

JOSEPH CHARLES LaMANNA, Ph.D.

Curriculum Vitae and Bibliography

July 12, 2013

JOSEPH CHARLES LaMANNA, Ph.D.

CURRICULUM VITAE

Biographical

Address: Mail: Department of Neurology, Case Western Reserve University School of Medicine,
Robbins E 611, 10900 Euclid Avenue, Cleveland OH 44106-4938.
Office: Robbins E 611, 2109 Adelbert Road.

Phone: (216)368-1112 Fax: (216)368-1144 E-mail: JCL4@po.cwru.edu

Academic Education:

Fordham Preparatory School, Bronx, New York, 1963-1967, H.S. Diploma
Georgetown University, Washington, D.C., 1967-1971, B.S. Biology
Duke University, Durham, North Carolina, 1971-1975, Ph.D., (Advisor: M Rosenthal),
Department of Physiology/Pharmacology, Minor: Neuroscience

Honors and Awards:

NIMH, 1971-1975, Predoctoral Fellowship
NIH (NHLBI), 1975-1977, Postdoctoral Fellowship
NIH (NHLBI), 1977, Young Investigator Award
NIH (NINCDS), 1978-1981, Research Career Development Award
NAS, 1980, Exchange Scientist
CWRU School of Medicine Student Committee on Medical Education Certificate of Award
in Recognition of Outstanding Teaching, 1989
CWRU School of Medicine Kaiser-Permanente Pre-Clinical Teaching Award, 1993
The Cervical Spine Research Society, Best Research Paper Award, 1997
American Heart Association, Cleveland Metro Division Board of Trustees 1998-99
First recipient of the Jeanette M. and Joseph S. Silber Research Fund for the Study of Brain
Sciences, 2000-2004.
Scientific Program Chair, Int. Soc. of Cerebral Blood Flow & Metabolism, 2007-2009.
President, International Society for Oxygen Transport to Tissue (2008-2009).
Vice President for Science Policy, FASEB (2009-2010).
President, FASEB (2011-2012).

Boards of Directors:

FASEB Board of Directors, as AAA representative (2005-2009).
Winter Conference on Brain Research Board of Directors, (2007-2011).
International Soc. of Cerebral Blood Flow & Metabolism Board of Directors, (2007-2011)
(Secretary 2011-).

Academic Appointments:

Duke University Medical Center, Durham, North Carolina

Postdoctoral Fellow/Research Associate, (Advisor: FF Jöbbsis), Department of Physiology and Pharmacology, 1975-1977

University of Miami Medical School, Miami, Florida

Assistant Professor, Depts of Neurology and Physiology/Biophysics, 1977-1981

Associate Professor, Depts of Neurology and Physiology/Biophysics, 1981

Case Western Reserve University School of Medicine, Cleveland, Ohio

Associate Professor, Department of Neurology, 1981-1990, Tenured 1987; Department of Physiology & Biophysics, 1982-90; Department of Neurosciences, 1989-90

Professor, Departments of Neurology, Physiology & Biophysics, and Neurosciences, 1990-present, Anatomy 1993-2008

Case Western Reserve University, School of Medicine, Department of Anatomy, **Interim Chair**, 1993-2004. **Chair** 2004-2008

Current Position:

Professor of Physiology & Biophysics, Case Western Reserve University School of Medicine, Cleveland, OH

Adjunct Appointment:

Medical Illustration Department, Cleveland Institute of Art, Cleveland, Ohio. 2001 - 2008

Visiting Investigator:

Loma Linda University Medical School, Loma Linda, California, Visiting Investigator (with G Austin), 1975

Semmelweis Medical University, Budapest, Hungary, Visiting Investigator (with AGB Kovach), Department of Physiology 2, 1980

University of Ljubljana Medical Faculty, Ljubljana, Slovenia, Visiting Investigator (with D. Stiblar-Martincic), Institute of Histology and Embryology, 2003

Participating Consultant:

Medical College of Virginia, NIH Head Trauma Research Center, 1975-1984

University of Miami Medical School, Miami, Florida Cerebrovascular Research Center, 1981-1988, 2006-2011

The Ohio State University Spinal Cord Trauma Center, Member External Advisory Board, 1991- 1995

Consultant, Grifols (Talecris) Biotherapeutics, RTP, North Carolina, 2007- present.

Society Affiliates:

Society for Neuroscience (1974-); Program Committee (2002-2005).

American Physiological Society (1976-).

Optical Society of America (1977-2006).

International Society for Oxygen Transport to Tissues (1976-); Executive Committee, 1986-9; 1995-8; 2000-3, 2006-8, President (2008-2009).

International Society of Cerebral Blood Flow and Metabolism (Charter Member, 1981-present); Board of Directors, (2007-2011), Scientific Program Chair (2007-2009).

Biomedical Engineering Society (1989-1997).

Microcirculatory Society (1991- 2006).

Assoc. of Anatomy, Cell Biology and Neuroscience Chairs (1993-, emeritus 2008-); Executive Board (2003 - 5) AAAS (1994 -).

American Heart Association Stroke Council (1994-)

American Association for the Study of Headache (1998)

American Association of Anatomists (1999-present); Public Affairs Committee 1999- 2007 (Chair 2002- 2007), FASEB Science Policy Committee AAA representative 2001-2007.

Journal Referee Service:

Acta Physiologica
American Journal of Pathology
American Journal of Physiology
American J of Resp and Crit Care Medicine
Anatomical Record
Annals of Neurology
Antioxidants & Redox Signaling
ASN Neuro
BBA-Proteins and Proteomics
Biochem. and Biophys. Res. Communications
Biophysical Journal
BMC Neuroscience
Brain
Brain Research
Brain Research Bulletin
Cancer Letters
Cell Calcium
Cellular and Molecular Neurobiology
Cerebral Cortex
Comparative Biochemistry and Physiology
Critical Care Medicine
Current Neurovascular Research
Current Medicinal Chemistry
Current Molecular Medicine
Developmental Neuroscience
Diabetes
Experimental Biology and Medicine
Experimental Neurology
Expert Review of Proteomics
Faseb Journal
FEBS Letters
Glia
Hypertension
Int J Biochem and Cell Biology
Journal of Alzheimers Disease
Journal of Applied Physiology
Journal of Biological Chemistry
Journal of Biomedical Optics
Journal of Cell Biocehm
Journal of Cell Biology
Journal of Cerebral Blood Flow and Metabol
Journal of Clinical Investigation
Journal of Diabtees Science and Technology
Journal of Experimental Biology
Journal of Gerontology: Biological Sciences
Journal of Neurochemistry
Journal of the Neurological Sciences
Journal of Neuropath and Exp Neurology
Journal of Neurophysiology
Journal of Neuroscience
Journal of Neuroscience Methods
Journal of Neuroscience Research
Journal of Neurosurgery
Journal of Neurotrauma
Journal of Physiology (Lond.)

