Curriculum Vitae

PAUL ANTHONY IAIZZO

PERSONAL INFORMATION

Home:	12930 Homestead Drive White Bear Lake, MN 55110	Phone: (651) 340-9551 Cell: (612) 867-1222
Business:	Department of Surgery University of Minnesota 420 Delaware St. SE B172 Mayo, MMC 195 Minneapolis, MN 55455	Phone: (612) 624-7912 Fax: (612) 624-2002 Email: iaizz001@umn.edu

Birthplace/Date:	Superior, Wisconsin, USA; November 26, 1956
Citizenship:	USA
Marital Status:	Married to Margaret K. Iaizzo, PT (8/13/83)
Children:	Maria (7/13/84), Jenna (6/4/86), Hanna (12/3/90)
Grandchildren:	Giada, Fiona, Cosetta, Reven, Lucia

EDUCATION

1978	BS, Biology, University of Minnesota, Duluth
1980	MS, Physiology, University of Minnesota, Duluth Advisor: Robert S. Pozos, MS Thesis: "The effect of fatigue on physiological action tremor of the ankle"
1986	PhD, Physiology (Neurophysiology), University of Minnesota Advisors: Richard E. Poppele, PhD, Stuart R. Taylor, PhD Thesis: "Aequorin luminescence from stimulated skeletal muscle cells: relation between changes in intracellular calcium and contractile force"

POSTDOCTORAL POSITIONS

1986	Postdoctoral NIH research fellowship, Department of Pharmacology, Mayo Foundation Advisor: Robert G. Tancredi, MD (Rochester, MN)
1987-88	Postdoctoral Alexander von Humboldt-Stiftung research fellowship, Department of Neurology, Technical University of Munich Hosts: Albrecht Struppler, MD and Frank Lehmann-Horn, MD (Munich, Germany)

ACADEMIC POSITIONS

1979-81	Sea Grant Pre-doctoral Trainee (Advisor: Robert S. Pozos, PhD)
1981-83	Research and Teaching Assistant, Department of Physiology, Laboratory of Neurophysiology, University of Minnesota (Chairman: Eugene Grim, PhD)
1986	NIH Research Fellow, Department of Pharmacology, Mayo Foundation, Rochester, MN (Director: Robert G. Tancredi, MD)
1987-88	Alexander von Humboldt-Stiftung Research Fellow, Department of Neurology, Technical University of Munich, Germany (Hosts: Albert Struppler, MD and Frank Lehmann-Horn, MD)
1988-90	Assistant Professor of Anesthesiology, Research Associate, Mayo Medical School, Rochester, MN (Chairmen: Alan Sessler, MD, Roy Cucchiara, MD, and D Rorie, MD, PhD)
1990-91	Research Associate, Department of Anesthesiology, University of Minnesota (Chairman: Richard J. Palahniuk, MD)
1990-92	Visiting Scientist, Department of Anesthesiology, Mayo Clinic, Rochester, MN (Hosts: Jack D. Michenfelder, MD and William L. Lanier, MD)
1990-01	Director of Anesthesia Research, Department of Anesthesiology, University of Minnesota
1991-96	Assistant Professor, Department of Anesthesiology, University of Minnesota (Chairman: Richard J. Palahniuk, MD)
1992-96	Assistant Professor, Department of Physiology, University of Minnesota (Chairman: Robert F. Miller, MD)
1992-99	Associate in the Center for Interfacial Engineering, University of Minnesota (Director: DF Evans, PhD; center closed in 1999)
1993-00	Guest Professor, Abteilung Angewandte Physiologie, Universität Ulm, Ulm, Germany; 1-2 visits annually (Professor and Head: Frank Lehmann-Horn, MD)
1996-01	Guest Professor, Biomedical Engineering, Fachhochschule Anhalt, Köthen, Germany; 4-5 lectures annually (Host: Professor Markus J. Seewald, PhD)
1996-01	Associate Professor, Departments of Anesthesiology and Physiology, University of Minnesota (Chairmen: Richard J. Palahniuk, MD and Joseph Di Salvo, PhD)
1996-03	Co-Director, Center for Muscle and Muscle Disorders, University of Minnesota (Co-Director: John W. Day, MD, PhD)
1999-01	Associate Professor, Carlson School of Management, University of Minnesota (Associate Dean: C.J. Nachtsheim, PhD)
1990-Present	Director of the Malignant Hyperthermia Muscle Biopsy Center, Department of Surgery, University of Minnesota
1993-Present	Graduate Faculty, Biomedical Engineering, University of Minnesota (Director: Victor Barocas, PhD)
1993-Present	Graduate Faculty, Physiology, University of Minnesota (Directors: John Osborn, PhD, Stephen Katz, PhD, Catherine Kotz, PhD)
1996-Present	Faculty, Carlson Entrepreneurship Program, Carlson School of Management, University of Minnesota (Director: Harry Sapienza, PhD)
1998-Present	Graduate Faculty, Neuroscience, University of Minnesota (Director: Virginia S. Seybold, PhD)
2001-Present	Professor, Carlson School of Management, University of Minnesota (Associate Dean: C.J. Nachtsheim, PhD)

2001-2003	Professor, Department of Anesthesiology, University of Minnesota (Chairman: Richard C. Prielipp, MD)
2001-Present	Professor, Department of Integrative Biology and Physiology, University of Minnesota (Chairman: Joseph Metzger, PhD)
2002-Present	Professor, Department of Surgery, University of Minnesota (Chairmen: Selwyn M. Vickers, MD, David Rothenberger, MD, Sayeed Ikramuddin, MD, MHA)
2002-2015	Professor, Experimental Surgical Services, Department of Surgery, University of Minnesota (Director: Richard W. Bianco)
2002-Present	Director of Education, Lillehei Heart Institute, University of Minnesota (Directors: Daniel J. Garry, MD, PhD, Samuel Dudley, MD, PhD)
2003-Present	Affiliate Member, Graduate Faculty in Biological Science, University of Minnesota (Director: James A. Fuchs, PhD)
2004-Present	Medtronic Professorship in Visible Heart Research, Department of Surgery, University of Minnesota
2005-Present	Affiliate Senior Member, Graduate Faculty in Mechanical Engineering, Institute of Technology, University of Minnesota
2007-2013	Associate Director for Education, Institute for Engineering in Medicine, University of Minnesota (Director: Jeffery McCullough, MD)
2013-Present	Associate Program Director for Education and Outreach, Institute for Engineering in Medicine, University of Minnesota (Director: Bin He, PhD, John Bischof, PhD)
2015-Present	Graduate Faculty, Bioinformatics and Computational Biology, University of Minnesota

HONORS AND AWARDS

1979-81	Sea Grant Pre-doctoral Traineeship
1986	National Institutes of Health Research Fellowship
1987-88	Alexander von Humboldt-Stiftung Research Fellowship
1988-92	Alexander von Humboldt-Stiftung Collaborative Research Travel Awards (7 trips to Germany)
1992	Organization for Economic Cooperation and Development; Research project on biological resource management; Paris, France (three-week fellowship in Germany)
1995	John Tate Award for Excellence in Academic Advising, University of Minnesota
1999,00,01	Finalist for the Horace T. Morse-Minnesota Alumni Association Award for Outstanding Contributions to Undergraduate Education, University of Minnesota
2002	University Recipient of the Award for Outstanding Contributions to Postbaccalaureate, Graduate, and Professional Education, University of Minnesota
2002	Academy of Distinguished Teachers, University of Minnesota
2002	Academy of Medical Educators, University of Minnesota
2004	Medtronic Professorship in Visible Heart Research
2007	Recognition of 5 years of service to the University for organizing President's 21st Century Conferences on the Design of Medical Devices
2012	American Institute for Medical and Biological Engineering (AIMBE), College of Fellows 2012
2013	Academy of Medical Device Innovators, Institute for Engineering in Medicine
2013	Director's Award, Institute for Engineering in Medicine
2015	Fellow of Heart Rhythm Society
2015	Wangensteen Surgical Society

2016	Institute of Electrical and Electronics Engineers (IEEE), Senior Member
2019-Present	Medtronic Bakken Professorship for Engineering in Medicine, Univeristy of Minnesota

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PROFESSIONAL MEMBERSHIPS

1979-81	American College of Sports Medicine
1985-Present	Biophysical Society—USA
1986-Present	European Malignant Hyperpyrexia Group (EMHG)
1989-Present	American Society of Anesthesiologists (ASA)
1989-Present	Minnesota Society of Anesthesiologists (MSA)
1990-Present	North American Malignant Hyperthermia Registry (NAMHR)
1996-Present	Biomedical Engineering Society (BMES)
2000-Present	NASPE—Heart Rhythm Society (HRS)
2002-Present	American Physiological Society (APS)
2002-Present	American Heart Association (AHA)
2003-Present	Heart Failure Society (HFS)
2006-Present	American Society of Mechanical Engineers (ASME)
2008-Present	Institute of Electrical and Electronics Engineers (IEEE)
2008-Present	IEEE, Engineering in Medicine and Biology Society (EMBS)
2011-Present	International Society for Cardiovascular Translational Research (ISCTR)
2014-Present	American Institute for Medical and Biological Engineering (AIMBE)

PROFESSIONAL ACTIVITIES

1991-04	Consultant, Augustine Medical Inc.
1992	Organizing Committee, VI International Malignant Hyperthermia Workshop
1992-Present	Ad Hoc Grant Reviewer, Schweizerrischer Nationalfonds zur Förderung der Wissenschaftlichen Forschung
1993-2020	Professional Advisory Council of the Malignant Hyperthermia Association of the United States
1993-Present	Ad Hoc Grant Reviewer, Naval Medical Research and Development Command
1994-96	Executive Committee, VIII International Malignant Hyperthermia Workshop
1994-96	Scientific Committee, VIII International Malignant Hyperthermia Workshop
1994-01	Board of Directors, North American Malignant Hyperthermia Registry
1995-2009	TELTECH Technical Knowledge Service
1998	Textbook Reviewer: Principles of Anatomy and Physiology, 8th edition
1999-05	Medical Advisory Board, Spinal Designs International
1999-Present	Consultant, Medtronic
2004-Present	Research Committee, LifeSource, Upper Midwest Organ Procurement Organization
2005-Present	Special Issue Associate Editor, Journal of Biomechanical Engineering and Medical Devices, ASME
2007-Present	Associate Editor, Journal of Medical Devices, ASME
2008-Present	Member of Technical Committee on Cardio-Pulmonary Systems, IEEE Engineering in Medicine and Biology Society

2008-2010	Chair of Technical Committee on Cardio-Pulmonary Systems, IEEE Engineering in Medicine and Biology Society
2008-2010	Track Chair and Co-Chair on Cardio-Pulmonary Systems, IEEE Engineering in Medicine and Biology Society, 2009, 2010
2008-2009	Theme Chair on Cardiovascular & Respiratory System Engineering, 31st International Conference of the IEEE EMBS, September 2009
2009-2014	Executive editor of the Journal of Cardiovascular Translational Research
2009-Present	Organizing Committee of the Innovations in Cardiovascular Interventions (ICI), annual meeting and workshop
2012-2014	Education Subcommittee of the American Institute for Medical and Biological Engineering
2020-Present	Scientific Advisory Board, International Society for Cardiovascular Translational Research (ISCTR)

JOURNAL REFEREE

1989-Present	Muscle & Nerve
1990-Present	Anesthesiology
1992-Present	Anesthesia and Analgesia
1992-Present	Acta Anaesthesiologica Scandinavica
1994-Present	Journal of Applied Physiology
1994-Present	Liver Transplantation and Surgery
1995-Present	Mayo Clinic Proceedings
1998-Present	Wound Repair and Regeneration
1999-Present	IEEE Transactions on Medical Imaging
2000-Present	IEEE Transactions on Biomedical Engineering
2001-Present	Journal of Cardiovascular Pharmacology
2002-Present	Annals of Thoracic Surgery
2003-Present	Animal Science
2004-Present	BioMed Central Musculoskeletal Disorders
2005-Present	Physiological Genomics
2005-Present	Journal of Biomechanical Engineering
2006-Present	Journal of Medical Devices
2007-Present	Medical Physics
2008-Present	Annals of Biomedical Engineering
2009-Present	Journal of Cardiovascular Translational Research
2010-Present	Interventional Cardiology
2010-Present	The Anatomical Record
2011-Present	International Journal of Hyperthermia
2011-Present	Clinical Anatomy
2012-Present	Heart
2012-Present	Anesthesiology Research and Practice
2012-Present	Journal of Translational Engineering in Health and Research
2012-Present	Journal of Experimental Biology
2012-Present	Journal of Medical Physics
2013-Present	Journal of Cardiovascular Engineering

UNIVERSITY AND DEPARTMENTAL ACTIVITIES

UNIVERSITY ACTIVITIES: ACADEMIC HEALTH CENTER

1991-94 Mentor for Advanced Admission Students (Program ended 1994)
1996-Present UMHS Minority Program: High School Research Apprentice Program
1998-99 Catalyst Program (project of the 2001 Medical School class)
1999-01 Stem Cell Institute Search Committee
2000-Present Faculty Interviewer: Medical School Admissions
2004-Present Interviewer: Medical School, Pre-medical Scholars Program
2005-2008 Ad Hoc Committee on Space for Biomedical Engineering/Medical Device Center (Erdman, Iaizzo, Kaveh, Keller, McCullough, Moldow, Wederstrom, Tranquillo)

UNIVERSITY ACTIVITIES: BIOMEDICAL ENGINEERING

1993-Present Graduate Faculty in Biomedical Engineering
1994-95 Faculty Advisory Panel to the Biomedical Engineering Center
1994 Biomedical Interfacial Engineering Task Force
1995-Present Core Faculty of the Biomedical Engineering Institute
1997-Present Chair, Nominations Committee
1998-00 Undergraduate Degree and Curriculum Committee
1999-00 Biomedical Engineering Space Committee
2000-01 Executive and Program Committees, "Minnesota's Medical Device Community Forum: Design of Medical Devices"
2001-03 Membership Committee, Biomedical Engineering Institute
2001-Present Faculty Advisory Board, Institute for Engineering in Medicine (formally BMEI)
2001-Present Program Committee, Design of Medical Devices Conference, University of Minnesota
2003-2010 Group Leader, Cardiovascular Physiology, Institute for Engineering in Medicine
2003-2010 Program Chair, President's Commissioned Conferences on Medical Devices
2004: "Maintaining Minnesota as the Leader in the Medical Device Industry;" 2005: "Leading the Change for Breakthroughs in Health through Medical Device Advancements;" 2006: "Medical Devices for Delivering the New Biology;" 2007: "Inventing Medical Devices;" 2008: "Lifelong Learning of the Medical Device Engineer;" 2009: "Translational Research: From Prototype to Product"
2004-2010 Local Organizing Committee, Joint Meeting of 5th International Conference on Bioelectromagnetism & 5th International Symposium on Noninvasive Functional Source Imaging within the Human Brain and Heart
2004-06 Co-organizer, Midwest Chapter of the Biomedical Engineering Society
2005-07 Ad-hoc member of Medical Devices Planning Committee
2007-Present Academic Advisory Board, Medical Devices Center
2011-2012 Search Committee for Director of Institute for Engineering in Medicine

UNIVERSITY ACTIVITIES: LILLEHEI HEART INSTITUTE

2002-2014 Director of Education
2002-Present Steering Committee Member
2019-Present Co-investigator on NIH T32 Training Grant: Mentor for Anthony Prisco, MD PHD

UNIVERSITY ACTIVITIES: OTHER

1992-96 Faculty Advisor, Center for Interfacial Engineering Small Company Program, supported by NSF

1992-99	Project Leader, Research Explorations: "Biomedical Research on Diseases of Muscle," CEE
1994-Present	President's Distinguished Faculty Mentor Program
1994-Present	Teaching Opportunity Program for Doctoral Students (TOPDS)
1995-Present	Undergraduate Research Opportunity Program (UROP)
1995-Present	University of Minnesota Alumni Association Mentor Program
1998-05	Page Education Foundation's Senior Mentor Program
2004-06	Twin Cities Campus Assembly, Advisory Committee on Athletics

DEPARTMENTAL ACTIVITIES: SURGERY

2002-2015	Staff, Experimental Surgical Services
2005-06	Faculty Recruitment, Development, and Retention Committee
2005-2015	Development and Fundraising Committee
2006-07	Search Committee for Head of Cardiovascular Surgery
2007-2015	Executive Research Council
2007	Founder of annual "Bakken Surgical Device Symposium"
2007-Present	Organizing Committee of "Bakken Surgical Device Symposium"

DEPARTMENTAL ACTIVITIES: INTEGRATIVE BIOLOGY AND PHYSIOLOGY

1993-Present	Graduate Faculty, Cellular and Integrative Physiology
1994-00	Faculty Evaluation Committee
2000-06	Physiology Industrial Advisory Board
2006-07	Search Committee for new Professor and Head

DEPARTMENTAL ACTIVITIES: ANESTHESIOLOGY

1990-01	Coordinator, Bi-monthly Research Conferences
1990-present	Director, Malignant Hyperthermia Clinical Diagnostic Laboratory
1990-96	Coordinator, Malignant Hyperthermia Journal Club
1991-93	Chairman of Research Committee
1991-01	Coordinator, Annual Clinical Symposium
1991-01	Coordinator, Undergraduate Summer Research Fellowship
1991-01	Research Committee
1992-01	Coordinator for Laboratory Safety
1995-01	Continuing Education Committee
1996-01	Chairman of Research Committee

RESEARCH INTERESTS

1. Physiology of skeletal and cardiac muscle (in vivo, in situ and in vitro)
2. Pathophysiology of human skeletal muscle (malignant hyperthermia, myotonic dystrophy, recessive generalized myotonia, myotonia congenita, Schwartz-Jampel syndrome, paramyotonia, hyperkalemic periodic paralysis, and hypokalemic periodic paralysis)
3. Effects of anesthetic agents on the function of extrafusal and intrafusal skeletal muscle and cardiac muscle
4. Development of novel instrumentation and biomedical devices for physiological monitoring, clinical evaluation, and/or therapeutic use

5. Role of elevated intracellular [Ca2+] in: 1) cell signaling; 2) dystrophic processes within skeletal muscle; and 3) cell toxicity
6. Physiological and pathological oscillations of the musculoskeletal system (tremor, shiver and clonus)
7. Anesthetic effects on the physiology of thermoregulation and biomedical applications of heat transfer in humans
8. Noninvasive and invasive correlates of wound formation, status, healing and prevention: development of animal models, effects of anesthetics, and design of biomedical instrumentation
9. Cervical and lumbar spinal cord biomechanics and management of back pain

OUTSIDE INTERESTS AND ACTIVITIES

1. Running, tennis, biking, and hiking (bear dens, searching for mushrooms, Chaga)
2. Fishing and fly-fishing
3. Coaching soccer: club teams, both outdoor and indoor; E -level coaching license
4. Coaching basketball: recreational teams (since 1993): school, AAU and travel club teams; 1997 Girls 7A (State Champions); 1998 Girls 8A (State Champions); 1998 Girls 6AA (State Runner-ups); 1999 Girls 7AAA (State Champions); 2000 Girls 8AAA (State Champions); 2004 Girls 8AAA (State Runner-ups)
5. Gardening, home repairs, and woodworking

FORMAL CLASSROOM TEACHING

1992-Present University of Minnesota, Minneapolis, MN, Medical School: **Anesthesiology Residents, (2 hours).**
Topic: Skeletal muscle physiology

1993-Present University of Minnesota, Minneapolis, MN: **BMEN 8970, Literature Seminar: Biomedical Journal Club at weekly laboratory meetings (15 hours)**

1994-Present University of Minnesota, Minneapolis, MN: **(Course Originator and Director) BMEN 5371/5701, Biomedical Application of Heat Transfer in Humans (10 hours, offered every other year)**
Lecture topics: Course introduction; composition of the human body; biology of skin; physiology of thermoregulation; consequences of hypothermia or hyperthermia; treatment of hypothermia or hyperthermia; malignant hyperthermia; applications of IR imaging (live demo)

1996-Present University of Minnesota, Minneapolis, MN, Biomedical Engineering and the Carlson School of Management: **BMEN 8401-8402, ME 8221-8222, ENTR 6041-6042, New Product Design and Business Development (5-8 hours per week; fall and spring semesters)**
Lecture topics: Course introduction; designing medical devices and clinical testing. Faculty Mentor for Teams: (1996-97) Spinal Designs International and Augustine Medical Inc.; (1997-98) Augustine Medical Inc., Select Comfort, and Sulzer Medical; (1998-99) Medtronic, Shepherd Medical, and Sulzer Medical; (1999-00) Medtronic and EnduraTEC; (2000-01) Medtronic CRM; (2001-02) 3M Surgical; (2002-03) 3M Surgical; (2003-04) Arctic Cat; (2004-05) Medtronic CRDM; (2005-06) Medtronic CRDM; (2006-07) Medtronic Cardiac Surgery; (2007-08) Augustine

Biomedical and Design; (2008-10) Medtronic Cardiac Surgery; (2010-18) Medtronic

1996-Present University of Minnesota, Minneapolis, MN: **Neuroscience 5100/4185/5551 (1 week at Itasca Biological Station, Course Director; 45+ contact hours)**
Lecture topics: Course introduction and lab notebooks; basic muscle contraction; dissection; neuromuscular junction; force assessment in humans; cardiac muscle (isolated heart studies)

1999-Present University of Minnesota, Minneapolis, MN, Medical School, 1st Year: **Physiology 5111-5112, Physiology Laboratory (10 hours, Winter Quarter)**
Lecture topics: Stimulated muscle force assessment; ex vivo four-chamber working swine heart model

2000-Present University of Minnesota, Minneapolis, MN: **(Course Originator and Director) PHSL 5510, Advanced Cardiac Physiology and Anatomy (10 hours)**
Lecture topics: Course introduction and review of the cardiovascular system; cellular (conduction system and arrhythmias); autonomic nervous system and cardiac function; Visible Heart®; fresh cadaver demo; demo of open-heart surgery in a swine (small groups)

2000-Present University of Minnesota, Minneapolis, MN, Dental School: **Dent 8440, TMJ and Craniofacial Pain: Advanced Theory and Principles (3 hours)**
Lecture topics: Skeletal muscle physiology; skeletal muscle patho-mechanisms

2000-Present University of Minnesota, Minneapolis, MN: **Bioc/Phsl/NSc/MVB/BMEN 5444, Muscle (3 hours)**
Lecture topics: Visible Heart®; stimulated force assessment

2001-Present University of Minnesota, Minneapolis, MN: **BMEN3701, Physiology Laboratory (15 hours)**
Lecture topics: Course introduction, BioPac systems and lab notebooks; cardiovascular system; skeletal muscle and force assessment; designing your own experiments

2001-Present University of Minnesota, Minneapolis, MN: **BMEN 5041, Tissue Engineering (1 hour)**
Lecture topics: Mesenchymal tissues (muscle)

2001-Present University of Minnesota, Minneapolis, MN: **BMEN 2602, Sophomore Seminar (2 hours)**
Topics: Laboratory tour; discussion of required animal testing for implanted medical devices

2002-Present University of Minnesota, Minneapolis, MN: **Physiology 5511, The Neuromuscular Junction (10 hours)**
Lecture topics: Basic muscle contraction; nerve/muscle dissection; neuromuscular junction; force assessment in humans

2018-Present University of Minnesota, Minneapolis, MN: **BMEN 8611, Professional Skills and Ethics for Biomedical Engineers 3 hours)**
Lecture topics: Medical Device Innovation and the Visible Heart Laboratories

2019-Present University of Minnesota, Minneapolis, MN: **ME 8381, Bioheat and Mass Transfer (7 hours)** *Lecture topics: Human Body Composition, Somatotypes, Thermoregulation, Thermal therapies, Surgical cooling and warming, Malignant Hyperthermia, ANS, Perfusion and Transplantation*

PREVIOUS TEACHING EXPERIENCES

1980	College of St. Scholastica, Duluth, MN: Guest lecturer, Neurophysiology, Physical Therapy Students (2 hours). *Topic: Tremors and clonus*
1980	University of Minnesota School of Medicine, Duluth, MN: Guest lecturer, Human Physiology, Medical Students (3 hours). *Topics: Pathological oscillations and spinal cord injuries*
1981-82	University of Minnesota Health Sciences, Minneapolis, MN: Teaching Assistant, Human Physiology and Neurophysiology, Medical, Dental and Pharmacy Students (30 hours). *Topics: General physiology; cardiovascular system; muscle, respiratory and motor control*
1984-85	University of Minnesota School of Medicine, Duluth, MN: Guest lecturer, Animal Physiology (6 hours). *Topics: Sensory systems; skeletal muscle physiology; temperature regulation*
1984-85	University of Minnesota School of Medicine, Duluth, MN: Guest lecturer, Human Physiology, Medical Students (4 hours). *Topics: Motor control and pathological oscillations*
1989	Mayo Medical School, Pharmacology, Rochester, MN: Medical Students (1 hour). *Topic: Local anesthetics*
1989	College of St. Scholastica, Duluth, MN: Invited lecturer, Neurophysiology: Physical Therapy Students (7 hours). *Topics: Pain; anesthesia; vestibular system; hearing; ascending reticular activating system and sleep*
1989	University of Minnesota School of Medicine, Duluth, MN: Invited lecturer, Animal Physiology: ANS (5 hours). *Topics: Sensory physiology; programmed motor behavior*
1989	University of Minnesota School of Medicine, Duluth, MN: Invited lecturer; Human Physiology, Medical Students (8 hours). *Topics: Pain; anesthesia; vestibular system; hearing; ascending reticular activating system and sleep*
1990	Mayo Medical School, Rochester, MN: Invited lecturer in Pharmacology: Medical Students (1 hour). *Topic: Local anesthetics*
1992	University of Minnesota, Minneapolis, MN: *Physiology 5444, Muscle contraction* (4 hours). *Topic: Metabolism and excitation*
1992-2017	University of Minnesota, Minneapolis, MN: Physiology 3053/3056/5441 Quantitative Physiology (10 hours); Physiology 3061/3071/5061, Principles of Physiology *Lecture topics: Somatosensory systems and neuronal circuits; general anatomic and functional components of motor system; maintenance of upright posture and sense of equilibrium; complex integrative functions of motor system; pathophysiology of motor system; autonomic nervous system; hypothalamus and limbic system; ascending reticular activating system (sleep, pain); regulation of body temperature; vision, sound and hearing, taste, and smell*
1993-94	University of Minnesota College of Biological Sciences, Minneapolis, MN: Honors Seminar (15 hours). *Topic: Muscle diseases*
1994-99	University of Minnesota Medical School, Minneapolis, MN: Medical Student Rotation in Anesthesiology (1 hour). *Topic: Thermoregulation and consequences of anesthesia*

