Abstract).

Norbury, J.W.; Cucinotta, F.A.; Townsend*, L.W.; Badavi, F.F.
Parameterized cross sections for Coulomb dissociation in heavy-ion collisions.

Norbury, J.W.; Deutchman, P.A.; Townsend*, L.W.; Cucinotta, F.A.

Norbury, J.W.; Townsend*, L.W.; Badavi, F.F.
Radiation-induced DNA damage and repair: Argonne National Laboratory Symposium, Argonne.

Penney, D.P.; Philpott*, D.E.; Rosenkraus, W.A.; Cooper, R.A., Jr.
Effects of high energy particle (HZE) radiation on the distal lung.

Poitou, J.; Babinet, R.; De Marco, N.; Fanet, H.; Fodor, Z.; Gosset, J.;
Alard, J.P.; Augerat, J.; Bastid, N.; Dupieux, P.; Fraysse, L.; Montarou, G.;
Parizet, M.J.; Valéro, J.; Brochard, F.; Gorodetzky, P.; Racca, C.
Exclusive measurement of Ne + Pb (yields) w, H, He at E/A=400 and 800 MeV.

Richmond, R.G.; Badhwar, G.D.; Cash, B.; Atwell, W. (Hardy, A.C. = P.I.)
Measurement of differential proton spectra onboard the space shuttle using a thermoluminescent dosimetry system.

Richmond, R.G.; Badhwar, G.D.; Cash, B.L.; Atwell, W. (Hardy, A.C. = P.I.)
Measurement of orbit-averaged, differential energy spectra of trapped protons using thermoluminescent dosimeter techniques.

Richmond, R.G.; Cash, B.L. (Hardy, A.C. = P.I.)
Effective use of lithium fluoride, TLD-100, at very low radiation doses.

Richmond, R.G.; Jones, K.L.; Cash, B.L.; Mizner, A.A. (Hardy, A.C. = P.I.)
Operational dosimetry for the space shuttle: A short summary of techniques and results.

Distribution of energy in polymers due to incident electrons and protons.

Schimmerling*, W.
Physical considerations relevant to HZE-particle transport in matter.

Schimmerling*, W.; Alpen, E.L.; Powers-Risius, P.; Wong, M.; DeGuzman, R.J.;
Rapkin, M.
The relative biological effectiveness of 670 MeV/A neon as a function of depth in water for a tissue model.
Schimmerling*, W.; Alpen, E.L.; Wong, M.; Rapkin, M.
The RBE of 670A MeV neon as a function of depth in water for a tissue model (Abstract).

Biophysical aspects of heavy ion interactions in matter.

Schimmerling*, W.; Wong, M.; Rapkin, M.

Transport parameters in models of distributed acceleration (Abstract).

Radiation hazards in space.

Silberberg*, R.; Tsao, C.H.; Letaw, J.R.
A comparison of neutron-induced SEU rates in Si and GaAs devices (Abstract).

Silberberg*, R.; Tsao, C.H.; Letaw, J.R.
New semiempirical equation parameters for cross sections of elements 21<Z<83 (Abstract).

Silberberg*, R.; Tsao, C.H.; Letaw, J.R.
Recent improvement of spallation cross section calculations, applicable to cosmic ray physics.

Silberberg*, R.; Tsao, C.H.; Letaw, J.R.
Transport of cosmic ray nuclei in various materials.

Silberberg*, R.; Tsao, C.H.; Letaw, J.R.; Shapiro, M.M.
Propagation and transformations of cosmic rays: From sources to Earth.

Townsend*, L.W.; Nealy, J.E.; Wilson, J.W.
Townsend*, L.W.; Wilson, J.W.  
Comment on "Trends of total reaction cross sections for heavy ion collisions in the intermediate energy range."  

Townsend*, L.W.; Wilson, J.W.  
An evaluation of energy-independent heavy ion transport coefficient approximations.  

Townsend*, L.W.; Wilson, J.W.  
Galactic heavy ion propagation through spacecraft.  
Paper presented at the Natural Space Radiation and VLSI Technology Conference, Houston, TX, January 20-21, 1987, 10 p. (GWU 10960)

Townsend*, L.W.; Wilson, J.W.  
Nuclear cross sections for estimating secondary radiations produced in spacecraft.  

Townsend*, L.W.; Wilson, J.W.  
Nuclear cross sections for hadronic transport (Abstract).  

Townsend*, L.W.; Wilson, J.; Cucinotta, F.A.  
A simple parameterization for quality factor as a function of linear energy transfer.  

Townsend*, L.W.; Wilson, J.W.; Nealy, J.E.  

Townsend*, L.W.; Wilson, J.W.; Schimmerling*, W.; Wong, M.  
Studies of HZE particle interactions and transport for space radiation protection purposes (Abstract).  

Townsend*, L.W.; Wong, M.; Schimmerling*, W.; Wilson, J.W.  
Development of a nuclear data base for relativistic ion beams.  

Nuclear collective flow in neon-nucleus collisions at E/A = 800 MeV.  
In: *Proceedings of the Third International Conference on Nucleus-Nucleus Collisions,* Saint Malo, France, June 6-11, 1988, p. 141. (GWU 10919)
Distributed reacceleration of cosmic rays.  

Wilson, J.W.; Chun, S.Y.; Buck, W.W.; Townsend*, L.W.  
High energy nucleon data bases.  

Wilson, J.W.; Khandelwal, G.S.; Fogarty, N.T. (Townsend, L.W. = P.I.)  

Wilson, J.W.; Schimmerling*, W.; Wong, M.; Townsend*, L.W.  
Heavy ion beams in extended materials computational methods and experiment.  