Journal of the American Aging Association
Journal of the Soc. for Gynecologic Invest.
Journal of Visualized Experiments
LANCET
LASER & Photonics Reviews
Life Sciences
Mechanisms of Ageing and Development
Metabolic Brain Disease
Microscopy Research Techniques
Microvascular Research
Molecular Pharmacology
Nature: Clinical Practice Cardiovascular Med.
Nature: Neuroscience Reviews
Neurobiology of Aging
Neurobiology of Disease
Neurocritical Care
Neurological Research
Neurological Sciences
Neurology
Neuroscience
Neuroscience Letters
NMR in Biomedicine
Pediatric Research
Pharmaceutical Research
Pharmacol, Biochem, Behavior
Physiological Genomics
Physiological Measurement (IOP)
Physiology
Pflügers Archives
PLoS one
Proc Nat Acad Science
Progress in Neurobiology
Respiratory Physiology & Neurobiology
Science World Journal
Sleep & Breathing
Stroke
Translational Stroke Research

Editorial Boards:

Journal of Applied Physiology (2001-3, 2006-present)
 Brain Research (2002-present)
 Journal of Cerebral Blood Flow and Metabolism (2005 - present)
 Neurosciences Journal (2012 -)

Grant Review Service:**Ad Hoc**

Ontario Mental Health Foundation, 1976, 1978
 External Reviewer, Ohio State University Spinal Cord Trauma Center, May 1986, April 1991
 Ad Hoc Member, NIH (NINCDS), NSP-A Program Project Site Visit Team, June, 1986
 Ad Hoc Review Committee Member, NIH (NHLBI), Clinical Sciences Study Section, Subcommittee 2, July, 1986
 Veterans Administration Scientific Review Consultant, 1986, 1990-93
 National Science Foundation, Integrative Neural Systems Program, Grant Reviewer, 1987
 Member, NIH Special Study Section on Optical Imaging (SSS-X), December 1987 (teleconference)
 Member, NIH Special Study Section on Optical-Digital Imaging (SSS-X), April 1988
 Member, Heart Association of Northeast Ohio Research Study Section, April 1988
 Chairman, NIH Special Study Section on Optical Processes (SSS-X), November 1988 (teleconference)
 March of Dimes, November 1988
 Member, NIH Special Study Section on Image Processing and Analysis (SSS-X), December 1988
 Outside Reader, NIH Neurology-B Study Section, February 1989
 Ad Hoc Member, NIH Neurology-A Study Section, February 1989
 Member, NIH Special Study Section (SSS-6 BCE), March 1989 (teleconference)
 Member, Site Visit Team, Government of Canada Inter-Council Program Directorate, Networks of Centres of Excellence, March 1989
 Member, Site Visit Team, NIH NSP-A Committee (NINDS), May 1989
 National Science Foundation, Biochemical Engineering Program, Reviewer, November 1989
 Member, NIH Special Study Section (SSS-6 BCE), November 1989 (teleconference)
 Member, NIH NSP-A Committee (NINDS) teleconference, January 1990
 Member, Site Visit Team, NIH NSP-A Committee (NINDS), May 1990
 Outside Reviewer, Kentucky EPSCoR Program, September, 1990
 Member, Site Visit Team, NIH NHLBI, March 1991, October 1991
 National Science Foundation, Biomedical Engineering Program, Reviewer, April 1991
 Member, Site Visit Team, NIH NSP-A Committee (NINDS), July 1992
 Member, Site Visit Team, NIH NSP-A Committee (NINDS), February 1993
 Outside Reviewer, American Cancer Society, March 1993
 Ad Hoc Member, NIH Neurology B-1 Study Section, June 1993
 National Science Foundation, Neuronal and Glial Mechanisms Program, Reviewer, December 1993
 International Science Foundation, FSU grant reviewer, April 1994
 Outside reviewer, VAH Lexington, Kentucky, April 1994
 Grant Agency of the Czech Republic, grant reviewer, January 1994, July 1999
 American Institute of Biological Sciences, USAMRDC grant reviewer, May 1994, September 1997
 Ministry of Health of the Czech Republic, grant reviewer, September, 1995
 University of Kansas Medical Center Research Institute, grant reviewer, December 1997
 United States - Israel Binational Science Foundation, grant reviewer, August 1999
 Ministry of Science and Technology of Portugal, Program Reviewer and Site Visitor, October 9-16, 1999
 Ad Hoc Member, NIH NINDS Training Grant (NST) Study Section, February 2000
 Reviewer, Alzheimer's Association, April 2001, 2004-8. 2010-11
 Ad Hoc Member, NIH BDCN-2 Study Section, Special Emphasis Panel, November 2001
 AAA Representative, FASEB Federal Funding Consensus Conference FY2003, Bethesda, MD, December 3-5, 2001
 National Science Foundation, International Programs, Reviewer, August 2001
 National Science Foundation, Neuronal and Glial Mechanisms Program, Reviewer, May 2002
 Ad Hoc Reviewer, NIH BDCN-2 Study Section, Clinical Neuroplasticity and Neurotransmitters, February 2003

Ad Hoc Member, NIH BDCN-2 Study Section, Member Conflict BDCN IRG, March 2003
 Ad Hoc Reviewer, NIH RESP Study Section, March 2003
 Ad Hoc Member, NIH BDCN-3 Study Section, (CDIN), June 2003
 Chair, NINDS SEP ZNS1 SRB-M 03 Special Emphasis Panel, October, 2003
 Ad Hoc Reviewer, NIH Clinical Neurosciences and Disease (CND) Study Section, February 2004
 Reviewer, The Wellcome Trust, October 2002, March, 2004, June 2006
 Pre-proposal Reviewer, South Carolina DoD EPSCoR, July 2004
 Ad Hoc Member, NIH Hypertension and Microcirculation Study Section (HM), March 2005
 Ad Hoc Reviewer, NIH NHLBI Special Emphasis Panel RFA HL-05-004, July 2005
 National Science Foundation, IOB-Functional & Regulatory Systems Program, Reviewer, April 2005, 2006
 Ad Hoc Member, AHA Brain 3 study section, April 2006, April 2007
 External Grant Reviewer, National University of Singapore, June 2006, December 2007
 Ad Hoc Reviewer, NIH Brain Injury and Neurovascular Pathologies Study Section (BINP), October 2006
 Ad Hoc Member, AHA Bugher Stroke Center Award Study Section, March 2007
 Ad Hoc Reviewer, NIH NINDS ZNS1 SRB-M (50) K99 Special Emphasis Panel, July 2007
 Ad Hoc Member, AHA Brain 1 study section, October 2007
 Ad Hoc Reviewer (teleconference), NIH NCCAM ZAT1 SM (08) Special Emphasis Panel, November 2007
 Reviewer, Czech Science Foundation, June 2008
 March of Dimes, Reviewer, September 2008.
 National Science Foundation, International Research Fellowship Program, Reviewer, November 2008
 Ad Hoc Member, NIH ZRG1 EMNR-B(02) Study Section, December 2009.
 Reviewer, Natural Sciences and Engineering Research Council of Canada (NSERC), February 2010
 United States - Israel Binational Science Foundation, grant reviewer, February, 2010
 Reviewer, NIH R13 application, Aug 2010
 Ad Hoc Member, NIH Review Panel ZRG1 EMNR-Q(02), August 2010
 Ad Hoc Member, AHA Brain 3 study section, October 2010
 Reviewer, Clinical and Translational Science Collaborative (CTSC) 2010 Pilot Grant Program
 Ad Hoc Member, NIH Review Panel ZRG1 EMNR-P(02) Member Conflict Special Emphasis Panel, November 2010
 Ad Hoc Member, NIH Review Panel ZNS1 SRB-M (76) April, 2011 Loan Repayment Program Review
 Ad Hoc Member, NIH Review Panel ZNS1 SRB-M 79 S, April 2012 Loan Repayment Program Review
 Ad Hoc Reviewer Chinese Academy of Science - Croucher Foundation Joint Laboratories Funding Program, May 2012