1996	Engineering, Fachhochschule Anhalt, Köthen, Germany: Engineering and Nutrition (15 hours). *Topic: Neurophysiology*
1996	University of Minnesota Medical School, Neurology, Minneapolis, MN: Scientific Basis of Neurology Course (1.5 hours). *Topic: Fundamentals of muscle physiology*
1996	College of St. Catherine, Minneapolis, MN: Master of Physical Therapy Program (24 hours and Course Director). *Topic: Applied physiology*
1999	University of Minnesota Program in Physical Therapy, Minneapolis, MN: *PMed 8101, Physical Therapy* (3 hours, Winter Quarter). *Topic: Skeletal muscle force assessment*
2007-2017	University of Minnesota, Minneapolis, MN: Medical Industry Leadership Institute: MILI 6990, Anatomy and Physiology for Managers *Lecture topics: Cardiovascular system and devices*

ADVISING RESPONSIBILITIES

INTERNATIONAL GUEST RESEARCHERS

1. **Oliver Bandschapp, MD**, Visiting Scholar (10/07 to 11/07; 5/10 to 3/11) from Universitätsspitals Basel, Switzerland
2. **Francesco Bianchini, MD,** Visiting Interventional Cardiology Fellow (5/22 to 7/22 from Universitá Cattolica Sacro Cuore, Roma, Italy. Funded via Mixed Realitites Grant
3. **Stefano Cangemi, MD,** Visiting Interventional Cardiology Fellow (3/22 to 5/22) from Universitá Cattolica Sacro Cuore, Roma, Italy. Funded via Mixed Realitites Grant
4. **Hans M. Eichinger, PhD**, Visiting Scientist (7/91 to 8/91) from Versuchsstation Thalhausen, Technische **Universität** München, W-8051 Kranzberg, Germany. Funded via Cooperative Research Project Grant of the Organization for Economic Cooperation and Development, Paris, France
5. **Federica Sacco, PhD**, Visiting Doctoral Candidate (9/18 to 12/18) from University of Pompeo Fabra, Spain
6. **Alfonso Santiago, PhD**, Visiting Doctoral Candidate (11/18 to 12/18) from University of Pompeo Fabra, Spain
7. **Markus J. Seewald, PhD**, Visiting Scientist (7/91 to 8/91; 9/95) from Abteilung für Allgemeine Physiologie, Universität von Ulm, Oberer Eselberg, 7900 Ulm, Germany. Funded via grant from Boehringer Ingelheim
8. **Hiroshi Yamada, MD**, Visiting Scientist in Orthopedic Surgery and Anesthesiology (6/92 to 11/93) from Wakayama Medical College, Wakayama, Japan. Supported via fellowship from the Nanki Scholarship Fund, Japan

RESEARCH AND POST-DOCTORAL FELLOWS AND ASSOCIATES

1. **Susana Arango, MD**, Post-doctoral Associate in Anesthesiology (6/21 to present), Department of Anesthesiology, University of Minnesota. Departmental support via funds from Univeristy of Minnesota Academic Investment Education Program Investment
2. **Shancy Augustine, PhD**, Electrical and Computer Engineering, University of Florida, Postdoctoral Volunteer (4/15 to 12/15); Lead Scientist/BioMEMS/Microfluidics Engineer, Achira Labs Pvt. Ltd. (India)
3. **Oliver Bandschapp, MD**, Post-doctoral Fellow in Surgery (4/10 to 3/11); Anesthesiologist, University of Basel, Switzerland

4. **George Bojanov, MD**, Cardiac Fellow in Anesthesiology (7/99 to 7/00), Department of Anesthesiology, University of Minnesota. Departmental support via funds from Minnesota Medical Foundation; Anesthesiologist, Twin Cities Anesthesia Associates PA, MN
5. **Jason Johnson**, Resident Physician, Anesthesiology (9/06 to 5/07); University of Minnesota
6. **M.V. Shailesh Kumar, PhD**, Post-doctoral Fellow in Anesthesiology (8/96 to 5/99), National Institute of Mental Health and Neurosciences, Bangalore University, India; Principal Scientist, Medtronic, MN
7. **Xiaohuan (Rebecca) Li, MD**, Post-doctoral Fellow in Surgery (8/06 to 5/11)
8. **Michael Loushin, MD**, Chief Resident in Anesthesiology, University of Minnesota (12/01 to 6/02); Anesthesiologist, Twin Cities Anesthesia Associates PA, MN
9. **Anthony Prisco MD, PhD,** Cardiology Fellow (7/19 to present) Physician Scientist Training Program University of Minnesota
10. **Daniel C. Sigg, MD**, Post-doctoral Fellow in Anesthesiology (8/97 to 6/99), Department of Anesthesiology, University of Basel, Switzerland. Supported via fellowship from the Swiss National Research Foundation; Professional Photographer, Self employed, MN
11. **John R. Spratt MD, MA,** General Surgery Resident, University of Minnesota (8/15 to 7/17); Fellow in Thoracic and Cardiovascular Surgery at the University of Florida.
12. **Robert S. Zink, MD**, Research Fellow (7/91 to 6/92); Clinical practice in Wisconsin

CURRENT DOCTORAL STUDENTS

1. **Michael Bielecki**, Doctoral student in Biomedical Engineering (12/20 to present)
2. **Renee Brigham**, Doctoral candidate in Biomedical Engineering (1/19 to present)
3. **Amanda DeVos**, Doctoral student in Biomedical Engineering (12/20 to present)
4. **Masha Iassonova**, Doctoral student in Bioinformatics & Computational Biology (9/21 to present)
5. **David Ramirez**, Doctoral candidate in Biomedical Engineering (11/17 to present)
6. **Emma Schinstock**, Doctoral candidate in Mechanical Engineering (5/18 to present)
7. **Amanda Tenhoff,** Doctoral candidate in Biomedical Engineering (1/19 to present)
8. **Weston Upchurch,** Doctoral student in Bioinformatics and Computational Biology (9/19 to present)
9. **Jorge Vergen,** Doctoral student in Bioinformatics & Computational Biology (6/20 to present)

DOCTORAL STUDENTS WITH COMPLETED DEGREES

1. **Sarah E. Ahlberg, PhD**, Doctoral degree in Biomedical Engineering (1/04 to 4/07), Thesis: "Investigation of the influence of long and short term cardiac pacing from alternate sites on the electrical and mechanical performance of the heart in the *in vivo* animal model." Senior Research Manager, Medtronic, MN
2. **Sara E. Anderson, PhD**, Doctoral degree in Biomedical Engineering (12/04 to 4/08), Thesis: "Effects of pacing lead position and cardiac anatomy on left ventricular venous pacing." Global R&D Sensor Director, Medtronic Covidien, CO
3. **Michael G. Bateman, PhD**, Doctoral degree in Biomedical Engineering (9/07 to 5/12), Thesis: "Investigations into the effects of transcatheter valve implantations on the cardiac conduction system and cardiac anatomy." Principal Test Development Engineer, Cardiovascular Systems, Inc., MN
4. **Mark A. Benscoter, PhD, MBA**, Doctoral degree in Biomedical Engineering (1/09 to 4/15), Thesis: "Study of atrial septal puncture and monophasic action potential contact force for

medical device enhancements to improve ablation procedure outcomes." Electronics & Safety Engineering Unit Head, Mayo Clinic, MN

5. **Edward C. Chinchoy, PhD,** Doctoral degree in Biomedical Engineering (12/96 to 12/99). Thesis: "An ex vivo four chamber working swine heart model." President, VisCardia, 3VO, CA
6. **James A. Coles Jr., PhD**, Doctoral degree in Biomedical Engineering (4/00 to 9/02). Thesis: "Pharmacological approaches to cardioprotection." Director Global Downstream Marketing, Medtronic, MN
7. **Alex J. Deakyne**, **PhD**, Doctoral degreee in Bioinformatics & Computational Biology (1/19 to 4/21). Thesis: "The uses of artficial intelligence and virtual reality platforms for developing the next generation of anatomical, medical device, and surgical educational tools." Lyft Software Engineer, Level 5, Palo Alto, CA
8. **Michael D. Eggen, PhD**, Doctoral degree in Biomedical Engineering (1/06 to 10/09). Thesis: "Heart failure and associated structural and functional remodeling: assessment employing various magnetic resonance imaging methodologies." Senior Principal Mechanical Engineer, Medtronic, MN
9. **Jon H. Falkenberg, PhD**, Doctoral degree in Cellular and Integrative Physiology (12/97 to 9/00). Thesis: "Assessment and treatment of disorders of the spinal musculoskeletal system." Deceased 2011
10. **Sarah A. Frommer, PhD**, Doctoral degree in Biomedical Engineering (7/01 to 3/07). Thesis: "Investigating the use of multipotent adult progenitor cells for treatment of Sucheneen muscular dystrophy: a translational approach." Co-Advisor Catherine M. Verfaillie, MD, University of Minnesota Medical School MD/PhD program. Plastic Surgeon, Craniofacial Team of Texas
11. **Erik N. Gaasedelen, PhD**, Doctoral degree in Bioinformatics & Computational Biology (8/15 to 6/19). Thesis: "Deep learning and virtual reality in the surgical sciences." Lyft Self Driving Division, Level 5, Palo Alto, CA
12. **Ryan P. Goff, PhD**, Doctoral degree in Biomedical Engineering (11/09 to 3/14). Thesis: "Studies of cryothermal ablation for the treatment of atrial fibrillation." Program Manager, R & D, CryoLife, Inc., TX
13. **Gary L. Hansen, PhD**, Doctoral degree in Biomedical Engineering (6/93 to 11/95). Thesis: "Evaluation of cutaneous and deep tissue injuries using computer imaging." Director of R&D, Arizant Healthcare Inc., MN
14. **Alexander J. Hill, PhD**, Doctoral degree in Biomedical Engineering (1/99 to 11/03). Thesis: "Large mammalian comparative cardiac anatomy." Senior Program Director, Medtronic, MN
15. **Mikayle A. Holm**, **PhD**, Doctoral degree in Biomedical Engineering (11/16 to 11/20). Thesis: "Novel educational tools to understand cardiac device delivery pathways." Senior Scientist, Medtronic, MN
16. **Jin Back Hong, PhD**, Doctoral degree in Biomedical Engineering (9/98 to 1/03). Thesis: "The development of outcomes diagnostic measurement and potential therapies on patients with a neuromuscular disorder and/or skeletal muscle weakness." Principal Consultant/Scientist, Medtronic, MN
17. **Brian T. Howard, PhD**, Doctoral degree in Biomedical Engineering (5/12 to 7/16). Thesis: "Investigative applications of isolated cardiopulmonary systems." Senior Biomedical Engineer, Medtronic, MN

18. **Stephen A. Howard, PhD**, Doctoral degree in Biomedical Engineering (9/08 to 8/13). Thesis: "Interatrial septal anatomy, physiology and biomechanics: implications for percutaneous delivery of cardiac devices." Principal Systems Engineer, Medtronic, MN
19. **Tinen L. Iles, PhD**, Doctoral degree in Bioinformatics & Computational Biology (8/15 to 11/17). Thesis: "Big data analyses to identify physiologic adaptive responses in the American Black Bear (Ursus americanus): from basic biological knowledge to clinical applications." Assistant Professor, University of Minnesota, MN
20. **Michael W. Kimmel, PhD**, Doctoral degree in Biomedical Engineering (12/02 to 4/07). Thesis: "Swine models for study and optimization of biventricular pacing therapies as treatments for heart failure." Senior R&D Engineer, Medtronic, MN
21. **Jaydeep Y. Kokate, PhD**, Doctoral degree in Biomedical Engineering (1/93 to 12/96). Thesis: "Critical thresholds for causation of cutaneous and subcutaneous injury in a porcine model: experimental and numerical approaches." Director of Research and Development, Boston Scientific, MN
22. **Timothy G. Laske, PhD**, Doctoral degree in Biomedical Engineering (5/00 to 3/04). Thesis: "The application of an isolated perfused working heart model to the design of endocardial pacing systems." Vice President of Research and Business Development, Medtronic, MN
23. **Alexander R. Mattson**, **PhD,** Doctoral degree in Biomedical Engineering (11/14 to 7/18). Thesis: "Anatomical, biomechanical, and end-of-life considerations for emergent cardiac pacing technologies." Senior Scientist, Medtronic, MN
24. **Lars M. Mattison**, Doctoral degree in Biomedical Engineering (11/13 to 1/19). Thesis: "An examination of the cardiothoracic tissue biophysical response to electroporation therapies." Senior Scientist, Medtronic, MN
25. **Stephen G. Quallich, PhD**, Doctoral degree in Biomedical Engineering (11/11 to 9/15). Thesis: "Studies of ablation complications during the treatment of atrial fibrillation." Quality Program Manager, Medtronic, MN
26. **Jason L. Quill, PhD**, Doctoral degree in Biomedical Engineering (9/05 to 5/09). Thesis: "Applications of the Visible Heart for cardiac valve repair and replacement devices." Project Team Leader (atrial fibrillation treatment), AtriCure, Inc. MN
27. **Eric S. Richardson, PhD**, Doctoral degree in Biomedical Engineering (9/05 to 5/09). Thesis: "Intrapericardial delivery of anti-arrhythmic agents." Associate Professor, Duke University, NC
28. **Christopher D. Rolfes, PhD**, Doctoral degree in Biomedical Engineering (11/07 to 5/12). Thesis: "Intrapericardial delivery of omega-3 polyunsaturated fatty acids." Senior Program Manager, T3labs (Translational Testing and Training Laboratories), GA
29. **Jorge D. Zhingre Sánchez, PhD**, Doctoral degree in Biomedical Engineering (11/16 to 11/20). Thesis: "Anatomical, Structural, and Device-Tissue Characterizations of the Atrioventricular Valves, and Associated Structures: Implications for Transcatheter Valve Repairs and/or Replacement Therapies." Senior R&D Engineer, Medtronic, MN
30. **Megan M. Schmidt**, **PhD**, Doctoral in Biomedical Engineering (11/13 to 4/18). Thesis: "Utility of monophasic action potentials in the diagnosis and treatment of cardiac arrhythmias." Senior Scientist, Medtronic, MN
31. **Maneesh Shrivastav, PhD**, Doctoral degree in Biomedical Engineering (11/04 to 4/07). Thesis: "The monophasic action potential: an investigation of ischemic cardiomyopathy." Director of Market Development (Medical Devices), Medtronic, MN

32. **Daniel C. Sigg, MD, PhD**, Doctoral degree in Cellular and Integrative Physiology (6/99 to 12/01). Thesis: "Pharmacological preconditioning with opioids for myocardial protection" Professional Photographer, Self employed, MN
33. **Ashish Singal, PhD,** Doctoral degree in Biomedical Engineering (1/08 to 8/14). Thesis: "The comparative assessment of clinical ablative therapies: effects on physiological and biomechanical properties of tissues in response to therapeutic doses." Medical student
34. **Nicholas D. Skadsberg, PhD**, Doctoral degree in Biomedical Engineering (3/03 to 12/04). Thesis: "Single site cardiac pacing: influence of pacing site on electrophysiology and performance in the normal swine heart." Global Downstream Marketing Director-AF Solutions, Medtronic, MN
35. **Julianne H. Spencer,** Doctoral degree in Biomedical Engineering (11/09 to 11/13). Thesis: "The implications and effects of coronary venous anatomy on clinical interventions." Principal Scientist, Medtronic, MN
36. **Thomas F. Valenzuela III, PhD,** Doctoral degree in Biomedical Engineering (9/17 to 4/21). Thesis: "Utility of the visible heart® and micro-CT reconstructions to optimize treatments for bifurcation stenting." Senior R&D Engineer, Medtronic, Santa Rosa, CA

CURRENT MASTERS STUDENTS

1. **Samantha Kohnle**, MS student in Biomedical Engineering (1/21/ to present)
2. **Leo Mose**, MS student in Mechanical Engineering / Biomedical (1/22 to present)
3. **Ryan Nadybal**, MS student in Biomedical Engineering (10/20 to present)

MASTERS STUDENTS WITH COMPLETED DEGREES

1. **Matthew Adams**, MS in Biomedical Engineering (1/02 to 6/05). Vice President and General Manager, Minnetronix Neuro, MN
2. **Ivan Akunovich**, MS in Biomedical Engineering (6/11 to 6/12). Senior Program Manager, Epic Sciences, CA
3. **Lina Alzate**, MD, MS in Biomedical Engineering (10/01 to 6/03). Senior Director Safety Operations, Johnson & Johnson, Medical Devices, FL
4. **Sara Anderson**, MS in Biomedical Engineering (12/04 to 2/06). Global R&D Sensor Director, Medtronic Covidien, CO
5. **Sally Anzelc**, MS in Biomedical Engineering (7/08 to 11/08). President, Quality Foundations LLC, MN
6. **Lindsey Arndt**, MS in Biomedical Engineering (9/17 to 5/18). Systems Engineer, Restorative Therapies, Medtronic, MN
7. **Brent Barnstuble**, MS in Biomedical Engineering (4/00 to 5/02). Family Medicine Physician, MN
8. **Esha Bhargava**, MS student in Health Informatics (9/05 to 6/06). Vice President, Experience Research, Ascension, IL
9. **Tom Brass**, MS in Biomedical Engineering (1/94 to 10/95). Senior Systems Engineer, Saint Bernard Engineering Inc., MN
10. **Josh Brauer**, MS in Biomedical Engineering (1/00 to 7/01). Internal Medicine Physician, The Permanente Medical Group, CO
11. **Robin Brusen**, MS in Biomedical Engineering (5/08 to 5/10), MD/MS program. General Cardiologist, Kaiser Permanente, WA
12. **Robert Buechler**, MS in Biomedical Engineering (9/10 to 10/13). Medtronic, MN

13. **Maria Burbano**, MS in Biomedical Engineering (9/15 to 6/17). Global Field Service and Technical Support Engineer, Medtronic, MN
14. **Angela Burgess**, MS in Biomedical Engineering (9/17 to 5/18). Mechanical Design Engineer, Medtronic, MN
15. **Nyimatoulie Cham**, MS student in Biomedical Engineering (10/20 to 12/21). R&D Engineer II, Medtronic, MN
16. **Edward C. Chinchoy**, MS in Mechanical Engineering (6/95 to 12/96). Executive Vice President, VisCardia, OR; Founder and CEO, 3VO, CA
17. **Woohyek Choi**, MS in Electrical Engineering (3/99 to 6/00). Leader of HW Development Group, Philosys, Korea
18. **James A. Coles Jr**, MS in Biomedical Engineering (1/99 to 7/00). Director of Global Downstream Marketing, Medtronic, MN
19. **Alex Deakyne**, MS in Bioinformatics & Computational Biology (6/18 to 1/19). Research Scientist, Visible Heart Laboratories, University of Minnesota, MN
20. **Anthony Dupre**, MS in Biomedical Engineering (12/02 to 12/04). Senior R&D Engineer, St. Jude Medical, MN
21. **Salah El Haddi**, MD/MS Program, (1/14 to 11/17). Surgical Resident, University of Michigan, MI
22. **Jon Falkenberg**, MS in Physiology (8/95 to 12/97). Deceased 2011
23. **Kevin Fitzgerald**, MS in Biomedical Engineering (9/02 to 5/04). Program Manager, Medtronic Surgical Technologies, CO
24. **Yan Gao**, MS in Mechanical Engineering (2/93 to 8/95)
25. **Sarah Hamlin,** MS in Biomedical Engineering (9/17 to 5/18). Reliability Engineer, Medtronic, MN
26. **Sarah Handahl (Ahlberg)**, MS in Biomedical Engineering (1/04 to 5/05). Senior Research Manager, Medtronic, MN
27. **Megan Harris,** MS in Biomedical Engineering (7/15 to 6/17). Scientist, Medtronic, MN
28. **Alexander J. Hill**, MS in Biomedical Engineering (1/99 to 9/00). Senior Program Director, Medtronic, MN
29. **Ross Hinrichsen,** MS in Biomedical Engineering (5/15 to 5/16). Mechanical Design Engineer, Medtronic, MN
30. **Bryce Cole Holmgren**, MS in Biomedical Engineering, Plan B (5/12 to 5/14), Medical student (MD/MS Program). Anesthesiologist, KS
31. **Jin Back Hong**, MS in Electrical Engineering (4/97 to 9/98). Principal Consultant/Scientist, Medtronic, MN
32. **Tinen L. Iles,** MS in Biological Science (8/13 to 5/15). Assistant Professor, Visible Heart® Laboratories, University of Minnesota, MN
33. **Aaron Janke**, MS in Biomedical Engineering (11/94 to 6/96). Field Clinical Studies Engineer, Biotronik Inc, MI
34. **Yong Jeon**, MS in Biomedical Engineering (7/93 to 7/95). Owner/Consultant, Tulip Engineering, CA
35. **Evan Johnson,** MS in Biomedical Engineering (8/15 to 6/17). Hardware Engineer, Medtronic, MN
36. **Traci Jones (Kress),** MS in Biomedical Engineering (1/16 to 5/17). Senior Pre-Market Reliability Engineer, Medtronic, MN
37. **Shanthi Kandikonda**, MS in Computer Science (1/08 to 5/08). Senior Manager, Identity and Access Management, Charles Schwab, TX

38. **Alex Kelner**, MS in Biomedical Engineering, Plan B (9/21 to 5/22). Scientist, Medtronic, MN
39. **Jaydeep Kokate**, MS in Biomedical Engineering (1/93 to 8/93). Director of Research and Development, Boston Scientific, MN
40. **Narasimhararo Kommamuri**, MS in Biomedical Engineering (7/93 to 1/97). Software Engineer, Abbott Diabetes Care Inc., CA
41. **Graig Kveen**, MS in Biomedical Engineering (6/93 to 12/95). R&D Engineer, 3M, MN
42. **Ryan Lahm**, MS in Biomedical Engineering (1/97 to 6/99). Senior Engineering Manager and Technical Fellow, Medtronic, MN
43. **George Mallin**, MS in Mechanical Engineering (1/10 to 3/11). Product Manager, Optina Diagnostics, Montreal
44. **Mark Marshall**, MS in Physiology (12/02 to 5/10). Technology Manager and Researcher, Medtronic, MN
45. **Amanda Martel (Wilson)**, MS in Biomedical Engineering (11/09 to 4/12). Senior Engineering Director, Medtronic, MN
46. **Lizzie Mattson,** MS in Biomedical Engineering (8/17 to 5/18). Systems Engineer, Medtronic, MN
47. **Miles McParland**, MS in Biomedical Engineering (12/16 to 12/17). Scientist, Medtronic, MN
48. **Judy A. Miller**, MS in Biomedical Engineering (6/00 to 1/02)
49. **Nathalie Odryzynski**, MS in Biomedical Engineering (11/99 to 7/01). Reliability Engineering Manager, Medtronic, MN
50. **Ky O'Rourke,** MS in Biomedical Engineering (1/18 to 12/18). Quality Engineer, Medtronic, MN
51. **Sara Overgaard**, MS in Mechanical Engineering (12/05 to 5/08). Safety Program Manager, Medtronic, MN
52. **Suman Pal**, MS in Biomedical Engineering (1/07 to 8/08). Senior District Service Manager, Medtronic, OH
53. **Susan Paquette**, MS in Physiology (12/02 to 1/07). Vice President and General Manager, Wound Care, BioMedGPS, LLC, MN
54. **Xavier Pardo**, MS in Mechanical Engineering (3/97 to 9/99). Global Medical Technology Executive, Neo Medical SA, Switzerland
55. **Meenal S. Pathak**, MS in Biomedical Engineering (4/96 to 3/98)
56. **Rian J. Podein**, MS in Physiology (6/96 to 12/97)
57. **Christopher Quinn**, MS in Biomedical Engineering (11/97 to 6/99). Chief Technical Engineer, Smiths Medical, MN
58. **Ali Rafiq**, MS in Biomedical Engineering (10/14 to 7/15). Manufacturing Engineer, The Tech Group, AZ
59. **Jeremy Riedesel**, MS in Biomedical Engineering (1/97 to 12/98). Family Medicine Physician, Family Health Medical Services PLLC, NY
60. **Kaileigh Rock,** MS in Biomedical Engineering (8/17 to 1/19). Research Contingent, Medtronic CRT, MN
61. **Lance Rongstad**, MS in Biomedical Engineering (2/14 to 8/17). Medical Device Sales Representative, Gemini Medical/Arthrex, MN
62. **Alex Ryan**, MS in Mechanical Engineering (5/10 to 9/11)
63. **Justin Schaffer**, MS in Biomedical Engineering (6/06 to 8/06). Cardiothoracic Surgeon, Cardiac Surgery Specialists, TX
64. **Emma Schinstock**, MS in Mechanical Engineering (5/18 to 9/19). PhD Candidate in Mechanical Engineering, University of Minnesota, MN

65. **Tony Schmitz,** MS in Biomedical Engineering (8/15 to 5/17). Reliability Engineer, Medtronic, MN
66. **Justine Schneider**, MS in Biomedical Engineering (1/20 to 5/21). Manufacturing Engineer, Medtronic, MN
67. **Douglas Seiffert**, MS in Mechanical Engineering (6/93 to 12/94). Manager of Quality Assurance, Janssen, Pharmaceutical Companies of Johnson & Johnson, NJ
68. **Brice Shireman**, Graduate research fellow in the Center for Interfacial Engineering via the National Science Foundation (7/92 to 9/93), MS in Bioengineering (to 6/94). SciMed, Boston Scientific, MN
69. **Nicholas Skadsberg**, MS in Biomedical Engineering (9/01 to 3/03). Global Downstream Marketing Director-AF Solutions, Medtronic, MN
70. **Scott Skorupa,** MS in Biomedical Engineering (3/08 to 12/15); did not complete degree. Senior Manager, Clinical Project Management, Abbott, MN
71. **Laura Slobotski**, MS in Biomedical Engineering (7/93 to 7/95). Sprint Technology, TX
72. **Jerome Socha**, MS in Biomedical Engineering (granted 3/03). Systems Engineer, Lockheed Martin, TX
73. **Charles Soule**, MS Biology, CBS (12/01 to 6/05). Quality Control Chemist, Interplastic Corp., MN
74. **Vincent Splett**, MS in Physiology (1/06 to 9/07). Principal Scientist, Medtronic, MN
75. **Marc Steckler**, MS in Biomedical Engineering (8/08 to 5/09). Principal Systems Engineer, Medtronic, MN
76. **Jeremy Stimack**, MS in Biomedical Engineering (9/15 to 7/16). R&D Engineer II, Boston Scientific, MN
77. **Dona Suardini,** MS in Biomedical Engineering (11/12 to 7/13). Senior Operations Program Manager, Medtronic, MN
78. **Susan Sun,** MD/MS Program (9/16 to 6/17). University of Minnesota Medical School
79. **Matthew Sweney**, MD, MS in Biomedical Engineering (1/99 to 9/00). Pediatric Neurologist and Epileptologist, University of Utah, UT
80. **Samira Tahvildari**, MS in Mechanical Engineering (3/98 to 2/00). Senior Manager Core Quality Services, Medtronic, MN
81. **Weston Upchurch,** MS student in Bioinformatics & Computational Biology (9/19 to 10/21). Visible Heart® Laboratories, University of Minnesota, MN
82. **Matt Venegoni**, MS, Masters Capstone Project (8/11 to 5/12). Clinical Study Manager, Wright Medical, MN
83. **Jorge Vergen,** MS in Bioinformatics & Computational Biology (9/19 to 6/20). PhD candidate in Bioinformatics & Computational Biology, University of Minnesota, MN
84. **Sarah Vincent**, MS in Biomedical Engineering (11/02 to 9/04). Engineering Program Manager, Medtronic, MN
85. **Daniel Voce,** MS in Biomedical Engineering (9/18 to 5/19). Research Engineer. MicorOptx, MN
86. **Michael F. Wolf**, MS in Biomedical Engineering (9/06 to 12/09). Scientist and Technical Fellow, Medtronic, MN
87. **Matt Yoder,** MS in Biomedical Engineering (9/08 to 8/16). Principal Systems Engineer, Medtronic, MN

