

Curriculum Vitae

Alan R. Hargens, Ph.D.

Present Position, Phone and Fax Numbers, Email Address and Websites:

Professor, Department of Orthopaedic Surgery
University of California, San Diego
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Born:

Great Falls, Montana

Citizenship:

U.S.A.

Education:

1962-1966	B.A. in Chemistry, Summa Cum Laude, University of Minnesota, Minneapolis
1966-1971	Ph.D. in Marine Biology, Scripps Institution of Oceanography, University of California, San Diego

Postgraduate Training:

1971-1972	National Science Foundation NATO Postdoctoral Fellow, Institute of Biological Chemistry A, University of Copenhagen, Denmark
1973-1975	American Heart Association Advanced Research Fellow, Department of Bioengineering, School of Medicine, UC, San Diego
1975-1976	National Institutes of Health Trainee, Department of Medicine - Nephrology, University of California, San Diego

Positions Held:

1971	Postgraduate Research Physiologist, Physiological Research Laboratory, Scripps Institution of Oceanography, University of California, San Diego
1972	Assistant Professor, Department of Zoophysiology, University of Aarhus, Denmark
1975-1976	Assistant Research Bioengineer, Department of AMES (Applied Mechanics and Engineering Sciences) - Bioengineering, School of Medicine, University of California, San Diego
1976-1978	Assistant Research Physiologist, Department of Surgery, School of Medicine, University of California, San Diego
1978-1979	Associate Research Physiologist, Department of Surgery, School of Medicine, University of California, San Diego
1979-1984	Associate Professor of Surgery, Department of Surgery, School of Medicine, University of California, San Diego
1978-1987	Orthopaedic Investigator and Biomedical Engineer, Department of Surgery - V.A. Medical Center, San Diego
1984-1988	Professor of Surgery, Department of Surgery, School of Medicine, University of California, San Diego
1987-1988	Chief, Space Physiology Branch, NASA Ames Research Center, Moffett Field, California
1988-1992	Lecturer, Department of Aeronautics & Astronautics, Stanford University
1988-1997	Space Station Project Scientist, NASA Ames Research Center, Moffett Field, California
1988-1998	Adjunct Professor, Department of Orthopaedics, School of Medicine, University of California, San Diego
1993-2000	Consulting Professor, Program in Human Biology, Stanford University
1994-1996	Chief (Acting), Gravitational Research Branch, NASA Ames Research Center, Moffett Field, California
1996-2000	Senior Research Physiologist, Gravitational Research Branch, NASA Ames Research Center, Moffett Field, California
1998-present	Professor, Department of Orthopaedic Surgery, School of Medicine, University of California, San Diego

Academic and Professional Honors:

1963	NSF Summer Research Award in Chemistry
1965	Phi Beta Kappa
1966	Summa Cum Laude graduate in Chemistry and Mathematics
1966-1969	National Science Foundation Graduate Fellowship
1967	California State Scholarship
1971-1972	National Science Foundation NATO Postdoctoral Fellowship
1973	American Heart Association Research Fellowship
1974-1975	American Heart Association Advanced Research Fellowship
1979-1984	National Institutes of Health Research Career Development Award
1986	Shinshu University Medal, Matsumoto, Japan
1987	Elizabeth Winston Lanier Award, American Academy of Orthopaedic Surgeons and Orthopaedic Research Society (Highest Research Award in Orthopaedic Surgery)
1987	Outstanding Service Award, Veterans Administration
1988	Fellow, American College of Sports Medicine
1988	Phi Beta Delta Honor Society for International Scholars (Charter Member of San Diego Chapter)
1988	NASA Cosmos Biosatellite Group Achievement Award
1989	Associate Fellow, Aerospace Medical Association

1991 Honorary Lecture, University of Alabama College of Medicine, Student Summer Research Program

1992 Sustained Superior Performance Award, NASA Ames Research Center

1992 NASA Ames Honor Award for Excellence in the Category of Mentor

1993 Outstanding Performance Award, NASA

1994 Outstanding Performance Award, NASA

1995 Fellow, Aerospace Medical Association

1995 Outstanding Performance Award, NASA

1995 NASA Ames Women's Mentor Award

2001-2003 Program Chair, International Society of Adaptive Medicine

2003-2006 President, International Society of Adaptive Medicine

2003-2009 Member, NASA/ESA/CNES Review Committee on Development of Countermeasures for Long Duration Space Flight

2003 Jacquelin Perry Award co-author for lower body positive pressure exercise research in knee surgery patients, Orthopaedic Rehabilitation Association

2006 Hallman Lecture Award for Distinguished Visiting Professor, University of Waterloo, Canada

2008 Adaptation Biology and Medicine book dedication to AR Hargens

2008 Recognition Award, American Physiology Society History Group

2008, 2009 Invited Speaker, International Congress of Cardiovascular Sciences, Brazil

2008-2010 Member, American Heart Association Peer-Review Committee for Research

2008 Invited Speaker and Discussant, International Workshop on Cardiovascular Adaptation to Space Flight

2009 Invited Landmark Lecture, International Society of Adaptive Medicine, National Yang-Ming University, Taipei, Taiwan

2009-2011 Member and Acting Chair, "Integrative and Translational Research for the Human System" panel on a National Academies study that will recommend a portfolio and timeline for NASA research in life and physical sciences for the 2010-2020 decade.

2010-2012 Vice Chair, Translational Physiology Interest Group, American Physiological Society

2010 "Most-read full-text journal article by Orthopaedists in 2010": Neuschwander TB, Cutrone J, Macias BR, Cutrone S, Murthy G, Chambers H, and Hargens AR. The effect of backpacks on the lumbar spine in children: a standing magnetic resonance imaging study, Spine 35: 83-88, 2010.

2012 Honorary Lecture, Leslie Oliver Oration "The Gravity of Space Exercise for Astronaut Health and Earth Benefit", presented at Queen's Hospital, London, UK on 23 January 2012.

2013-2016 Chair, Translational Physiology Interest Group, American Physiological Society

2014 Nello Pace Award for Outstanding Leadership in and Contributions to the Field of Gravitational Physiology, presented at the International Society of Gravitational Physiology meeting, Waterloo, Canada on 18 June 2014.

2015 Citation Award from American College of Sports Medicine

2016 Kjell Johansen Award and Invited Lecture "What can Giraffes on Earth Teach Astronauts in Space?" University of Aarhus, Denmark

2016-2018 National Academies of Science Committee Member, "Recapturing a Future for Space Exploration, A Midterm Assessment of Implementation of the Decadal Survey on Life and Physical Sciences Research at NASA.

2016 GRAMMER European Spine Journal Award for best basic-science paper for 2016/2017 "The effect of simulated microgravity on lumbar spine biomechanics: an in vitro study" Eur Spine J (2016) 25:2889-2897

2017	Recognition Award from Southwest American College of Sports Medicine for outstanding contributions to exercise science and sports medicine.
2017	NASA Distinguished Public Service Metal (NASA's highest form of recognition that is awarded to any non-Government individual or to an individual who was not a Government employee during the period in which the service was performed, whose distinguished service, ability, or vision has personally contributed to NASA's advancement of United States' interests. The individual's achievement or contribution must demonstrate a level of excellence that has made a profound or indelible impact to NASA mission success, therefore, the contribution is so extraordinary that other forms of recognition by NASA would be inadequate).
2018	Outstanding paper for medical/interventional science in the journal Spine "From the International Space Station to the clinic: how prolonged unloading may elevate risk for low back pain and lumbar instability" Spine J (2018) 18:7-14.
2019	Honorary Professor and Keynote Speaker at Seoul National University College of Medicine, Seoul, Korea. Invited Lectures: "Artificial Gravity Exercise for Deep-Space Missions" and "Orthopaedic Applications of Space Research," 6-9 December 2019.
2020	Nicolas Andry Lifetime Achievement Award from the Association of Bone and Joint Surgeons for nearly a half-century of research and clinical progress in Compartment Syndromes and Intracompartmental Pressure Measurement.