Grant Review Committee Membership

Member, American Heart Association Brain, Lung and Development Research Study Committee, 1986 - 1989
 Member, American Heart Association, Northeast Ohio Chapter Research Fellowship Committee, 1987 - 1991
 Member, Veterans Administration Merit Review Board for Neurobiology, 1987-1990
 Member, NIH Neurology B-1 Study Section, 1993-1996
 Vice Chairman, Research Study Section A, American Heart Association, Northeast Ohio Affiliate. 1994-7
 Ministry of Science and Technology of Portugal, Pharmacology, Pharmaceutical Sciences and Biomaterials Review Panel (FCB), May 24-28, 2000; May 14 - 18, 2001, October 16-19, 2002
 Member, American Heart Association National Peer Review Committee Brain1, 2001-2004
 Co-chair, AHA, Brain 3 study section, 2007-2008.
 Member, NIH Brain Injury and Neurovascular Pathologies Study Section 2011-2014

University Service:

University of Miami School of Medicine, Institutional Review Committee for the Biomedical Research Support Small Grants Program, 1981
 University of Miami School of Medicine, Ad Hoc Steering Committee to develop data processing systems for the School of Medicine, 1981
 University Hospitals of Cleveland, Institutional Review Board for Human Investigation, 1983 - 1985
 CWRU School of Medicine, Faculty Council, Department of Neurology Representative, 1983 - 1986
 CWRU School of Medicine, Neuroscience Curriculum Advisor, Core Academic Program, 1987 - 1999
 CWRU School of Medicine, Phase I Comprehensive Examination Committee, 1984 - 1989, 1992-present

CWRU School of Medicine, Coordinator, Neuroscience Area of Concentration, Flexible Academic Program, 1985-1998
CWRU School of Medicine, Chair, Year 2 Nervous System Subject Committee, Core Academic Program, 1987-1993
CWRU School of Medicine, Committee on Computing and Medical Education, 1993-1997
Cleveland VA Research and Development Committee, 1993-1996
CWRU Geriatric Care Center, Pepper Pilot Projects Reviewer, 1993
CWRU School of Medicine, Committee on Students, 1993-1999
CWRU School of Medicine, Committee on Medical Education, 1994- 1996 (Chair 1996- 2002)
CWRU School of Medicine, Neurology Department Chair Search Committee, 1994-1995
CWRU School of Medicine, Kaiser-Permanente Teaching Award Committee, 1994
CWRU, Annual Commencement Convocation Assistant Marshall (1993-6), Assoc. Marshall, 1997- 2005
CWRU, School of Medicine, Annual Commencement Convocation Associate Marshall (1993-6), Marshall, 1997- 2005
CWRU, School of Medicine, Information Systems Strategic Planning Committee, 1995
CWRU School of Medicine, Neuroscience Department Chair Search Committee, 1997-1998
CWRU School of Medicine, University Hospitals Family Medicine Department Chair Search Committee, 2001
CWRU School of Medicine, Vice Dean for Medical Education Search Committee, 2001
CWRU School of Medicine, Advisory Committee for the Division of General Medical Sciences, 2004-2007

Departmental Service:

Graduate Studies Committee, Department of Physiology, 1983-86; 1990 - 1993.
Co-Chairman, Ad Hoc Committee to develop a flexible academic program in Neurosciences, Department of Neurology, 1984 - 1985.
Committee on Student Admission and Recruitment, Dept of Physiology/Biophysics, 1986 - 1988
Human Studies Committee, Department of Neurology, 1983 - 1997 (Chair 1983 - 1989)
Committee on Medical Education, Department of Physiology/Biophysics, 1988-90, 92-95
Interim Chairman, Department of Anatomy, 1993-2004
Chair, CAPT, Department of Physiology & Biophysics, 2008-
Masters in Medical Physiology Administration Committee, student academic and student career advisor, 2011-

External Service

ISCBFM abstract reviewer 1993-present
International Stroke Conference abstract reviewer 2008-present

TEACHING

Medical:

Core Academic Program, Phase I, Neuromuscular Committee Lecturer, 1984 - 1986
Core Academic Program, Year 1, Homeostasis Committee, Neuromuscular Subcommittee, Lecturer, 1986 - 2002.
Core Academic Program, Year 2, Nervous System/Mind Committee, lecturer 1984 - 2002 (Committee Chair 1987-1994)
Core Academic Program, Year 1, Histology Committee, Lab Instructor, 2002 - 2006
Flexible Academic Program
Elective A049, Brain Metabolism & Blood Flow, 1985- present
Elective A051, Neuroscience Research at CWRU (Landis), 1988-90
Elective A078, Nervous System Case Presentations (Chandar), 1988 - 1993

Graduate:

Courses

PHOL 480 Physiology of Organ Systems, CNS Section leader, 1987 - present
PHOL, NEUR 601S Physiology, Neurosciences Independent Research, 1984 - 1990
PHOL 602K Physiology Tutorials, Neurophysiology, 1984 - 1987
PHOL 651K Thesis Research, 1983 - 1990

PHOL/ANAT 610 Oxygen and Physiological Function, Course Director, 1993, 1995, 1997, 2001, 2004, 2006-pres
 ANAT 498 Departmental Seminar 1995 - 1999
 ANAT 417 Cell & Molecular Biology Techniques, Lecturer, 2006
 ANAT 451 Writing & Reviewing Scientific Papers and Grants, Course Director, 2006 - 2008
 EBME 403 Biomedical Instrumentation, Guest Lectures, 1987
 EBME 523 Biosensors, Guest Lecture, 1988
 NEUR 411 Neurobiology of Disease, 2008
 PHOL 481/482 Medical Physiology (Neuroscience), Administration Committee, block leader, 2012-
 PHOL 483/484 Translational Physiology (Neuroscience), Administration Committee, block leader, 2012-
 IBMS500 Responsible Conduct Course, small group facilitator
 PHIL 467/PHOL 467... Evolutionary Medicine, Co-Course Director/Lecturer, 2012