CURRENT MEDICAL/VETERINARY MEDICINE STUDENTS

1. **Mina Estafanos,** Medical student, University of Minnesota (2/21 to present)

FORMER MEDICAL/VETERINARY MEDICINE STUDENTS

1. **Johnathon Aho**, Medical student, University of Minnesota (2008-2009). General Surgeon, Mayo Clinic, MN
2. **Andrea Allen**, Medical student, University of Kansas (5/16 to 8/16). MD Candidate, University of Kansas, KS
3. **Corey Anderson**, Medical student/Research rotation, University of Minnesota (1/03 to 9/06). Anesthesiologist, Essentia Health, MN
4. **Greg Banker,** Medical student, University of Minnesota (8/13 to 10/13). Strategic Market Development Director, Vertiflex, MN
5. **Allison Bradee**, Medical student, University of Minnesota (10/11 to 9/12). Resident Physician, University of Nebraska Medical Center, NE
6. **Robin Brusen**, MD/MS program, University of Minnesota (5/08 to 5/10). General Cardiologist, Kaiser Permanente, WA
7. **Rachel Busko,** Medical student, University of Minnesota (5/16 to 2/17). Medical student, University of Minnesota, MN
8. **Brian Chan**, Medical student, Casual/temp employee (human heart atlas), University of Minnesota (6/09 to 9/09). Fellow in Musculoskeletal Imaging and Intervention, University of Wisconsin School of Medicine and Public Health, WI
9. **Nathan Charles**, MD/PhD program/Research assistant, University of Minnesota (5/03 to 8/03). Physician, Pathology (Anatomic & Clinical), Great Lakes Pathologists, SC, WI
10. **Chen Chen,** Medical student, University of Minnesota (5/15 to 9/15)
11. **Robert Colbert**, Medical student, University of Minnesota (5/13 to 1/14)
12. **Steve Conlon,** Medical student, University of Minnesota (1/12 to 5/13). Resident Physician, Nationwide Children's Hospital, MN
13. **William Dennehy**, Medical student, University of Minnesota (6/18 to 9/18). Medical student, University of Minnesota, MN
14. **Christopher DeNucci**, MD/PhD program/Research rotation, University of Minnesota (6/04 to 9/04). Radiologist, Meritus Health, TX
15. **Alex DiBartolomeo**, Medical student, University of Minnesota (1/16 to 2/17). Medical student, University of Minnesota, MN
16. **Chris Duncan**, Research assistant, University of Minnesota; funded by a grant from the Minnesota Medical Foundation (11/99 to 8/00). Anesthesiologist, Mayo Clinic, MN
17. **Cary Effertz, MS**, Research assistant, University of Minnesota (5/07 to 8/07). Pain Management Specialist/Anesthesiologist, Mayo Clinic, WI
18. **Ellie Engelen,** Veterinary medicine student, University of Minnesota (5/15 to 5/16). Associate Veterinarian, Forest Lake Veterinary Hospital, MN
19. **Anthony Frattalone**, Research assistant, University of Minnesota; recipient of Minnesota Medical Foundation student research grant (1/03 to 8/03). Neurologist, TX
20. **Sarah Frommer, PhD**, MD/PhD program/Research assistant, University of Minnesota (7/01 to 3/07). Plastic Surgeon, Craniofacial Team of Texas
21. **Andrew Geeslin**, Research volunteer, University of Minnesota (11/07 to 5/09). Orthopedic Surgeon, Sports Medicine, Borgess Health, MI
22. **Jeff Hall**, Medical student, University of New England College of Osteopathic Medicine, ME (5/17 to 7/17)
23. **Bryce Cole Holmgren,** Medical student (MD/MS Program), University of Minnesota (5/12 to 5/14). Anesthesiologist, KS

24. **Dih-Dih Huang**, Medical student, University of Minnesota (1/11 to 8/11). Surgery Resident, St. Joseph's Hospital, AZ
25. **Sandra Kopp**, Research assistant, University of Minnesota (8/96 to 5/99). Anesthesiologist, Mayo Clinic, MN
26. **Tarissa Lai**, Medical student, University of Minnesota (1/14 to 9/15). Medical student, University of Minnesota, MN
27. **Alice Lehman**, Medical student, University of Minnesota (5/13 to 10/13). Pediatrics Resident, University of Minnesota, MN
28. **Erica Levine**, Medical student, University of Minnesota (5/14 to 8/15). Medical Resident, University of Minnesota, MN
29. **Timothy Lindsey**, Medical student/Research rotation, University of Minnesota (9/01 to 12/01). Anesthesiologist, TRIA, MN
30. **Michael Loushin**, Advanced admission, University of Minnesota (9/93 to 9/94), Life Sciences Summer Research Programs (6/94 to 8/94), Research assistant (9/94 to 6/98). Twin Cities Anesthesia Associates, MN
31. **Katelyn Madigan**, Medical student, University of Minnesota (1/16 to 2/17). Medical student, University of Minnesota, MN
32. **Sarah Mott**, Medical student, Creighton (5/13 to 8/13). Emergency Medicine Physician, Regions Hospital, MN
33. **Cathy Nguyen,** Medical student, University of Minnesota (6/11 to 8/11)
34. **Zachary Novaczyk,** Medical student, University of Minnesota (5/18 to 9/18). Doctor of Medicine Candidate, University of Minnesota, MN
35. **Carrie Ronstrom**, Medical student, University of Minnesota (9/13 to 5/15). Medical student, University of Minnesota, MN
36. **Theresa Rosendahl**, MD/MPH program/Research assistant, University of Minnesota (8/05 to 6/06)
37. **Cori Russell**, Medical student, Casual/temp employee, University of Minnesota (5/09 to 9/09). Physician, Cardiology, Henry Ford Hospital and Medical Center, MI
38. **Carl Sakamoto**, Medical student research elective in Anesthesiology (3/93 to 5/94). Anesthesiologist, APA, MN
39. **Nathan Schoeneck**, Research volunteer, University of Minnesota (09/08 to 5/09). Assistant Professor, Internal Medicine, Minneapolis VA Medical Center, MN
40. **Maria Seewald,** Medical student, University of Magdeburg, Germany (9/15 to 10/16). Medical student, University of Magdeburg, Germany
41. **Kim Sergerie,** Medical student, McGill University, Montreal (9/16 to 10/16). Medical Science Advisor & Liason, Kinova, Quebec
42. **Erika Sidney**, Research assistant, University of Minnesota (8/98 to 4/99). Pediatric Emergency Medicine Physician, Children's Hospital Colorado, CO
43. **Miriam Smetak**, Medical student, University of Minnesota (6/14 to 5/15). Otolaryngology Resident, Vanderbilt University Medical Center, TN
44. **Bowei (LuLu) Song,** Medical student, University of Minnesota (4/16 to 8/16). Medical student, University of Minnesota, MN
45. **Collin Stinogel,** Medical student, Liberty University College of Osteopathic Medicine, VA (6/16 to 8/16). Medical student, VA
46. **Luke Stoltzfus**, Medical student/Research rotation; MMF research grantee, University of Minnesota (6/05 to 9/06). Anesthesiologist, St. Luke's, MN

47. **Jarrod Tembreull**, Medical student, University of Minnesota (1/15 to 9/15). Medical student, University of Minnesota, MN
48. **Jeff Theismann**, Medical student, University of Minnesota (1/15 to 9/15). Medical Resident, Orthopaedic Surgery, University of Minnesota, MN
49. **Kathryn Thomas,** Medical student, University of Minnesota (5/15 to 8/16)
50. **Chad Thompson,** Medical student, University of Minnesota (10/11 to 1/14)
51. **Mike Torchia**, Medical student, University of Minnesota (10/11 to 12/11). Orthopaedic Surgery Resident, Dartmouth-Hitchcock, NH
52. **Michael Tradewell**, Medical student, University of Minnesota (9/14 to 5/16). Medical student, University of Minnesota, MN
53. **Dan Virnig**, Research assistant, University of Minnesota (9/00 to 12/00). Gastroenterologist, HealthPartners, MN
54. **Gina Weiss**, Medical student, University of Minnesota (1/16 to 8/16). Medical student, University of Minnesota, MN
55. **Oh Sang (Michael) Woo,** Research volunteer, University of Minnesota (5/08 to 9/08)
56. **Melanie Yates,** Medical student, Case Western (5/16 to 8/16). Medical student, Case Western, OH

CURRENT PHARMACY STUDENTS
None

FORMER PHARMACY STUDENTS
1. **Andrea Bochna**, Pharmacy student, Research rotation, University of Wisconsin-Madison (8/16 to 10/16)
2. **Dustin Fredrickson,** Pharmacy student, Research rotation, University of Wisconsin-Madison School of Pharmacy (5/16 to 7/16)
3. **Taryn Hinners,** Pharmacy student, Research rotation, University of Wisconsin-Madison (7/16 to 8/16). Pharmacist, Walgreens Specialty Pharmacy LLC, PA
4. **Alexander "AJ" Kellogg**, Pharmacy student, Research rotation, University of Wisconsin-Madison (1/17 to 4/17). Pharmacy Resident, University of Southern California School of Pharmacy, CA
5. **Anna Legreid Dopp**, PharMD, Research volunteer and PharMD program, 4th year research rotation, University of Minnesota School of Pharmacy (8/00 to 6/02). Director, Clinical Guidelines & Quality Improvement at the American Society of Health-System Pharmacists, MD
6. **Nate Menninga,** Pharmacy student, University of Wisconsin Madison (5/14 to 8/14). Clinical Pharmacy Specialist, William S. Middleton VA Hospital, WI
7. **Sarah Novak**, PharMD program, 4th year research rotation, University of Minnesota School of Pharmacy (6/02 to 8/02)
8. **Adam Remme**, Pharmacy student, Research rotation, University of Wisconsin-Madison (3/18 to 5/18)

CURRENT NEUROSCIENCE STUDENTS
None

FORMER NEUROSCIENCE STUDENTS

1. **Roman Tyshynsky**, PhD Neuroscience student, Research rotation, University of Minnesota (1/17 to 4/17). Neuroscience student, University of Minnesota, MN

FORMER PHYSICAL THERAPY STUDENTS

1. **Natalie Amundsen**, MS in Physical Therapy, College of St. Catherine, MN (12/95 to 6/98). Physical Therapist, Mills Health Center, CA
2. **Kristopher Balgaard**, DPT in Physical Therapy, University of Minnesota (1/01 to 7/02). Physical Therapist/Site Lead, Viverant, MN
3. **Brenda Becker**, MS in Physical Therapy, College of St. Catherine, MN (12/95 to 6/98)
4. **Mike Carey**, DPT in Physical Therapy, University of Minnesota (1/01 to 7/02). Physical Therapist, In Motion Physical Therapy & Fitness, MN
5. **Katherine Chromy**, DPT in Physical Therapy, University of Minnesota (1/01 to 7/02). Physical Therapist, Anoka/Hennepin School District, MN
6. **Jeremiah Hales**, MS in Physical Therapy, University of Minnesota (9/98 to 12/00). Physical Therapist, M-Power Physical Therapy, MN
7. **Pete Larson**, MS in Physical Therapy, University of Minnesota (9/98 to 12/00), Physical Therapist, MN
8. **Sonja Lukas (Day)**, DPT in Physical Therapy, University of Minnesota (2/03 to 7/04). Physical Therapist, Courage Center, Golden Valley, MN
9. **Laury Martini-Clymer**, MS in Physical Therapy, College of St. Catherine, MN (12/95 to 6/98)
10. **Erika Sandell**, DPT in Physical Therapy, University of Minnesota (2/03 to 7/04). Physical Therapist, Institute for Athletic Medicine, MN
11. **Kimberly Scharmer-Baumann**, MS in Physical Therapy, College of St. Catherine, MN (12/95 to 6/98)
12. **Margaret Tilman**, DPT in Physical Therapy, University of Minnesota (2/03 to 7/04). Physical Therapist, OSI Physical Therapy, MN

FORMER PHYSIOLOGY STUDENTS

1. **Jason Foss**, IBP rotation in Physiology (9/09 to 12/10)

CURRENT UNDERGRADUATE STUDENTS AND VOLUNTEERS

1. **Jack Burt**, Volunteer (3/22 to present)
2. **Katherine Heinle**, Casual/temp employee (8/21 to present)
3. **Emme Lindeberg**, Volunteer (5/22 to present)
4. **Greta Long**, Volunteer (10/22 to present)
5. **Alex Maierhofer**, Volunteer (2/22 to present)
6. **Samanta Toczyl**, Volunteer/Directed Research (10/21 to present)
7. **Connie Wang**, Voluteer/Honors Thesis (9/21 to present)
8. **Josh Zipf**, Volunteer (9/21 to present)

FORMER UNDERGRADUATE STUDENTS

1. **Marina Abramovich**, Honors Thesis Project in Physio/ogy (8/98 to 3/99)
2. **Kymberly Adams**, Undergraduate in Electrical Engineering (4/93 to 7/93)
3. **Varun Agarwal,** Volunteer (12/18 to 8/19)
4. **Neil Aggarwal**, Summer Undergraduate Research Program in Science and Engineering via the National Science Foundation (6/98 to 8/98)

5. **Afeefa Ahmed,** Volunteer (2/20 to 6/21)
6. **Amber Aho**, Volunteer (5/03 to 8/03)
7. **Nadia Altaf**, Undergraduate scholar in the President's Distinguished Faculty Mentor Program (9/97 to 6/98)
8. **Kylea Barnes,** Volunteer (9/18 to 9/19)
9. **Brady Anderson,** Volunteer (1/15 to 6/16)
10. **Danielle Anderson,** Volunteer (8/14 to 1/15)
11. **Perico Noel Cruz Arcedo**, Research Explorations Program, Continuing Education and Extension, University of Minnesota (10/92 to 7/93)
12. **Verna Arcedo**, Research Explorations Program, Continuing Education and Extension, University of Minnesota (6/94 to 9/94)
13. **Gregory D. Ariff**, Summer Fellowship in Biomedical Engineering, Biomedical Engineering Center, University of Minnesota (6/97 to 8/97)
14. **Gunnar Askegaard**, Volunteer (9/14 to 5/15)
15. **Jeremiah Atkinson**, Volunteer (5/13 to 8/13)
16. **Dan Balto**, Volunteer/Undergraduate Research Opportunities Program/Directed research (6/10 to 6/11)
17. **Lukas Baner,** Volunteer (11/15 to 5/16)
18. **Jennifer Bangsund**, Research Experiences for Undergraduates via the National Science Foundation (6/95 to 9/95)
19. **Mariel Barcelos**, Volunteer (10/08 to 5/09)
20. **Aaron Barlow**, Volunteer (1/09 to 10/09); Directed research (5/10 to 8/10)
21. **Alex Barstad**, Volunteer (2/11 to 9/11)
22. **Kasia Bartczak**, Volunteer (2007-8)
23. **Ashley Bartlett**, Directed research, Technology (2007-8)
24. **Katie Batman**, Volunteer (2/14 to 1/15)
25. **Adam Beck**, Volunteer (4/13 to 1/14)
26. **Nick Beck**, Directed research in Biomedical Engineering (1/01 to 5/01)
27. **Grant Beckstrand**, Directed research in Biomedical Engineering (1/02 to 5/02)
28. **Alex Beebout**, Volunteer/Directed research (10/10 to 9/11)
29. **Jason Berg,** Volunteer (5/18 to 5/19)
30. **Stephanie Bersie**, Volunteer (5/13 to 5/15)
31. **Mark Bluemke**, Volunteer (11/05 to 5/06, 9/06 to 5/07)
32. **Vyvian Borse,** Volunteer (5/16 to 8/16)
33. **Hana Boudlali**, Volunteer (1/15 to 9/15)
34. **Tori Boughton**, Directed research in Physiology (5/05 to 8/05)
35. **Karen Broady**, Directed research in Biomedical Engineering (9/00 to 12/00)
36. **Erica Brooks**, Life Sciences Summer Undergraduate Research Program (6/98 to 8/98)
37. **Tara Buhl**, Advanced admission student, University of Minnesota School of Medicine (9/91 to 9/93)
38. **Angela Burgess,** Volunteer (2/17 to 9/17)
39. **Andrew Bursaw**, Directed research in Physiology (9/01 to 12/01)
40. **Theresa Bushman,** Volunteer (5/16 to 11/16)
41. **Michael Caldwell**, Honors Thesis Project in Physiology, Research assistant (7/97 to 3/99)
42. **Stephanie Caldwell**, Volunteer (10/12 to 12/12)
43. **Stuart Campbell**, Biomedical Engineering Life Sciences Summer Undergraduate Research Program (6/04 to 8/04)

44. **Khoa Cao**, Volunteer (2/13 to 6/14)
45. **Gail Carlson**, Volunteer (6/97 to 6/99)
46. **Nathan Carlson**, Research Explorations Program, Continuing Education and Extension, University of Minnesota (3/96 to 9/96)
47. **Elizabeth Carroll**, Honors Thesis Project in Physiology, Volunteer (7/97 to 3/99)
48. **Rachel Carson**, Directed research in Biology (11/04 to 8/05)
49. **Alien Castamagna-Soto**, Volunteer (2/21 to 5/21)
50. **Leilani Castleman**, Life Sciences Summer Undergraduate Research Program (6/02 to 8/02)
51. **Santiago Charry,** Volunteer (5/16 to 8/16)
52. **Justin Chen,** Volunteer (11/20 to 5/21)
53. **Geoffrey Cherucheril**, Volunteer (12/06 to 2/07, 2/08 to 5/09)
54. **Jennifer Chmura,** Volunteer (8/13 to 2/14, 6/14 to 6/16)
55. **Sung Jun "Paul" Cho,** Volunteer (10/15 to 5/18)
56. **David Choi**, Directed research, Undergraduate Research Opportunity Award recipient (2/03 to 4/04)
57. **Matthew Chu**, Life Sciences Summer Undergraduate Research Program (6/00 to 8/01), Johns Hopkins Medical School
58. **Ioana Ciuta**, Volunteer (11/13 to 6/14)
59. **Madison Clague,** Volunteer (5/15 to 9/15, 5/17 to 8/17)
60. **Ellie Clark**, Volunteer (11/13 to 6/14)
61. **Lynn Clark**, Directed research (Spring 2008)
62. **Ryan Clark**, Directed research (9/10 to 5/11)
63. **Amanda Claseman**, Volunteer (12/13 to 6/14)
64. **Chris Cobar**, Volunteer (11/14 to 5/14)
65. **Dayna Cohen,** Volunteer (10/13 to 2/14)
66. **Jerfiz Constanzo**, Life Sciences Summer Undergraduate Research Program (6/09 to 8/09)
67. **Ben Cooper**, Volunteer (2/11 to 5/11)
68. **Ryan Corcoran**, Directed research in Biology/Volunteer (2/05 to 1/08)
69. **Hailey Corrigan**, Volunteer (5/14 to 1/15)
70. **Sydney Crims,** Volunteer (12/18 to 3/20)
71. **Jodi Deleski**, Volunteer (5/99 to 6/00)
72. **Erica Delin**, Volunteer (2/05 to 5/07)
73. **Tristan Dockendorf**, Volunteer, Undergraduate Research Opportunities Program (1/09 to 10/09)
74. **Kristin Donley**, Volunteer (9/02 to 8/03), Physical Therapy program, University of Minnesota
75. **Alec Donohue,** Volunteer (9/14 to 12/15)
76. **Dannyelle Donahue,** Volunteer (8/18 to 3/20)
77. **Kerleene Dorceus,** Summer Undergraduate Research Program in Science and Engineering via the National Science Foundation (6/21 to 8/21)
78. **Peter Downie**, Volunteer (6/13 to 8/13)
79. **Rachel Drake**, Volunteer (5/12 to 6/14)
80. **Sherwin Duke**, Biomedical Engineering Undergraduate Summer Fellow (6/99 to 8/99)
81. **Mitch Dyrdahl**, Directed research (2/03 to 6/04)
82. **Tommica Edwards**, Undergraduate scholar in the President's Distinguished Faculty Mentor Program (9/97 to 6/98)
83. **Alex Eldredge**, Volunteer (9/10 to 7/12)
84. **Kendall Emfield,** Volunteer (5/18 to 12/19)

85. **Katy Empanger,** Volunteer (5/12 to 8/15)
86. **Kristen A. Engelhardt**, Life Sciences Summer Undergraduate Research Program (6/92 to 8/92)
87. **Kyle Erickson**, Volunteer (6/11 to 9/11)
88. **Justin Esterberg**, Research Explorations Program, Continuing Education and Extension, University of Minnesota (7/93 to 10/93)
89. **Sarah Ezzat**, Volunteer, Undergraduate Research Opportunities Program (2/06 to 5/07)
90. **Jon Falkenberg**, Research Explorations Program, Continuing Education and Extension, University of Minnesota (6/94 to 7/95)
91. **Gia Fedo**, Volunteer (10/08 to 10/09)
92. **Rachel (Bersie) Feliciano**, Volunteer (5/14 to 8/16)
93. **Kris Felsman**, Volunteer (6/97 to 6/98)
94. **Jessica Felton**, Volunteer (1/09 to 5/09)
95. **Emily Fiala**, Volunteer (2/17 to 8/18)
96. **Kristi Field**, Research Explorations Program, Continuing Education and Extension, University of Minnesota (3/94 to 11/95)
97. **Darryl Finkton**, Life Sciences Summer Undergraduate Research Program (5/07 to 8/07)
98. **Mary Finta**, Volunteer (10/13 to 5/15)
99. **Emily Fitch**, Volunteer (5/10 to 8/12)
100. **James Fleming**, Volunteer (4/13 to 5/14)
101. **Patrick Fones**, Volunteer (8/08 to 12/08)
102. **Bret Fox,** Volunteer (5/12 to 10/13)
103. **Boutheina Fradj,** Directed research (9/14 to 5/15)
104. **Brad Fredrickson**, Volunteer (9/14 to 12/15)
105. **Andy Freeman**, Volunteer in Biomedical Engineering (2/02 to 5/02)
106. **Ally Fuher**, Volunteer/Student employee (5/14 to 6/17)
107. **Darren Galligan**, Life Sciences Summer Undergraduate Research Program in Biomedical Engineering (6/03 to 8/03)
108. **Dionna Gamble**, Life Sciences Summer Undergraduate Research Program (6/11 to 8/11)
109. **Grant Gangeness**, Volunteer/Undergraduate Research Opportunities Program (5/13 to 8/14)
110. **Josh Gangl,** Volunteer (2016)
111. **Rachel Gasser,** Volunteer (11/19 to 9/21)
112. **Chelsie GawneMark,** Volunteer (8/13 to 6/14)
113. **Erin Ge**, Directed research (6/06 to 8/06)
114. **Tara Gengenbach**, Research Explorations Program, Continuing Education and Extension, University of Minnesota (9/95 to 12/96)
115. **Scott Gershan**, Volunteer (9/05 to 5/06)
116. **Jeff B. Geske**, Directed research in Physiology (1/02 to 5/02), Mayo Medical School, MN
117. **Megan Ghai**, Volunteer (9/08 to 12/11)
118. **Odalys Gonzalez-Rodriguez**, Life Sciences Summer Undergraduate Research Program (6/06 to 8/06)
119. **William Goodson**, Research Experiences for Undergraduates via the National Science Foundation (6/94 to 8/94)
120. **David Grabowski**, Honors Thesis Project in Biochemistry (7/97 to 6/98)
121. **Kevin Graden**, Volunteer (8/09 to 2/11)
122. **Tony Grandelis**, Volunteer (3/09 to 5/09)
123. **Michael Greene,** Volunteer (2016)

124. **Emma Greibenow,** Volunteer (10/15 to 11/16)
125. **Melissa Groen**, Directed research (12/08 to 8/09)
126. **Amelia Gudex,** Directed research (8/16 to 2/17)
127. **Erik Gudmundson**, Volunteer (2008)
128. **Adam Gullickson**, Directed research (2/03 to 6/03)
129. **Jake Gustafson**, Volunteer (5/14 to 12/14)
130. **Annie Haakenstad,** Volunteer (10/15 to 8/16)
131. **Amy Handlogten**, Volunteer/URS (9/11 to 5/12)
132. **Victoria Harp**, SEED program, Center for Interfacial Engineering via the National Science Foundation (6/94 to 8/94)
133. **Sam Harpell**, Volunteer (10/14 to 9/15)
134. **Jack Hartmann,** Directed research (1/16 to 2/17)
135. **Kevin Hartoyo**, Volunteer (9/15 to 2/17)
136. **Moe Hatab**, CHE Research Training Program (5/10 to 6/12)
137. **Josh Havel**, Directed research (1/13 to 5/13)
138. **Jennifer Heidmann**, Research Explorations Program, Continuing Education and Extension, University of Minnesota (1/94 to 8/94)
139. **Salma Helal**, Directed research in Biological Sciences (1/07 to 9/07)
140. **Andrew Held**, Undergraduate research assistant in the Center for Interfacial Engineering via the National Science Foundation (4/92 to 8/93)
141. **Alyssa Hennen,** Volunteer (5/12 to 10/12)
142. **Gabriel Hernandez**, Life Sciences Summer Undergraduate Research Program (6/14 to 8/14)
143. **Mackenzie Herzig**, Volunteer (11/14 to 5/16)
144. **Danielle Hesprich**, Volunteer (9/05 to 8/06)
145. **Erica Hjelle,** Casual/temp employee (6/09 to 8/09)
146. **Mara Hjelle,** Casual/temp employee (4/12 to 10/12)
147. **Thuy Hoang**, Volunteer (2/17 to 6/17)
148. **Matt Hoffman**, Directed research (7/08 to 5/09)
149. **Brandon Hoglund,** Volunteer (9/19 to 12/19)
150. **Shawn Hong**, Volunteer (11/13 to 12/14)
151. **Aishania Hopkins**, Senior thesis for summa honors (9/96 to)
152. **Christina Horn**, Life Sciences Summer Undergraduate Research Program (6/02 to 8/02)
153. **Dan Hosker**, Volunteer; Physiology honors project (6/09 to 8/10)
154. **Christopher Howard**, Directed research in Biomedical Engineering, Volunteer (1/03 to 6/05)
155. **Emily Hoyer**, Volunteer (6/12 to 8/12)
156. **Mahdi Hurreh,** Volunteer 9/17 to 5/20)
157. **Noora Hussain,** Volunteer (9/12 to)
158. **Devon Hutton**, Volunteer (5/09 to 8/10)
159. **Hanna Iaizzo**, Casual/temp employee (6/09 to 8/09)
160. **Jenna Iaizzo**, Directed research in Physiology/Volunteer (5/05 to 8/05, 6/06 to 8/06)
161. **Yoko Ishida,** Volunteer (9/12 to 10/13)
162. **Jihan Jacobs**, Directed research in Physiology/Biology (10/04 to 5/06)
163. **Christine Jauregui**, Research Explorations Program, Continuing Education and Extension, University of Minnesota (7/95 to 9/95)
164. **Dawn Jiang**, Volunteer (12/12 to 5/13)
165. **Brooks Johnson**, Volunteer in Physiology (6/95 to 9/98)
166. **Chloe Johnson,** Volunteer (5/16 to 8/18)