Mentored Student and Postdoctoral Fellow Awards:

1. **Groppo E**, R Eastlack, A Cutuk, H Noh, A Langemack, E Quigley, G Steinbach, A Hargens and R Pedowitz. Rehabilitation Using Lower Body Positive Pressure After Knee Surgery To Decrease Load And Preserve Gait Mechanics. Presented at the Southwestern American College of Sports Medicine Conference, San Diego, California, 2000. **(1st Place Student Award)**
2. **White KK**, RS Meyer, JM Smith, SJ Mubarak and AR Hargens. Intramuscular and blood pressures in legs positioned in the hemilithotomy position on a fracture table. San Diego Chapter of the American College of Surgeons and San Diego Society of General Surgeons, Surgical Residents Paper Competition, 2000. **(2nd Place Award)**
3. **Tanaka K**, J Waldie, G Steinbach, P Webb, D Tourbier, J Knudsen, C Jarvis and A Hargens. Positive and negative counterpressure differentials decrease and increase skin microvascular flow in the hand. AsMA 2001 Meeting. In: Aviation, Space, and Environmental Medicine, 72(3):263, Reno, Nevada, 2001. **(New Investigator Honorable Mention Award)**
4. **Steinbach G**, B Macias, T. Nguyen, D O'Leary, W Yost, J Cantrell and A Hargens. A noninvasive ultrasound technique used to assess changes in cranium dynamics following 30 days bedrest. AsMA 2001 Meeting. In: Aviation, Space, and Environmental Medicine, 72(3):251-252, Reno, Nevada, 2001. **(New Investigator Honorable Mention Award)**
5. **Monga M**, E Groppo, RS Meyer and A Hargens. Genetic determination of urinary stone risk in identical twins. 20th World Congress of Endourology and Shockwave. Genoa, Italy, 2002. Journal of Endourology 16 (Suppl) PO4-5, 2002 **(Awarded Prize for Best Overall Paper from 1200 submitted)**
6. **Macias B**, H Tran Cao, B Lee, M Bawa, E Groppo, R Pedowitz, A Hargens. Physiologic responses of lower body negative pressure treadmill exercise as a training modality. American College of Sports

Medicine (ACSM) SW Chapter, Las Vegas, Nevada, 2002. **(Student Award from American College of Sports Medicine (ACSM) SW Chapter, Las Vegas, Nevada, 2002)**

7. **Groppo E**, R Ng, R Eastlack, A Cutuk, G Schmid-Schonbein, A Hargens and R Pedowitz. Quantifying neutrophil activation with xylenol orange reaction: a possible method for detecting systemic activation. *FASEB Journal* 16: A 82(121.3), 2002. **(Zweifach Student Award from the Microcirculatory Society)**
8. **Bawa, M**, ER Groppo, GC Steinbach, SM Lee, SM Smith, AR Hargens, RS Meyer. Lower body negative pressure treadmill exercise prevents the spinal deconditioning of astronauts in simulated space flight. American Academy of Orthopaedic Surgeons Annual Meeting, New Orleans, Louisiana, 2003 **(First Prize Award for the Rehabilitation and Spine Division at the American Academy of Orthopaedic Surgeons)**
9. **Keehan MM**, SMC Lee, DE Watenpaugh, SM Schneider and AR Hargens. Simultaneous exercise and lower body negative pressure countermeasure during bed rest protects exercise capacity. 7th Congress of the International Society for Adaptive Medicine, San Diego, California, 2003. **(First Place Student Award)**
10. **Kimura S**, GC Steinbach, DE Watenpaugh and AR Hargens. Lower body negative pressure treadmill exercise may maintain lumbar spinal structure and function during 30 days of bedrest. 7th Congress of the International Society for Adaptive Medicine, San Diego, California, 2003. **(Second Place New Investigator Award)**
11. **Wiemann JM**, T Ueno, AK Schwartz, WT Yost and AR Hargens. Noninvasive measurements of intramuscular pressure using ultrasound for detecting compartment syndromes. Western Student Medical Research Forum, 2003. **(Subspecialty Award Winner in the Western Student Medical Research Forum, one of only 20 selected for this honor from a total of 354 submissions)**
12. **Eastlack RK**, AR Hargens, ER Groppo, GC Steinbach, KK White and RA Pedowitz. Lower body positive pressure exercise after knee surgery. *Clinical Orthopaedics and Related Research*, 2003 **(Recipient of the Jacquelin Perry Award from the Orthopaedic Rehabilitation Association)**
13. **Macias BR**, DE Watenpaugh, D O'Leary, SM Schneider, SMC Lee and AR Hargens. Supine lower body negative pressure exercise maintains orthostatic tolerance in men and women after 30-d bed rest. 15th Humans in Space Symposium, No. 11.8.2-3, Graz, Austria, 2005. **(International Travel Award and First Place Award)**
14. **Meuche S**, SM Schneider, SMC Lee, BR Macias, DE Watenpaugh and AR Hargens. Supine treadmill exercise in lower body negative pressure combined with resistive exercise counteracts bone loss, reduced aerobic upright exercise capacity, and reduced muscle strength. American College of Sports Medicine, SW Chapter, San Diego, CA, 2006. **(Student Award from American College of Sports Medicine, SW Chapter)**
15. **Brandon R. Macias, Tom K. Scott Award for best abstract and oral presentation in the field of Gravitational and Space Biology, American Society for Gravitational and Space Biology, 27 October 2007.**
16. **Macias BR**, SM Schneider, SMC Lee, P Guinet, S Meuche, RL Hughson, SM Smith, SR Zwart, DE Watenpaugh, and AR Hargens. WISE-2005: Lower Body Negative Pressure Treadmill Exercise and Resistive Exercise Countermeasure Maintain Physiologic Function in Women during 60-days of Bed

Rest. American Society for Gravitational and Space Biology 2007, Poster B10 (**First Place Poster Award**). October 2007

17. **Neuschwander TB**, Macias BR, and AR Hargens. Backpack straps significantly decrease brachial artery blood flow. American College of Sports Medicine, SW Chapter, San Diego, CA, 2007. (**Award from American College of Sports Medicine, SW Chapter**)
18. **David Hakopian**, undergraduate mentee, won the **2007 UC San Diego Undergraduate Library Research Prize** competition co-sponsored by the UCSD Libraries and the Vice-Chancellor of Student Affairs. His research involved studies of hydrostatic blood pressure during microgravity produced by parabolic flight.
19. **Macias BR**, SM Schneider, SMC Lee, P Guinet, S Meuche, RL Hughson, SM Smith, SR Zwart, DE Watenpaugh, and AR Hargens. WISE-2005: Lower Body Negative Pressure Treadmill Exercise and Resistive Exercise Countermeasure Maintain Physiologic Function in Women during 60-days of Bed Rest. (**American Physiological Society: Exercise & Environmental Physiology Section, Gravitational Physiology Pre-doctoral Award**) 7 April 2008
20. **Sara Richardson**, undergraduate mentee, won the **2009 UC San Diego Undergraduate Library Research Prize** competition co-sponsored by the UCSD Libraries and the Vice-Chancellor of Student Affairs. Her research was titled "Simulation of EVA Suit Effects during Lunar and Martian Analog Exercise".
21. **JR Bachman**, undergraduate mentee, **Second Place Award, 2010 UC San Diego Undergraduate Library Research Prize** competition co-sponsored by the UCSD Libraries and the Vice-Chancellor of Student Affairs. His research was titled "Lower Limb Bone and Muscle Blood flow and Oxygenation Changes with Body Tilt".
22. **Mehria Sayad-Shad**, undergraduate mentee, **2010 Norman James Award** at the American College of Sports Medicine, SW Chapter in San Diego, CA, 2010. Her research was titled "Blood Flow and Oxygenation are Modulated by External Pressure during Isometric Muscle Contractions", 23 October 2010
23. **Mehria Sayad-Shad**, undergraduate mentee, **2011 David S. Bruce Outstanding Undergraduate Abstract Award** from the American Physiological Society, based on abstract, 1-page letter, and support letter. 24 February 2011
24. **Mehria Sayad-Shad**, undergraduate mentee, **David S. Bruce Excellence in Undergraduate Research Award** from the American Physiological Society at EB 2011 for "Excellence in Undergraduate Research Award by presenting a poster to an APS review committee onsite at the Experimental Biology meeting, Washington, DC, 10 April 2011
25. **JR Bachman**, Edward Grigoryan, Kevin Patterson, Thomas Hegstad, Mehria Sayad-Shah, Alan Hargens, "Modeling Intracranial Pressure in Microgravity during Parabolic Flight", **Student First Place Poster Award** from American Society for Gravitational and Space Biology 2011, 5 November 2011
26. **Kevin Anderson**, **APS/NIDDK Minority Travel Fellowship Award** from the American Physiological Society at the Experimental Biology meeting, San Diego, CA, 21 April 2012