Student Thesis Committees (* as Advisor)

Completed:

***Richard Shockley**, M.S. Physiology, August 1985
 ***Ralph C. Crumrine**, M.S. Physiology, August 1986; Ph.D. Physiology/Biophysics, August 1990
 ***Rongan Zhang**, M.S. Biomedical Engineering, March 1988
 Hani Kayyali, M.S. Biomedical Engineering, April 1990
 Eduardo Warman, Ph.D. Biomedical Engineering, April 1992
 ***Chii-Wann Lin**, Ph.D. Biomedical Engineering, December 1992
 Wynee Tsao, M.S. Biomedical Engineering, March 1993
 Madhvi Patil, Ph.D. Biomedical Engineering, February 1995
 ***Edwin Yeh**, M.S. Biomedical Engineering, March 1996
 Shih-Chu Liao, Ph.D. Biomedical Engineering, November 1996
 Dee Wu, Ph.D. Biomedical Engineering, January 1998
 Anila Razaq Jahangiri, Ph.D. Biomedical Engineering, March 1998
 Marek Bucek, M.D., Ph.D. Anatomy, July 1998
 Yinong Zhou, M.D., M.S. Applied Anatomy, August 1998
 Michael Decker, Ph.D. Anatomy, February, 1999
 David Lucas, Ph.D. Physiology, May, 1999
 Leila Onderak, Ph.D. Anatomy, March 2001
 Dan Merrill, Ph.D. Biomedical Engineering, June 2002
 ***Juan Carlos Chávez**, Ph.D. Anatomy, August 2003
 ***Paola Pichiule**, Ph.D. Anatomy, January 2004
 Rossana Occhipinti, Ph.D., Mathematics, June 2009
 ***Kui Xu**, PhD., Anatomy March 2010
 Haiying Zhou, Ph.D. Biomedical Engineering May 2010
 E. Chepchumba Yego, PhD Physiology May 2010
 Xiao Wang, Ph.D., Nutrition, May 2010
 ***Obinna Ndubuizu**, MSTP, PhD Physiology, December 2010
 *Girriso Benderro, PhD Anatomy, October 2012

Current:

Ling Zheng, Ph.D., Pharmacology
 Jessica Spires, PhD Biomedical Engineering
 ***Yifan Zhang**, PhD Biomedical Engineering
 Neil Goldsmith, PhD Physiology

External Examiner:

Marcy Roche, Ph.D. Physiology, Dartmouth, May 2004

Undergraduate:

Courses

BIOL 388 Undergraduate Research 1983-86, 97, 2004-7
BIOL 389 Undergraduate Research 1985-87
BIOL 390 Undergraduate Research 1985-87, 1989-90
BIOL 391 Research Project, 1997
PHOL 351 Independent Study in Physiology, 2007

CWRU Undergraduate Research Students

Anthony Ricci, 1983 - 84
Marlene Miller, 1985
Jason Brodkey, 1985
Karen Seta, 1986 - 87
Timothy Donovan, 1989 - 90
Justin Rerko, 1996-97
Rafay Hussain, 2000
Anamika Roy, 2001 - 2002
Kristen Noon, 2004
Elizabeth (Libby) Moore, 2004
Nick Spassil, 2004
Vikram Seetharaman, 2005-2006
Cynthia Pierce, 2007
Timothy Darlington, 2008-2012
Kevin Train, 2008-2011
Linda Katirji, 2009
Elias Kikano, 2009-2012
Donald Harris, 2011-

CWRU MS Medical Physiology Students

Daniel Munley, 2011

Other:

Special Students

Daniel Sogg, Hawken High School, Senior Project, 1983
Elizabeth Farrell, Yale Univ., HANEO Summer Research Fellow, 1987
Timothy Donovan, CWRU, HANEO Summer Research Fellow, 1989
Moises Gomez, Shaker Heights High School, Senior Project, 1990
Ruth Farrell, Univ. Chicago, Summer Undergraduate Research Fellow, 1990-2
Anthony Jolly, CWRU Medical School, Summer Fellow, 1991, 1992
Eric Brown, Ohio University, Summer Research Fellow, 1992
Katrina Schreiber, CWRU Medical School, Research Fellow, 1992
Michelle McKnight, College of Wooster, Summer Undergraduate Research Student, 1993
Karen Lauro, NSF Graduate Research Fellow, 3/93 - 5/94
David Benhayon, Rice University, HHMI Summer Undergraduate Research Fellow, 1996
Joseph Hoxworth, CWRU Medical School, Kroc Summer Research Fellow, 1996
AHA Stroke Council Cerebrovascular Disease Student Scholar, 1997
Juan-Carlos Chávez, Peru, Visiting Research Scholar, 1996-7
Paola Pichiule, Peru, Visiting Research Scholar, 1996-7
Kui Xu, PR China, Visiting Research Scholar, 1996-9
Ebonnie West, Michigan Tech. University, HHMI Summer Undergraduate Research Fellow, 1997
Nikki Neubauer, Georgetown University, Summer Undergraduate Research Fellow, 1998
Richard McCormack, Harvard University, Summer Undergraduate Research Fellow, 1998
Anamika Roy, CWRU, Summer Undergraduate Research Fellow. 2000
Alice Biggio, George Mason University, HHMI Summer Undergraduate Research Fellow, 2001

Nicole Jones, VPI, HHMI Summer Undergraduate Research Fellow, 2001
 Francisco Villfuerte, Cayetano Heredia Peruvian University, Visiting Research Student, Summer 2001
 Douglas Emancipator, Ursuline College Undergraduate Research Project, 2002-3
 Mahmoud (Mike) Khair, CCLCOM Summer Research Student, 2004
 Kristen Noon, CWRU Summer Undergraduate Research Fellow, 2004-5
 Nicholas Spassil, CWRU Summer Undergraduate Research Fellow, 2004-6
 Vikram Seetharaman, CWRU Summer Undergraduate Research Fellow, 2005-6
 Cynthia Pierce, CWRU Summer Undergraduate Research Fellow, 2007
 Ashlee Crumbly, CWRU Summer Undergraduate Research Fellow, 2007
 Ang Li, CWRU Summer Undergraduate Research Fellow, 2008
 Maria Avkshtol, CWRU Summer Undergraduate Research Fellow, 2008
 Ali Serhal, Visiting Research Scholar, 2008-2009
 Christin Godale, Mentor High School, 2010-2011
 Le Zhang, MD, China, Visiting Research Scholar, 2011-2012
 Tanetta Currenton, CSU Summer Undergraduate Research Student, 2013
 Aashaak Patel, St. Ignatius High School Summer Research Student, 2013