167. **Graham Johnson,** Volunteer (5/16 to 7/17)
168. **Karl Johnson**, Honors thesis in Physiology (9/05 to 5/06)
169. **Lisa Johnson**, Junior Research Project in Physics (1/02 to 5/02)
170. **Zach Juveli**, Volunteer (7/08 to 12/08)
171. **David Kalb**, Life Sciences Summer Undergraduate Research Program (6/93 to 8/93)
172. **Amy Kaleita**, Summer Fellowships in Biomedical Engineering, Biomedical Engineering Center, University of Minnesota (6/95 to 8/95)
173. **Christina Kang**, Directed research (9/03 to 1/04)
174. **Nick Karlovich,** Volunteer (9/18 to 5/20)
175. **Cory Kasprzak**, Volunteer (6/10 to 12/10)
176. **Megan Katopodis,** Casual/temp employee (5/17 to 7/17)
177. **Daniel Kehler**, Volunteer (10/06 to 4/07)
178. **Jackie Kehler**, Volunteer (6/03 to 8/03)
179. **Alexander (AJ) Kellogg,** Volunteer (5/12 to 10/12)
180. **Brenna Kelly,** Post-baccalaureate volunteer (9/17 to 5/18)
181. **Kyrsten Kelley**, Volunteer/Undergraduate Research Opportunities Program (CBS) (2005-8)
182. **Hayden Kelly**, Volunteer (12/11 to 5/12)
183. **Jason Kelly,** Life Sciences Summer Undergraduate Research Program (5/15 to 8/15)
184. **Todd Kerkow**, Undergraduate research assistant in the Center for Interfacial Engineering via the National Science Foundation. (12/93 to 9/95)
185. **Michael Kern,** Volunteer (9/05 to 5/06)
186. **Alyssa Kessel,** Volunteer (7/12 to 5/13)
187. **Mira Khatib**, Volunteer (5/13 to 8/13)
188. **Tarek Khatib,** Post-baccalaureate volunteer (1/18 to 12/18)
189. **Martin Khoury,** Volunteer (9/15 to 6/16)
190. **Sheena Kiaei,** Volunteer (9/16 to 7/17)
191. **Jennifer Kim,** Volunteer (5/15 to 8/15)
192. **Jennifer Kim,** Volunteer (5/16 to 7/17)
193. **Gayla King**, Volunteer (8/99 to 12/99)
194. **Steve Kiviahde**, Directed research (9/08 to 5/09)
195. **Will Kivlin,** Volunteer (1/15 to 9/15)
196. **Katherine G. Koff**, Research Explorations Program, Continuing Education and Extension, University of Minnesota (1/96 to 4/99)
197. **Emily Kollenbroich,** Volunteer (8/16 to 5/17)
198. **John Korkko**, Volunteer (5/09 to 10/09)
199. **Becky Kortum,** Volunteer (8/13 to 6/14)
200. **Mariya Kovaleva**, Volunteer (9/08 to 11/08, 2/09 to 5/09, 10/09 to 5/10)
201. **Konstantin Kravcheuko**, Directed research (10/10 to 6/11)
202. **Beth Kregel,** Volunteer (9/10 to 5/12)
203. **Traci Kress,** Volunteer, Casual/temp employee (8/12 to 12/12)
204. **Kevin Kriege**, Volunteer (5/13 to 6/16)
205. **Lori Kruse**, Biological Sciences Alumni Society Mentor Program, Volunteer (1/96 to 6/98)
206. **Roby Kuderko,** Volunteer (1/12 to 12/12)
207. **Daniel Kuivinen,** Volunteer (2/17 to 9/17)
208. **Elizabeth Laakso,** LHI scholar (5/15 to 9/15)

209. **Dan Lackas**, Undergraduate research assistant in the Center for Interfacial Engineering via the NSF (6/93 to 6/94, 9/94 to 7/96); Research Experiences for Undergraduates via the NSF (6/94 to 9/94)
210. **Joe Lai**, Volunteer (1/09 to 8/09)
211. **Maria LaNasa**, Volunteer (7/09 to 12/10)
212. **Xiao-yu (Matt) Lao**, Research Experiences for Undergraduates via the NSF (6/94 to 8/94)
213. **Allison Larson,** Volunteer (6/11 to 8/13)
214. **Jessie Lasher**, Volunteer (6/08 to 8/08, 5/09 to 8/09)
215. **Juliet Laske,** Volunteer, Casual/temp employee (10/13 to 8/14)
216. **Tod Leaven**, Neuroscience, Life Sciences Summer Undergraduate Research Program (6/97 to 8/97)
217. **Mai Yer Lee,** Volunteer (9/11 to 2/14)
218. **Panyiag Lee**, Volunteer (12/08 to 8/09)
219. **Keith Leland**, Undergraduate research assistant in the Center for Interfacial Engineering via the National Science Foundation (7/93 to)
220. **Ed LeMahieu**, Directed research in Physiology (1/00 to 12/00)
221. **Charles LeNeave,** Volunteer (1/16 to 7/17)
222. **Elizabeth Lezama**, Life Sciences Summer Undergraduate Research Program (6/13 to 8/13, 6/14 to 8/14)
223. **Jason Liao**, Volunteer (10/14 to 1/15)
224. **Kevin Liao**, Volunteer (7/10 to 9/10)
225. **Annette Lindblom**, Research Experiences for Undergraduates via the NSF (6/97 to 8/97)
226. **Xiaoyin Ling,** Volunteer (2/18 to 12/18)
227. **Cindy Liu**, Directed research for honors project in Physiology (9/00 to 12/00)
228. **Meghan Longen,** Volunteer (1/18 to 8/18)
229. **Tran Lu,** Volunteer (9/19 to 3/20)
230. **Jim MacKenzie**, Volunteer, pre-med student at the University of Minnesota (7/95 to 9/95)
231. **Libby Magnuson**, Graphic art designer (6/07 to 9/07)
232. **Erin Mahre,** Casual/temp employee (5/17 to 8/17)
233. **Claire Manlove**, Volunteer (11/12 to 5/15)
234. **Aamir Mansoor**, Volunteer (2006-7)
235. **Jade Marchiniak**, Volunteer (1/12 to 5/12)
236. **Irmarie Marrero-Marrero**, Life Sciences Summer Undergraduate Research Program (6/12 to 8/12)
237. **Savannah Martinson,** Volunteer (6/19 to 12/19)
238. **Phil Matta**, Directed research/Volunteer (12/07 to 10/09)
239. **Kari Mattison,** Casual/temp employee (5/15 to 8/15)
240. **Frances Maybach**, Directed research/Volunteer (1/05 to 12/05, 6/06 to 1/07)
241. **Sheena Mbachu**, Volunteer (2/10 to 12/10)
242. **Anna McCormick**, Directed research (10/05 to 1/07)
243. **Gannon McGrath,** Volunteer (8/12 to 8/13, 6/14 to 1/15)
244. **Brendan McKnight**, Volunteer (1/06 to 1/07)
245. **Nathan McLean**, Directed research (2/03 to 6/03)
246. **Maria Del Mar Mendez-Casillas**, Life Sciences Summer Undergraduate Research Program (6/21 to 8/21)
247. **Melanie Menk,** Volunteer (1/15 to 1/18)
248. **Nate Menninga**, Casual/temp employee (5/14 to 8/14)

249. **James Mika**, Undergraduate Research Opportunity Program (2/05 to 6/05)
250. **Jesse Miller**, Volunteer (2/03 to 6/03)
251. **Laura Miller**, Volunteer and Honors Project in Physiology (1/01 to12/01, 7/03 to 5/05), School of Public Health, University of Minnesota (7/05)
252. **Nana Mitsuishi,** Volunteer (11/14 to 7/17)
253. **Jacquelyn Mohn**, Senior honors project (2007-8)
254. **Allison Mumbleau**, Volunteer (6/04 to 8/04)
255. **Semal Musleh**, Volunteer (10/14 to)
256. **Alexa Muylaert,** Volunteer (12/18 to 5/20)
257. **Nancy Nacker**, Volunteer (9/97 to 6/98)
258. **Max Nagarajan**, Volunteer/URS (10/11 to 1/12)
259. **Caroline Nam**, Biomedical Engineering Undergraduate Summer Fellow (6/99 to 8/99)
260. **Cherie Nau**, Volunteer (9/95 to 3/96)
261. **Denise Nelson**, Volunteer/Directed research (9/11 to 5/12)
262. **Mitch Nelson**, Volunteer (1/10 to 5/12)
263. **Nicole Neumann,** Volunteer (8/13 to 12/14)
264. **Krista Neururer-Rothstein**, Volunteer/Directed research (1/10 to 8/11)
265. **Sydney Newton,** Volunteer (5/15 to 12/18)
266. **Mary Nguyen**, President's Distinguished Faculty Mentor Program; Undergraduate Research Opportunity Award (1/01 to)
267. **Nicki Nguyen**, President's Distinguished Faculty Mentor Program (10/95 to 12/99)
268. **Lesa Nord**, Volunteer, Casual/temp employee (8/10 to 8/12)
269. **Edna Nore**, Life Sciences Summer Undergraduate Research Program (6/03 to 8/03)
270. **Meagan Nowariak,** LHI Scholar (6/17 to 8/17)
271. **Maureen O'Connor**, Volunteer (2008)
272. **Naomi Ollila**, Volunteer (12/13 to 8/14)
273. **Steve Oommen**, Directed research, Undergraduate Research Opportunity Award (2/03 to 5/04)
274. **Lev Ostrer**, Volunteer (9/11 to 5/12)
275. **Kate Overgaard**, Volunteer (9/09 to 12/09)
276. **Maria Pagnetta**, Professional Learning Experience Program, Biological Sciences, University of Minnesota (6/94 to 8/94)
277. **Drew Paradis**, Volunteer (1/13 to 5/13)
278. **Kishan Patel,** Volunteer (9/18 to 12/19)
279. **Nia Patterson**, Life Sciences Summer Undergraduate Research Program (6/11 to 8/11)
280. **Scott Pearson**, Volunteer (1/11 to 5/12)
281. **Michelle Perry**, Life Sciences Summer Undergraduate Research Program (5/07 to 8/07)
282. **Lee Peters**, Volunteer (9/10 to 8/11)
283. **Brent Peterson**, Volunteer (10/11 to 12/11)
284. **Justin Peterson**, Volunteer (5/06 to 1/08)
285. **Emily Pfieffer,** Volunteer (9/16 to 9/18)
286. **Catherine Pham**, Pre-med Scholar (10/03 to 8/05)
287. **Nicholas Plachinski,** Volunteer (5/18 to 12/18)
288. **Dmitrii Pokhil**, Volunteer (6/11 to 12/11)
289. **Tracy Powell**, Volunteer (1/07 to 8/08)
290. **Garrett Prahl,** Volunteer (7/12 to 5/13)
291. **Conner Prasky,** Volunteer (10/16 to 7/17)
292. **Dawn Qiu**, Directed research (12/05 to 5/07)

293. **Amelia Raether**, Volunteer (6/10 to 8/10)
294. **Henry Raether**, Volunteer (6/13 to 8/13)
295. **Starr Ramirez**, University of Minnesota Health Sciences Minority Program: High School Research Apprentice Program (6/97 to 8/97)
296. **Dylan Redden**, Volunteer (12/13 to 8/14)
297. **Elizabeth Reily**, Biomedical Engineering Undergraduate Summer Fellow (6/00 to 8/00)
298. **Dannah Reiter**, Volunteer (2/14 to 8/15)
299. **Jessica Reynertson**, Volunteer (1/09 to 9/09)
300. **Aaron Richter**, Volunteer (11/13 to 9/15)
301. **Casey Rieck**, Volunteer (10/14 to 8/16)
302. **Tyler Riedinger**, Volunteer (11/13 to 6/14)
303. **Mathew Robertson**, Summer Research Programs via Goucher University (6/03 to 8/03)
304. **Laura Rogers**, Volunteer (10/14 to 9/15)
305. **Alison Rolandelli,** Volunteer (5/15 to 9/15)
306. **Paul Rolfes**, Volunteer, Casual/temp employee (6/11 to 8/11)
307. **Jocelyn Rowe**, Biology Colloquium Course, volunteer (12/98 to 6/99)
308. **Andrew Roy**, Volunteer (5/13 to 8/13)
309. **Sam Rush**, Volunteer, National High School Science Fair Competitions (6/94 to 9/97)
310. **Emily Sakamoto**, Volunteer (5/13 to 7/13)
311. **Shireen Sakizadeh**, Directed research in Physiology (9/01 to 12/01)
312. **Lahiru Samarsinghe,** Volunteer (5/16 to 7/17)
313. **Marit Sanders**, Volunteer (1/07 to 9/07)
314. **Kristy Schaefer**, Directed research in Physiology (1/02 to 5/02)
315. **Bill Schertzing**, Volunteer (9/07 to 12/10)
316. **Bryant Schmitz,** Volunteer (11/12 to 5/13)
317. **Sophie Schmitz,** Volunteer/Directed Research (7/21 to 3/22)
318. **Michael Schnaus**, Volunteer (6/09 to 5/10)
319. **Nate Schneider**, Volunteer (1/11 to 6/11)
320. **Keriann Schulkers**, Volunteer (10/06 to 4/07)
321. **Katrina Schweiker**, Junior Research Project in Physics (1/02 to 5/02)
322. **Ashley Scott**, Life Sciences Summer Undergraduate Research Program (6/13 to 8/13)
323. **Kothai Seelan,** Volunteer (2/20 to 9/21)
324. **Jamilisse Segarra,** Life Sciences Summer Undergraduate Research Program (5/15 to 8/15)
325. **Maria Seewald**, Volunteer (3/12 to 4/12)
326. **Kelly Seifert**, Research Explorations Program, Continuing Education and Extension, University of Minnesota from Wellesley College (6/96 to 9/96)
327. **Neda Shahghasemi**, Directed research in Biomedical Engineering (5/04 to 5/05)
328. **Salma Shaker**, Volunteer (5/07 to 6/09)
329. **Olivia Shepler,** Volunteer (5/15 to 8/15; 5/16 to 8/16)
330. **Margaret Shevik,** Volunteer (11/12 to 10/13)
331. **Nina Sigg**, Volunteer (3/13 to 6/13)
332. **Laura Skadsberg**, Undergraduate Research Opportunity Award (1/04 to)
333. **Laura Skarie**, Volunteer, University of Minnesota (9/98 to 4/99)
334. **Kaley Smith**, Volunteer (2009)
335. **Jaime Smith**, Volunteer (1/06 to 5/06)
336. **Sarah Sneider**, Volunteer (8/05 to 12/05)
337. **Oliver Sogard,** Volunteer (4/14 to 1/15)

338. **Nancy Sokkary**, Magna cum laude paper, Physiology (1/02 to)
339. **Tanya Solovey**, Undergraduate Research Opportunity Award, pre-med student at University of Minnesota (5/94 to 7/96)
340. **Danielle Sorensen,** Volunteer (1/18 to 5/18)
341. **Mario Soto,** Life Sciences Summer Undergraduate Research Program (6/16 to 8/16)
342. **Zach Sperry**, Volunteer (9/10 to 12/11)
343. **Natasha Srb**, Volunteer (3/99 to 10/99)
344. **Jenna Stangland**, Volunteer in CBS (9/06 to 5/07)
345. **Jake Starsiak**, Volunteer (5/13 to 12/14)
346. **Chelsea Steinborn,** Volunteer (9/07 to 4/09)
347. **Zak Stelter**, Volunteer (9/10 to 12/10)
348. **Justine Sternke**, Volunteer (11/13 to 2/14)
349. **Luis Cesar Suarez-Rodriguez**, Life Sciences Summer Undergraduate Research Program (6/06 to 8/06)
350. **Sean Sullivan**, Biomedical Engineering Undergraduate Summer Fellow (6/01 to 8/01)
351. **Cassandra Sundaram,** Volunteer (3/12 to 12/14)
352. **Kimberly Swanson**, Volunteer, nursing student, University of Minnesota (7/94 to 12/94)
353. **Geoff Swisher**, Volunteer (1/13 to 5/13)
354. **Emily Syverud,** LHI scholar (5/15 to 8/15)
355. **Nick Tassoni,** Volunteer (9/12 to 5/13)
356. **Ryan Taylor**, Volunteer (5/10 to 5/11)
357. **Melissa (Toolie) Tetzner**, Volunteer (6/09 to 8/09)
358. **Rohan Thakur,** Volunteer (6/18 to 5/18)
359. **Kelly Thao,** Volunteer (5/12 to 9/15)
360. **Claire Thomas,** Volunteer (8/17 to 8/19)
361. **Nichole Torgerson,** Volunteer (9/17 to 3/20)
362. **Sara Torgerson**, Life Sciences Summer Undergraduate Research Program (6/01 to 8/01)
363. **Katia Y. Torres Román**, Life Sciences Summer Undergraduate Research Program (6/12 to 8/12)
364. **Peter Toy,** Volunteer (6/10 to 8/13)
365. **Jack Trebelhorn**, Volunteer (9/10 to 6/12)
366. **Ben Troness,** Volunteer (8/13 to 8/14)
367. **Nolan Turner**, Volunteer (5/09 to 5/10)
368. **Michelle Uchenik,** Volunteer (9/19 to 3/20)
369. **Joanna Ulmen**, Casual/temp employee (2008-09)
370. **John Uphoff**, Volunteer (11/09 to 9/11)
371. **Kristen Upson**, Directed research in Physiology (12/00 to 12/01)
372. **Uzma Usmani**, Life Sciences Summer Undergraduate Research Program (6/09 to 8/09)
373. **Mike Van Heel**, Volunteer (3/13 to 12/14)
374. **Julia Van Luyk,** Volunteer (2/17 to 8/18)
375. **Sukanya Varadharajan**, Volunteer (11/09 to 5/10)
376. **Kari Varichak**, Directed research in Biomedical Engineering (9/00 to 12/00)
377. **Matt Varner**, Directed research (1/04 to 5/05)
378. **Aileen Villanueva**, Undergraduate scholar in the President's Distinguished Faculty Mentor Program (10/94 to 6/95)
379. **Sarah Vincent**, Directed research in Biomedical Engineering, Biomedical Engineering Undergraduate Summer Fellow (1/01 to 9/01)

380. **Chelsea Wallace**, Directed research (9/03 to 6/05)
381. **Lisa Weeks,** Work Study (10/12 to 6/14)
382. **Josh Weinberger**, Life Sciences Summer Undergraduate Research Program (7/08 to)
383. **Melissa White,** Volunteer (10/11 to 2/14)
384. **Mark Wieland**, Life Sciences Summer Undergraduate Research Program (6/98 to 8/98)
385. **Rachel Wilharm,** Volunteer (9/18 to 3/20)
386. **Erin Williams**, Research Explorations Program, Continuing Education and Extension, University of Minnesota (6/95 to 1/96)
387. **Jonathan Williams,** Volunteer (10/16 to 7/17)
388. **Marta Williams,** LHI Scholar (6/17 to 8/17)
389. **Emma Wilson,** Volunteer (9/18 to 3/20)
390. **Anna Windfeldt**, Directed research in Biology (9/02 to 12/02)
391. **Simon Wing**, Volunteer (6/99 to 6/00)
392. **Steve Wisniewski**, Biological Sciences Alumni Society Mentor Program, Undergraduate Research Opportunity Program (1/95 to 9/96)
393. **Kylie Wittl**, Volunteer (5/14 to 12/14)
394. **Jade Wulff**, Volunteer (3/04 to 6/05)
395. **Nadine Yacoub,** Volunteer/Directed research (9/11 to 10/13)
396. **Mai Der Yang,** LHI Scholar (5/14 to 9/14), Volunteer (5/15 to 9/15)
397. **Pang Dra Yang**, Undergraduate scholar in the President's Distinguished Faculty Mentor Program (9/96 to 6/97)
398. **Melanie Yates,** Volunteer (5/15 to 9/15)
399. **KC (Kojo) Yeboa**, Life Sciences Summer Undergraduate Research Program (6/10 to 8/10)
400. **Jon Yoon,** Volunteer (5/15 to 8/15)
401. **Jackie Youtsos**, Honors Thesis Project in Physiology, Undergraduate Research Opportunities Program (3/04 to 6/05)
402. **Shawn Zani**, Volunteer (9/09 to 5/11)
403. **Maria Zauner**, Volunteer/Life Sciences Summer Undergraduate Research Program, Undergraduate Research Opportunities Program (6/10 to 5/12)
404. **JingJing Zhu,** LHI Scholar (6/16 to 8/16)
405. **Kirsten Ziegler,** Volunteer (1/19 to 3/20)
406. **Patrick Zielie**, Pre-med undergraduate student, summa thesis (4/93 to 8/93)
407. **Kim Zillig**, Directed research in Biomedical Engineering (1/04 to 6/04)
408. **Jenna Zimmerman,** Volunteer (1/10 to 6/14)
409. **Shannon Zhou,** Volunteer (9/16 to 7/17)
410. **Fu Zurovac**, Directed research (9/03 to 12/05)

CURRENT HIGH SCHOOL STUDENTS
None

FORMER HIGH SCHOOL STUDENTS
1. **Bobby Gelly**, Volunteer, Mahtomedi High School (6/13 to 8/13)
2. **Daniel Geoffrion**, ISEF program via Breck High School (5/05 to 8/05)
3. **Nia Jones**, University of Minnesota Health Sciences Minority Program: High School Research Apprentice Program (6/96 to 9/96)
4. **Keshav Kohli,** Volunteer (7/08 to 8/09)
5. **Sabina Kumar,** Volunteer (5/09 to 5/10)

6. **Aamir Mansoor,** Volunteer (2/06 to 5/06)
7. **Andrew McCullough**, ISEF program via Breck High School (5/05 to 8/05)
8. **Andrew Nelson**, Volunteer via St. Cloud Apollo High School (6/06 to 8/06)
9. **Arsalan Radmehr**, Volunteer (Wayzata High School) (6/11 to 12/11)
10. **Vidur Sharma**, Volunteer, Eagan High School (6/07 to 8/07, 7/08 to 8/09)
11. **Noah Smith,** St. Paul Academy (5/05 to 6/05)
12. **Zach Soule**, Volunteer, Blaine High School (7/08 to 8/08)
13. **Sally Swanson,** Volunteer, St. Paul Academy (5/05 to 6/05)
14. **Mai Der Yang**, LHI Summer Scholar (6/14 to 8/14)

FORMER INTERNATIONAL STUDENTS

1. **Gunter Apelt**, Practicum in Biomedical Engineering from the Fachhochschule Anhalt, Köthen, Germany (5/96 to 7/96)
2. **Eva Geissler**, Physical therapist from Germany (4/05)
3. **Holger Lerche, MD**, Medical student from the University of Munich, Germany (6/93 to 7/93)
4. **Carl Meissner**, Intern from Wohlsdorf, Germany (2003)
5. **Karsten Meissner**, Practicum in Biomedical Engineering from the Fachhochschule Anhalt, Köthen, Germany (7/96 to 10/96)
6. **Susanne Ruff**, Graduate student in Nutritional Sciences from the Technical University of Munich, Germany (5/98 to)
7. **Andrea Sammler**, Graduate student in Nutritional Sciences from the Technical University of Munich, Germany (9/94 to 12/94)
8. **Maria Seewald**, Medical student from the University of Magdeburg, Germany (2/12 to 4/12)

STUDENTS (Initiated programs and then considered other options)

1. **Mark Hilse**, MS student in Biomedical Engineering, Plan B (1/99 to)
2. **Alyssa Jackson**, MS student in Biomedical Engineering (2/14 to)
3. **Janice Kruse**, MS student in Biomedical Engineering, Plan B (2/08 to 5/08)
4. **Robert Schmitt**, MS student in Physiology (12/05 to 10/07)
5. **Ryan Scott**, MS student in College of Biological Sciences, Directed Research (1/07 to 8/08)
6. **Hua Sun**, Doctoral student in Biomedical Engineering, Medtronic, MN (1/07 to 6/08)
7. **Samira Tahvildari, MS**, Doctoral student in Biomedical Engineering (5/00 to 8/08)
8. **Meredith Thompson**, Doctoral student in Biomedical Engineering (10/07 to 9/08)

STUDENTS (Member of thesis committees only)

1. **Devesh Amatya**, Biomedical Engineering, PhD (passed prelim 12/05)
2. **Joseph Anderson**, Mechanical Engineering, MS granted 5/13
3. **Itzhak Zachi Attia**, Bioinformatics & Computational Biology, PhD granted 5/20
4. **Paul R. Barratt**, Mechanical Engineering, MS granted 5/99
5. **Kaysie L. Banton, MD**, Surgery, PhD (passed prelim 5/09)
6. **Diana Burns**, Biomedical Engineering, MS granted 1/95
7. **Ricky Chow**, Biomedical Engineering, MS granted 12/09
8. **Razvan Cornea**, Biochemistry, PhD (passed prelim 1/94)
9. **Kelsey Davis,** Mechanical Engineering, MS granted 12/17
10. **Lisa M. Durhman**, Biomedical Engineering, MS granted 8/99
11. **Michelle Fangmeier**, Mechanical Engineering, MS granted 10/02
12. **Yusra Farhat Ullah**, Mechanical Engineering, PhD granted 2/22