27. **JR Bachman**, undergraduate mentee, **2012 David S. Bruce Outstanding Undergraduate Abstract Award** from the American Physiological Society, based on abstract, 1-page letter, and support letter. 22 February 2012
28. **JR Bachman**, undergraduate mentee, **David S. Bruce Excellence in Undergraduate Research Award** from the American Physiological Society, based on research presentation to the APS Education Committee 22 April 2012
29. **Sandra Thao**, undergraduate mentee, **2013 Student Research Award** at the American College of Sports Medicine, SW Chapter in Newport Beach, CA. Her research was titled “Leg Blood Flow and Limb Circumference with Altered External Pressure for Prostheses in Sports” 18 October 2013
30. **Davina Moossazadeh**, Canyon Crest High School mentee, **2014 Engineering Scholar**, Society of American Military Engineers, April 2014.
31. **Shannon Baird**, teacher mentee at The Preuss School UCSD, **American Physiological Society Research Teacher Professional Development Fellowship**: La Jolla, CA. 2014
32. **Erika Clary**, undergraduate mentee, **American Physiological Society Undergraduate Summer Research Fellowship**, 2014
33. **Jacqueline Holt**, medical student mentee, **Michael L. Pollock Student Scholarship** for abstract, Holt J, BR Macias, R Healey, SMC Lee, SM Schneider, A Snyder, DG Chang, and AR Hargens. WISE 2005: Aerobic and Resistive Exercises Protect Lumbar Paraspinal Lean Muscle Mass during 60 day Bed Rest in Women. American College of Sports Medicine, San Diego, CA 2015.
34. **Alex Snyder**, medical student mentee, **APS Excellence in Professional Student Research Travel Award** for abstract Snyder AJ, BR Macias, R Healey, JA Holt, DG Chang, JC Lotz, and AR Hargens, Lumbar Paraspinal Muscle Atrophy during Long Duration Spaceflight. Experimental Biology, Boston, MA 2015.
35. **Alex Snyder**, medical student mentee, **American Physiological Society Exercise & Environmental Physiology Section’s National Space Biomedical Research Institute’s Gravitational Physiology Predoctoral Award**, Experimental Biology, Boston, MA 2015.
36. **Jamila Siamwala**, Postdoctoral mentee, **American Physiological Society Exercise & Environmental Physiology Section’s National Space Biomedical Research Institute Gravitational Physiology Beginning Investigator Award** for abstract Siamwala JH, BR Macias, R Healey, and AR Hargens. Cerebral Vascular Changes in Space Mice Calvaria. Experimental Biology, Boston, MA 2015.
37. **Timothy Macaulay**, undergraduate mentee, **Julia Brown Undergraduate Research Scholarship** to support his summer research opportunity in the Clinical Physiology Research Laboratory titled “Altered Residual Limb Volume Associated with a Vacuum-Assisted Prosthesis” 2015.
38. **Sravya Challa**, medical student mentee, **2015 Student Research Award** for abstract **Muscle Microvascular Blood Flow, Oxygenation, and pH as Potential Diagnostic Parameters in Athletes with Chronic Exertional Compartment Syndrome** at the American College of Sports Medicine, SW Chapter in Newport Beach, CA, October 2015.

39. **Timothy Macaulay**, undergraduate mentee, **2015 Student Research Award** for abstract **Lower Body Negative Pressure Treadmill Exercise Attenuates Simulated Space Flight-Induced Reductions of Balance Abilities in Males but Not Females** at the American College of Sports Medicine, SW Chapter in Newport Beach, CA, October 2015.
40. **Richard Valle, Euan Tan, Kristine Khieu, and Kyle Gillespie**, undergraduate student mentees and finalists for designing and building an asteroid chipping and sampling device **Rock Extraction Chipping Container**, as part of the MicroG-NExT competition at NASA-Johnson Space Center, April 2016.
41. **Kristine Khieu**, undergraduate mentee, **Second Place Award, 2016 UC San Diego Undergraduate Library Research Prize** competition co-sponsored by the UCSD Libraries, UCSD Alumni Association and the Vice-Chancellor of Student Affairs. Her research was titled **Rock Extraction Chipping Container: Engineering and Safety Review**, May 2016
42. **William Watkins**, medical student mentee, **2016 First Place, Gail Butterfield Student Research Award, American College of Sports Medicine**, SW Chapter in Newport Beach, CA. His research was titled **Noninvasive Intracranial Pressure following Simulated Head Contact Events** October 2016
43. **Lonnie Petersen**, postdoctoral mentee, **American Physiological Society Exercise & Environmental Physiology Section's National Space Biomedical Research Institute Postdoctoral Research Award** for paper **Effects of Gravity and Lower Body Negative Pressure on Intracranial Pressure; Implications for Astronauts and Patients on Earth** Experimental Biology, Chicago, IL, April 2017.
44. **Kristine Khieu**, a UCSD mentee in Bioengineering, received a **2017 USRA Frederick A. Tarantino Memorial Scholarship Award**. She was selected from among 112 eligible applicants for one of 6 USRA scholarships, August 2017.
45. **Lonnie Petersen**, postdoctoral mentee, **Human Research Program Workshop Postdoctoral Research Award** for abstract and poster **Mobile Negative Pressure Suit as An Integrated Countermeasure**, January 2018.
46. **Jeannie Bailey**, postdoctoral mentee, **Human Research Program Workshop Postdoctoral Research First Place Award** for abstract and poster **Risk of Intervertebral Disc Damage after Prolonged Space Flight**, January 2018.
47. **Neeki Ashari**, mentee and MS student in Bioengineering, received a **Distinguished Student Award** for her abstract **Modeling Forces for a Mobile Gravity Suit for Long-Duration Space Flight** submitted to The International Astronautics in Washington DC, July 2019
48. **Lonnie Petersen**, postdoctoral mentee, **Aerospace Medical Association Postdoctoral Scholar Award** for abstract and paper **Mobile Lower Body Negative Pressure Suit as an Integrative Countermeasure for Spaceflight**, December 2019.
49. **Alisha Poudel**, undergraduate mentee, **UC-San Diego Undergraduate Julia Brown Scholarship** to support her summer research opportunity in the Clinical Physiology Research Laboratory titled **"Ground Force Distribution and Gait Patterns during Lower Body Positive Pressure Treadmill Exercise"** Summer 2020.

50. **Alisha Poudel**, undergraduate mentee, **2020 First Place, Norman James Student Research Award** for abstract and paper **Ground Reaction Forces Generated by a Lower Body Negative Pressure Exercise Device for Space Flight**, American College of Sports Medicine, SW Chapter, November 2020.
51. **Alisha Poudel**, undergraduate mentee, **2020 ACSM President's Cup Competition Award**, American College of Sports Medicine, SW Chapter, November 2020.

Scientific/Research Advisory Board Memberships

- 1995-2000 Member of the Scientific Board, CIRCAID Medical Products, Inc., San Diego, CA
 1998-present Member of the Scientific Board, DynaMed, Stockholm, Sweden

Professional Society Memberships:

- 1965 Phi Beta Kappa
 1966 American Chemical Society
 1967 American Association for the Advancement of Science
 1974 American Physiological Society
 1989-1991; Member, Committee on Committees
 2009-present; Member, APS Reynolds Award Review Committee
 2010: Vice Chair, Translational Physiology Interest Group
 1976 Microcirculatory Society (U.S.)
 1976 European Society for Microcirculation
 1977 Orthopaedic Research Society
 1978 Societe Internationale de Recherche Orthopedique et de Traumatologie (SIROT)
 1980 International Society of Lymphology
 1983 Aerospace Medical Association (Life Member and Fellow)
 1989-present Member, Scientific Program Committee
 1990-1992 Member, Nominating Committee (Associate Fellows)
 1983 American College of Sports Medicine
 1985 American Society for Gravitational and Space Biology
 1985 European Low Gravity Research Association
 1985 IUPS Commission on Gravitational Physiology
 1988 American Heart Association Council on Circulation
 1996-present International Society for Adaptive Medicine (President, 2003-2006 and 2018-2021: Board of Directors and Program Committee)
 2004-2018 International Academy of Astronautics "Humans in Space Symposium" (Program Committee Member)
 2005 International Congress of Physiological Sciences (Symposium Chair)
 2006-2009 Orthopaedic Research Society (Program Committee abstract reviewer)
 2010-2014 Orthopaedic Research Society (Topic Chair and Member, Program Committee)
 2010-present International Society for Gravitational Physiology (Council of Trustees and Program Committee)

Research Expeditions (funding):