Post-Doctoral Fellows

J. Keven Griffith, M.D., 7/89 - 6/91
 Howard Ferimer, M.D., 7/91 - 6/94
 Chii-Wann Lin, Ph.D., 12/92 - 8/93
 Karen Lauro, Ph.D., 6/94 - 7/96
 Gjumrach Aliev, PhD, 10/98 - 3/03
 Kui Xu, M.D., 7/99 - 2002
 Michelle A. Puchowicz, Ph.D., 10/99 - 3/03
 Solomon Raju Bhupanapadu Sunkesula, PhD, 1/09 – 7/10

Faculty Mentoring

1993-1995 J.R. Alcala, Ph.D, Assistant Professor of Biomedical Engineering, CWRU, NIH Minority Investigator
 1994 N.R. Kreisman, Ph.D, Sabbatical, Associate Professor, Dept of Physiology, Tulane University, New Orleans, LA
 1994-1998 Greg Carlson, MD, Assistant Professor of Orthopedics, UH and the Cleveland VAH.
 1994-2009 Marco Cabrera, PhD, Assistant Professor of Pediatrics, UH
 1995 Evelyn Bradshaw, APS Frontiers in Physiology, Science Teacher Summer Research Program
 1998 Manivanh Souphanthong, M.D, Laos, ECFMG International Fellow in Medical Education
 2000-2002 Deborah Crawford, Ph.D, Instructor, Department of Anatomy, CWRU, NIH Minority Investigator
 2001-present Elaine Fisher, RN, PhD Univ of Akron College of Nursing
 2002-2003 Draga Stilbar-Martincic, MD, Slovenia, ECFMG International Fellow in Medical Education
 2004-2005 Nicole L. Ward, PhD, Assistant Professor, Department of Anatomy, CWRU
 2009-present Julian Stelzer, PhD, Assistant Professor, Department of Physiology & Biophysics, CWRU
 2009-2012 Yuahan Zhou, PhD, Instructor, Department of Physiology & Biophysics, CWRU
 2010-2012 Mohamad Koubeissi, MD, Assistant Professor, Department of Neurology, CWRU
 2011 Charles Kunos, MD, PhD, Assistant Professor, Department of Radiation Oncology, CWRU
 2012 Benjamin Walter, MD, Assistant Professor, Department of Neurology, CWRU

Training Grant Participation

1. USPHS NIH K99/R00 HL087620 (PI – P. Kc, Co-Mentor – JC LaManna), 1/1/08 – 12/31/12
“Role of the PVN in Chronic Intermittent Hypoxia-Induced Cardiorespiratory Changes”
2. USPHS NIH T32 GM007250 (PI - C Harding), 7/1/95 – 6/30/14
“Medical Scientist Training Program”
3. USPHS NIH T32 HL07913-10 (KP Strohl), 09/30/05--06/30/15)
“Sleep Medicine Neurobiology and Epidemiology”

4. USPHS NIH T35 HL082544-05 (PI: Z Toossi/J Bruzik) 06/01/06--05/31/11 (Renewal submitted)
“Medical Student Research Training in Heart, Lung, Blood, & Sleep Diseases”
5. USPHS NIH T32 EB007509-04; 09/01/07--08/31/12 (PI: D Wilson/J Duerk)
“Interdisciplinary Biomed Imaging Training Program”
6. USPHS NIH T32 NS077888; 07/01/13—06/30/18 (PI: JC LaManna/Xiongwei Zhu)
“Training in Neurodegenerative Diseases”

Grant and Award History:

1. NIMH T01 MH 12333, Pre-doctoral Fellowship. "Research and training program, Biological Science (pre-doctoral)." Trainee, 1971 - 1975. Tuition, fees, and support.
2. NIH (NHLBI) F32 HL 05208, Post-doctoral Fellowship. "The definition of critical pO₂ in heart and brain," Post doctoral Fellow, 1975 - 1977, total direct cost \$16,400.
3. North Carolina Alcohol Research Authority, Research Grant. "Acute and chronic alcohol effects on CNS oxidative metabolism measured in situ," 1975 - 1977. Principal investigator - M. Rosenthal, co-investigator - J. LaManna, total direct cost \$42,175.
4. NIH (NHLBI) R23 HL21542, Young Investigator Award. "Oxygen and energy requirements of cardiac tissue," 1977 - 1980, total direct cost \$86,360 (awarded but never activated due to change of institution).
5. NIH (NINCDS) R01 NS14325, Research Grant. "Cerebral ischemia, viability and oxidative metabolism," 1977 - 1982. Principal investigator - M. Rosenthal, co-investigator - J. LaManna, total direct cost years 1-3 \$118,000, years 4-6 \$240,240.
6. NIH (NINCDS) R01 NS14319, Research Grant. "In situ studies of drug actions on CNS metabolism," 1978 - 1981. Principal Investigator - M. Rosenthal, Co-investigator - J. LaManna, total direct costs \$249,135.
7. NIH (NINCDS) K04 NS00399, Research Career Development Award, "Brain work: Mechanisms of metabolic control," 1978 - 1981, total direct costs \$89,406 (Non-transferable grant terminated July 1, 1981).
8. NIH (DRR) SO7 RR05363-18, Biomedical Research Support Grant Program, awarded to the University of Miami School of Medicine. "The influence of noradrenergic input on the cerebral cortical metabolic response to methamphetamine, desipramine, and iprandole," 1979 - 1980, Principal investigator - J. LaManna. Total direct cost \$3,875.
9. National Parkinson Foundation, Inc., Research Grant. "The metabolic basis of cerebral cortical dysfunction in an experimental model of Parkinson's Disease," 1981, co-principal investigator - J. LaManna. Total direct cost \$16,084.
10. National Academy of Sciences Interacademy Scientific Exchange Program - USSR and East Europe, 1980, Exchange Scientist. Airfare and living expenses for six week visit to Semmelweiss Medical School, Budapest, Hungary.
11. NIH (NINCDS) R01 NS16617, Research Grant. "Noradrenergic control of cerebral oxidative metabolism," co-principal investigator - J. LaManna, 1980 - 1981. Total direct cost year 1 \$84,673, year 2 \$4,867 (transferred to CWRU effective August 1, 1981, see below).
12. Case Western Reserve University Research Initiation Grant. "Substrate control of cerebral oxidative metabolism", principal investigator - J. LaManna, 1981 - 1982. Total direct cost \$2,000.
13. Cleveland Foundation Grant. "Senior Neuroscientists," program director - R.B. Daroff, principal investigators - S.I. Harik and J. LaManna, 1982 - 1984. Total direct cost \$150,000.
14. NIH (NINCDS) P01 NS05820. Research center for cerebral vascular disease, University of Miami, Miami, Florida, Subproject 05 (subcontract to CWRU). Program director - M. Ginsberg, Principal Investigator - J. LaManna, 1982 - 1985. Total direct cost \$32,176.
15. American Heart Association (Northern Ohio Affiliate). "Intracellular pH regulation determines recovery from stroke," principal investigator, 1983. Total direct cost \$10,750.
16. NIH (DRR) S07 RR05410-24. Biomedical Research Support Grant Program, awarded to CWRU School of Medicine. "Microscope Instrumentation," principal investigators - J. LaManna, W.D. Lust, and W. Selman, November 1985 - March 1986. Total direct cost \$18,272.
17. NIH (NHLBI) R01 HL23582. "Pathophysiology/therapy of post-cardiac arrest brain damage," Principal investigator - D.L. Jackson, acting principal investigator - J. LaManna, 1983 - 1986. Total direct cost \$254,742.
18. Heart Association of Northeast Ohio (HANE0). Student Summer Stipend Program Award to Elizabeth Farrell, June 1987-August 1987. \$1,200.