Wilson, J.W.; Townsend*, L.W.  
A benchmark for galactic cosmic-ray transport codes.  

Wilson, J.W.; Townsend*, L.W.  
Nucleon interaction data bases for background estimates.  

Wilson, J.W.; Townsend*, L.W.  
Radiation safety in commercial air traffic: A need for further study.  

Wilson, J.W.; Townsend*, L.W.; Atwell, W.  

Wilson, J.W.; Townsend*, L.W.; Badavi, F.F.  
Galactic HZE propagation through the Earth's atmosphere.  

Wilson, J.W.; Townsend*, L.W.; Badavi, F.F.  
A semiempirical nuclear fragmentation model.  

Wilson, J.W.; Townsend*, L.W.; Buck, W.W.; Chun, S.Y.; Hong, B.S.; Lamkin, S.L.  

Wilson, J.W.; Townsend*, L.W.; Chun, S.Y.; Buck, W.W.; Khan, F.; Cucinotta, F.  
Wilson, J.W.; Townsend*, L.W.; Cucinotta, F.A.

Wilson, J.W.; Townsend*, L.W.; Ganapol, B.; Chun, S.Y.; Buck, W.W.
Charged-particle transport in one dimension.

Wilson, J.W.; Townsend*, L.W.; Ganapol, G.; Lamkin, S.L.
Methods for high energy hadronic beam transport (Abstract).

Wong, M.; Schimmerling*, W.; Ludewigt, B.; Phillips, M.; Curtis, S.; Tobias, C.A.
Multiple Coulomb scattering of high-energy heavy charged particle beams used in biology and medicine (Abstract).

Wong, M.; Schimmerling*, W.; Phillips, M.H.; Ludewigt, B.A.; Curtis, S.B.; Tobias, C.A.
The multiple Coulomb scattering of very heavy charged particles (Abstract).

Yamamoto, O.; Fuji, I.; Yoshida, T.; Cox, A.B.; Lett*, J.T.
Age dependency of base modification in rabbit liver DNA.

Yamamoto, O.; Lett*, J.T.; Cox, A.B.
Similarity of modification of DNA bases of rabbit liver by aging to that of nucleobases in aqueous solution by gamma-irradiation (Abstract).
CLINICAL MEDICINE PROGRAM
Houtchens*, B.A.
Development of capability to perform emergency surgical procedures in the remote, self-contained, microgravity environment of space station (Abstract).

Logan*, J.S.
An approach to the design of a health care delivery system for lunar base (Abstract).

Logan*, J.S.
Health maintenance on Space Station.

Ostler*, D.V.
HMF medical decision support system: Extensions for lunar base (Abstract).

Pool*, S.L.
Space medicine.

Santy*, P.A.; Kapanka, H.; Davis, J.R.; Stewart*, D.F.
Analysis of sleep on shuttle missions (Abstract).

Computer applications to trauma patient evaluation and care.

Update: Weekly conferencing system - Multidisciplinary review of 70-100 patients (Abstract).
Archives of Physical and Medical Rehabilitation 68(9): 671, 1987. (GWU 8952)

Tipton, D.A.; Myers, K.J.; Loyd*, O.H.
The adaptation of CPR techniques for use in the weightless environment (Abstract).

Webster*, L.
Space station health maintenance facility (HMF) knowledge based system for analyzing noninvasive measurements of deconditioning onboard and advising exercise countermeasures (Abstract).
Callahan, P.X.; Grindeland*, R.; Funk, G.; Lencki, W.
Results from the SL-3 Ames Research Center Life Sciences Payload: A spaceflight of 24 rats and 2 monkeys (Abstract).

Committee on Space Biology and Medicine, National Academy of Sciences

Fuller*, C.A.; Sulzman*, F.M.; Keefe*, J.R.
Artificial gravity: The evolution of variable gravity research.

Hymer*, W.C.; Grindeland*, R.; Hayes, C.; Lanhan, J.W.; Morrison*, D.
Life sciences, biotechnology, and microgravity.

Medical considerations for extending human presence in space.

Leach*, C.S.; Schneider, H.J.
Spacelab life sciences 1 and 2 scientific research objectives.
Physiologist 30(1, Suppl.): S6-S9, 1987. (GWU 8619)

Lui, B.Y.H. (Chairman)
(NASA-CP-2499) (GWU 8117)

McCormack*, P.D.
Radiation dose and shielding for the space station.

McCormack*, P.D.; Swenberg, C.E.; Bucker, H. (Eds.)
(GWU 10711)

Human tolerances to combined Gy and Gz accelerations (Abstract).

Inflight combined vertical and lateral space vehicular accelerations: Human tolerances.

Morrison*, D.R.
(NASA-CP-2485) (GWU 11069)
Nicogossian*, A.E.; Garshnek*, V.
The effect of space flight on the cardiopulmonary system.

Nicogossian*, A.E.; Garshnek*, V.
Summary of space flight.

Nicogossian*, A.E.; McCormack*, P.D.
Artificial gravity: A countermeasure for zero gravity.

Phillips*, R.W.
Animals in biomedical space research.

Rambaut*, P.C.
The prevention of adverse physiological change in space station crewmembers.

Smith, M.C., Jr.; Johnson*, P.C.; LeBlanc*, A.
Animal Enclosure Module inflight test.

Vernikos-Danellis*, J.

Wolfe*, J.W.; Davis*, J.G.
An overview of the School of Aerospace Medicine: Its role in aerospace and space biomedical research.
APPENDIX: Space Medicine and Flight Principal Investigators
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