1967	R/V ALPHA HELIX Amazon Expedition (NSF)
1968	R/V ALPHA HELIX Bering Sea Expedition (NSF)
1969	Crater Lake, Oregon Expedition (NSF, NIH)
1970	R/V ALPHA HELIX Guadeloupe Island, Mexico Expedition (NSF)
1970	Tweedsmuir Salmon Expedition, Bella Coola, B.C., Canada (Fleischman Foundation)
1970-1971	R/V ALPHA HELIX Antarctic Expedition (NSF)
1978	R/V ALPHA HELIX Green Turtle Expedition (NSF)
1983	Pacific Billfish and Tuna Research (PGF)
1985	Giraffe Physiology Expedition, South Africa (NIH, NSF, National Geographic Society)
1991-1993	Giraffe Cardiovascular System, Omaha Zoo (NASA)

Teaching Experience (course number):

1969-1971	Topics of Environmental Physiology (SIO 294), Scripps Institute of Oceanography
1972	Comparative Physiology, University of Aarhus, Denmark
1973-1989	Independent Study (AMES-Bioengineering 199 and Biology 199), University of California, San Diego
1978	Advanced Cell Physiology (AMES-Bioengineering 274), University of California, San Diego
1977-1978	Doctoral Committee, Jorge Huacuz-Villamar, Department of AMES-Bioengineering, University of California, San Diego
1977-1987	Compartment Syndrome Pathophysiology, Diagnosis and Treatment, Department of Surgery, University of California, San Diego
1979-1987	Quantitative Physiology A. Structure and Function (AMES-Bioengineering 271A) B. Cardiovascular (AMES-Bioengineering 271B), University of California, San Diego
1979-1987	Transport Phenomena (AMES-Bioengineering 173, 272 and 273), University of California, San Diego
1980	Laboratory Projects in Biology (Biology 203 A, B, C), University of California, San Diego
1982-1983	Doctoral Committee, Peter Burkhard, Department of AMES-Bioengineering, University of California, San Diego
1982-1987	Surgery Research (Surgery 299), University of California, San Diego
1983-1984	Master's Committee, Suzanne Malloy, Department of AMES-Bioengineering, University of California, San Diego
1984-1987	Doctoral Committee, Tadachi Tamura, Department of AMES-Bioengineering, University of California, San Diego
1985-1987	Doctoral Committee, Donald W. Sutton, Department of AMES-Bioengineering, University of California, San Diego
1985-1988	Doctoral Committee, Joerg-Uwe Meyer, Department of AMES-Bioengineering, University of California, San Diego
1986-1988	Doctoral Committee, Amy Tsai, Department of AMES-Bioengineering, University of California, San Diego
1986-1988	Doctoral Committee, Sharon Gott, Department of AMES-Bioengineering, University of California, San Diego
1986-1989	Doctoral Committee, Michelle Mazzoni, Department of AMES-Bioengineering, University of California, San Diego

1987 Bioengineering Laboratory (AMES-Bioengineering 174), University of California, San Diego

1988-1989 Stanford Medical Student mentor for Scott Parazynski, M.D.

1989-1991 UC Davis MS mentor for Shannon Stout, B.S.

1991-1996 UC Davis Ph.D. mentor for Donald E. Watenpaugh, M.S., M.A.

1988-1992 Colloquium on Life in Space (AA129), Department of Aeronautics and Astronautics, Stanford University, Course Coordinator

1993-1994 San Diego State MS mentor for Richard Ballard, B.S., Ph.D. mentor for Yuichiro Haruna, M.S.

1993-2001 Biology and Space Exploration, Program in Human Biology, Stanford University

1994-1995 UC Berkeley Ph.D. mentor for Gita Murthy, B.A.

1994-1996 Colorado State MS mentor for Anthony Artino, B.S. and Kjell Lindgren, B.S.

1995-1997 University of Tokyo Ph.D. student mentor for Kana Kuriyama, M.S., Stanford Med

1996-1998 Student mentor for James Campbell, M.S. and Christopher Yang, M.S.

1998 Space Biology Class (B0277), Department of Biology, North Carolina State, Guest Lecturer

1999-2000 Doctoral Committee, Jeff Bishop, Department of Bioengineering, University of California, San Diego

1998-present Compartment Syndrome Pathophysiology, Diagnosis and Treatment, Department of Orthopaedic Surgery, University of California, San Diego

2009-2011 Doctoral Committee, Cassondra L. Williams, Scripps Institution of Oceanography, University of California, San Diego

2010-2012 Research Advisor and Doctoral Committee Co-Chair, Jaime Mateus, Department of Aerospace Biomedical Engineering, Massachusetts Institute of Technology

2015-present Space Physiology and Exploration Seminar series (WARR 87, UCSD)

Postdoctoral Fellows, Orthopaedic Residents, Graduate Students, Medical Students, and Visiting Faculty in Orthopaedic Physiology Lab at University of California, San Diego:

1975-1976 Ladd Rutherford, M.D.

1976-1977 Donald A. Schmidt, M.D.

1977-1978 Ray R. Castilonia, Ph.D., Steven R. Garfin, M.D., Charles M. Tipton, Ph.D.

1978-1979 Robert K. Smith, M.D., Scott A. Young, M.D.

1979-1980 Robert N. Gould, M.D., Ph.D., Patrick T. Hergenroeder, M.D.

1980-1981 Randy C. Barrows, M.D., Yu Fon Lee, M.D., Goran Lundborg, M.D., Ph.D.

1981-1982 Jan Fronek, M.D., Wayne W. Mortensen, M.D.

1982-1983 Kristin Kardel, M.S., Robert M. Szabo, M.D., Richard V. Williamson, M.D., Albert Simpkins, M.D., Nicholas C. Yaru, M.D.

1982-1985 Richard L. Lieber, Ph.D.

1982-1984 Randy O'Hara, M.D., Mark Silver, M.D.

1982-1987 Larry A. Danzig, M.D.

1983-1984 Jon Camp, M.D., Michael S. Gross, M.D., Michael M. Katz, M.D., William Pfeiffer, M.D., Charles E. Rhoades, M.D., Michael J. Skyhar, M.D., Will Stewart, M.D., Blake R. Thompson, M.D., Eric Zimmer, M.D.

1984-1985 Marcia K. Beckman, M.D., Jan Fridén, M.D., Ph.D., Lawrence Kurz, M.D., Alexander Rosenstein, M.D., Peter N. Sfakianos, M.D.

1985-1986 Tom Ferro, M.D., Mike Glover, M.D., Chris Guier, M.D., Michael Moore, M.D.

1986-1987 Ron Anderson, M.D., Tom Ferro, M.D., Sharon Gott, M.S., Robert Pedowitz, M.D., Ph.D., Björn Rydevik, M.D., Ph.D.

1998-1999 Masayuki Matsuyama, M.D., Ph.D., Sonya Waters, M.D., Klane White, M.D.

1999-2000 Shinji Kimura, MD., Ph.D; Murali Adusumalli, MD, Gregory Steinbach, PhD., Hansen Noh, BS, Tom Stoll, BS, Tuan Nguyen, BS, MS.

2000-2002 Shinji Kimura, MD, PhD; Robert Eastlack, MD; Kunihiko Tanaka, MD, PhD; Gregory Steinbach, PhD; Kevin Kuhn, MD; Maneesh Bawa, MD; Brandon Macias, BS; Meghan Imrie, BS; Jaideep Iyengar, BS; Pranat Kumar, BS; Pieter Stoop, BS; Ramsford Ng, BS; Vid Upasani, BS.

2002-2004 Maneesh Bawa, MD, UCSD orthopaedic resident; Jaideep Iyengar, medical student; Kunihiko Tanaka, MD, PhD, postdoc fellow; Aimee Schmizzi, MD, UCSD orthopaedic resident; Nicole Khalili, BS; Alan Ka, MD, NIH Orthopaedic Trainee; Hop Tran, medical student; Bryan Leek, MD, UCSD orthopaedic resident; Peihong Cao, MD, postdoc fellow; Josh Yune, MD, postdoc fellow; Patrick Danaher, medical student; Kentaro Suzuki, medical student; John Wiemann, medical student; Kevin Tse, medical student.

2004-2006 Patrick Guinet, MD, postdoc fellow; Ranjeet Minocha, medical student; Tim Neuschwander, MD, NIH Orthopaedic Trainee, Qiuxia Zhang, MD, PhD, postdoc fellow; Andrew Indresano, medical student; Brandon Gabel, undergraduate student; Nick Schneider, BS; Vidhi Doshi, undergraduate student; Sabine Vogler, medical student.

