

Decadal Survey on Biological and Physical Sciences in Space: Integrative and Translational Research for the Human System Panel

Committee

James A. Pawelczyk

Chair

JAMES A. PAWELCZYK is an associate professor of physiology and kinesiology at Pennsylvania State University. Dr. Pawelczyk served as a payload specialist on STS-90 Neurolab from April 17 to May 3. During the 16-day Spacelab flight the seven person crew aboard NASA Space Shuttle Columbia served as both experiment subjects and operators for 26 individual life science experiments focusing on the effects of microgravity on the brain and nervous system. Dr. Pawelczyk's primary research interests include the neural control of the circulation, particularly skeletal muscle blood flow, as it is affected by exercise or spaceflight. Dr. Pawelczyk is a member of the American Heart Association, the American Physiological Society, the American College of Sports Medicine and the Society for Neuroscience. He has won numerous awards, including the Young Investigator Award from the Life Sciences Project Division of the NASA Office of Life and Microgravity Science Applications (1994) and the NASA Space Flight Medal (1998). He earned two B.A. degrees in biology and psychology from the University of Rochester, New York in 1982, a M.S. in physiology from Pennsylvania State University in 1985 and a Ph.D. in biology (physiology) from the University of North Texas in 1982. Dr. Pawelczyk has previously served as a member of the National Research Council's Review of NASA Strategic Roadmaps: Space Station Panel (2005), the Committee on NASA's Bioastronautics Critical Path Roadmap (2004-2006), the Committee to Review NASA's Space Flight Standards (2006-2007), the Planning Committee for the Issues in Space Science and Technology Workshop Series (2007-2008), and the Committee on NASA's Research on Human Health Risks (2007-2008). He currently serves as a member of the National Research Council Committee on Aerospace Medicine and Medicine of Extreme Environments (2006-2009) and as a member of the Space Studies Board (2006-2010).

Alan R. Hargens

Member

ALAN R. HARGENS is the principal investigator and professor of the Clinical Physiology Laboratory at the University of California, San Diego (UCSD) Medical Center. Prior to joining the faculty of UCSD, Dr. Hargens was the senior research physiologist (1996-2000) and a space station project scientist (1988-1997) at NASA Ames Research Center in Moffett Field, California. He has received numerous academic awards and professional honors, including the 2008 Recognition Award from the American Physiology Society History Group and the Outstanding Performance Award from NASA (1993-1995). He received his B.A. in chemistry from the University of Minnesota, Minneapolis in 1966 and his Ph.D. in marine biology from the Scripps Institution of Oceanography at the University of California, San Diego.

Robert L. Helmreich

Member

ROBERT L. HELMREICH is a retired professor of psychology at The University of Texas at Austin, where he taught from 1966 to 2006. He was principal investigator of the University of Texas Human Factors Research Project, which studied individual and team performance, human error, and the influence of culture on behavior in aviation and medicine. He was a member of the Space Life Sciences Committee for NASA's University Space Research Association and he is a Fellow of the Royal Aeronautical Society and the American Psychological Association. Dr. Helmreich received the Flight Safety Foundation Distinguished Service Award for his contributions to aviation safety through the study and development of team training techniques (Crew Resource Management) for flight crews. He was also awarded Laurels from Aviation Week and Space Technology for his research related to human factors in aviation. He received the distinguished service award of the Flight Safety Foundation and the Human Factors award of Airbus Industrie in 2004. Dr. Helmreich is the 2005 recipient of the Public Service Award of the American Association of Anesthesia Nurses and of the University of Texas College of Liberal Arts Pro Bene Meritis Award and he received the David S. Sheridan Award from Albany Medical College in 1997. He has written more than two hundred papers, chapters, and scientific reports and he is the author (with Ashleigh Merritt) of the 1998 book, *Culture at Work in Aviation and Medicine: National, Organizational, and Professional Influences*. Dr. Helmreich received his B.S. and his Ph.D. from Yale University in 1959 and 1966, respectively. He has served on the National Research Council Panel on Human Behavior, the Panel on Workload Transition, the Committee on Space Biology and Medicine, the Committee on Human-Systems Integration, the Committee on Human Factors and the Panel on Human Factors in Air Traffic Control Automation.

Joanne R. Lupton

Member

JOANNE R. LUPTON is a Distinguished Professor, Regent's Professor and University Faculty Fellow at Texas A&M University and holder of the William W. Allen Endowed Chair in Human Nutrition. She chaired the Macronutrients Panel for Dietary Reference Intakes, Food and Nutrition Board, National Academy of Sciences, that determined the intake values for protein, carbohydrates, fats, fiber and energy and she also chaired the National Academy panel to determine the definition of dietary fiber. She was also a member of the 2005 Dietary Guidelines Committee. Dr. Lupton spent one year at the Food and Drug Administration helping to develop levels of scientific evidence required for health claims. She is a lifetime associate of the National Academy of Sciences. Dr. Lupton has mentored more than 50 MS and Ph.D. students while at Texas A&M, and received the Dannon/American Society for Nutrition mentoring award in 2004. In 2007 she received the Texas A&M University distinguished achievement award for research. Dr. Lupton is immediate Past President of the American Society for Nutrition (ASN), the nutrition research organization. She is on the nutrition advisory committee to the Texas Commissioner for Agriculture. Dr. Lupton's research is on the effect of diet on colon physiology and colon cancer with a particular focus on dietary fiber and n-3 fatty acids. She translates basic research on diet and colon physiology to science-based public policy, and has consulted with individuals in Japan, South Korea, China, Taiwan and elsewhere on the definition of dietary fiber and establishing dietary guidance systems in those countries. She is the principle investigator on a training grant to train Ph.D. students in space life sciences, and is the former team leader for the Nutrition and Physical Fitness for the National Space Biomedical Research Institute. She is currently the lead scientist for a front of pack food labeling system to help consumers make healthier choices in the marketplace. Her research is supported by grants from the NIH/NCI, NASA, and NSBRI. Her undergraduate degree is from Mt. Holyoke College and her Ph.D. in Nutrition is from the University of California at Davis.