19. Heart Association of Northeast Ohio (HNEO). Student Summer Stipend Program Award to Timothy Donovan, June 1989-August 1989. \$1600.
20. NIH (NINCDS) R01 NS18150, Research grant. "Noradrenergic control of cerebral oxidative metabolism, Principal Investigator - SI Harik, Co-Principal Investigator - JC LaManna. (Previously NS16617, transferred to CWRU August 1, 1981.) 1981 - 1989. Total direct cost \$889,321.
21. Heart Association of Northeast Ohio (HNEO). Student Summer Stipend Program Award to Eric Brown, June 1992-August 1992. \$1600. (not accepted, in favor of #22 below).
22. Diabetes Association of Greater Cleveland. Student Summer Stipend Program Award to Eric Brown, June 1992-August 1992. \$1500.
23. NIH (NHLBI) P01 HL25830, PPG "Control of Respiratory, Skeletal and Smooth Muscle". Program Director - NS Cherniack, "Project 3: Cellular Mechanisms of Neuronal Dysfunction", Principal Investigator - TS Whittingham, Co-Investigator - JC LaManna (20% effort). April 1991 - March 1996. Project total direct cost \$607,441.
24. Diabetes Association of Greater Cleveland. Student Summer Stipend Program Award to Joseph Hoxworth, June 1996-August 1996. \$2000.
25. NIH (NINDS) R01 NS22077, Research grant. "Recovery from Stroke: Metabolic and vascular factors," Principal Investigator - JC LaManna (40% effort). April 1985 - March 1996. TDC \$1,018,489
26. American Heart Association, Stroke Council Student Scholarship in Cerebrovascular Disease Award to Joseph Hoxworth, 1997. \$2000.
27. C.D. Pepper Older Americans Independence Center (USPHS NIH (NIA) AG 10418), "Pilot Project", PI - JC LaManna, January -- November 1997. TDC \$21,205
28. NIH (NHLBI) P50 HL42215, SCOR in Cardiopulmonary Disorders During Sleep. Program Director - KP Strohl, "Project 4: Brain Vascular and Metabolic Adaptations to Hypoxemia", Principal Investigator - JC LaManna (15% effort). 9/88 - 8/98
29. NIH (NINCDS) R01 NS22571, Research grant. "Focal Stroke: Metabolism and pH_i using neutral red," Principal Investigator - WD Lust, Co-Investigator - JC LaManna (25% effort). 7/87 - 2/98. TDC \$1, 206, 265
30. AHA Grant-in-Aid, "Increased Vulnerability to Ischemia in Aging Rat Brain", PI - JC LaManna (10% effort), ADC \$50,000 TDC \$150,000. 1/1/98 thru 12/31/00.
31. NIH (NINDS) 1R01 NS37111, "Regional Brain pH_i and Recovery from Cardiac Arrest", PI - JC LaManna (35% effort), TDC \$578,704. 12/15/97 thru 11/30/01. \$50,000 capital equipment supplement awarded July, 1999.
32. American Heart Association, Stroke Council Student Scholarship in Cerebrovascular Disease Award to Danielle Magness, 2004. \$2000 (declined in order to enter medical school).
33. "The Jeanette M. and Joseph S. Silber Research Fund", PI- JC LaManna, \$20,000/year, 5/1/00 thru 4/30/04.
34. NIH (NINDS) 1 R01 NS41309, "Mitochondria and Regulation of HIF-1", PI - F Agani, Co I - JC LaManna (5% effort), ADC: \$200,000; TDC: \$500,000, 4/1/02 thru 1/31/06.
35. NIH (NINDS) 1 R01 NS46074, "Treatment Strategies in a Rat Model of Cardiac Arrest", PI- JC LaManna (30% effort), ADC \$237,500 TDC \$950,000. 9/30/02 thru 6/30/06. (No cost extension thru 6/30/07).
36. US Army ECBC, Cont. # W911-NF-07-C-0053; APL Cont. # 939408, "Improving Warfighters' Sustainment and Performance in Extreme Environmental Conditions", (Director: Ibolja Cernak, Johns Hopkins Applied Physics Lab); Subcontract PI: JC LaManna (3% effort) , Project, "Simulated-altitude adaptation study"; subcontract ADC: \$69,578; subcontract TC: \$107498 , 7/1/07 – 12/31/07.
37. "The Kenneth Haas Medical Care Trust", Co-PI JC LaManna, \$200,000, 12/10/01. Supplement (\$35,000) added 5/02.
38. NIH (NIGMS) P50 GM066309, "Center for Modeling Integrated Metabolic Systems (MIMS)", Director: G.M. Saidel; Project PI: J.C. LaManna (15% effort), ADC: \$1,683,528; TDC: \$8,298,880, 7/10/02 thru 6/30/07 (No cost extension thru 7/08).
39. NIH (NINR) K01 NR009787 (PI - E Fisher; Sponsor – JC LaManna), 3/1/06 – 2/28/09
"Nursing Inquiry: Generation of Gut CO₂ Under Dysoxic Conditions in Rats"
40. NIH (NINDS) R01 NS060770 (PI – R. Milner, Scripps Research Institute) "An Angiogenic Role for the alpha-5-beta-1 and alpha-v-beta-3 Integrins During Cerebral Ischemia", (Subcontract Project PI: JC LaManna,) 7/15/08 – 6/30/09. ADC: \$20,469, TC \$32,136.
41. NIH (NINDS) R21 NS062048, "Energy Balance During Ketosis in Rat Brain", PI: JC LaManna (20% effort)
Yrs 1-2: 5/01/2009 thru 4/30/2011: ADC \$150,00; \$125,000 TC \$431,750
42. NIH (NHLBI) R01 HL092933, "Angiogenic Response to Hypoxia and Ketosis in Rat Brain", PI: JC LaManna (25% effort) (No cost extension – renewal submitted, see #43 below).
Yrs 1-4, 4/01/2009 thru 3/31/2013: ADC \$250,000 TC \$1,568,000

43. “Neuroprotective Properties of Ketosis in Aging Brain”, PIs: MA Puchowicz/JC LaManna, R01 HL092933, 12-1-13 – 11-30-18