2006-2008 Tea Nguyen, undergraduate student; Cassie Kline, BA; Jong Kim, MD, PhD, postdoc fellow; Emily Kraus, undergraduate student; David Hakopian, undergraduate student; Junichiro Yamauchi, postdoc fellow; Keisuke Kida, postdoc fellow; Gary Murphey, NIH Orthopaedic Trainee; Tim Neuschwander, UCSD Orthopaedic resident; Miles Wilkinson, undergraduate student; Alexis Gaskin, undergraduate student; Pascual Dutton, medical student; Heidi Ruckstuhl, PhD, postdoc fellow; Jennifer Kho, medical student; Sara Richardson, undergraduate student.

2009-2010 Gary Murphey, NIH Orthopaedic Trainee; Tim Neuschwander, UCSD Orthopaedic resident; Miles Wilkinson, undergraduate student; Alexis Gaskin, undergraduate student; Pascual Dutton, medical student; Heidi Ruckstuhl, PhD, postdoc fellow; Jennifer Kho, medical student; Sara Richardson, undergraduate student, Armando Rosales, postdoc fellow; Ravindra Kumar, postdoc fellow; Julia Tomlin, medical student; Matt Weed, medical student; Mike Cardno, medical student from Aberdeen, Scotland; Sean Mazloom, medical student; Thomas Schlabs, medical student; Moses Lipshaw, undergraduate student; JR Bachman, undergraduate student; Michael Yeranorian, medical student; Jaime Mateus, PhD student

2011-2012 Thomas Schlabs, medical student from Berlin, Germany; Mehria Sayad-Shad, UCSD undergraduate student; JR Bachman, UCSD undergraduate student; Samantha Lee, UCSD medical student; Jaime Mateus, PhD student from MIT; Michael Padilla, UCSD orthopaedic lab resident; Bing Zhang, UCSD medical student; Kevin Anderson, UCSD undergraduate student; Ronald Crater, UCSD orthopaedic lab resident; Susan Aminzai, UCSD undergraduate student; Roshmi Bhattacharya, UCSD undergraduate student; Sae Hoon Kim, MD, PhD, postdoctoral fellow from Seoul, Korea; Brittany Lim, UCSD; undergraduate student; Clifford Mao, UCSD; undergraduate student; Ibrahim Yusufu, STARS undergraduate student from UC, Merced; Michael Ramirez, UCSD medical student; Stephen Shymon, UCSD medical student

2012-2013 Mehria Sayad-Shad, UCSD undergraduate student; Samantha Lee, UCSD medical student; Jaime Mateus, PhD student from MIT; Michael Padilla, UCSD orthopaedic lab resident; Bing Zhang, UCSD medical student; Kevin Anderson, UCSD undergraduate student; Ronald Crater, UCSD orthopaedic lab resident; Roshmi Bhattacharya, UCSD undergraduate student; Sae Hoon Kim, MD, PhD, postdoctoral fellow from Seoul, Korea; Clifford Mao, UCSD undergraduate student; Stephen Shymon, UCSD medical student; Brandon Macias, PhD, UCSD postdoctoral fellow; Jamila Siamwala, PhD, UCSD postdoctoral fellow from India; Noelia Grande Gutiérrez, graduate student from

- Spain; Sandra Thao, UCSD undergraduate student; Eهران Khan, UCSD undergraduate student
- 2013-2014 Paul Lee, UCSD undergraduate student; Johnny Fu, UCSD undergraduate student; Gautam Srinivasan, UCSD undergraduate student; Yuki Iizuka, UCSD medical student; Michael Padilla, UCSD orthopaedic lab resident; Bing Zhang, UCSD medical student; Noelia Grande Gutiérrez, UCSD graduate student; Ronald Crater, UCSD orthopaedic lab resident; Roshmi Bhattacharya, UCSD graduate student; Sae Hoon Kim, MD, PhD, postdoctoral fellow from Korea; Clifford Mao, UCSD undergraduate student; Stephen Shymon, UCSD medical student; Brandon Macias, PhD, UCSD Postdoctoral Fellow; Jamila Siamwala, PhD, UCSD Postdoctoral Fellow; Sandra Thao, UCSD undergraduate student; Eهران Khan, UCSD undergraduate student, Davina Moossazadeh, Canyon Crest Academy
- 2015-2016 Paul Lee, UCSD undergraduate student; Yuki Iizuka, UCSD medical student; Noelia Grande Gutiérrez, UCSD graduate student; Ronald Crater, UCSD orthopaedic lab resident; Roshmi Bhattacharya, University of Alabama medical student; Brandon Macias, PhD, UCSD Postdoctoral Fellow; Jamila Siamwala, PhD, UCSD Postdoctoral Fellow; Jacqueline Holt, University of Washington medical student; Michelle Howden, UCSD undergraduate student; Timothy Macaulay, UCSD undergraduate student; Sravya Challa, UCSD medical student; William Watkins, UCSD medical student; Ted Kawai, UCSD undergraduate student; Rachel Becker, UCSD undergraduate student, Davina Moossazadeh, University of Chicago undergraduate student; James Hubbard, UCSD orthopaedic lab resident; Kristine Khieu, UCSD undergraduate student; Richard Valle, UCSD undergraduate student; Stephanie Vallarino, UCSD graduate student
- 2016-2017 Yuki Iizuka, UCSD medical student; Roshmi Bhattacharya, University of Alabama medical student; Jamila Siamwala, PhD, UCSD Postdoctoral Fellow; Michelle Howden, UCSD undergraduate student; Timothy Macaulay, UCSD undergraduate student; Sravya Challa, UCSD medical student; William Watkins, UCSD medical student; Ted Kawai, UCSD undergraduate student; Rachel Becker, UCSD undergraduate student, Davina Moossazadeh, University of Chicago undergraduate student; Kristine Khieu, UCSD undergraduate student; Richard Valle, UCSD undergraduate student; Stephanie Vallarino, UCSD graduate student; Lonnie Petersen, MD, PhD, UCSD Postdoctoral Fellow from University of Copenhagen, Denmark; Claudio Ghetti, UC-Berkeley undergraduate student; William Wey, University of Vanderbilt undergraduate student; Lean Teodoro, University of Mariannas undergraduate student; Kevin Nguyen, University of Central Florida medical student; Paul Thompson, University of Virginia medical student; Fane He, UCSD undergraduate student; Neeki Ashari, UCSD undergraduate student
- 2017-2018 Yuki Iizuka, UCSD medical student; Roshmi Bhattacharya, University of Alabama medical student; Jamila Siamwala, PhD, Brown University Postdoctoral Fellow; Davina Moossazadeh, University of Chicago undergraduate student; Lonnie Petersen, MD, PhD, UCSD Postdoctoral Fellow from University of Copenhagen, Denmark; Casper Petersen, MD, UCSD Postdoctoral Fellow from University of Copenhagen, Denmark; Claudio Ghetti, UC-Berkeley undergraduate student; Neeki Ashari, UCSD undergraduate student; Danielle Carroll, Surgery resident; Dong Kyu Kim, MD, Postdoctoral Fellow from Kosin University College of Medicine, Korea; Kayla Meyer, Northeastern University undergraduate student; Jessie Fischman, UCSD undergraduate student; Liz Bird, MD, PhD student at UCSD; Prav Baines, APS Summer student from Illinois State University; Sherina Malkani, UCSD undergraduate student; Tejas Shah, DO

student from William Beaumont in Michigan; Shane Zeshonski, MD student from Geisinger Commonwealth School of Medicine, PE; Robin Cowen, PhD, APS Summer Research Teacher from Army and Navy Academy; Jonathan Kim, UCSD undergraduate student; Evan Grace, UCSD undergraduate student; Meenakshi Pandia Rajan, UCSD undergraduate student; Bryan Chavez, UCSD undergraduate student

2018-2019

Jamila Siamwala, PhD, Brown University Postdoctoral Fellow; Lonnie Petersen, MD, PhD, UCSD Postdoctoral Fellow from University of Copenhagen, Denmark; Casper Petersen, MD, UCSD Postdoctoral Fellow from University of Copenhagen, Denmark; Neeki Ashari, UCSD undergraduate student; Claudio Ghetti, UC-Berkeley undergraduate student; Danielle Carroll, Surgery resident; Liz Bird, MD, PhD student at UCSD; Sherina Malkani, UCSD undergraduate student; Jonathan Kim, UCSD undergraduate student; Evan Grace, UCSD MS student; Meenakshi Pandia Rajan, UCSD undergraduate student; Bryan Chavez, UCSD undergraduate student; Cameron Keane, MS in Medical Sciences student from Boston University. Justin Lee, UCSD undergraduate student; Alisha Poudel, UCSD undergraduate student; Richard Feng, Postdoctoral Fellow and PhD student from Central South University, China; Jeremy Sieker, UCSD MD, PhD student; Mitchell Kong, UCSD undergraduate student