13. **Juan Feng**, Biomedical Engineering, PhD granted 11/07
14. **Julia Feygin**, Biomedical Engineering, PhD granted 10/07
15. **Stefan Freeman**, Mechanical Engineering, MS granted 9/09
16. **Bin Fu,** Mechanical Engineering, MS granted 5/20
17. **Michael Eggen**, Mechanical Engineering, MS granted 12/05
18. **Ewnet Gebrehiwot**, Mechanical Engineering, MS granted 8/21
19. **Vadim Gektin**, Mechanical Engineering, MS granted 12/93; PhD (passed prelim 5/96)
20. **Matthew Geeslin**, Mechanical Engineering, MS granted 12/03
21. **Jesse Geroy**, Mechanical Engineering, MS granted 8/07
22. **Adam Gladen**, Mechanical Engineering, MS granted 6/11
23. **Robert Griffin**, Biophysical Science, PhD granted 6/98
24. **Ghazaleh Haghiashtiani**, Mechanical Engineering, PhD program 2019
25. **Brent T. Harrold**, Mechanical Engineering, MS granted 12/98
26. **Jud Herrig**, Mechanical Engineering, MS granted 3/08
27. **Margaret A. Hartfel**, Mechanical Engineering, PhD granted 2/01
28. **Xiaoming He**, Mechanical Engineering, PhD granted 5/04
29. **Dillon Hodapp**, Mechanical Engineering, MS granted 12/09
30. **Bradley S. Karon**, Biochemistry, PhD granted 8/94
31. **Jason Kelly,** Mechanical Engineering, PhD granted 5/20
32. **Scott Kimmel**, Biomedical Engineering, MS granted 11/04
33. **James Krolnik,** MS-MDI (2018 to)
34. **Brian Krueger**, Mechanical Engineering, MS granted 10/12
35. **John A. Krueger**, Biomedical Engineering, MS granted 9/94
36. **Po-Chih Lee,** Mechanical Engineering, PhD granted 5/19
37. **Jeffery Lind**, Mechanical Engineering, MS granted 4/14
38. **Chenguang Liu**, Biomedical Engineering, PhD granted 12/09
39. **Ryan Mach**, Mechanical Engineering, MS granted 12/04
40. **Michael S. Mata**, Mechanical Engineering, MS granted 5/07
41. **Brian T. McHenry**, Mechanical Engineering, MS granted 5/02
42. **Alexandra M. Naughton**, Aerospace Engineering, MS granted 5/98
43. **Josie Nelson**, Physical Therapy, MS granted 6/02
44. **Julia Neuman**, Mechanical Engineering, MS granted 12/07
45. **Duy Nguyen**, Biomedical Engineering, MS granted 12/04
46. **Brenda Ogle**, Biomedical Engineering, PhD granted 9/00
47. **Deb O'Reilly**, Physical Therapy, MS granted 6/02
48. **E. Michael Ostap**, Biochemistry, PhD granted 8/93
49. **Suku Ponkshe**, Mechanical Engineering, MS granted 5/09
50. **Bhaskar Ravishankar**, Electrical Engineering, PhD granted 6/21 (chair)
51. **A.J. Reis**, Biomedical Engineering, MS granted 6/97
52. **Spencer Rettler,** Conservation Sciences, Wildlife, PhD program
53. **Chad Ritter**, Physical Therapy, MS granted 6/02
54. **Adam Rivard**, Mechanical Engineering, MS granted 5/04
55. **Cindy Satterness**, Biomedical Engineering, PhD (passed prelim 7/01)
56. **Diane Schebonski**, Mechanical Engineering, MS granted 5/13
57. **Justine Schneider**, Biomedical Engineering, MS granted 5/21
58. **Robert Schulzetenberg**, Biomedical Engineering**,** MS granted 7/16
59. **Colin Sehnert**, Mechanical Engineering, MS granted 9/03

60. **Alexander Shrom**, Biomedical Informatics & Computational Biology, MS granted 5/19
61. **Allan Shuros**, Integrative Biology & Physiology, MS granted 12/11
62. **Jason Sprain**, Biomedical Engineering, MS granted 10/03
63. **Sachin Shah**, Biomedical Engineering, MS granted 7/13
64. **Tom Suszynski**, Biomedical Engineering, MD, PhD granted 8/12
65. **Sanket Yogaj Thakare,** Biomedical Engineering, MS granted 6/20
66. **Kevin Thissen**, Mechanical Engineering, MS granted 4/09
67. **David Tkach**, Biological Sciences, MS granted 9/10
68. **Sang Tran**, Biomedical Engineering, MS granted 3/95
69. **Quincy Undseth**, Biomedical Engineering, MS granted 5/21
70. **Dawn Violette**, Physical Therapy, MS granted 6/02
71. **Brooke Wassenaar,** College of Sci and Engineering, MS granted 7/20
72. **Rachel Weathers-Pawson**, Mechanical Engineering, PhD (passed prelim 2/01)
73. **Samuel Lee Will**, Mechanical Engineering, MS granted 12/05
74. **Elizabeth Wilson,** Biomedical Engineering, PhD granted 8/19
75. **Terri Wright**, Biomedical Engineering, MS granted 10/01
76. **Jade Erin Wulff**, Biological Sciences, MS granted 7/07
77. **Long Yu,** Biomedical Engineering, PhD granted 11/16
78. **Zhaoye Zhou**, Biomedical Engineering, PhD (passed prelim 9/10)

PUBLICATIONS

ORIGINAL ARTICLES

1. Pozos RS, **Iaizzo PA**, Petry RW: Physiological action tremor of the ankle. *Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology* 52:226-230, 1982. DOI: 10.1152/jappl.1982.52.1.226.
2. Iaizzo PA, Pozos RS: Exercise-induced amplitude modification of physiological action tremor of the ankle. Journal of Applied Physiology: Respiratory, Environmental and Exercise Physiology 53:1164-1170, 1982. DOI: 10.1152/jappl.1982.53.5.1164.
3. Quinlan JG, Iaizzo PA, Gronert GA, Taylor SR: Use of dantrolene plus multiple pulses to detect stress-susceptible porcine muscle. Journal of Applied Physiology 60:1313-1320, 1986. DOI: 10.1152/jappl.1986.60.4.1313.
4. Iaizzo PA, Klein W, Lehmann-Horn F: Fura-2 detected myoplasmic calcium and its correlation with contracture force in skeletal muscle from normal and malignant hyperthermia susceptible pigs. Pflügers Archive 411:648-653, 1988. DOI: 10.1007/BF00580861.
5. Iaizzo PA: The effects of temperature on relaxation in frog skeletal muscle: the role of parvalbumin. Pflügers Archive 412:195-202, 1988. DOI: 10.1007/BF00583750.
6. Oakes SG, Iaizzo PA, Richelson E, Powis G: Histamine-induced intracellular free Ca++, inositol phosphates and electrical changes in murine N1E-115 neuroblastoma cells. Journal of Pharmacology and Experimental Therapeutics 247:114-121, 1988. PMID: 3262737.
7. Quinlan JG, Iaizzo PA, Lambert EH, Gronert GA: Ankle dorsiflexor twitch properties in malignant hyperthermia. Muscle & Nerve 12:119-125, 1989. DOI 10.1002/mus.880120206.
8. Iaizzo PA, Lehmann-Horn F, Taylor SR, Gallant EM: Malignant hyperthermia: effects of halothane on the surface membrane. Muscle & Nerve 12:178-183, 1989. DOI: 10.1002/mus.880120303.
9. Iaizzo PA, Lehmann-Horn F: The in vitro determination of susceptibility to malignant hyperthermia. Muscle & Nerve 12:184-190, 1989. DOI: 10.1002/mus.880120304.

10. Iaizzo PA, Seewald M, Oakes SG, Lehmann-Horn F: The use of Fura-2 to estimate myoplasmic [Ca2+] in human skeletal muscle. Cell Calcium 10:151-158, 1989. DOI: 10.1016/0143-4160(89)90069-9.
11. Lanier WL, Iaizzo PA, Milde JH: Cerebral function and muscle afferent activity following intravenous succinylcholine in dogs anesthetized with halothane: the effects of pretreatment with a defasciculating dose of pancuronium. Anesthesiology 71:87-95, 1989. DOI: 10.1097/00000542-198907000-00016.
12. Lehmann-Horn F, Iaizzo PA: Resealed fiber segments for the study of the pathophysiology of human skeletal muscle. Muscle & Nerve 13:222-231, 1990. DOI: 10.1002/mus.880130309.
13. Iaizzo PA, Lehmann-Horn F: The correlation between electrical after-activity and slowed relaxation in myotonia. Muscle & Nerve 13:240-246, 1990. DOI: 10.1002/mus.880130311.
14. Iaizzo PA, Seewald MJ, Powis G, Van Dyke RA: The effects of volatile anesthetics on Ca++ mobilization in rat hepatocytes. Anesthesiology 72:504-509, 1990. DOI: 10.1097/00000542-199003000-00019.
15. Quinlan JG, Iaizzo PA, Gronert GA, Lambert EH: Twitch response in a myopathy with impaired relaxation but no myotonia. Muscle & Nerve 13:326-329, 1990. DOI: 10.1002/mus.880130408.
16. Powis G, Seewald MJ, Sehgal I, Iaizzo PA, Olsen RA: Platelet-derived growth factor stimulates non-mitochondrial Ca2+ uptake and inhibits mitogen-induced Ca2+ signaling in Swiss 3T3 fibroblasts. Journal of Biological Chemistry 265:10266-10273, 1990. PMID: 2113051.
17. Lehmann-Horn F, Iaizzo PA, Franke C, Hatt H, Spanns F: Schwartz-Jampel syndrome: II. Na+ channel defect causes myotonia. Muscle & Nerve 13:528-535, 1990. DOI: 10.1002/mus.880130609.
18. Franke C, Hatt H, Iaizzo PA, Lehmann-Horn F: Characteristics of Na+ channels and Cl- conductance in resealed muscle fibre segments from patients with myotonic dystrophy. Journal of Physiology 425:391-405, 1990. DOI: 10.1113/jphysiol.1990.sp018110.
19. Lanier WL, Iaizzo PA, Milde JH: The effects of intravenous succinylcholine on cerebral function and muscle afferent activity following complete ischemia in halothane-anesthetized dogs. Anesthesiology 73:485-490, 1990. DOI: 10.1097/00000542-199009000-00019.
20. Iaizzo PA: Histochemical and physiological properties of Rana temporaria tibialis anterior and lumbricalis IV muscle fibres. Journal of Muscle Research and Cell Motility 11:281-292, 1990. DOI: 10.1007/BF01766666.
21. Quinlan JG, Wedel DJ, Iaizzo PA: Multiple-pulse stimulation and dantrolene in malignant hyperthermia. Muscle & Nerve 13:904-908, 1990. DOI: 10.1002/mus.880131003.
22. Iaizzo PA, Olsen RA, Seewald MJ, Powis G, Stier A, Van Dyke RA: Transient increases of intracellular Ca2+ induced by volatile anesthetics in rat hepatocytes. Cell Calcium 11:515-524, 1990. DOI: 10.1016/0143-4160(90)90027-R.
23. Lehmann-Horn F, Iaizzo PA: Are myotonias and periodic paralyses associated with susceptibility to malignant hyperthermia? British Journal of Anaesthesia 65:692-697, 1990. DOI: 10.1093/bja/65.5.692.
24. Iaizzo PA, Poppele RE: Twitch relaxation of the cat soleus muscle at different lengths and temperatures. Muscle & Nerve 13:1105-1112, 1990. DOI: 10.1002/mus.880131204.
25. Olsen RA, Seewald MJ, Melder DC, Berggren M, Iaizzo PA, Powis G: Platelet-derived growth factor blocks the increase in intracellular free Ca2+ caused by calcium ionophores and a volatile anesthetic agent in Swiss 3T3 fibroblasts without altering toxicity. Toxicology Letters 55:117-125, 1991. DOI: 10.1016/0378-4274(91)90033-3.

26. Wedel DJ, Iaizzo PA, Milde JH: Desflurane is a trigger of malignant hyperthermia in susceptible swine. Anesthesiology 74:508-512, 1991. DOI: 10.1097/00000542-199103000-00020.
27. Iaizzo PA, Seewald MJ, Olsen R, Wedel DJ, Chapman DE, Berggren M, Eichinger HM, Powis G: Enhanced mobilization of intracellular Ca2+ induced by halothane in hepatocytes isolated from swine susceptible to malignant hyperthermia. Anesthesiology 74:531-538, 1991. DOI: 10.1097/00000542-199103000-00023.
28. Iaizzo PA, Franke C, Hatt H, Spittelmeister W, Ricker K, Rüdel R, Lehmann-Horn F: Altered sodium channel behaviour causes myotonia in dominantly inherited myotonia congenita. Neuromuscular Disorders 1:47-53, 1991. DOI: 10.1016/0960-8966(91)90042-Q.
29. Lehmann-Horn F, Iaizzo PA, Hatt H, Franke C: Altered gating and conductance of Na+ channels in hyperkalemic periodic paralysis. Pflügers Archive 418:297-299, 1991. DOI: 10.1007/BF00370530.
30. Seewald MJ, Eichinger HM, Lehmann-Horn F, Iaizzo PA: Characterization of swine susceptible to malignant hyperthermia by in vivo, in vitro and post-mortem techniques. Acta Anaesthesiologica Scandinavica 35:345-349, 1991. DOI: 10.1111/j.1399-6576.1991.tb03303.x.
31. Seewald MJ, Eichinger HM, Iaizzo PA: Malignant hyperthermia: an altered phospholipid and fatty acid composition in muscle membranes. Acta Anaesthesiologica Scandinavica 35:380-386, 1991. DOI: 10.1111/j.1399-6576.1991.tb03314.x.
32. Franke C, Iaizzo PA, Hatt H, Spittelmeister W, Ricker K, Lehmann-Horn F: Altered Na+ channel activity and reduced Cl- conductance cause hyperexcitability in recessive generalized myotonia (Becker). *Muscle & Nerve* 14:762-770, 1991. DOI: 10.1002/mus.880140811.
33. Iaizzo PA, Wedel DJ, Gallagher WJ: In vitro contracture testing for determination of susceptibility to malignant hyperthermia: a methodological update. Mayo Clinic Proceedings 66:998-1004, 1991. DOI: 10.1016/S0025-6196(12)61722-4.
34. Pozos RS, Iaizzo PA: Shivering and pathological and physiological clonic oscillations of the human ankle. Journal of Applied Physiology 71:1929-1932, 1991. DOI: 10.1152/jappl.1991.71.5.1929.
35. Lanier WL, Iaizzo PA, Murray MJ: The effects of convective cooling and rewarming on systemic and central nervous system physiology in isoflurane-anesthetized dogs. Resuscitation 23:121-136, 1992. DOI: 10.1016/0300-9572(92)90197-K.
36. Iaizzo PA: The effects of halothane and isoflurane on intracellular Ca2+ regulation in cultured cells with characteristics of vascular smooth muscle. Cell Calcium 13:513-520, 1992. DOI: 10.1016/0143-4160(92)90019-O.
37. Iaizzo PA, Pozos RS: Analysis of multiple EMG and acceleration signals of various record lengths as a means to study pathological and physiological oscillations. *Electromyography and Clinical Neurophysiology* 32:359-367, 1992. PMID: 1526216.
38. Pozos RS, Iaizzo PA: Effects of topical anesthesia on essential tremor. Electromyography and Clinical Neurophysiology 32:369-372, 1992. PMID: 1526217.
39. Deufel T, Müller-Felber W, Pongratz DE, Hübner G, Johnson K, Iaizzo PA, Lehmann-Horn F: Chronic myopathy in a patient suspected of carrying two malignant hyperthermia susceptibility (MHS) mutations. Neuromuscular Disorders 2:389-396, 1992. DOI: 10.1016/S0960-8966(06)80010-6.
40. Iaizzo PA, Seewald MJ, Powis G, Van Dyke RA: The effects of sevoflurane on intracellular Ca2+ regulation in rat hepatocytes. Toxicology Letters 66:81-88, 1993. DOI: 10.1016/0378-4274(93)90082-9.

41. Zink RS, Iaizzo PA: Convective warming therapy does not increase the risk of wound contamination in the operating room. Anesthesia and Analgesia 76:50-53, 1993. DOI: 10.1213/00000539-199301000-00009.
42. Seewald MJ, Iaizzo PA, Heisswolf E, Eichinger HM: Effects of meat quality and storage on the breakdown of adenosine triphosphate in muscle from swine. Meat Science 35:47-61, 1993. DOI: 10.1016/0309-1740(93)90069-T.
43. Wedel DJ, Gammel SA, Milde JH, Iaizzo PA: Delayed onset of malignant hyperthermia induced by isoflurane and desflurane compared with halothane in susceptible swine. *Anesthesiology* 78:1138-1144, 1993. DOI: 10.1097/00000542-199306000-00018.
44. Otten W, Wirth C, Iaizzo PA, Eichinger HM: A high omega 3 fatty acid diet alters the fatty acid composition of heart, liver, kidney, adipose tissue and skeletal muscle in swine. Annals of Nutrition and Metabolism 37:134-141, 1993. DOI: 10.1159/000177761.
45. Beebe DS, Gauthier RL, DeMars JJ, Iaizzo PA: Lower extremity hypothermia is beneficial during infra-renal aortic cross-clamping in pigs. Anesthesia and Analgesia 77:241-249, 1993. DOI: 10.1213/00000539-199308000-00006.
46. Lanier WL, Iaizzo PA, Milde JH, Sharbrough FW: The cerebral and systemic effects of movement in response to a noxious stimulus in lightly anesthetized dogs. Possible modulation of cerebral function by muscle afferents. Anesthesiology 80:392-401, 1994. DOI: 10.1097/00000542-199402000-00019.
47. Iaizzo PA, Wedel DJ: Response to succinylcholine in porcine malignant hyperthermia. Anesthesia and Analgesia 79:143-151, 1994. DOI: 10.1213/00000539-199407000-00027.
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19. Minnesota Supercomputing Institute (https://www.msi.umn.edu/pi/5b97f34cfbc223870930210f798ae183/26198)
20. Award for Outstanding Contributions to Postbaccalaureate, Graduate, and Professional Education, 2002 (http://www.scholarswalk.umn.edu/awards/aoce/gradprof.html)
21. Academy of Distinguished Teachers, Medical School, 2002 (http://www.adt.umn.edu/)

MEDIA PRESENTATIONS OR INTERVIEWS (http://www.vhlab.umn.edu/media)

1. "Hyperthermia," Simply Science, KARE 11 News, August 1998.
2. "The bear evidence," 50-minute film produced by Henson International Television and shown on National Geographic International, Fall 2001.
3. "Those cuddly Camp Ripley bears," Minnesota Video Vault, March 14, 2003. http://www.mnvideovault.org/mpml_player_embed.php?vid_id=410&select_index=4
4. "Waking up hibernating bears in Washington State," National Public Radio, October 22, 2003.
5. "Sleeping it off: how animals use hibernation and other cold-weather survival strategies to stay alive," Science Daily, January 11, 2005. http://www.sciencedaily.com/releases/2005/01/050111152415.htm
6. "Device and conquer," University of Minnesota Pictures of Health (Academic Health Center), March 9, 2005.
7. "Apollo health career students visit research lab," St. Cloud School District 742, October 12, 2005.
8. "Tech Talk: Medical devices," Minnesota Public Television, January 29, 2006. http://techtalk.umn.edu/episodes/season4/411.shtml
9. "Camp Ripley," On the Road with Jason Davis, KSTP 5 Eyewitness News ABC, May 20, 2007. http://www.minnesotanationalguard.org/camp_ripley/index.php
10. "Real hearts, remarkable images," April 1, 2008. http://drwes.blogspot.com/2008/04/real-hearts-remarkable-images.html
11. "The Visible Heart lab," KSTP 5 Eyewitness News ABC, April 29, 2008. http://kstp.com/article/stories/S428535.shtml
12. "Visualizing the beating heart," ReachMD (Radio XM157), May 26, 2008. http://www.testMD.com/xmsegment.aspx?sid=2952
13. "Opioids, fish oils, and hibernating bears," ReachMD (Radio XM157), May 19, 2008. http://www.testMD.com/xmsegment.aspx?sid=2953
14. "U lab puts human hearts in the hands of fairgoers to spark interest in science," August 28, 2008.
15. "10 lessons medicine can learn from bears," Scientific American, January 6, 2009. http://www.scientificamerican.com/article.cfm?id=bear-hibernation-science
16. "Black bear research may revolutionize medicine," Bear Smart Society, March 9, 2010.
17. "Learning from the bears," Northland Outdoors, March 14, 2010.
18. "U researchers get inside look at the heart," Minnesota Daily, April 29, 2010.
19. "Visible Heart laboratory," Minnesota Daily/youtube, April 30, 2010. http://www.youtube.com/watch?v=VS22U4S8G1c
20. "Can dormant bears help us heal?" Minneapolis Star Tribune, December 26, 2010.
21. "U of M bear study could help critical care patients," KSTP 5 Eyewitness News ABC, January 6, 2011.
22. "Good Question: How does hibernation work?" WCCO CBS, January 20, 2011. http://minnesota.cbslocal.com/2011/01/20/good-question-how-does-hibernation-work/
23. "Bringing dead hearts back to life—Horizon: How to mend a broken heart—BBC Two," February 14, 2011. http://www.youtube.com/watch?v=Fi7cb449Xjc
24. "Collaboration: the heart of scientific discovery," University of Minnesota Academic Health Center, February 23, 2011.

25. "A look inside: the Visible Heart® laboratory seeks solutions for muscle atrophy," University of Minnesota Academic Health Center, February 23, 2011.
26. "Photos: Bear research in northwestern Minnesota," Minnesota Public Radio News, March 15, 2011. http://minnesota.publicradio.org/display/web/2011/03/14/photos-bear-researcher/
27. "Understanding bears could help us survive heart attacks, researchers say," MPR News, June 7, 2011. http://www.mprnews.org/story/2011/06/07/hibernating-bears
28. "Beware the black bear–even if it looks asleep," The Independent, UK, August 17, 2011. http://www.independent.co.uk/news/science/beware-the-black-bear-ndash-even-if-it-looks-asleep-2338815.html
29. "Cutting edge research being done at U of M lab filled with hearts," Kare 11 News NBC, October 25, 2011.
30. "Minnesota sounds and voices: Paul Iaizzo is the Visible Heart lab's beating core," Minnesota Public Radio, January 27, 2012. http://www.mprnews.org/story/2012/01/27/minnesota-sounds-and-voices-visible-heart-lab
31. "Where engineering meets imagination," IEEE Engineering in Medicine & Biology Society, April 15, 2012.
32. "Laboratory Profiles: Visible Heart Laboratory," IEEE Engineering in Medicine & Biology Society, June 26, 2012. http://www.embs.org/videos/laboratory-profiles/
33. "Black bear: medical marvel," University of Minnesota Medical School, Medical Bulletin, October 29, 2012.
34. "Inside the beating heart," University of Minnesota Medical School, Medical Bulletin, October 29, 2012.
35. "Minnesota in photos, MPR photos of the year," Minnesota Public Radio, December 22, 2012. http://www.mprnews.org/story/2012/12/21/mpr-photos-of-the-year#fig-107892
36. "Next generation of lifesaving devices could come from conference at U of M," KSTP, April 9, 2013.
37. "Whole body donations help teach future doctors," WCCO, August 5, 2013. http://minnesota.cbslocal.com/2013/08/05/anatomy-bequests-help-teach-future-doctors/
38. "Why Paul Iaizzo does what he does," Academic Health Center, University of Minnesota, October 14, 2013. http://www.youtube.com/watch?v=o8zI1EHsBt0
39. "Midwest's first breathing lung transplant performed at University of Minnesota Medical Center, Fairview," University of Minnesota Health Talk, November 22, 2013. http://www.healthtalk.umn.edu/2013/11/22/umn-breathing-lung-transplant/
40. "U of M researches connection between black bears and human heart health," KSTP, January 7, 2014.
41. "Dr. Paul Iaizzo discusses the Visible Heart Lab at the University of Minnesota," Lillehei Heart Institute, February 27, 2014. https://www.youtube.com/watch?v=QHxC6CBn-d4
42. "An underground lab at the heart of cardiovascular innovation," May 1, 2014.
43. "TCT innovation update 2014," September 17, 2014. http://www.tctmd.com/multimedia/?section=/video/interviews/2014/79e0ce7a4eb84786adc832ff9970eb92 http://www.tctmd.com/multimedia/?section=/video/interviews/2014/b7f0e1c88b1c43dda6dfa17d6cc9479f
44. "ICI Meeting 2014—Academy Day," January 5, 2015. https://www.youtube.com/watch?v=UgCo1qDoJp0
45. "From the lab to the north woods," University of Minnesota Foundation, January 28, 2015.
46. "The big sleep," Scholastic, February 2, 2015.

47. "Bear study teams DNR, Medtronic and University of Minnesota researchers," Grand Forks Herald, March 14, 2015.
48. "Turns out that Medtronic is really interested in bears," Qmed, March 17, 2015. http://www.qmed.com/mpmn/medtechpulse/turns-out-medtronic-really-interested-bears
49. "University of Minnesota researcher has one of the first 'bioprinters' using living tissue," Minneapolis Star Tribune, May 21, 2015. http://www.startribune.com/university-of-minnesota-researcher-has-one-of-the-first-bioprinters-using-living-tissue/304654771/
50. "Made to order," University of Minnesota Medical School, Medical Bulletin, October 19, 2015. http://www.med.umn.edu/news-events/medical-bulletin/made-order
51. "Next big thing: 3D printing," KARE 11, February 9, 2016. http://www.kare11.com/news/next-big-thing-3d-printing/37756290
52. "How 3-D imaging could change heart surgery in the future," The Washington Post, February 22, 2016. https://www.washingtonpost.com/national/health-science/how-3-d-imaging-could-change-heart-surgery-in-the-future/2016/02/22/48f28a44-cf62-11e5-88cd-753e80cd29ad_story.html
53. "U of M experts share innovative research at Red Wing Golf Club," University of Minnesota Foundation Sparks Series, March 28, 2016. http://www.republican-eagle.com/news/3995108-u-m-experts-share-innovative-research-red-wing-golf-club
54. "3D printed hearts are a model teaching tool at U of M," KARE 11, March 29, 2016. http://www.kare11.com/news/3d-printed-hearts-are-a-model-teaching-tool-at-u-of-m/101999972
55. "To repair Karlie's weakened heart, her care team turned to a 3-D printer," Mhealth, April 6, 2016.
56. "3D printing gives doctors a new view," KARE 11, April 15, 2016. http://www.kare11.com/news/3d-printing-gives-doctors-a-new-view/135852297
57. "U scientists recreate woman's aorta with 3-D printer," WCCO, May 26, 2016. http://minnesota.cbslocal.com/2016/05/26/scientists-recreate-heart-3d-printer/
58. "At heart lab, anatomy gains new perspective," Minnesota Daily, July 13, 2016.
59. "Studying the heart, hands-on," Inquiry, July 18, 2016. https://inquiry.research.umn.edu/2016/07/18/studying-the-heart-hands-on/
60. "This reanimated heart footage is amazing," QMED, August 4, 2016. http://www.qmed.com/mpmn/medtechpulse/reanimated-heart-footage-amazing
61. "Minnesota is re-animating dead pig hearts for science: LiveBIG," Big Ten Network LiveBIG, August 11, 2016. http://btn.com/2016/08/11/minnesota-is-re-animating-dead-pig-hearts-for-science-livebig/
62. "Minnesota lab takes a close-up look at hearts, beat by beat: LiveBIG," Youtube, January 4, 2017. https://www.youtube.com/watch?v=a57l8ZuqPrA
63. "Heart in a box," University of Minnesota Medical School, Medical Bulletin, March 28, 2017. https://www.med.umn.edu/news-events/medical-bulletin/heart-box
64. "Bear Week: Researchers look to hibernating bears for advancements in human medicine," FOX 9, May 14, 2017. http://www.fox9.com/news/researchers-look-to-hibernating-bears-for-advancements-in-human-medicine
65. "Bear Week: Scientists look to unlock the mysteries of hibernation," FOX 9, May 16, 2017. http://www.fox9.com/news/bear-week-scientists-look-to-unlock-the-mysteries-of-hibernation
66. "VR & 3D printing for heart treatment: a tour," ASME. June 23, 2017. https://aabme.asme.org/posts/virtual-reality-and-3d-printing-for-heart-treatment-a-tour

67. "How virtual reality is changing cardiovascular care," American Heart Association, August 3, 2017. https://news.heart.org/virtual-reality-changing-cardiovascular-care/
68. "University of Minnesota Medical School celebrates 40 years of heart transplants," Fox 9, March 1, 2018. http://www.fox9.com/news/university-of-minnesota-health-celebrates-40-years-of-heart-transplants
69. "See it in 3-D, The U's Visible Heart Lab has printed 1,000 or so heart models to educate students, researchers, surgeons, and patients," University of Minnesota Brief, March 14, 2018.
70. "Red Heart Soiree: an evening to benefit cardiovascular health," September 13, 2018. https://www.youtube.com/watch?v=dRT46w0qwvc&feature=youtu.be&t=167
71. "How ancient remedies are changing modern medicine," National Geographic, January 1, 2019.