Active Support:

1. NIH (NINDS) R01 NS38632, “Brain vascular and metabolic adaptation to hypoxia”, PI: JC LaManna (30% effort)
Yrs 1-5: ADC: \$225,000 TDC: \$925,000, Minority Suppl. (9/00 - 8/31/02) TDC \$109,205.
Yrs 6-10, 7/15/05 thru 6/30/10: ADC: \$231,250, TC: \$1,461,500 (ARRA Admin Supplement 9/30/09 – 8/31/11, \$98,910.
Yrs 11-15 8/15/10-6/30/2015: ADC: \$218,750; TDC: \$1, 093,750.
2. NIH (NHLBI) K99/R00 HL087620, “Role of the PVN in Chronic Intermittent Hypoxia-Induced Cardiorespiratory Changes” (PI – P. Kc, Co-Mentor – JC LaManna), 1/1/08 – 2/28/14
3. Refinement of lead compounds to modulate water permeability through AQP4”, PI: WF Boron (Aeromics); Type: Phase II SBIR; Consultant: JC LaManna
We have a subcontract to test the efficacy of identified compounds against cerebral edema.
4. Athersys, Inc. Service Agreement, PI: JC LaManna; Period: 9/19/11 – 9/1/13
We have a subcontract to test the efficacy of identified compounds against cerebral edema.
5. The Jeannette M. and Joseph S. Silber Research Fund for the Study of Brain Sciences”, PI: JC LaManna (Private Fund); Period: 8/2008 – 12/2012
This is a research fund which was established to improve the outcome of stroke patients.
6. The Jeannette M. and Joseph S. Silber Professorship for the Study of Brain Sciences”, PI: JC LaManna
Period: 12/2012 – 11/2017

BIBLIOGRAPHY

Ph.D. Dissertation: LaManna, JC: In vivo control of oxidative metabolism monitored in intact cerebral cortex by optical techniques. Department of Physiology and Pharmacology, Duke University, 1975.

Journal Articles and Original Reports

1. LaManna JC and M Rosenthal: Effect of ouabain and phenobarbital on oxidative metabolic activity associated with spreading depression in cats. *Brain Res.* **88**:145-149 (1975).
2. Lothman E, JC LaManna, G Cordingley, M Rosenthal, and G Somjen: Responses of electrical potential, potassium levels, and oxidative metabolic activity of the cerebral neocortex of cats. *Brain Res.* **88**:15-36 (1975).
3. Rosenthal M and JC LaManna: Effect of ouabain and phenobarbital on the kinetics of cortical metabolic transients associated with evoked potentials. *J.Neurochem.* **24**:111-116 (1975).
4. LaManna JC, AL Sylvania, D Martel, and M Rosenthal: Fluorometric monitoring of the effects of adrenergic agents on oxidative metabolism in intact cerebral cortex. *Neuropharmacol.* **15**:17-24 (1976).
5. Rosenthal M, JC LaManna, FF Jöbsis, JE Lévassieur, HA Kontos, and JL Patterson, Jr.: Effects of respiratory gases on cytochrome a in intact cerebral cortex: is there a critical PO₂. *Brain Res.* **108**:143-154 (1976).
6. Rosenthal M, DL Martel, and JC LaManna: Effects of incomplete and complete ischemia on mitochondrial functioning measured in intact cerebral cortex of cats. *Exptl.Neurol.* **52**:433-446 (1976).
7. Rosenthal M, D Martel, JC LaManna, and FF Jöbsis: In situ studies of oxidative energy metabolism during transient cortical ischemia in cats. *Exptl.Neurol.* **50**:477-494 (1976).
8. Somjen GG, M Rosenthal, G Cordingley, JC LaManna, and E Lothman: Potassium, neuroglia, and oxidative metabolism in central gray matter. *Fed.Proc.* **35**:1266-1271 (1976).
9. Hempel FG, FF Jöbsis, JC LaManna, M Rosenthal, and HA Saltzman: Oxidation of cerebral cytochrome a₃ by oxygen plus carbon dioxide at hyperbaric pressures. *J.Appl.Physiol.* **43**:873-879 (1977).
10. Jöbsis FF, JH Keizer, JC LaManna, and M Rosenthal: Reflectance spectrophotometry of cytochrome aa₃ in vivo. *J.Appl.Physiol.* **43**:858-872 (1977).