2019-2020

Lonnie Petersen, MD, PhD, UCSD Postdoctoral Fellow from University of Copenhagen, Denmark; Casper Petersen, MD, UCSD Postdoctoral Fellow from University of Copenhagen, Denmark; Neeki Ashari, UCSD undergraduate student; Claudio Ghetti, UC-Berkeley undergraduate student; Danielle Carroll, Surgery resident; Liz Bird, MD, PhD student at UCSD; Jonathan Kim, UCSD undergraduate student; Meenakshi Pandia Rajan, UCSD undergraduate student; Cameron Keane, MS in Medical Sciences student from Boston University. Justin Lee, UCSD undergraduate student; Alisha Poudel, UCSD undergraduate student; Richard Feng, Postdoctoral Fellow and PhD student from Central South University, China; Jeremy Sieker, UCSD MD, PhD student; Mitchell Kong, UCSD undergraduate student; Katia Luna, Southwestern College and UCSD undergraduate student; Greta Fehlan, Biomedicine Intern from La Jolla High School

Postdoctoral Fellows, Graduate Students, Medical Students, and Visiting Faculty in NASA Ames Research Center Space Physiology Lab:

1987-1988	Michael Aratow, M.D., Scott Parazynski, M.D., Brian Quigley, Ph.D., Jorma Styf, M.D., Ph.D.
1988-1989	Michael Aratow, M.D., J.-Uwe Meyer, Ph.D., Scott Parazynski, M.D., Jorma Styf, M.D., Ph.D., Bryan Tucker, M.S.,
1989-1990	Michael Aratow, M.D., J.-Uwe Meyer, Ph.D., Jorma Styf, M.D., Ph.D.
1990-1991	J.-Uwe Meyer, Ph.D., M. Shannon Stout, B.S.
1991-1992	Gregory A. Breit, Ph.D., Yasuaki Kawai, M.D., Ph.D., M. Shannon Stout, M.S., Charles M. Tipton, Ph.D.
1992-1993	Gregory A. Breit, Ph.D., Harvey B. Lillywhite, Ph.D., Jorma Styf, M.D., Ph.D., Donald E. Watenpugh, M.S., M.A.
1993-1994	Richard Ballard, B.S., Yuichiro Haruna, Ph.D., Harvey Lillywhite, Ph.D., Jorma Styf, M.D., Ph.D., Professor Shigeyo Torikoshi, Donald Watenpugh, M.S., M.A.
1994-1995	Richard Ballard, B.S., Wanda Boda, Ph.D., Harvey Lillywhite, Ph.D., Gita Murthy, B.A., Professor Shigeyo Torikoshi, Donald Watenpugh, M.S., M.A.

1995-1996	Anthony Artino, B.S., Richard Ballard, B.S., Wanda Boda, Ph.D., Andrew Ertl, Ph.D., Kana Kuriyama, M.S., Harvey Lillywhite, Ph.D., Kjell Lindgren, B.S., Iwane Mitsui, M.D., Gita Murthy, B.A., Toshiaki Ueno, M.D., Ph.D., Donald Watenpaugh, Ph.D.
1996-1997	Richard Ballard, M.S., Wanda Boda, Ph.D., James Campbell, M.S., Andrew Ertl, Ph.D., Kana Kuriyama, M.S., Harvey Lillywhite, Ph.D., Masayuki Matsuyama, M.D., Ph.D., Iwane Mitsui, M.D., Gita Murthy, M.S., Toshiaki Ueno, M.D., Ph.D., Christopher Yang, M.S.
1997-1998	Wanda Boda, Ph.D., James Campbell, M.S., Masayuki Matsuyama, M.D., Ph.D., Gita Murthy, M.S., Elizabeth Sánchez, B.S.
1998-1999	Wanda Boda, Ph.D., Gita Murthy, M.S., James Campbell, M.S.

Editorial Service:

1977-2014	Microvascular Research
1978-present	American Journal of Physiology (Editorial Board, Heart and Circulatory Physiology, 1990-1994)
1980-1991	Journal of Comparative Physiology
1980-present	Journal of Bone and Joint Surgery (Editorial Consultant)
1982-2006	Journal of Theoretical Biology
1982-present	Science
1983-present	Journal of Orthopaedic Research (Associate Editor, 1984-1992)
1983-present	Journal of Applied Physiology
1984-1987	Journal of Biomechanical Engineering
1985-present	Medicine and Science in Sports and Exercise
1986-1987	Archives of Surgery
1986-1990	Anesthesiology
1987-2009	American Journal of Sports Medicine
1987-present	Nature
1988-1995	Behavioral and Brain Sciences (Associate)
1988	Critical Reviews in Biomedical Engineering (Associate Editor)
1989	American Journal of Obstetrics and Gynecology
1989	CRC Press
1989-present	Journal of Biomechanics
1990	Pflügers Archiv (European Journal of Physiology)
1991-present	Aviation, Space and Environmental Medicine
1992-present	FASEB Journal
1993-present	Journal of Experimental Biology
1993-2009	American Journal of Cardiology
1993-present	Microcirculation
1994-2000	Acta Physiologica Scandinavica
1994-present	Comparative Biochemistry and Physiology
1995-present	Journal of Gravitational Physiology (Associate Editor, 1998 - present)
1996-present	Spine
1997-present	European Journal of Applied Physiology
1998-present	Clinical Orthopaedics and Related Research
2002-2006	Clinical Physiology and Functional Imaging – Microcirculation
2002-2003	Brain Research
2003-present	Japanese Journal of Physiology (Associate Editor and Editorial Board Member)
2003-present	Orthopaedic Research Society Program Reviewer

2004-present	The Journal of Physiology
2004-2009	Scandinavian Journal of Medicine and Science in Sports
2004-2011	Neuroscience Letters
2005	Applied Mathematics Letters
2005-2014	Applied Physiology, Nutrition and Metabolism
2005-present	Acta Astronautica
2006	Journal of Clinical Endocrinology and Metabolism
2006-present	Physiological Measurement
2006-present	Advances in Physiology Education
2006-2014	Journal of Cerebral Blood Flow and Metabolism
2006-present	Muscle and Nerve
2006-present	Journal of Orthopaedic Trauma
2007	Biotechnology and Bioengineering
2007	Musculoskeletal Disorders
2007-2009	International Conference on Environmental Systems
2007	Applied Physiology, Nutrition and Metabolism
2007-2009	British Journal of Sports Medicine
2007-present	Archives of Physical Medicine and Rehabilitation
2007	Microgravity Science and Technology
2008	Cardiovascular Research
2009-present	Adaptive Medicine (Associate Editor, 2009 - present)
2010-present	Gravitational and Space Biology
2011-present	Orthopedic & Muscular System (Editorial Board Member)
2011-present	Frontiers in Physiology (Editorial Board Member)
2011-present	Advances in Space Research
2011-present	PLoS One
2013-present	Orthopedic & Muscular System: Current Research (Executive Editor)

Government Public Advisory Service:

1988-1995	Chair, Science Working Group, Space Station Centrifuge Facility, NASA
1989-1991	Member, Cardiopulmonary Discipline Working Group, NASA Headquarters, Life Sciences Division
1993-1996	Member, Merit Review Board for Surgery, Department of Veterans Affairs
2002-2003	Chair, NASA Panel for Program "Human Health from Earth to Space: A NASA-MU Partnership for Understanding Sex Differences in Physiology"
2003	Member, NASA Headquarters Committee on Development of Countermeasures for Long Duration Space Flight
2003-2008	Member, International Multidisciplinary Artificial Gravity Project Review
2007	Invited Lecturer, Canadian Space Agency Bed-Red Workshop
2008	Invited Speaker and Discussant for NASA, International Cardiovascular Workshop for Space Flight, Strasbourg, France.
2009-2011	Member and Acting Chair, Integrative and Translational Research for the Human Systems Panel, National Academy of Sciences Decadal Study of Life Sciences in Space.
2009-2011	Co-Chair, NASA Human Health Countermeasure Element Standing Review Panel
2009-2011	Invited Reviewer, NASA Human Research Program Cardiovascular Risks Panel
2009	Invited Discussant, NASA Head-Up Tilt Bed Rest for Flight Analogs Project
2010-present	Member, National Institute of General Medical Sciences Special Emphasis Panel