INVITED LECTURES

1. "Relaxation of skeletal muscle: do parvalbumins play a role?," Neurologische Klinik der Technischen Universität München, Munich, FRG, August 27, 1986.
2. "Power-spectral analysis of physiological and pathological oscillations of the ankle," Neurologische Klinik der Technischen Universität München, Munich, FRG, August 28, 1986.
3. "The role of parvalbumins in the relaxation of frog skeletal muscle," Abteilung für Allgemeine Physiologie der Universität Ulm, Ulm, FRG, July 22, 1987.
4. "The diagnosis of malignant hyperthermia," Department of Anesthesiology, Mayo Clinic, Rochester, MN, December 22, 1987.
5. "The effects of halothane on malignant hyperthermia susceptible skeletal muscle," Department of Anesthesiology, Mayo Clinic, Rochester, MN, December 23, 1987.
6. "Physiology of muscular contraction," Department D'Anesthesie-Reanimation Chirurgicale I, Centre Hospitalier Regional DeLille, Lille, France, May 16, 1988.
7. "The effects of halothane and isoflurane on Ca2+ mobilization in rat hepatocytes," Department of Anesthesiology, Mayo Clinic, Rochester, MN, May 31, 1989.
8. "New insights into the pathophysiology of malignant hyperthermia," Department of Anesthesiology, Mayo Clinic, Rochester, MN, June 7, 1989.
9. "The effects of anesthetic agents on intracellular Ca++," Neurologische Klinik der Technischen Universität München, Munich, FRG, December 7, 1989.
10. "Mechanical and electrical properties of resealed fiber segments of human skeletal muscle," Departments of Anesthesiology and Physiology, Bowman Gray School of Medicine, Wake Forest University, Winston-Salem, NC, March 1, 1990.
11. "The use of resealed fiber segments of human skeletal muscle to study mechanical and electrical properties," Department of Physiology, Indiana University, Terre Haute Center for Medical Education, Terre Haute, IN, April 23, 1990.
12. "Resealed fiber segments for the study of electrical and mechanical properties of human skeletal muscle," Department of Pharmacology, University of North Dakota, Grand Forks, ND, May 3, 1990.
13. "The use of resealed fiber segments for the study of the pathophysiology of human skeletal muscle," Department of Anesthesiology, University of Minnesota, Minneapolis, MN, July 31, 1990.
14. "Electrophysiology of muscle disorders," Department of Veterinary Biology, University of Minnesota, Minneapolis, MN, January 17, 1991.

15. "In vitro electrophysiological studies of myotonic muscle," Department of Neurology, University of Minnesota, Minneapolis, MN, February 14, 1991.
16. "In vitro contracture testing to determine susceptibility to malignant hyperthermia," Department of Anesthesiology, University of Minnesota, Minneapolis, MN, May 26, 1991.
17. "Forced air cooling following exercise-induced heat stress," Department of Anesthesiology Research Conference, University of Minnesota, Minneapolis, MN, June 11, 1991.
18. "Tremor, shiver and clonus," Department of Anesthesiology Research Conference, University of Minnesota, Minneapolis, MN, September 10, 1991.
19. "In vitro contracture test," Department of Anesthesiology, University of Minnesota, Minneapolis, MN, 1st Annual Clinical Symposia, November 9, 1991.
20. "Investigations into the pathophysiology of human skeletal muscle," Department of Physiology, University of Minnesota, Minneapolis, MN, February 14, 1992.
21. "Anesthetics and intracellular Ca2+," Department of Anesthesiology Research Conference, University of Minnesota, Minneapolis, MN, April 14, 1992.
22. "The physiology of thermoregulation and the clinical occurrence of hypothermia," Department of Kinesiology, University of Minnesota, Minneapolis, MN, May 18, 1992.
23. "Physiological implications of malignant hyperthermia in humans and in the pig model," Lehrstuhl für Tierzucht der Technishen Universität München, Freising-Weihenstephen, Germany, July 30, 1992.
24. "Malignant hyperthermia and temperature regulation," Forschungsinstitut für die Biologie landwirtschaftlicher Nutztiere Fachbereich Physiologische Grundlagen der Tierhaltung, Dummerstorf-Rostock, Germany, August 3, 1992.
25. "Intraoperative patient warming by convection: hygiene aspects with forced air," Zentrum Anaesthesiologie, Universität Göttingen, Göttingen, Germany, August 5, 1992.
26. "The physiology of thermoregulation: the consequences of hypothermia," Abteilung für Allgemeine Physiologie der Universität Ulm, Ulm, Germany, August 6, 1992.
27. "Thermoregulation in humans," Institut für Anaesthesiologie, Universität Erlangen, Erlangen, Germany, October 7, 1992.
28. "The physiology of thermoregulation," Department of Anesthesiology Research Conference, University of Minnesota, Minneapolis, MN, January 7, 1993.
29. "Increased muscle excitability: myotonia," Department of Neurology, University of Minnesota, Minneapolis, MN, April 3, 1993.
30. "Electrophysiological studies of human skeletal muscle," Department of Biomedical Engineering, University of Minnesota, Minneapolis, MN, April 20, 1993.
31. "The measurement of ankle torque for the diagnosis of periodic paralysis," Department of Anesthesiology, University of Minnesota, Minneapolis, MN, November 30, 1993.
32. "Thermal balance during an episode of malignant hyperthermia," Abteilung für Anästhesiologie und Intensivmedizin, Rehabilitaionskrankenhaus Ulm, Ulm, Germany, September 21, 1993.
33. "Thermal balance during an episode of malignant hyperthermia," Department of Anesthesiology Research Conference, University of Minnesota, Minneapolis, MN, January 3, 1994.
34. "Thermoregulation and malignant hyperthermia," Institut für Tierzucht und Hausteirgenetik, Justus-Liebig-Universität, Gießen, Germany, May 5, 1994.
35. "Malignant hyperthermia: an update," Department of Anesthesiology Research Conference, University of Minnesota, Minneapolis, MN, September 6, 1994.

36. "Porcine model to study wound formation, healing, and prevention," 3M Health Care Division, St. Paul, MN, October 11, 1994.
37. "Temperature modulated pressure ulcers: a porcine model," Department of Biomedical Engineering, University of Minnesota, Minneapolis, MN, October 25, 1994.
38. "Porcine model to study wound formation, healing and prevention," Research Animal Resources, University of Minnesota, Minneapolis, MN, November 15, 1994.
39. "Malignant hyperthermia: variability in clinical presentation," Department of Anesthesiology, Mayo Clinic, Rochester, MN, January 25, 1995.
40. "Myotonic disorders," Department of Neurology, University of Minnesota, Minneapolis, MN, February 8, 1995.
41. "Biomedical aspects of heat transfer in humans," Engineering, Fachhochschule Anhalt, Köthen, Germany, March 27, 1995.
42. "The use of fluorophlores to monitor modulations in intracellular [Ca2+] in skeletal muscle," Musckelbiologie and Wachstum, Forschungsinstitut für die Biologie landwirtschaftlicher Nutztiere Fachbereich, Dummerstorf-Rostock, Germany, March 29, 1995.
43. "Malignant hyperthermia: variability in clinical presentation," Department of Anesthesiology Research Conference, University of Minnesota, Minneapolis, MN, May 2, 1995.
44. "Muscle force assessment in neuromuscular diseases," Muskelzentrum der Universität Ulm, Ulm, Germany, May 15, 1995.
45. "Malignant hyperthermia: muscle properties," Versuchsstation Thalhausen-Lehrstuhl für Tierzucht, Technische Universität München, Munich, Germany, May 23, 1995.
46. "Prevention of pressure ulcers by focal cooling," Center for Wound Healing and Reparative Medicine, Department of Surgery, University of Minnesota, Minneapolis, MN, February 5, 1996.
47. "Prevention of pressure ulcers by focal cooling," Department of Anesthesiology Research Conference, University of Minnesota, Minneapolis, MN, March 12, 1996.
48. "Prevention of pressure ulcers by focal cooling," Augustine Medical, Inc., Eden Prairie, MN, April 3, 1996.
49. "Prevention of pressure ulcers by focal cooling," Muskelzentrum der Universität Ulm, Ulm, Germany, May 6, 1996.
50. "Anesthetic complication in muscle disorders," Department of Anesthesiology Research Conference, University of Minnesota, Minneapolis, MN, August 6, 1996.
51. "Anesthesia and neuromuscular disorders," Departement Anästhesie der Universität Kantonsspital Basel, Basel, Switzerland, September 30, 1996.
52. "Human thermoregulation," Departement Anästhesie der Universität Kantonsspital Basel, Basel, Switzerland, October 1, 1996.
53. "Anesthetic complications and neuromuscular disorders," Department of Anesthesiology, United Hospital, St. Paul, MN, December 5, 1996.
54. "Calcium dysregulation during anesthetic complications and neuromuscular disorders," Department of Laboratory Medicine, Jena, Germany, January 30, 1997.
55. "Anesthetic complications and neuromuscular disorders," Department of Neurology, Medizinishen Fakultät der Martin-Luther-Universität, Halle, Germany, January 30, 1997.
56. "Why perform clinical research?" Department of Anesthesiology Research Conference, University of Minnesota, Minneapolis, MN, March 15, 1997.
57. "Assessment of stimulated muscle force in humans," Clinical Neurosciences Conference, Department of Neurology, University of Minnesota, Minneapolis, MN, September 2, 1997.

58. "Assessment of stimulated muscle force in humans," Department of Animal Physiology, University of Wyoming, Laramie, WY, September 23, 1997.
59. "Axial spinal unloading using an LTX3000™ lumbar rehabilitation system," Muskelzentrum der Universität Ulm, Ulm, Germany, October 9, 1997.
60. "The physiological response to lumbar traction in humans," Department of Neurology, Medizinishen Fakultätosher der Martin-Luther-Universität, Halle, Germany, October 13, 1997.
61. "Stimulated muscle force assessment in humans," Tage der Elektrotechnik, Biomedizinschen Technik, Fachhochschule Anhalt, Köthen, Germany, October 15, 1997.
62. "Force assessment in overwintering black bears," Department of Anesthesiology Research Conference, University of Minnesota, Minneapolis, MN, January 13, 1998.
63. "Thermoregulation in humans and swine: a comparative analysis," Versuchsstation Thalhausen-Lehrstuhl für Tierzucht, Technische Universität München, Munich, Germany, April 17, 1998.
64. "In vivo stimulated force assessment for diagnosis and measurement of clinical outcomes," Muskelzentrum der Universität Ulm, Ulm, Germany, April 21, 1998.
65. "Critical thresholds for pressure ulcer formation in a porcine model: prevention by focal cooling," Biomedizinschen Technik, Fachhochschule Anhalt, Köthen, Germany, April 24, 1998.
66. "The physiological response to lumbar traction in humans," Departement Anästhesie der Universität Kantonsspital Basel, Basel, Switzerland, September 9, 1998.
67. "An in-vitro four-chamber working swine heart model," Faculty Research Highlights, Biomedical Engineering, University of Minnesota, Minneapolis, MN, September 29, 1998.
68. "An ex-vivo 4-chamber working heart model," Department of Anesthesiology Research Conference, University of Minnesota, Minneapolis, MN, January 1999.
69. "Studies in an animal model of the human working heart," Department of Neurology, Medizinishen Fakultät der Martin-Luther-Universität, Halle, Germany, April 14, 1999.
70. "An ex vivo working heart model: a collaborative project between the University of Minnesota and Medtronic," Biomedizinschen Technik, Fachhochschule Anhalt, Köthen, Germany, April 15, 1999.
71. "Collaborative research, academic and industry partnerships," BioRegioUlm and the Muskelzentrum der Universität Ulm, Ulm, Germany, April 16, 1999.
72. "An ex vivo working heart model: video images for education," LifeSource, Minneapolis, MN, May 6, 1999.
73. "Why clinical research?" Annual Clinicians Meeting, Spinal Designs International, Hinkley, MN, May 19, 1999.
74. "Assessment of stimulated muscle force in humans and hibernating black bears," Medtronic Scientific Forum Presentation, Medtronic, Fridley, MN, August 4, 1999.
75. "An ex-vivo 4-chamber working heart model," Department of Anesthesiology, Mayo Clinic, Rochester, MN, September 15, 1999.
76. "Gearing up for the next 50 years," *Keynote speaker*, Catheter Related Technology Symposium, Medtronic, Fridley, MN, September 21, 1999.
77. "Clinical Research," International Academy of Orthopedic Medicine, St. Paul, MN, November 11, 1999.
78. "Pain and pain mechanisms," International Academy of Orthopedic Medicine, St. Paul, MN, November 11, 1999.
79. "An ex-vivo 4-chamber working heart model," LifeSource, St. Paul, MN, January 11, 2000.

80. "Why and what research to perform?" Department of Anesthesiology Research Conference, University of Minnesota, Minneapolis, MN, October 3, 2000.
81. "Stimulated muscle force assessment: the ICU to hibernating bears," Department of Neurology, Universität Regensgurg, Germany, April 19, 2001.
82. "Stimulated muscle force assessment: the ICU to hibernating bears," Department of Veterinary Pathobiology, University of Minnesota, Minneapolis, MN, September 12, 2001.
83. "Force assessment and weakness in the ICU," Clinical Neurosciences Conference, University of Minnesota, Minneapolis, MN, February 12, 2002.
84. "The Visible Heart," Health Informatics Seminar, University of Minnesota, Minneapolis, MN, February 14, 2002.
85. "The cardiac conduction system" Therapy Research, Cardiac Rhythm Management, Guidant Corporation, St. Paul, MN, April 17, 2002.
86. "Muscle contraction," Applied Research, Boston Scientific, Scimed, Minneapolis, MN, August 16, 2002.
87. "Skeletal muscle force assessment: from humans to bears," Department of Biomedical Engineering, Marquette University, Milwaukee, WI, October 4, 2002.
88. "The Visible Heart™: the collaborative development and use of this educational tool by the University of Minnesota and Medtronic," Biomedical Engineering Society Meeting, Houston, TX, October 24, 2002.
89. "Induction of mild hypothermia for cerebral protection," Design of Medical Devices Conference, University of Minnesota, Minneapolis, MN, April 24, 2003.
90. "The Visible Heart®: a large mammalian isolated heart model," Department of Surgery Transplant Conference, University of Minnesota, Minneapolis, MN, May 7, 2003.
91. "Update on human anatomical research," Pediatric EP Focus Group, Medtronic Cardiac Rhythm Management, Fridley, MN, September 15, 2003.
92. "Why study the hibernating black bear?" Department of Biomedical Engineering, University of Minnesota, Minneapolis, MN, April 19, 2004.
93. "The Visible Heart® Center," Medtronic Cardiac Rhythm Management, Fridley, MN, September 2, 2004.
94. "The Visible Heart® Center," Medtronic Minnesota Chapter American Society of Mechanical Engineers, University of Minnesota, Minneapolis, MN, September 22, 2004.
95. "A Working Industry/University of Minnesota Relationship," Nanotherapy Workshop, University of Minnesota, Minneapolis, MN, November 15, 2004.
96. "The Visible Heart™ Center," Minnesota Microscopy Society, St. Paul, MN, February 17, 2004.
97. "The Visible Heart™: video and simulation," Department of Applied Physiology, Universität Ulm, Ulm, Germany, April 21, 2005.
98. "Maintenance of muscle during hibernation," Department of Applied Physiology, Universität Ulm, Ulm, Germany, April 22, 2005.
99. "The Visible Heart® Center," Technical Forum, Medtronic Production and Engineering, Villalba, Puerto Rico, August 11, 2005.
100. "The Visible Heart®Center," Technical Forum, Medtronic Production and Engineering, Juncos, Puerto Rico, August 11, 2005.
101. "Translational research: from the bear den to the bedside," Technical Forum, Cardiac Rhythm Management, Medtronic, Minneapolis, MN, August 19, 2005.
102. "Translational research: from the bear den to the bedside," Minneapolis Surgical Society, Minneapolis, MN, September 19, 2005.

103. "Translational research: from the bear den to the bedside," Dialogue North, Itasca Community College Foundation, Grand Rapids, MN, April 27, 2006.
104. "A review of cardiac physiology and anatomy," Transoma Medical, Minneapolis, MN, June 26, 2006.
105. "Translational research: from the bear den to the bedside," Bioanalytik Weihenstephan, Technische Universitat Munchen, Freising, Germany, August 22, 2006.
106. "Cardiac pacing: the lead-tissue interface," Department of Applied Physiology, University of Ulm, Ulm, Germany, August 23, 2006.
107. "The Visible Heart®: an update," Lillehei Heart Institute, University of Minnesota, January 23, 2007.
108. "Translational research: from the bear den to the bedside," Lake Region Manufacturing Annual Business Meeting, Chaska, MN, January 26, 2007.
109. "The hibernating black bear," 32nd Annual Minnesota Association of Veterinary Technicians Convention, Minneapolis, MN, February 2, 2007.
110. "Malignant hyperthermia: a current view," Idaho Society of Anesthesiologists Annual Conference, Sun Valley, Idaho, March 3, 2007.
111. "Translational research: from bear den to bedside," Idaho Society of Anesthesiologists Annual Conference, Sun Valley, Idaho, March 4, 2007.
112. "A legacy of collaboration between the University of Minnesota and Medtronic: open-heart surgery, biomedical devices and the Visible Heart® Laboratory," 2nd Annual Patent Recognition Banquet, Cardiac Rhythm and Disease Management, Medtronic, McNamara Alumni Center, University of Minnesota, Minneapolis, MN, June 7, 2007.
113. "Translational research: from bear den to bedside," Departement Anästhesie der Universität Kantonsspital Basel, Basel, Switzerland, June 27, 2007.
114. "Pharmacological preconditioning to prevent ischemic muscle damage," Department of Applied Physiology, University of Ulm, Ulm, Germany, June 28, 2007.
115. "The Visible Heart®: functional human cardiac anatomy," Josephson and Wellens How to Approach Complex Arrhythmias for EP Fellows, Boston, MA, July 20, 2007.
116. "The Visible Heart®: functional human cardiac anatomy," Regions Hospital, Grand Rounds, St. Paul, MN, September 26, 2007.
117. "A legacy of collaboration between the University of Minnesota and Medtronic: open-heart surgery, biomedical devices and the Visible Heart® Laboratory," Cardiovascular, Medtronic, Fridley, MN, October 15, 2007.
118. "Benefits of anatomical donations for medical education and research," The Minnesota Commission of the Procurement and Use of Anatomical Donations in conjunction with LifeScience Alley, St. Paul, MN, February 7, 2008.
119. "The Visible Heart®: human cardiac anatomy," 28th Annual Spring Seminar, Minnesota Society of Diagnostic Ultrasound, Minneapolis, MN, March 29, 2008.
120. "The Visible Heart®: cardiac devices," 28th Annual Spring Seminar, Minnesota Society of Diagnostic Ultrasound, Minneapolis, MN, March 29, 2008.
121. "Endoscopic visualization of the coronary veins," CARDIOSIM 2008, 16th World Congress on Cardiac Electrophysiology and Cardiac Techniques, Nice, France, June 2008.
122. "An update on the Visible Heart® Project and the Atlas of Human Cardiac Anatomy," Lillehei Heart Institute, University of Minnesota, October 15, 2008.
123. "From research to bedside: perspectives from academia and industry," LifeScience Alley, Minneapolis, MN, October 28, 2008.

124. "Pharmacological preconditioning to prevent ischemic muscle damage," Paul and Sheila Wellstone Muscular Dystrophy Center, University of Minnesota, January 30, 2009.
125. "Translational research: from bear den to bedside," Conservation Biology Graduate Program, University of Minnesota, Minneapolis, MN, February 16, 2009.
126. "The Visible Heart® Project and the Atlas of Human Cardiac Anatomy," 29th Annual Spring Seminar, Minnesota Society of Diagnostic Ultrasound, Minneapolis, MN, March 28, 2009.
127. "Translational research: from bear den to bedside," 29th Annual Spring Seminar, Minnesota Society of Diagnostic Ultrasound, Minneapolis, MN, March 2, 2009.
128. "The Visible Heart® Laboratory, and the Atlas of Human Cardiac Anatomy," LifeSource, St. Paul, MN, June 2009.
129. "The Visible Heart® Project and the Atlas of Human Cardiac Anatomy," Community Education Conference: Heart of the Matter, St. Joseph's Hospital, St. Paul, MN, October 12, 2009.
130. "A review of cardiovascular physiology and an update on the Visible Heart® Project," LifeSource, St. Paul, MN, October 12 & 14, 2009.
131. "Physiological engineering within the Visible Heart® Laboratory: guiding the laboratory forward to enhance future cardiovascular device designs," Horizon Series, co-sponsored by Medtronic's Bakken Society and Technical Fellows, Minneapolis, MN, February 22, 2010.
132. "Physiological engineering within the Visible Heart® Laboratory: using swine hearts to save human lives," 6th Annual Regional Bioscience Conference, Worthington, MN, March 26, 2010.
133. "The University of Minnesota: one of the pioneering institutions in the field of cardiovascular surgery," 30th Annual Spring Seminar, Minnesota Society of Diagnostic Ultrasound, Minneapolis, MN, March 27, 2010.
134. "Physiological engineering within the Visible Heart Laboratory," 2nd Annual University of Minnesota Cardiovascular Retreat, St. John's University, MN, June 24, 2010.
135. "The Visible Heart® Project," Department of Surgery Grand Rounds, University of Minnesota, Minneapolis, MN, August 31, 2010.
136. "The Visible Heart® Laboratory," Cardiovascular Innovation Seminars (CVIS), Medtronic, Mounds View, MN, September 1, 2010.
137. "Functional anatomy of the human heart: The Visible Heart® Project," Medtronic Ventor, Natanya, Israel, December 2, 2010.
138. "Translational research: from the bear den to the patient bedside," Young Scientist Roundtable, Wayzata High School, Wayzata, MN, February 2011.
139. "Translational research: from the bear den to the patient bedside," Mini Medical School, University of Minnesota, Minneapolis, MN, March 21, 2011.
140. "Cardiovascular advances by the University of Minnesota: past, present and future," Boston Scientific, Maple Grove, MN, May 16, 2012.
141. "Malignant hyperthermia: a current view," New River Medical Center, Monticello, MN, July 12, 2012.
142. "The Visible Heart® Project: journey inside the heart," Paris, France, January 19, 2013.
143. "The Visible Heart® Laboratory and the Atlas of Human Cardiac Anatomy," Northern Ohio Cardiac Imaging Association, University Hospital, Case Medical Center, Cleveland, OH, April 13, 2013.
144. "The Visible Heart® Lab and the Atlas of Human Cardiac Anatomy," Physiological Research Laboratories, Medtronic, Coon Rapids, MN, August 14, 2013.
145. "The Visible Heart® Laboratory and the Atlas of Human Cardiac Anatomy," Skirball Research Center, Cardiovascular Research Foundation, New York, NY, August 19, 2013.

146. "The Visible Heart® Lab and Medtronic: a partnership between academia and industry," Annual Meeting of Halstad Society, University of Minnesota, Minneapolis, MN, September 12, 2013.
147. "Inside the human heart," I Am Hope LifeSource Symposium, Minneapolis, MN, November 7, 2013.
148. "The Visible Heart® Laboratory and the Atlas of Human Cardiac Anatomy," Innovations in Cardiovascular Interventions, Tel Aviv, Israel, December 1-4, 2013.
149. "Temperature regulation-modulation in clinical settings," Ambulatory Anesthesia Course, Universitätsspital, Basel, Switzerland, August 18-19, 2014.
150. "The Visible Heart Project and the Atlas of Human Cardiac Anatomy," Ambulatory Anesthesia Course, Universitätsspital, Basel, Switzerland, August 18-19, 2014.
151. "Priming innovation: the right environment, tools, partners, and mentors," Transcatheter Cardiovascular Therapeutics (TCT) Annual Conference, Washington DC, September 14, 2014.
152. "Understanding anatomy-device interactions of different bifurcation stent techniques: insights from the Visible Heart Lab," Transcatheter Cardiovascular Therapeutics (TCT) Annual Meeting, Washington DC, September 15, 2014.
153. *Keynote* "The Visible Heart Laboratory," 30th Annual Meeting of the Academy of Surgical Research, Hyatt Regency, Minneapolis, MN, September 19, 2014.
154. "Cardiovascular advances at the University of Minnesota: past, present, and future," Human Anatomy and Physiology Society Regional Conference, Eastview High School, Eagan, MN, October 17, 2014.
155. "The science of organ preservation and hidden secrets of the hibernating black bear," 8th Annual Department of Surgery Bakken Symposium, Minneapolis, MN, December 2, 2014.
156. "Evaluating your medical device idea using bench tests, animal tests and clinical trials," 2015 Innovation Workshop Program, Design of Medical Devices Conference, Minneapolis, MN, April 11, 2015.
157. "Muscle metabolism and function in the hibernating black bear," 6th Basel Muscle Symposium on Skeletal Muscle, Universitätsspital Basel, Basel, Switzerland, May 15, 2015.
158. "Prototyping in the real world: the Minnesota experience," Imaging in Cardiovascular Interventions (CSI 2015), Frankfurt, Germany, June 23, 2015.
159. *Keynote* "Innovation on the edge: from reanimated human hearts to hibernating black bears," Association of Medical Illustrators 2015 Annual Meeting, Cleveland Clinic, OH, July 22-25, 2015.
160. "Visualizations of cardiac anatomy, activation patterns, and therapy using Visible Heart methodologies," 8th TRF Forum on Computer Simulation and Experimental Assessment of Cardiac Function, Lugano, Switzerland, December 8, 2015.
161. "The Visible Heart Laboratory and the Atlas of Human Cardiac Anatomy," San Raffaele Hospital, Milan, Italy, December 9, 2015.
162. "Essentials of creativity," Academy of Innovation Day, 20th International Conference for Innovations in Cardiovascular Interventions (ICI), Tel Aviv, Israel, December 13, 2015.
163. "Testing your medical device idea: bench tests, pre-clincial, clinical trials," Academy of Innovation Day, 20th International Conference for Innovations in Cardiovascular Interventions (ICI), Tel Aviv, Israel, December 13, 2015.
164. "Innovation to the edge," University of Minnesota Alumni Association: Change Meets Innovation, Red Wing, MN, March 22, 2016.
165. "Ecosystem for the development of medical devices, Visible Heart Project," Cardiac Phyione Society, Seoul, South Korea, August 24, 2016.