Charles M. Oman

Member

CHARLES M. OMAN is a Senior Research Engineer, Senior Lecturer and Director of the Man-Vehicle Laboratory in the Department of Aeronautics and Astronautics at the Massachusetts Institute of Technology in Boston. Dr. Oman's group studies the physiological and cognitive limitations of humans in aircraft and spacecraft, and tries to develop new ways of improving human-vehicle effectiveness and safety. The laboratory takes an interdisciplinary approach, utilizing techniques from manual and supervisory control theory, estimation, signal processing, biomechanics, cognitive, computational and physiological neuroscience, sensory-motor physiology, human factors, and biostatistics. Dr. Oman received his BSE. from Princeton University and his Ph.D. from MIT. He flew experiments visual and vestibular function in spatial orientation on 9 Shuttle missions, including 6 Spacelab flights. Since 1997 he has lead the Sensorimotor Adaptation research team of the National Space Biomedical Research Institute. Dr. Oman previously served on the NASA Advisory Council's Biological and Physical Research Advisory Committee and the National Research Council Panel on Robotic Access and Human Planetary Landing Systems. He chaired the NASA Space Station Utilization Advisory Subcommittee in 2004-05. He is a member of the International Academy of Astronautics.

David Robertson

Member

DAVID ROBERTSON is a professor of Medicine and Pharmacology and a professor of Neurology in addition to the Elton Yates Professor of Autonomic Disorders, director of the General Clinical Research Center and director of the Center for Space Physiology and Medicine at Vanderbilt University. Prior to joining the Vanderbilt faculty, Dr. Robertson completed an internship and residency in Medicine at Johns Hopkins Hospital and a postdoctoral fellowship in Clinical Pharmacology at Vanderbilt before accepting a position as assistant chief of Service in Medicine and instructor in Medicine at Johns Hopkins in 1977.. In 1993, he became director of the Medical Scientist Training Program at Vanderbilt University and also took the position of director of the Division of Movement Disorders in the Department of Neurology, which he held until 2000. Dr. Robertson currently serves on the Board of Advisors for the World Life Foundation, the NASA Microgravity Human Research Committee, the Merck Advisory Board, and the editorial boards of American Journal of Medicine, Autonomic Neuroscience and Clinical Autonomic Research. He is also associate editor for the Journal of Pharmacology and Experimental Therapeutics. He received his B.A. in Germanic and Slavic Languages in 1969 from Vanderbilt University and his M.D. from Vanderbilt University Medical School.

Suzanne M. Schneider

Member

SUZANNE M. SCHNEIDER is an associate professor in the Department of Health, Exercise and Sports Sciences at the University of New Mexico (UNM). Prior to joining the UNM faculty of in 2002, Dr. Schneider was a research physiologist at NASA's Johnson Space Center (1989-2001) and a project scientist at the Human Research Facility of the International Space Station (1994-2001). Her research focuses on thermal physiology and microgravity, including the thermal responses of females to microgravity. Dr. Schneider is on the Editorial Board of the American Journal of Physiology and Aviation, Space and Environmental Medicine and she has presented at meetings of the Federation of American Scientists for Experimental Biology (FASEB), the American College of Sports Medicine (ACSM), and the Aerospace Medical Association (ASMA). She received her B.A. in biology in from the University of Missouri and her Ph.D. in physiology from St. Louis University. After graduation, she completed a postdoctoral fellowship at the John B. Pierce Foundation with an appointment with the Department of Epidemiology at Yale University. Dr. Schneider has no prior NRC experience.

Gayle E. Woloschak

Member

GAYLE E. WOLOSCHAK is a professor in the Department of Radiology and the Department of Cell and Molecular Biology at Northwestern University's Feinberg School of Medicine in Chicago. Prior to joining the Northwestern faculty in 2002, Dr. Woloschak was the senior molecular biologist in the Biosciences Division at Argonne National Laboratory. Her research is focused on nanocomposites and genes controlling radiosensitivity and motor neuron dysfunction. Dr. Woloschak's work is oriented toward function use of nanocomposites for intracellular manipulation, imaging, and gene silencing. Her work on motor neuron disease is designed to understand the molecular basis for the combined abnormalities from a molecular-cellular perspective. Dr. Woloschak has served as a member of the National Institute of Health's radiation study section and as chairman of NASA's peer review radiation biology committee. She received her Ph.D. in medical sciences (Microbiology) from the Medical College of Ohio. Dr. Woloschak has previously served as a member of the NRC Committee on Evaluation of Radiation Shielding for Space Exploration and the Committee to Assess Potential Health Effects from Exposures to PAVE PAWS Low-level Phased-array Radiofrequency Energy. Dr. Woloschak is currently a member of the Microgravity Decadal Survey Steering Committee, and she is being nominated to serve as a member of the panel and as a liaison to the Steering Committee.