2014	Invited Speaker and Discussant for NASA, Experimental Biology 2014 Symposium: International Space Station Research Results and Opportunities
2014-2019	Member, US Army Committee on Acute Compartment Syndromes, San Antonio, TX
2016-2018	Member, National Academies of Science Committee, "Recapturing a Future for Space Exploration, A Midterm Assessment of Implementation of the Decadal Survey on Life and Physical Sciences Research at NASA.
2018-2020	Member, US Army Committee on Arthritis and Acute Compartment Syndromes
2018-2021	Member, TRISH Committee on Space Technology

Research Grant Review Service:

1979-1987	Regulatory Biology Program, National Science Foundation
1981-1984	Polar Biology and Medicine Program, National Science Foundation
1981-present	Veterans Administration Research and Development (Surgery Merit Review Board member, 1993-1996)
1982-1985	Medical Research Council of Canada
1983-1987	American Heart Association
1983-1988	Orthopaedic Research and Education Foundation
1984-1993	Division of International Programs, National Science Foundation
1984-1987	National Institute of Arthritis and Musculoskeletal and Skin Diseases
1984-1994	American Institute of Biological Sciences
1987-present	National Aeronautics and Space Administration
1988-1989	Program Project Reviewer, National Institute of Arthritis and Musculoskeletal and Skin Diseases
1990-1996	Wellcome Trust (London)
1996-present	Austrian Science Foundation
1997-present	NATO Scientific Affairs Division (Brussels)
1998-present	Natural Sciences and Engineering Research Council of Canada
2002-present	U.S. Civilian Research & Development Foundation (CRDF) for the Independent States of the Former Soviet Union
2009	South Carolina NASA EPSCoR Research and Education Awards Program
2008-2009	Member, American Heart Association Peer-Review Committee for Research
2008-present	European Space Agency, NWO/SRON Programme Bureau Space Research, Utrecht, The Netherlands
2013-present	Peer Review Member, NASA Space Biology Musculoskeletal Panel
2013-present	Peer Review Member, NASA Space Biology Cardiovascular Panel
2013-2015	Peer Review Member, NSBRI Postdoctoral Fellow Panel
2014-present	Peer Review Member, DoD MRMC/CDMRP, Orthopaedic Research Program, Clinical Trial Panel
2017-present	External Reviewer, Baylor College of Medicine Translational Research Institute

Other Recent Service

2009-2013	Member, UCSD Recruitment and Admissions Committee
2009-2013	Member, Cardiovascular Awards Committee, American Physiological Society
2009-present	Member, Orr E. Reynolds Award Committee, American Physiological Society

- 2009-present Member, Clinical Data Access Taskforce, UCSD Health Sciences Committee
- 2010-2013 Vice Chair and Member, Translational Physiology Interest Group, American Physiological Society
- 2013-2018 Chair and Member, Translational Physiology Interest Group, American Physiological Society
- 2013-present Mentor, NIDDK STEP-UP Fellows, American Physiological Society

Research Grant Awards (role in project):

- 1976-1980 Pathophysiology of the Compartment Syndrome, AM-18824 (Co-Principal Investigator with Wayne H. Akeson, M.D.), National Institute of Arthritis, Metabolism and Digestive Diseases, \$400,000
- 1977-1982 Interstitial Tissue and Oncotic Pressure in Trauma, GM-24901 (Co-Principal Investigator with Richard M. Peters, M.D.), National Institute of General Medical Sciences, \$325,000
- 1979-1984 Effects of Tourniquet Ischemia on Skeletal Muscle, AM-00602 (Principal Investigator), Research Career Development Award, National Institute of Arthritis, Metabolism and Digestive Diseases, \$200,000
- 1979-1982 Tourniquet Ischemia Effects on Skeletal Muscle and Nerve, AM-25501 (Principal Investigator), National Institute of Arthritis, Metabolism and Digestive Diseases, \$150,000
- 1979-1984 Wick Catheter and Bioengineering Studies of Neuromusculoskeletal Diseases (Principal Investigator), Veterans Administration, \$185,000
- 1980-1981 Tissue-Fluid Shifts and Muscle Function in Humans During Weightlessness, NAS 9-16039 (Principal Investigator), National Aeronautics and Space Administration, Definition-Phase Study, \$35,000
- 1982-1985 Pathophysiology of the Compartment Syndrome, AM-26344 (Principal Investigator), National Institute of Arthritis, Diabetes, Digestive and Kidney Diseases, \$227,000
- 1982-1987 Interstitial Tissue and Oncotic Pressure in Trauma, GM-24901 renewal (Co-Principal Investigator with Richard M. Peters, M.D.), National Institute of General Medical Sciences, \$632,000
- 1983-1986 Tourniquet Ischemia Effects on Skeletal Muscle and Nerve, AM-25501 renewal, (Principal Investigator), National Institute of Arthritis, Diabetes, Digestive and Kidney Diseases, \$200,000
- 1983-1985 Skeletal Muscle Recovery after Immobilization with and without Stimulation (Co-Principal Investigator with Richard L. Lieber, Ph.D.), Mentor Corporation, \$10,000
- 1984-1987 Muscle Physiology of Compression Injury, Stroke & Electrical Stimulation (Principal Investigator), Veterans Administration, \$150,000
- 1985-1986 Orthostatic Adaptation in the Giraffe, HL-32703 (Principal Investigator), National Heart, Lung and Blood Institute, \$60,000
- 1985-1986 Tissue Adaptation to Natural Hypertension, DCB-8409253 (Principal Investigator), National Science Foundation, \$20,000

1985-1988 Pathophysiology of the Compartment Syndrome, AM-26344 renewal (Principal Investigator), National Institute of Arthritis, Diabetes, Digestive and Kidney Diseases, \$270,000

1985-1987 Management of Chronic, Exertional Compartment Syndromes (Principal Investigator), Veterans Administration, supplemental project, \$30,000

1985-1986 Orthostatic Adaptation in the Giraffe, 3072-85 (Principal Investigator), National Geographic Society, \$10,000

1986-1987 International Congress on Interstitial-Lymphatic Liquid and Solute Movement (Co-Investigator with Norman C. Staub, M.D.), National Heart, Lung and Blood Institute, \$12,500

1986-1987 Intracompartmental Measurements of Fluid Pressure (Principal Investigator), Camino Laboratories, \$4,100

1987-1990 Pathophysiology of Chronic Compartment Syndrome and Nerve Root Compression (Principal Investigator), Veterans Administration, \$249,000

1987-1988 Space Physiology: Cardiovascular and Musculoskeletal Adaptations to Weightlessness (Principal Investigator), NASA, \$300,000

1988-1990 G_x Effects on Cardiopulmonary Injury in Rhesus Monkeys as Related to CERV (Principal Investigator), NASA, \$180,000

1988-1991 Transcapillary Fluid Shifts during Simulated Weightlessness and Subsequent Orthostatic Recovery (Principal Investigator), NASA, \$450,000

1989-1990 Development of Exercise Equipment for Long-Duration Spaceflight (Principal Investigator), NASA, \$70,000

1990-1991 Development and Experimental Verification of a Noninvasive Intracranial Pressure Recording System (Principal Investigator), NASA, \$70,000

1992-1994 Exercise within an LBNP Chamber to Produce Artificial Gravity (Principal Investigator), NASA, \$460,000

1992-1994 Pathophysiology of Back Pain in Microgravity (Principal Investigator), NASA, \$150,000

1994-1995 Intervertebral Disc and Back Pain Studies using Spinal Traction and Compression during Magnetic Resonance Imaging (Principal Investigator), NASA, \$80,000

1994 A Noninvasive Acoustic Diagnostic Device to Measure Intracranial Pressure (Principal Investigator), NASA, \$50,000

1995-1996 Tissue Oxygenation as an Objective Tool for Diagnosing Repetitive Motion Disorders (Principal Investigator), NASA, \$80,000

1995-1996 Exercise within LBNP to Produce Artificial Gravity (Principal Investigator), NASA, \$472,000

1996-1999 Noninvasive Intracranial Volume and Pressure Measurements Using Ultrasound, (Principal Investigator) U.S. Army, \$324,743

1996-1999 Noninvasive Intracranial Diameter and Pressure Measurements Using Ultrasound, (Principal Investigator), NASA, \$283,155

1997-1998 MRI-Compatible Spinal Compression Harness, (Principal Investigator), ARC Commercial Technology Fund, \$75,000

1997-2002 Exercise within LBNP to Produce Artificial Gravity (Principal Investigator), NASA, \$713,245

1998-2002 Quality and Safety Assurance of Noninvasive Intracranial Pressure Measurement Instrument (Principal Investigator), NASA-LaRC, \$190,000

2000-2001 Development of Cervical Spine Compression Harness (Principal Investigator), DynaMed, Inc., \$52,000

2000-2003 Physiological Effects of a Mechanical Counter Pressure Suit (Contract Principal Investigator), Honeywell, Inc., \$288,000.