166. "Inspiring structural heart innovation by understanding anatomy and disease states," Medical Design and Manufacturing Conference, Minneapolis, MN, September 21, 2016.
167. "Advanced applied imaging: 3D printing for cardiac disease," Lillehei Symposium: Progress in Cardiovascular Care, Minneapolis, MN, October 24, 2016.
168. "The Visible Heart® Project," 28th International Conference of the Society of Medical Innovation and Technology, Delft, The Netherlands, October 6, 2016.
169. "The Visible Heart® Project," White Bear Lake Rotary Club, White Bear Lake, MN, February 15, 2017.
170. "Black bear hibernation: healing the human heart," Learning Life Program, University of Minnesota, St. Paul, MN, February 16, 2017.
171. "From the Visible Heart Lab to bear dens and back," Texas Heart Institute, Houston, TX, February 23, 2017.
172. "Translational research through industry partnerships," Rice University, Houston, TX, February 23, 2017.
173. "How new medical products are developed," Clinical and Scienific Innovations for Oral and Maxillofacial Surgery (CSIOMS) Conference, Rosemont, IL, April 28, 2017.
174. "Having black bears assist in the operating room: good idea?" Organization of Biological Field Stations Annual Meeting, Itasca Biological Station and Laboratories, Lake Itasca, MN, September 22, 2017.
175. "Monitoring the behaviors of the American Black Bear using implantable devices," Graduate Program in Neuroscience Colloquium, University of Minnesota, Minneapolis, MN, October 4, 2017.
176. "The Visible Heart® Project and the Atlas of Human Cardiac Anatomy," Mini Medical School, University of Minnesota, Minneapolis, MN, October 16, 2017.
177. "From the Visible Heart® Lab to bear dens and back," Whiteside Institute for Clinical Research, St. Luke's Hospital, Duluth, MN, October 19, 2017.
178. "Insights relative to black bear physiology and potential implications for human medicine," 78th Midwest Fish and Wildlife Conference, Milwaukee, WI, January 30, 2018.
179. "The Visible Heart® methodologies employed to study electrophysiologic therapies and devices," Texas Heart Institute, Houston, TX, March 29, 2018.
180. "Translational research through industry partnerships," Rice University, Department of Biomedical Engineering, Houston, TX, March 29, 2018.
181. "The Visible Heart® Laboratory and the Atlas of Human Cardiac Anatomy," Texas Heart Institute, Houston, TX, March 30, 2018.
182. "Translational applications of black bear hibernation for ischemic protection and/or wound healing," Children's Hospital, Magdeburg, Germany, May 3, 2018.
183. "The Visible Heart® Project and the Atlas of Human Cardiac Anatomy," Children's Hospital, Magdeburg, Germany, May 3, 2018.
184. "Visible Heart lab: driven to train the next generation of medical device innovators," 1st Annual Echo Supervisor Summit, September 5, 2018.
185. "The Visible Heart® Project and the Atlas of Human Cardiac Anatomy," University of Central Florida, Orlando, FL, October 15, 2018.
186. "Panel: industry trends in cardiology and the impact on your next device," MD&M Conference, Minneapolis, MN, November 1, 2018.
187. "Medical device innovation," University Hospital of Basel, Basel, Switzerland, November 12, 2018.

188. "Translational applications of black bear hibernation for ischemic protection and/or wound healing," University Hospital of Basel, Basel, Switzerland, November 13, 2018.
189. "Medical device innovation, Pitfalls and Pearls", Society Physician Innovators, Roseville Library, Roseville, MN, February 25, 2019.
190. "The Visible Heart® Project and the Atlas of Human Cardiac Anatomy," EuroPCR Advisor Board Meeting, Medtronic Training Pavilion, Bifurcation PCI Session, May 15, 2019.
191. "Leveraging our research partnership with the University of Minnesota," Medtronic, Mounds View, MN, August 7, 2019.
192. "Utilizing the unique capabilities of the VH Laboratories: 23 years of vital collaboration with Medtronic," Medtronic, Mounds View, MN, August 7, 2019.
193. "Bifurcation PCI: a step by step training approach (Visible Heart)," Transcatheter Cardiovascular Therapeutics (TCT) 2019, San Francisco, CA, 3 talks on September 26 and 28, 2019.
194. "The Visible Heart® Project and the Atlas of Human Cardiac Anatomy," Internistische Intensivmedizin, Universitätsklinikum Magdeburg, Magdebury, Germany. June 6, 2019.
195. "Medical device innovation," Keynote speaker, Seoul National University Hospital, Korea, October 10, 2019.
196. "Importance of medical device ecosystem," Seoul National University Hospital, Korea, October 11, 2019.
197. "The Visible Heart® Project and the Atlas of Human Cardiac Anatomy," XV European Bifurcation Club Meeting, Barcelona, Spain, October 19, 2019.
198. "The Visible Heart® Project and the Atlas of Human Cardiac Anatomy," Lillehei Heart Institute, Univiersity of Minnesota, Minneapolis, MN, February 5, 2020.
199. "Translational applications of black bear reasearch for ischemic protection of organs," Transplant Conference, University of Minnesota, Minneapolis, MN, October 7, 2020.
200. "Transitional applications of black bear reasearch for ischemic protection of organs," Department of Biology, St. Olaf College, Northfield, MN, October 26, 2020.
201. "The Visible Heart® Project and the Atlas of Human Cardiac Anatomy," Minnesota Academy of Medicine, Monthly meeting via Zoom, February 2, 2021.
202. "The challenges of performing field research on hibernating black bears," Department of Surgery, University of Minnesota, Minneapolis, MN, February 24, 2021.
203. "What can the Visible Heart® Lab teach us?" Symposium on Perioperative Right Heart Failure in the Cardiac Surgical Patient, Department of Anesthesia, Cardiac Surgery, and Cardiology, University of Minnesota, March 13, 2021.
204. "3D printing for research in higher education," MakerBot: Shaping the Future, 3D Printing in Education Virtual Summit, March 31, 2021.
205. "The Visible Heart® Project and the Atlas of Human Cardiac Anatomy," EuroPCR, May 18 – 20, 2021.
206. "The Visible Heart® Project and the Atlas of Human Cardiac Anatomy," Department of Surgery, University of Minnesota, Minneapolis, MN, Juen 16, 2021.
207. "MicroCT analyses of medical devices implanted within human and swine hearts," North Star Imaging Virtual Technical Symposium, September 15, 2021.
208. "MicroCT analyses of stenting perfromed within reanimated and fixed human hearts," European Bifurcation Club Hybrid Meeting, October 8, 2021.

GRAND ROUNDS

1. "Malignant hyperthermia: clinical presentation," Department of Neurology, Medizinishen Fakultät der Martin-Luther-Universität, Halle, Germany, March 28, 1995.
2. "Muscle force assessment in neuromuscular disorders," Department of Neurology, Medizinishen Fakultät der Martin-Luther-Universität, Halle, Germany, May 2, 1996.
3. "The Visible Heart®: functional cardiac anatomy," Department of Medicine, University of Minnesota, Minneapolis, MN, January 14, 2004.
4. "An ex-vivo 4-chamber working heart model," Department of Cardiology, Universität Ulm, Ulm, Germany, July 30, 1999.
5. "The Visible Heart®: functional cardiac anatomy," Departments of Neurology and Medicine, Universität Regensburg, Regensburg, Germany, April 26, 2005.
6. "The Visible Heart®: functional cardiac anatomy," Veterans Administration Hospital, San Juan, Puerto Rico, August 10, 2005.
7. "Functional cardiac anatomy: the Visible Heart®," Grand Rounds: Laboratory Medicine and Pathology, University of Minnesota, October 11, 2006.
8. "An update on the Visible Heart® Project and the Atlas of Human Cardiac Anatomy," Grand Rounds, Department of Surgery, University of Minnesota, January 27, 2009.
9. "The Visible Heart® Laboratory and the Atlas of Human Cardiac Anatomy," Department of Medicine, Martin Luther University, Halle/Saale, Germany, April 24, 2009.
10. "Translational research: from the bear den to the patient bedside," Department of Surgery, University of Minnesota, Minneapolis, MN, August 18, 2009.
11. "Stimulated muscle force assessment: at the bear den or in an ICU," Department of Neurology, University of Minnesota, Minneapolis, MN, February 11, 2010. "Functional anatomy of the human heart: the Visible Heart® Project," Mayo Clinic, Jacksonville, FL, November 8, 2010.
12. "The Visible Heart® Laboratory: our latest results," Department of Surgery Grand Rounds, University of Minnesota, Minneapolis, MN, January 31, 2012.
13. "The Visible Heart® Project and the Atlas of Human Cardiac Anatomy," Texas Heart Institute, Houston, TX, Cardiology-Electrophysiology Grand Rounds, February 24, 2017.
14. "From the Visible Heart® Lab to bear dens and back," Texas Heart Institute, Houston, TX, March 30, 2018.
15. "Visible Heart® Lab: driven to train the next generation of medical device innovators," Children's Hospital, Magdeburg, Germany, May 4, 2018.
16. "Insights relative to black bear physiology and their potential implications to humans," Abbott Northwestern Hospital, Minneapolis, MN, September 18, 2019.
17. "Medical Device Innovation," Department of Surgery Grand Rounds, University of Minnesota, Minneapolis, MN, January 21, 2020.
18. "title of talk," Department of Surgery Grand Rounds, Universityof Minnesota, Minneapolis, MN, November 30, 2022.

WORKSHOPS

1. "Secondary changes in chloride channel diseases: sodium channel dysfunction," ENMC Workshop on Non-dystrophic Myotonias and Periodic Paralyses, Ulm, Germany, October 6, 1992.
2. "Anesthetic complications in muscle disorders (panel discussion)," VIII International Workshop on Malignant Hyperthermia, Minneapolis, MN, September 7, 1996.
3. "Futuristic technologies workshop," EP, Snowbird, UT, February 11, 2001.

4. "Academy of Innovation: the device development process," Innovations in Cardiovascular Interventions, Co-organizer, Tel Aviv, Israel, December 6, 2009.
5. "The Visible Heart: echocardiography and angiography application in the donor heart," National Association of Transplant Coordinators, National Meeting, Fort Lauderdale, FL, January 15, 2010.
6. "Review of cardiac anatomy and physiology," Lake Region Medical Training Workshop, University of Minnesota, Minneapolis, MN, November 24, 2010.
7. "Academy of Innovation: expanding cardiovascular therapies, the development of new medical devices," Innovations in Cardiovascular Interventions, Co-organizer, Tel Aviv, Israel, December 5, 2010.
8. "Academy of Innovation," Innovations in Cardiovascular Interventions, Tel Aviv, Israel, December 4-5, 2011.
9. "Becoming a medical technology innovator," Design of Medical Devices Conference, Medical Device Innovation Workshop, University of Minnesota, Minneapolis, MN, April 9, 2012.
10. "Academy of Innovation," Innovations in Cardiovascular Interventions, Tel Aviv, Israel, December 2-4, 2012.
11. "Becoming a medical technology innovator," Design of Medical Devices Conference, Medical Device Innovation Workshop, University of Minnesota, Minneapolis, MN, April 2013.
12. "Academy of Innovation," Innovations in Cardiovascular Interventions, Tel Aviv, Israel, December 2013.
13. "Becoming a medical technology innovator," Design of Medical Devices Conference, Medical Device Innovation Workshop, University of Minnesota, Minneapolis, MN, April 2014.
14. "Academy of Innovation," Innovations in Cardiovascular Interventions, Tel Aviv, Israel, December 2014.
15. "Becoming a medical technology innovator," Design of Medical Devices Conference, Medical Device Innovation Workshop, University of Minnesota, Minneapolis, MN, April 2015.
16. "Academy of Innovation," Innovations in Cardiovascular Interventions, Tel Aviv, Israel, December 2015.
17. "Becoming a medical technology innovator," Design of Medical Devices Conference, Medical Device Innovation Workshop, University of Minnesota, Minneapolis, MN, April 2016.
18. "Academy of Innovation," Innovations in Cardiovascular Interventions, Tel Aviv, Israel, December 2016.
19. "Becoming a medical technology innovator," Design of Medical Devices Conference, Medical Device Innovation Workshop, University of Minnesota, Minneapolis, MN, April 2017.
20. "3D modeling and virtual reality in lead extraction," 2017 Lead Extraction Symposium, Minneapolis, MN, October 28, 2017.
21. "Academy of Innovation," Innovations in Cardiovascular Interventions, Tel Aviv, Israel, December 2017.
22. "Becoming a medical technology innovator," Design of Medical Devices Conference, Medical Device Innovation Workshop, University of Minnesota, Minneapolis, MN, April, 2018.
23. "Academy of Innovation," Innovations in Cardiovascular Interventions, Tel Aviv, Israel, December 2018.
24. "Becoming a medical technology innovator," Design of Medical Devices Conference, Medical Device Innovation Workshop, University of Minnesota, Minneapolis, MN, April 2019.
25. Keynote: "The Visible Heart® Lab: driven to train the next generation of medical device innovators," Workshop on VR in Medical Education, Magdebug, Germany, June 7, 2019.

26. "Academy of Innovation," Innovations in Cardiovascular Interventions, Tel Aviv, Israel, December 2019.
27. "Intro to Process: and IEM's clinical engagment program," Virtual Design of Medical Devices Conference, Cardiac Device Innovation, University of Minnesota, Minneapolis, MN, April 2021.
28. "Becoming a medical technology innovator," Virtual Design of Medical Devices Conference, Medical Device Innovation Workship, University of Minnesota, Minneapolis, MN, April 2021.
29. "Academy of Innovation," Innovations in Cardiovascular Interventions, Tel Aviv, Israel, virtual workshop presentation, December 2021.

SYMPOSIUM / CONGRESS LECTURES

1. "Pathophysiology of malignant hyperthermia," 20th Scandinavian Congress of Anaesthesiology, Copenhagen, Denmark, June 28, 1989.
2. "Pathophysiology of malignant hyperthermia." VII International Congress of Neuromuscular Diseases, Co-Chairman of session on malignant hyperthermia, Munich, Germany, September 19, 1990.
3. "Malignant hyperthermia," 1st Annual Symposia on Clinical Anesthesiology, Department of Anesthesiology, University of Minnesota, Minneapolis, MN, November 6, 1991.
4. "Hypothermia post-bypass," American Association of Critical-Care Nurses, Minneapolis, MN, April 28, 1992.
5. "Physiology and biochemistry of muscle contraction," Anaesthesia and Pharmacogenetic Diseases: Malignant Hyperthermia, Co-chairman of session on Muscle contraction, Padova, Italy, May 22, 1993.
6. "The induction of mild hypothermia aided by facial warming," Department of Anesthesiology, 6th Annual Clinical and Research Symposium, University of Minnesota, Minneapolis, MN, September 27, 1997.
7. *Keynote* "Industry sponsored student research," Tage der Elektrotechnik, Fachhochschule Anhalt, Köthen, Germany, October 14, 1997.
8. "Force assessment in the ICU," Department of Anesthesiology, 7th Annual Clinical and Research Symposium, University of Minnesota, Minneapolis, MN, November 20, 1999.
9. "The Visible HeartTM," Department of Anesthesiology, 8th Annual Clinical and Research Symposium, University of Minnesota, Minneapolis, MN, November 18, 2000.
10. "Physiology and pathophysiology of skeletal muscle," 21st Myron B. Laver International Postgraduate Course: Impact of Research on Anaesthesia and Intensive Care, University of Basel, Basel, Switzerland, March 16-17, 2001.
11. "Industry-funded basic research," 21st Myron B. Laver International Postgraduate Course: Impact of Research on Anaesthesia and Intensive Care, University of Basel, Basel, Switzerland, March 16-17, 2001.
12. "Malignant hyperthermia," 22nd St. Luke's Hospital and Regional Trauma Center's Annual Surgery Seminar, Duluth, MN, January 19, 2002.
13. "Clinical thermoregulation," Minnesota Society of Anesthesiologists Anesthesia Educational Symposium, Bloomington, MN, February 15, 2002.
14. "Clinical thermoregulation," Arrowhead Region Anesthesia Seminar, Duluth, MN, August 18, 2002.
15. "What's new in heart research," Medical Alley's 3rd Annual Health Care Technology Conference and Expo, Minneapolis, MN, November 17, 2004.

16. "Osteoporose-grundlagenforshung: Was können wir vom winterschlaf des baren lernen?" Osteoporose-eine wachsende Herausforderung, Anhaltinischer Therapeutentag, Hettstedt, Germany, April 23, 2005.
17. "Non-contact mapping and concomitant hemodynamic assessment for the study of heart deseases and their treatment," The Joint Meeting of 5th International Conference on Bioelectromagnetism & 5th International Symposium on Noninvasive Functional Source Imaging within the Human Brain and Heart, Minneapolis, MN, May 15, 2005.
18. Keynote "The Visible Heart®: functional cardiac anatomy," National Association of Transplant Coordinators National Meeting, Atlanta, GA, August 2, 2005.
19. "The Visible Heart®," Simulation in Healthcare at the University of Minnesota: Transforming Education, Minneapolis, MN, November 29, 2005.
20. "Educational activities of IEM" and "The Visible Heart®: device tissue interactions," Institute for Engineering in Medicine Symposium: A New Direction, University of Minnesota, Minneapolis, MN, February 15, 2008.
21. "Muscle trophic maintenance in man and other mammals," Symposium on Periodic Paralyses (PP) and Excitation-Contraction Coupling (ECC), Ulm, Germany, June 23, 2008.
22. "Novel views of valvular function: employing Visible Heart technologies," 2nd Annual Bakken Surgical Device Symposium, University of Minnesota, Minneapolis, MN, December 9, 2008.
23. "In vitro testing and the Visible Heart®," 3rd Annual Institute for Engineering in Medicine Educational Symposium, University of Minnesota, Minneapolis, MN, December 9, 2010.
24. "New insights in heart physiology," Jubiläumssymposium, Martin-Luther-Universität, Halle-Wittenberg, Germany, April 3, 2012.
25. Keynote "Functional anatomy of the human heart: Visible Heart® Project," Jubiläumssymposium von Prof. Karl-Ludwig Schober und 50-jähriges Jubliläum der ersten Herz-Operation mit Hilfe der hallechen Herz-Lungen-Maschine. Universitatklinkum Halle (Saale), Germany, April 3, 2012.
26. Keynote "Cardiovascular advances by the University of Minnesota: past, present and future," 6th Annual Bakken Surgical Device Symposium, University of Minnesota, Minneapolis, MN, May 16, 2012.
27. Keynote "Back to the future: laboratory research on the isolated heart to enhance cardiovascular device design," International Society for Rotary Blood Pumps, Istanbul, Turkey, September 22, 2012.
28. "Lessons from field research: ischemic protection during black bear hibernation," Hibernation 3.0 Regional Conference, Duluth, MN, June 4, 2015.

EDUCATIONAL PRESENTATIONS

1. Visible Heart video display within the Human Body Exhibit, Minnesota Science Museum, St. Paul, Minnesota (1999 to present).
2. "Medicine: Prescription for Tomorrow," 42nd Annual Nobel Conference, Gustavus Adolphus College, St. Peter, MN, October 3-4, 2006.
3. Interactive Display on Cardiac Anatomy and Physiology, Heart Rhythm Society Meeting, Denver, CO, May 10-12, 2007.
4. Interactive Display on Cardiac Anatomy and Physiology, American Heart Association, Orlando, FL, November 4-7, 2007.

5. Interactive Display on Cardiac Anatomy and Physiology, Society of Thoracic Surgeons, Ft. Lauderdale, FL, January 26-30, 2008.
6. Interactive Display on Cardiac Anatomy and Physiology, American College of Cardiology, Chicago, IL, March 30-April 1, 2008.
7. Interactive Display on Cardiac Anatomy and Physiology, Heart Rhythm Society, San Francisco, CA, May15-17, 2008.
8. Interactive Display on Cardiac Anatomy and Physiology, International Society of Minimally Invasive Cardiothoracic Surgery (ISMICS), Boston, MA, June 11-14, 2008.
9. Interactive Display on Cardiac Anatomy and Physiology, Academia Village, CARDIOSTIM 2008, 16th World Congress, Nice, France, June 18-21, 2008.

GRANTS AND FUNDING

PROPOSALS IN REVIEW

1. Development of an advanced surgical simulator for practicing skill acquisition: the difficult cholecystectomy, intraoperative cholangiogram, and clearance of the common bile duct". NIH; PI: James Harmon (Co-PI: Paul Iaizzo).
2. DoD PRORP entitled "Compartment Syndrome Models – Diagnostic and/or treatment strategies developed in a large animal model that replicates compartment syndrome. Model system should be clinically relevant and scientifically reproducible". PIs-Joan Bechtold and Iaizzo PA: Co-I Schmidt A, Odland R, Johnstone A, Wagstrom E, Durfee, MacCormick-Tatman L.; Potter B $248,127. (Submitted Fall 2019)
3. "Developing a national registry for the biophysical properties of human cardiothoracic tissues." NIH; PI: Iaizzo PA. (Submitted 10/2021)

CURRENTLY FUNDED GRANT PROPOSALS

1. "Swine isolated working heart model;" Medtronic; **Iaizzo PA**

   Overall total amouts of contracts: $22,556,106 (4/97 to Amendment 20)
   - Initial contract (FY98): $69,961 total, 4/97, 1 year (20% effort)
   - Laboratory equipment and Medtronic devices: $470,337, 5/98, 2 years (0% effort)
   - Contract extension (FY99): $129,604 total, $110,000 in equipment, 5/98, 1 year (20% effort)
   - Contract extension (FY00-02): $641,191 total, 5/99, 3 years (20% effort)
   - Contract extension (adjustment for FY01-02 and extension for FY03-05): $1,485,061 total, 5/02, 3 years (20% effort; 20% salary support and 20% augmentation)
   - Amendment 1: Additional project: $20,001 total, 11/02, 1 year (1% effort)
   - Amendment 2: Additional project: $19,999 total, 11/02, 1 year (1% effort)
   - Contract extension, Amendment 3 (FY06-10): $2,543,088 total, 5/05, 5 years (20% effort; 20% salary support and 20% augmentation)
   - Amendment 4: Additional project: $39,997 total, 8/04, 1 year
   - Amendment 5: Additional project: $30,000 total, 5/05, 1.5 years (1% effort)
   - Amendment 6: Additional project: $14,336 total, 9/05, 1 year (1% effort)
   - Amendment 7: Additional project: $13,279 total, 4/06, 1 year (1% effort)
   - Amendment 8: Additional project: $66,502 total, 6/06, 1 year (1% effort)
   - Amendment 9: Additional project: $1,800 total, 7/06, 1 year

- Amendment 7+: Additional project: $1,367 total, 11/07, 6 months
- Amendment 7+: Additional project: $2,734 total, 12/07, 6 months
- Amendment 11: Additional project: $39,092 total, 8/08, 1 year
- Amendment 12: Additional project: $4,673 total, 11/08, 1 year
- Amendment 7+: Additional project: $1,367 total, 2/09, 6 months
- Amendment 7+: Additional project: $1,557 total, 11/08, 1 year
- Amendment 7+: Additional project: $2,734 total, 2/10, 6 months
- Contract extension, Amendment 13 (FY11-15): $4,085,371 total, 5/10, 5 years (20% effort)
- Amendment 7+: Additional project: $9,454 total, 6/10, ongoing
- Amendment 7+: Additional project: $11,345 total, 2/11, 1 year
- Amendment 15: Additional project: $518,968 total, 9/11, 3 years
- Amendment 16: Additional project: $9,850 total, 1211, 1 year
- Contract extension, Amendment 18 (FY16-20): $5,068,863 total, 5/15, 5 years (30% effort)
- Amendment 19: Additional project: $59,459 total, 7/14, 1 year
- Amendment 19+: Additional experiments: $24,378 total, 2015 (1 year)
- Amendment 19+: Additional project: $5,025 total, 7/15 (1 year)
- Amendment 19+: Additional experiments; $25,924 (2016)
- Contract extension, Amendment 20 (FY20-25): $7,138,789 total, 5/20, 5 years (60% effort)

2. "Minnesota Muscle Training Program;" NIH 5T32 AR007612; Thomas DD (**Iaizzo PA**, co-PI); $639,348 direct, $680,772 total, 5/21 to 4/22.
3. "Medical Scientist Training Program;" NIH; Shimizu Y; NIGMS 5T32 GM008244; $821,376 direct, $860,206 total; 7/21 to 6/22.
4. "Summer Research at the University of Minnesota Medical School;" NIH 5R25 HL088728; Campbell CR; $172,796 direct, $186,620 total, 6/21 to 5/22.
5. "Heart preservation and organ care system;" Lillehei Family Foundation; **Iaizzo PA**; $250,000 over 4 years ($50K 1/17; $200K in 2018-2021), 0% effort (purchase/maintenance of organ care system for the heart).
6. "Breakthrough tissue and organ preservation and transplantation using scaled-up nanowarming technology;" NIH 5R01 HL135046; Bischof JC; $2,558,872 total, 8/17 to 7/22, PAI 4% effort for 3 years.
7. "Organ banking for transplant-kidney cryopreservation by virtrification and novel nonowarming technology;" NIH 5R01 DK117425; Bischof JC; $2,359,398 total, 4/18 to 3/22, PAI 4% effort for 4 years.
8. "Mixed realities for enhanced training of medical students, residents, fellows and faculty: an integrated, immersive and interactive platform for learning about the heart," Academic Investment Education Program Investment Grant, University of Minnesota; PI: Perry TE, **Iaizzo PA**, Co-I's: Konia MR, Blum J, Haas K, Iles TL $350,000 total, 4/20 to 4/23.
9. "Center for advanced technologies for preservation of biological systems," NSF 1941543; Bischof JC; 9/20 to 8/26; PAI 2% effort
10. "Biopsy perfusion platform for heart graft assessment," MIN-Corps MVP Challenge; **Iaizzo PA**, Tessier S, Jain R $5,000 total; 12/20 to 3/22.