2002-2004 Ultrasonic Measurement of Intracranial Pressure Waveforms (Principal Investigator), NASA NAG 1-2092, \$85,000.

2002-2005 Exercise within LBNP as an Artificial Gravity Countermeasure (Principal Investigator), NASA, NAG 9-1425, \$750,858

2003-2004 US Army Support of 2003 Congress of the International Society of Adaptive Medicine (Principal Investigator), US Army DAMD17-03-1-0503, \$19,000

2003-2004 NASA Support of 2003 Congress of the International Society of Adaptive Medicine (Principal Investigator), NASA NNG04GB54G, \$19,000

2003-2005 Non-Invasive Device for Diagnosis of Compartment Syndrome (Principal Investigator), US Army/Luna, \$304,788

2004-2007 LBNP Treadmill and Resistive Exercises during Long-Term Bed Rest (Principal Investigator), ESA/NASA/CNES, NASA NNJ04HF71G \$714,503

2004-2009 Role of Intracranial Pressure in Space Adaptation Syndrome (Co-Investigator), NASA NNJ04HD94A, \$564,624 (UCSD component)

2006-2007 Interstitial Fluid Pressure Distribution beneath a KCI Negative Pressure Dressing (Principal Investigator), KCI USA, Inc., \$105,200

2006-2007 Non-Invasive Device for Diagnosis of Compartment Syndrome (Principal Investigator), NIH/Luna, \$33,000

2006-2008 Comparison of Elastic and Inelastic Compression Devices (Principal Investigator), CircAid Medical Products, Inc, \$36,000

2007-2008 Effect of Recombinant Hyaluronidase on Interstitial Fluid Flow and Pressure in a Pc-3 Prostate Cancer Xenograft Model (Principal Investigator), Halozyme, Inc, \$163,000

2008-2011 Noninvasive Diagnosis of Compartment Syndrome (UCSD Principal Investigator), NIH R44 AR053750, \$282,000

2008-2013 Rodent Spine Deconditioning after 30 Days of Microgravity (Principal Investigator), NASA NNX09AP11G, \$150,000

2010-2013 Risk of Intervertebral Disc Damage after Prolonged Space Flight (Principal Investigator), NASA NNX10AM18G, \$1,167,000

2012-2013 Fluid Distribution before, during and after Prolonged Space Flight-Definition Phase (Principal Investigator), NASA NNX12AL66G, \$70,000

2013-2019 Fluid Distribution before, during and after Prolonged Space Flight (Principal Investigator), NASA NNX13AJ12G, \$1,179,073

2013-2021 Risk of Intervertebral Disc Damage after Prolonged Space Flight (Principal Investigator), NASA NNX13AM89G, \$1,343,404

2014-2018 Spinal Structure and Function after 90 Days Long-Duration Simulated Space Flight and Recovery (Principal Investigator), NASA NNX14AP25G, \$300,000

2018-2020 Directed Countermeasures for Venous Congestion in Space (Principal Investigator), NASA 80NSSC19K1668, \$100,000

2018-2021 Self-Generated LBNP for Deep-Space Missions (Principal Investigator), NASA 80NSSC19K0409 \$900,000

2019-2026 Preventive Medical Ultrasound Investigation of Organs Potentially Affected by Prolongated Exposure to Microgravity (US Principal Investigator), NASA NSSCXXX, \$700,000 pending

2019-2026 Manifestations of Spaceflight-Induced Sub-Clinical Cardiovascular Disease as a Long-Term Health Risk (US Principal Investigator), NASA NSSCXXX, \$700,000 pending

2019-2026 Investigating Structure and Function of the Eye (UCSD Principal Investigator), NASA NSSCXXX, \$100,000 pending

Patents:

1. Hargens AR and SJ Mubarak. Wick Catheter Pressure Sensing Probe and Method of Use (U.S. Patent 4,192,319 issued 11 March 1980 and reissued 15 June 1982 as 30,966).
2. Whalen RT and AR Hargens. Exercise Method and Apparatus Utilizing Differential Air Pressure (U.S. Patent 5,133,339 issued 28 July 1992).
3. Yost WT, JH Cantrell and AR Hargens. Method of Determining Intracranial Pressure from Pulsatile Skull Expansions (NASA Case No. LAR 15499-1-CU; U.S. Patent filed, 2002).
4. Hargens AR, K Tanaka and J Waldie. Method and Device to Enhance Blood Flow (UCSD 2001-212; U.S. Patent filed, 2003).
5. Yost WT, JH Cantrell and AR Hargens. Non-invasive Method of Determining Diastolic Intracranial Pressure (U.S. Patent 6,740,048 issued 25 May 2004).
6. Yost WT, JH Cantrell and AR Hargens. Non-invasive Method of Determining Absolute Intracranial Pressure (U.S. Patent 6,773,407 issued 8 August 2004).
7. Ueno T, AR Hargens and WT Yost. Ultrasonic Apparatus and Method to Assess Compartment Syndrome (NASA Case No. LAR 16406-1-CU; U.S. Patent filed, 2004).
8. Hargens AR, BR Macias, TB Neuschwander and Q Zhang. Method and Apparatus for Increasing Blood Flow in a Body Part (UCSD Case No. 2005-185-1; Provisional U.S. Patent filed 19 May 2006).
9. Petersen L, A R Hargens, C Petersen and J Steinberg, Device and Method for Reducing Intracranial Pressure U.S. Provisional Application Serial No. 62/520,428 filed on June 15, 2017.
10. Petersen L, N Ashari, E Goble and A R Hargens, Mobile method for redirecting blood volume and flow. UCSD Provisional Application UD00000554 17 August 2017

Books/ Journal Supplements:

1. Hargens AR. Tissue Fluid Pressure and Composition, Baltimore: Williams and Wilkins, 275 pages, 1981.
2. Mubarak SJ and AR Hargens. Compartment Syndromes and Volkmann's Contracture, Philadelphia: W.B. Saunders, 232 pages, 1981.
3. Hargens AR. Tissue Nutrition and Viability, New York: Springer-Verlag, 312 pages, 1986.
4. Staub NC, JC Hogg and AR Hargens. Interstitial-Lymphatic Liquid and Solute Movement. Basel, Switzerland: S. Karger, 290 pages, 1987.
5. Wood SC, RE Weber, AR Hargens and RW Millard. Physiological Adaptations in Vertebrates. New York: Marcel Dekker, 450 pages, 1992.

6. Gunji A, F Bonde-Peterson, H Fukuoka, AR Hargens, Y Haruna, K Kawakubo, Y Suzuki and K Takenaka. *Inactivity and Health: Effects of Bedrest on Health*, Oxford: Blackwell, *Acta Physiologica Scandinavica* 150, Suppl. 616, 114 pages, 1994.
7. Hargens A, N Takeda and PK Singal. *Adaptation Biology and Medicine, Volume 4 Current Concepts*, New Delhi, India: Narosa Publishing House, 342 pages, 2005.
8. Maikala RV and AR Hargens. Application of Near-Infrared Spectroscopy (NIRS) in Ergonomics and Exercise. *International Journal of Industrial Ergonomics* 40 (2), pages 123-229, 2010.
9. Popescu LM, AR Hargens and PK Singal. *Adaptation Biology and Medicine, Volume 7 New Challenges*, New Delhi, India: Narosa Publishing House, 498 pages, 2014.
10. Kawai Y, AR Hargens and PK Singal. *Adaptation Biology and Medicine, Volume 8 Current Trends*, New Delhi, India: Narosa Publishing House, 457 pages, 2017.
11. Macias, BR, JHK Liu, C Otto and AR Hargens *Intracranial Pressure and Its Effect on Vision in Space and on Earth, Vision Impairment in Space*, Singapore: World Scientific Publishing Co, 291 pages, 2017.

Articles:

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