FUNDED GRANT PROPOSALS

1. "The possible role of parvalbumins in skeletal muscle contraction;" National Science Foundation; Taylor SR, **Iaizzo PA**, Gerday C; $7,650, 6/86, 2 years.
2. "Episodes of malignant hyperthermia and masseter spasms induced by succinylcholine;" Mayo Foundation; Wedel DJ, **Iaizzo PA**, Joyner MJ; $24,810, 7/89, 1 year.
3. "The in vitro diagnosis of malignant hyperthermia: an equipment upgrade;" Mayo Clinic, Clinical Practice Committee; Wedel DJ, **Iaizzo PA**; $41,925, Equipment grant.
4. "The determinants of coughing-induced increases in intracranial pressure in anesthetized dogs;" Mayo Foundation; Lanier WL, **Iaizzo PA**; $19,101, 7/89, 1 year.
5. "The effects of I-653 on swine susceptible to malignant hyperthermia;" Anaquest; Wedel DJ, **Iaizzo PA;** $19,002, 10/89, 1 year.
6. "The determinants of increases in intraocular pressure following intravenous succinylcholine in cats;" Mayo Foundation; Hofer RE, Lanier WL, Murray MJ, **Iaizzo PA**; $22,132, 6/90, 1 year.
7. "The relative potency of desflurane, halothane and isoflurane as triggers of episodes of malignant hyperthermia;" Anaquest; **Iaizzo PA**, Wedel DJ, Milde JH; $48,578, 9/90, 1 year.
8. "The effect of convection-induced corporeal hypothermia and rewarming on central nervous system temperature and metabolites;" Augustine Medical, Inc.; Lanier WL, **Iaizzo PA**, Sharbrough FW, Murray MJ; $10,675, 1/91, 1 year.
9. "Are hyperkalemic periodic paralysis and paramyotonia the same entities?;" Muscular Dystrophy Association; Lehmann-Horn F, **Iaizzo PA;** $90,000, 1/91, 3 years.
10. "The use of forced air cooling to aid in the treatment of malignant hyperthermia;" Minnesota Medical Foundation via a gift from Augustine Medical, Inc.; **Iaizzo PA**, Palahniuk RJ; $12,380, 4/91, 2 years.
11. "Forced air cooling for the treatment of exercise-induced heat stress;" Minnesota Medical Foundation via a gift from Augustine Medical, Inc.; **Iaizzo PA**, Leon AS, Palahniuk RJ; $4,900, 9/91, 2 years.
12. "The effects of lower limb surface warming on hypotension following the release of an aortic cross clamp and indices of lower extremity ischemia in pigs;" Minnesota Medical Foundation via a gift from Augustine Medical, Inc; Beebe DS, Gauthier RL, DeMars J, **Iaizzo PA;** $18,0600, 9/91, 1 year.
13. "Malignant hyperthermia induction in susceptible swine following exposure to ORG 9487;" Organon Grant # 95-9669; Wedel DJ, **Iaizzo PA**; $69,249, 6/95, 2 years.
14. "The physiological response to lumbar traction in humans;" Spinal Designs International (via Center for Interfacial Engineering; **Iaizzo PA**, Sparrow EM; $21,560, 6/94, 1 year.
15. "Temperature thresholds at which applied cooling prevents pressure ulcers and at which applied warming promotes healing;" National Science Foundation; **Iaizzo PA**, Sparrow EM; $49,999, 12/94, 1 year.
16. "Doxorubicin chemomyectomy for the treatment of cervical dystonia;" Dystonia Medical Research Foundation; McLoon L, **Iaizzo PA**, Dykstra D, Thompson L, Nguyen LT; $23,655, 4/96, 1 year.
17. "Center for Muscle and Muscle Disorders;" Graduate School, University of Minnesota; Day JW, **Iaizzo PA**; $20,000, 7/96, 2 years.
18. "Doxorubicin chemomyectomy for the treatment of cervical dystonia;" Dystonia Medical Research Foundation; McLoon L, **Iaizzo PA**; $23,650, 4/97, 1 year.
19. "Swine isolated working heart model;" Medtronic, Cardiac Rhythm Management–Therapy Delivery; **Iaizzo PA**, Houlton AJ; $38,661 and $31,300 in equipment, 5/97, 1 year.

20. "Muscle physiology and protein use by overwintering black bears;" National Science Foundation; Harlow H, **Iaizzo PA**, Smith-Sonneborn J, Beck TDI; $301,598, 7/98, 3 years.
21. "Center for Muscle and Muscle Disorders;" Graduate School, University of Minnesota Day JW, **Iaizzo PA**; $100,000, 7/98, 3 years.
22. "Axial unloading device therapy for cervical spine rehabilitation;" Spinal Designs and Minnesota Technology Incorporated; **Iaizzo PA**, Erdman AG; $40,500, 1/99, 1.5 years.
23. "The effect of acute and subacute dexamethasone treatment on brain glucose and glycogen concentrations in anesthetized rats;" Pharmacia & Upjohn Company; Lanier WL, Thompson MD, Gallagher WJ, **Iaizzo PA**; $5,000, 6/99, 2 years.
24. "Muscle force assessment in critically ill patients;" Center for Excellence in Critical Care and the Graduate School, University of Minnesota; Hong J, Sigg D, **Iaizzo PA**; $1,000, 7/00, 1 year.
25. "The role of opioids in ischemic preconditioning of skeletal muscle;" Center for Muscle and Muscle Disorders; Sigg D, **Iaizzo PA**; $4,000, 7/00, 1 year.
26. "Training program in muscle research;" National Institutes of Health, Institutional NRSA – NIAMS; Thomas DD et al.; $1,478,495, 7/01, 5 years.
27. "Lab-based courses for BME undergraduates and practicing engineers;" The Whitaker Foundation; Tranquillo et al.; $ 999,432, 1/02, 3 years.
28. "The role of delta-opioids in attenuating reperfusion injury: post conditioning;" Lillehei Heart Institute Grant Revision Award; **Iaizzo PA**; $20,032 total, 5/02, 6 months.
29. "Force assessment in canines;" Merck, Inc.; **Iaizzo PA**; $34,950 total, 12/02, 1 year.
30. "Opioid preconditioning of normal and dystrophic heart and skeletal muscle;" Paul & Sheila Wellstone Muscular Dystrophy Center, Nash Avery Award; **Iaizzo PA**; $10,000 total, 3/04, 1 year.
31. "Opioid preconditioning in normal and dystrophic heart muscle;" Paul & Sheila Wellstone Muscular Dystrophy Center, Nash Avery award; **Iaizzo PA**; $15,000 total, 8/05, 1 year.
32. "Using an IR camera to assess the effectiveness of back treatment;" National Institutes of Health, Phase I SBIR R43 AT004383-01; $30,000 total, subcontract from Advanced Medical Electronics Corporation; **Iaizzo PA**; 1/08, 16 months.
33. "Development of a composite drug delivery and electrical sensing/stimulating implantable catheter;" Medical Devices Center of the Institute for Engineering in Medicine; Whitson B, Richardson ES, **Iaizzo PA**; $25,000 total, 9/08, 1 year.
34. "Multidomal biomedical imaging;" Institute for Engineering in Medicine; He B, **Iaizzo PA**; $400,000 total, 7/07, 2.5 years.
35. "Muscle force assessment system;" $39,000 award from the Medical Device Center of the University of Minnesota, with $10,000 matching funds from the 2007 Design of Medical Devices Conference; Durfee WK, **Iaizzo PA**; 1/08 to 1/10.
36. "Thermochemical ablation in image-guided interventions: initial assessment;" NIH R21 1R21-CA133263-01; Cressman E, Bischof JC, **Iaizzo PA**, Jessurun J; $268,944 direct, 4/08, 2 years.
37. "Molecular enhancement of cryosurgical ablation of the prostate;" AHC Translational Research Grant TRG #09-08; Metzger G, Bischof J, Slaton J, **Iaizzo PA**; $133,333 total; 10/09 to 9/11 (translation of gold nanoparticle TNF delivery to enhance and image cryosurgical treatments of prostate cancer in a canine model).
38. "The non-invasive assessment of involuntary muscle forces and muscle diameters in critically ill ICU patients: correlations with extubation criteria;" Excellence in Critical Care Seed Grant; **Iaizzo PA,** Loushin MK; $5,000 total, 2/10, 1 year.

39. "Quantification and modeling of the human phrenic nerve anatomy;" IEM Seed Grant; **Iaizzo PA**; $40,000 direct, 1/12, 1 year.
40. "An abnormal detrusor muscle contraction mapping approach in optimizing BTX injection in treating OAB;" IEM Seed Grant; Zhang Y, **Iaizzo P**, Nakib N, Erdman A, Timm G; $39,833 direct, 1/12, 1 year.
41. "Muscular Dystropy Center Core Laboratories;" NIH 5P30AR057220/1P30AR057220 (Ervasti JM, Day JW); 5% effort
    2013: $573,800 total
    2012: $604,000 total
    2011: $604,000 total
    2010: $601,450 total
    2009: $600,175 total
42. "LHI Elementary/College Program," Lillehei Heart Institute, **Iaizzo PA**
    2017: $50,000 total
    2016: $50,000 total
    2015: $50,000 total
    2014: $50,000 total
    2013: $50,000 total
43. "Minnesota Muscle Training Program;" NIH 5T32 AR007612; Thomas DD (**Iaizzo PA**, co-PI)
    2018: $571,796 total
    2017: $606,558 total
    2016: $473,239 total
    2015: $463,441 total
    2014: $449,250 total
    2013: $455,523 total
    2012: $457,752 total
    2011: $430,218 total
    2010: $438,101 total
    2009: $438,762 total
    2008: $329,857 total
    2007: $313,066 total
    2005: $170,926 total
    2004: $193,567 total
    2003: $182,218 total
    2002: $168,098 total
    2001: $155,516 total
44. "Medical Scientist Training Program;" NIH; NIGMS 2T32GM008244/3T32GM008244/5T32GM008244; LeBien, TW, Shimizu Y;
    2018: $625,559 total
    2017: $516,115 total (+ one supplement of $51,612)
    2016: $511,061 total (+ two supplements of $51,106 and $86,400)
    2015: $455,522 total
    2014: $434,448 total
    2013: $446,891 total
    2012: $446,891 total
    2011: $442,692 + $49,188 total
    2010: $438,610 + $48,734 total

2009: $400,983 + $44,953 + $44,953 total
2008: $402,595 total
2007: $402,595 total
2006: $357,862 total
2005: $342,350 total
2004: $80,628 total
2003: $78,891 total
2002: $470,335 total

45. "Summer Research at the University of Minnesota Medical School;" NIH 5R25HL088728/2R25HL088728/1R25HL088725; Campbell CR
    2018: $186,620 total
    2016: $157,464 total
    2015: $157,464 total
    2014: $157,464 total
    2013: $149,906 total
    2012: $157,464 total
    2011: $127,872 total
    2010: $127,872 total
    2009: $127,872 total
    2008: $127,872 total
    2007: $127,872 total
46. "Image-guided simulation-based approach for native and prosthetic aortic valves in patient-specific anatomies;" Lillehei Heart Institute High Risk High Reward Grant; **Iaizzo PA,** Sotiropoulos F; $100,000 total, 3/14 to 2/16.
47. "Electroporation for selective, non-thermal, reversible and irreversible tissue ablation;" Minnesota Partnership for Biotechnology and Medical Genomics (capital equipment); Asirvatham SJ, **Iaizzo PA**; $831,950 total; 7/14 to 8/16.
48. "Neuromuscular blockade assessment of motor point stimulation;" Office of Discovery and Translation (ODAT), Translational Technologies and Resources (TTR) Core Usage Program; **Iaizzo PA**; $3,500, 1/15 to 1/16.
49. "Ice technology for cooling organs;" Dr. Robroy MacIver (research grant); **Iaizzo PA**; $17,000 total, 6/15 to 5/18.
50. "3D imaging of congenital hearts;" Dr. Robroy MacIver (research grant); **Iaizzo PA**, Duncanson E; $8,275 total, 1/16 to 12/16.
51. "3D human torso models;" James B. Linsmayer Foundation; **Iaizzo PA**; $15,000, 12/15 to 1/17
52. "Human heart library and 3D printing;" Institute for Engineering in Medicine, University of Minnesota; **Iaizzo PA**; $30,000, 6/16 to 5/17.
53. "Electroporation for selective, non-thermal, reversible and irreversible tissue ablation;" Minnesota Partnership for Biotechnology and Medical Genomics (research grant); Asirvatham SJ, **Iaizzo PA**; $792,000 total, 2/15 to 12/17.
54. IEM support for heart library and 3D printing;" Institute for Engineering in Medicine; **Iaizzo PA**; $30,000 direct, 5/16 to 5/18.
55. "Neuromuscular blockade assessments of motor point stimulation;" Institute for Engineering in Medicine Seed Grant; **Iaizzo PA**, Durfee W; $20,000 total, 1/15 to 1/18.
56. "Cardiovascular remodeling;" Institute for Engineering in Medicine Seed Grant, University of Minnesota; Barocas V, **Iaizzo PA**; $75,000, 1/17 to 1/18.

57. "IEM book and education;" Institute for Engineering in Medicine; **Iaizzo PA**; $50,000, 6/17 to 7/18, 0% effort (support IEM book administration and education/outreach).
58. "Medtronic Professor of Visible Heart Research;" Medtronic; **Iaizzo PA**; $750,000 total, 2/04 to 6/24.
59. "Tissue characterization cooperative agreement—in vivo mechanical tissue properties via robotic smart tools;" Award W911NF-14-2-0035 ARL-HRED-STTC Tissue Characterization Research Initiative; US Army Medical Research and Materiel Command (USAMRMC); Kowalewski TM, **Iaizzo PA**; $162,524 direct, 12/17 to 12/18, 0% effort.
60. "IEM book and education;" Institute for Engineering in Medicine; **Iaizzo PA**; $50,000, 6/18 to 7/19, 0% effort (support IEM book administration and education/outreach).

ADDITIONAL STUDENT FUNDING

1. Biomedical Engineering Department Undergraduate Fellowships ($25,000)
   Kaleita (1995); Ariff (1997); Duke (1999); Reily (2000); Sullivan (2001)
2. Biomedical Engineering Department Graduate Fellowships ($10,000)
   Quill (2005)
3. Biomedical Engineering Institute (BMEI) Student Research Awards ($155,000)
   Kimmel (2003); Dupre (2003/4); Ahlberg (2004/5, 2005/6); Anderson (2005/6, 2006/7); Eggen (2006); Overgaard (2007)
4. Doctoral Dissertation Fellowships ($30,000)
   Richardson (2008/9)
5. GAANN Fellowships ($360,000)
   Richardson (2006/07, 2007/8); Rolfes (2007/8); Thompson (2007/8); Howard (2008/9); Eggum (2009/10); Goff (2009/10); Mattison (2013/14); Schmidt (2013/14); Mattson (2014/15)
6. Institute for Engineering in Medicine Grants ($70,000)
   Bateman (2008/9)
7. Life Sciences Summer Undergraduate Research Program (LSSURP) ($64,000)
   Engelhardt (1992); Kalb (1993); Leaven (1997); Wieland (1998); Brooks (1998); Chu (2001); Torgerson (2001); Castleman (2002); Horn (2002); Nore (2003); Galligan (2003); Campbell (2004); Gonzalez-Rodriguez (2006); Suarez-Rodriguez (2006); Finkton (2007); Perry (2007); Weinberger (2008); Usmani (2009); Constanzo (2009); Yeboa (2010); Zauner (2010); Patterson (2011); Gamble (2011); Marrero-Marrero (2012); Torres Roman (2012); Lezama (2013-4); Scott (2013); Hernandez (2014); Segarra (2015); Kelly (2015); Soto (2016); Mendez-Casillas (2021)
8. Minnesota Medical Foundation Grants ($20,000)
   Bojanov (1999/2000); Duncan (1999/2000); Frattalone (2003); Geeslin (2008)
9. NIH Muscle Training Grant (D Thomas, PI, PA Iaizzo, Co-PI) ($375,370)
   Eggen (2007/8, 2008/9); Frommer (2004/5, 2005/6, 2006/7); Rolfes (2009/10, 2010/11); Howard (2011/12, 2012/13); Mattison (2015/6, 2016/7); Ramirez (2019/20, 2020/21, 2021/22)
10. National Science Foundation (SURPE, REU, and SEED Programs) ($33,000)
    Held (1993); Kerkow (1993), Lackas (1993, 1994); Leland (1993); Goodson (1994); Harp (1994); Lao (1994); Bangsund (1995); Lindblom (1997); Aggarwal (1998)
11. Research Explorations Program ($16,500)

Cruz Arcedo (1993); Esterberg (1993); Arcedo (1994); Falkenberg (1994); Field (1994); Heidmann (1994); Gengenbach (1995); Jauregui (1995); Carlson (1996); Seifert (1996); Koff (1996)

12. Undergraduate Research Opportunities Program (UROP) Awards ($35,400)
    Solovey (1994); Wisniewski (1995); Nguyen (2002/3); Oommen (2003); Choi (2004); Skadsberg (2004); Wallace (2004); Youtsos (2004/5); Mika (2005); Kelley (2006/7); Ezzat (2006); Powell (2007); Dockendorf (2009); Tetzner (2009); Balto (2011); Schmidt (2011); Zauner (2011); Gangeness (2013/14); Richter (2014); Empanger (2014/15); Cho (2016); Ziegler (2019)
13. North Star Stem Project Award ($2,100)
    Mbachu (2010)
14. Earl E. Bakken Foundation Fund (for graduate student support)
    $100,000 (2005-2007)
    $105,000 (2011-2013)
    $70,000 (2014-2015)
    $70,000 (2016-2017)

EDUCATIONAL FUNDING

1. Course: New Product Design and Business Development; $1,000,000+ (48 projects) 1995 to present.
2. Book: Handbook of Cardiac Anatomy, Physiology and Devices; Lillehei Heart Institute, University of Minnesota; $10,000, 2004.
3. Book: Handbook of Cardiac Anatomy, Physiology and Devices; Biomedical Engineering Institute, University of Minnesota; $10,000, 2004.
4. Book: Textbook of Cardiac Anatomy, Physiology and Devices; Institute for Engineering in Medicine, University of Minnesota; $5,000, 2008.

LICENSING AGREEMENTS

1. US 7,045,279: Use of an isolated perfused heart preparation for device design and medical imaging (P-8207). Exclusive licensing agreement with Medtronic from 5/10 to 4/20 (10 years), $100,000 annually.

UNRESTRICTED RESEARCH GIFTS

1. "Human thermoregulation and wound healing;" Augustine Medical, Inc.; **Iaizzo PA;** ~$400,000, 4/95 through 2002.
2. "Lumbar traction using an LTX3000^{TM} lumbar rehabilitation system;" Spinal Designs International; **Iaizzo PA;** ~$300,000, 1/95 through 2002.
3. "Ergonomic comfort and spinal alignment;" Select Comfort; **Iaizzo PA;** $40,000, 4/97, 1 year.
4. "Human thermoregulation and patient warming gowns;" Arizant Healthcare, Inc.; **Iaizzo PA;** $6,200, 9/03.
5. "A retrospective analyses of the Low Back Rehabilitation Program," Spinal Designs International; **Iaizzo, PA**; $13,000, 9/05.

PATENTS

ISSUED US PATENTS

1. US 5,800,480: Support apparatus with a plurality of thermal zones providing localized cooling. Augustine SD, **Iaizzo PA**, Sparrow EM, Johnson PS, Arnold RC: Issued September 1, 1998.
2. US 5,837,002: Support apparatus with localized cooling of high-contact-pressure body surface areas. Augustine SD, **Iaizzo PA**, Sparrow EM, Johnson PS, Arnold RC, Stapf DE: Issued November 17, 1998.
3. US 5,860,292: Inflatable thermal blanket for convectively cooling a body. Augustine SD, **Iaizzo PA**: Issued January 19, 1999.
4. US 6,010,528: Support apparatus which cradles a body portion for application of localized cooling to high-contact-pressure body surface areas: Augustine SD, **Iaizzo PA**, Sparrow EM, Johnson PS, Arnold RC; Issued January 4, 2000.
5. US 6,033,432: Support apparatus with a plurality of thermal zones providing localized cooling. Augustine SD, **Iaizzo PA**, Sparrow EM, Johnson PS, Arnold RC: Issued March 7, 2000.
6. US 6,119,474: Inflatable thermal blanket for convectively and evaporatively cooling a body. Augustine SD, **Iaizzo PA**: Issued September 19, 2000.
7. US 6,123,716: Support apparatus which cradles a body portion for application of localized cooling to high contact-pressure body surface areas. Augustine SD, **Iaizzo PA**, Sparrow EM, Johnson PS, Arnold RC: Issued September 26, 2000.
8. US 6,210,427: Support apparatus with a plurality of thermal zones providing localized cooling. Augustine SD, **Iaizzo PA**, Sparrow EM, Johnson PS, Arnold RC: Issued April 3, 2001.
9. US 6,224,623: Support apparatus which cradles a body portion for application of localized cooling to high contact-pressure body surface areas. Augustine SD, **Iaizzo PA**, Sparrow EM, Johnson PS, Arnold RC: Issued May 1, 2001.
10. US 6,487,871: Apparatus, system and method for convectively and evaporatively cooling a body. Augustine SD, **Iaizzo PA**: Issued December 3, 2002.
11. US 6,497,720: Support apparatus with a plurality of thermal zones providing localized cooling. Augustine SD, **Iaizzo PA**, Sparrow EM, Johnson PS, Arnold RC: Issued December 24, 2002.
12. US 6,514,214: Intravascular temperature sensor. Kokate JY, DoBrava EM, Berrada MS, Kimmel S, Prstic S, Hoey MF, Bar-Cohen A, **Iaizzo PA**: Issued Feb 4, 2003.
13. US 6,581,400: Apparatus, system and method for convectively and evaporatively cooling a head. Augustine SD, Iaizzo PA: Issued June 24, 2003.
14. US 6,671,550: System and method for determining location and tissue contact of an implantable medical device within a body. **Iaizzo PA**, Laske TG: Issued December 30, 2003.
15. US 6,714,806: System and method for determining tissue contact of an implantable medical device within a body. **Iaizzo PA**, Laske TG, Choi W: Issued March 30, 2004.
16. US 7,045,279: Isolated perfused heart preparation and method for use. Laske TG, **Iaizzo PA**, Hjelle MA, Morissette J, Wahlstrom DA, Issued May 16, 2006.
17. US 7,529,584: Pacing method. Laske TG, **Iaizzo PA**: Issued May 5, 2009.
18. US 8,019,437: Lead fixation means. **Iaizzo PA,** Laske TG: Issued September 13, 2011.
19. US 8,332,035: Pacing method. **Iaizzo PA,** Laske TG: Issued December 11, 2012.
20. US 8,734,484: System and method for closure of an internal opening in tissue, such as a transapical access opening. Ahlberg S, Simma S, Rothstein PT, Clements M, Jelich D, Laske TG, Clague C, Green M, **Iaizzo P**: Issued May 27, 2014.
21. US 9,050,129 A1: Auto-closure apical access positioner device and method. Rothstein PT, Hill AJ, Hobday MJ, Green MM, **Iaizzo PA**: Issued June 9, 2015.

22. US 9,445,797: Percutaneous atrial and ventricular septal defect closure device. Rothstein P, **Iaizzo P**: Issued September 20, 2016.
23. US 9,943,682: Method and apparatus for determining suitability of a lead implant location. Eggen MD, Haddad TD, **Iaizzo PA**, Yang Z: Issued April 17, 2018.
24. US 10,098,685: Feedback system for cryoablation of cardiac tissue. Lalonde JP, Groves RE, Laske TG, **Iaizzo PA**, Bischof JC: Issued October 16, 2018.
25. US 10,575,744: Pericardial balloon mapping. Schmidt MM, **Iaizzo PA**: Issued March 3, 2020.
26. US 10,646,118: Laser catheter with use of reflected light to determine material type in vascular system. Kowalewski TM, Beekman DD, Stubbs JB**, Iaizzo PA**, Peterson GK: Issued May 12, 2020.
27. US 10,786,302: Method for closure and ablation of atrial appendage. **Iaizzo PA**, Goff RP: Issued September 29, 2020.
28. US 10,939,842: Pericardial balloon mapping. Schmidt MM, **Iaizzo PA**: Issued March 9, 2021.
29. US 11,141,209: Feedback system for cryoablation of cardiac tissue. Lalonde JP, Groves RE, Laske TG**, Iaizzo PA**, Bischof JC: Issued October 12, 2021.
30. US 11,241,171: Devices, systems and methods for monitoring neuromuscular blockage. Durfee WK, **Iaizzo PA**, Cabrera JA, Iaizzo JC, Mehawej J, Ruda K, McConnell JP: Issued February 8, 2022.

US PATENT APPLICATIONS

1. Pending: Method and apparatus for the induction of hypothermia in which the shivering response is suppressed by focal-facial warming. **Iaizzo PA**, Augustine SA: Filed January 2000.
2. Pending: System and method for placing an implantable medical device within a body. **Iaizzo PA**, Laske TG: Filed November 25, 2004.
3. Pending: Ergonomic rake and handling methods. **Iaizzo PA**, Augustine SA: Filed April 12, 2006.
4. Pending: Method of handling ergonomic rake. **Iaizzo PA**, Augustine SA: Filed September 21, 2006.
5. Pending: Novel lead fixation means. **Iaizzo PA**, Laske TG: Filed August 11, 2006.
6. Pending: System and method for closure of an internal opening in tissue, such as a trans-apical access opening. Ahlberg S, Simma S, Rothstein PT, Clements M, Jelich D, Laske TG, Clague C, Green M, **Iaizzio PA**: Filed April 21, 2009.
7. Pending: Auto-closure apical access positioner device and method. Rothstein PT, Hill AJ, Hobday MJ, Green MM, **Iaizzo PA**: Filed March 31, 2010.
8. Patent Board Approved for Filing: Algorithm and device to determine fixation state for an implantable pacing device. Eggen M, Haddad T, **Iaizzo PA**, Yang Z: Filed April 8, 2013.
9. Pending: Heart-lung preparation and method of use. **Iaizzo PA**, Laske TG, Eggen MD, Goff RP, Howard B: Filed April 24, 2014.
10. Pending: Method for closure and ablation of atrial appendage. **Iaizzo PA**, Goff RP: Filed October 9, 2015.
11. Pending: Method and apparatus for determining suitability of a lead implant location. Eggen MD, Haddad TD, **Iaizzo PA**, Yang Z: Filed on April 24, 2015.
12. Pending: Percutaneous atrial and ventricular septal defect closure device. Rothstein P, **Iaizzo PA**: Filed August 29, 2016.
13. Pending: Heart-lung preparation and method of use. **Iaizzo PA**, Laske TG, Eggen MD, Goff RP, Howard B: Filed May 11, 2017.

EUROPEAN / INTERNATIONAL PATENT OFFICES

1. EP1009342A1: An inflatable thermal blanket for convectively and evaporatively cooling a body. Augustine SD, **Iaizzo PA**: Issued September 25, 1998.
2. 01973198.3-2305-US0129289: Improved system and method for determining tissue contact of an implantable medical device within a body. **Iaizzo PA**, Laske TG: Filed May 7, 2003.
3. EP1123000, DE69922985D: Use of an isolated perfused heart preparation for device design and medical imaging (P-8207.00). Laske TG, **Iaizzo PA**, Hjelle MA, Morissette J, Wahlstrom DA: Filed October 22, 1999.
4. EP1009342, DE69827277D: Inflatable thermal blanket for convectively cooling a body. Augustine SD, **Iaizzo PA**: Filed August 26, 1997.

MARKETED OR LICENSED INVENTIONS

1. Slapshot Ergonomic Hockey Rake. Augustine Biomedical and Design, 2005, sold on QVC.
2. US 7,045,279: Isolated perfused heart preparation and method for use. Laske TG, **Iaizzo PA**, Hjelle MA, Morissette J, Wahlstrom DA, Issued May 16, 2006. (By Medtronic from the University of Minnesota for $1,000,000 for 10 years (2010-2020).
3. OTC Technology Case 20140073. Kowalewski TA, Beekman DD, Sachin B, Erdman A, **Iaizzo PA**, Keefe D, Peterson GK, Ruda K, Stubbs JB, Winek M. (2019)