11. LaManna J, E Lothman, M Rosenthal, G Somjen, and W Younts: Phenytoin, electric, ionic, and metabolic responses in cortex and spinal cord. *Epilepsia* **18**:317-329 (1977).
12. LaManna JC, BW Younts, Jr., and M Rosenthal: The cerebral oxidative metabolic response to acute ethanol administration in rats and cats. *Neuropharmacol.* **16**:283-288 (1977).
13. LaManna JC, FF Jöbsis, GM Austin, and W Schuler: Changes in brain metabolism in the cat in response to multiple brief transient ischemic episodes. *Exptl.Neurol.* **55**:304-317 (1977).
14. LaManna JC, G Cordingley, and M Rosenthal: Phenobarbital actions in vivo: Effects on intracellular potassium activity and oxidative metabolism in cat cerebral cortex. *J.Pharmacol.Exp.Ther.* **200**:560-569 (1977).
15. Sylvia AL, JC LaManna, M Rosenthal, and FF Jöbsis: Metabolite studies of amphetamine effects based upon mitochondrial respiratory state in rat brain. *J.Pharmacol.Exp.Ther.* **201**:117-125 (1977).
16. LaManna JC, J-J Saive, VW Macdonald, and FF Jöbsis: Simultaneous monitoring by optical techniques of respiratory chain and intracellular pH in toad ventricle strips. *Experientia* **34**:203-204 (1978).
17. Moffett DF and JC LaManna: Contributions of glycolysis and oxidative metabolism to recovery from electrical pulses in the isolated toad brain. *Brain Res.* **152**:365-368 (1978).
18. Harik SI, JC LaManna, AI Light, and M Rosenthal: Cerebral norepinephrine: Influence on cortical oxidative metabolism in situ. *Science* **206**:69-71 (1979).
19. Rosenthal M, J LaManna, S Yamada, W Younts, and G Somjen: Oxidative metabolism, extracellular potassium and sustained potential shifts in cat spinal cord in situ. *Brain Res.* **162**:113-127 (1979).
20. LaManna JC, M Rosenthal, R Novack, DF Moffett, and FF Jöbsis: Temperature coefficients for the oxidative metabolic responses to electrical stimulation in cerebral cortex. *J.Neurochem.* **34**:203-209 (1980).
21. LaManna JC, J-J Saive, and TR Snow: The relative time course of early changes in mitochondrial function and intracellular pH during hypoxia in the isolated toad ventricle strip. *Circ.Res.* **46**:755-763 (1980).
22. Lutz PL, JC LaManna, MR Adams, and M Rosenthal: Cerebral resistance to anoxia of the marine turtle. *Respiratory Physiol.* **41**:241-251 (1980).
23. Sick TJ, SI Harik, JC LaManna, and M Rosenthal: Effect of norepinephrine depletion on potassium transport in cerebral cortex. *Trans.Am.Neurol.Assoc.* **105**:451-453 (1980).
24. Duckrow RB, JC LaManna, and M Rosenthal: Disparate recovery of resting and stimulated oxidative metabolism following transient ischemia. *Stroke* **12**:677-685 (1981).
25. Duckrow RB, JC LaManna, M Rosenthal, JE Levasseur, and JL Patterson, Jr.: Oxidative metabolic activity of the cerebral cortex after fluid-percussion head injury in the cat. *J.Neurosurg.* **54**:607-614 (1981).
26. Harik SI, RB Duckrow, JC LaManna, M Rosenthal, VK Sharma, and SP Banerjee: Cerebral compensation for chronic noradrenergic denervation induced by locus ceruleus lesion: recovery of receptor binding, isoproterenol-induced adenylate cyclase activity, and oxidative metabolism. *J.Neurosci.* **1**:641-649 (1981).
27. Kreisman NR, TJ Sick, JC LaManna, and M Rosenthal: Local tissue oxygen tension - cytochrome a₃ redox relationships in rat cerebral cortex in vivo. *Brain Res.* **218**:161-174 (1981).
28. Kreisman NR, JC LaManna, M Rosenthal, and TJ Sick: Oxidative metabolic responses with recurrent seizures in rat cerebral cortex: Role of systemic factors. *Brain Res.* **218**:175-188 (1981).
29. LaManna JC, SI Harik, AI Light, and M Rosenthal: Norepinephrine depletion alters cerebral oxidative metabolism in the 'active' state. *Brain Res.* **204**:87-101 (1981).
30. Rosenthal M, MR Adams, and JC LaManna: Nitrous oxide alters oxidative metabolic activities of rat neocortex in situ. *Brain Res.* **213**:405-414 (1981).
31. Snow TR, LH Kleinman, JC LaManna, AS Wechsler, and FF Jöbsis: Response of cytochrome a₃ in the in situ canine heart. *Basic Res.Cardiol.* **76**:289-304 (1981).
32. Duckrow RB, JC LaManna, and M Rosenthal: Sensitive and inexpensive dual-wavelength reflection spectrophotometry using interference filters. *Anal.Biochem.* **125**:13-23 (1982).
33. Harik SI, JC LaManna, S Snyder, JR Wetherbee, and M Rosenthal: Abnormalities of cerebral oxidative metabolism in animal models of Parkinson disease. *Neurol.* **32**:382-389 (1982).
34. Novack RL, JC LaManna, and M Rosenthal: Ethanol and acetaldehyde alter brain mitochondrial redox responses to direct cortical stimulation in vivo. *Neuropharmacol.* **21**:1051-1058 (1982).
35. Sick TJ, L Hertz, JC LaManna, M Rosenthal, A Flagman, and SI Harik: Does endogenous norepinephrine regulate potassium homeostasis and metabolism in rat cerebral cortex? *J.Cereb.Blood Flow Metab.* **2**:355-361 (1982).
36. Sick TJ, M Rosenthal, JC LaManna, and PL Lutz: Brain potassium ion homeostasis, anoxia and metabolic inhibition in turtles and rats. *Am.J.Physiol.* **243**:R281-R288(1982).

37. Sick TJ, PL Lutz, JC LaManna, and M Rosenthal: Comparative brain oxygenation and mitochondrial redox activity in turtles and rats. *J.Appl.Physiol.* **53**:1354-1359 (1982).
38. Kreisman NR, M Rosenthal, TJ Sick, and JC LaManna: Oxidative metabolic responses during recurrent seizures are independent of convulsant, anesthetic, or species. *Neurol.* **33**:861-867 (1983).
39. LaManna JC, G Doull, K McCracken, and SI Harik: (Na⁺-K⁺)-ATPase activity and ouabain-binding sites in the cerebral cortex of young and aged Fischer-344 rats. *Gerontol.* **29**:242-247 (1983).
40. Sylvia AL, SI Harik, JC LaManna, T Wilkerson, and M Rosenthal: Abnormalities of cerebral oxidative metabolism with aging and their relation to the central noradrenergic system. *Gerontol.* **29**:248-261 (1983).
41. LaManna JC and KA McCracken: The use of neutral red as an intracellular pH indicator in rat brain cortex *in vivo*. *Anal.Biochem.* **142**:117-125 (1984).
42. LaManna JC, AI Light, SJ Peretsman, and M Rosenthal: Oxygen insufficiency during hypoxic hypoxia in rat brain cortex. *Brain Res.* **293**:313-318 (1984).
43. Lockwood AH, JC LaManna, S Snyder, and M Rosenthal: Effects of acetazolamide and electrical stimulation on cerebral oxidative metabolism as indicated by the cytochrome oxidase redox state. *Brain Res.* **308**:9-14 (1984).
44. LaManna JC, SA Romeo, RC Crumrine, and KA McCracken: Decreased blood volume with hypoperfusion during recovery from total cerebral ischemia in dogs. *Neurol.Res.* **7**:161-165 (1985).
45. LaManna JC, SM Pikarsky, TJ Sick, and M Rosenthal: A rapid-scanning spectrophotometer designed for biological tissues *in vitro* or *in vivo*. *Anal.Biochem.* **144**:483-493 (1985).
46. LaManna JC and SI Harik: Regional comparisons of brain glucose influx. *Brain Res.* **326**:299-305 (1985).
47. Pikarsky SM, JC LaManna, TJ Sick, and M Rosenthal: A computer-assisted rapid-scanning spectrophotometer with applications to tissues *in vitro* and *in vivo*. *Comp.Biomed.Res.* **18**:408-421 (1985).
48. LaManna JC and SI Harik: Regional studies of blood-brain barrier transport of glucose and leucine in awake and anesthetized rats. *J.Cereb.Blood Flow Metab.* **6**:717-723 (1986).
49. Bark H, GS Supinski, JC LaManna, and SG Kelsen: Relationship of changes in diaphragmatic muscle blood flow to muscle contractile activity. *J.Appl.Physiol.* **62**:291-299 (1987).
50. LaManna JC, TJ Sick, SM Pikarsky, and M Rosenthal: Detection of an oxidizable fraction of cytochrome oxidase in intact rat brain. *Am.J.Physiol.* **253**:C477-C483(1987).
51. LaManna JC: Intracellular pH determination by absorption spectrophotometry of neutral red. *Metab.Br.Dis.* **2**:167-182 (1987).
52. Selman WR, C VanDerVeer, TS Whittingham, JC LaManna, WD Lust, and RA Ratcheson: Visually defined zones of focal ischemia in the rat brain. *Neurosurg.* **21**:825-830 (1987).
53. Harik SI and JC LaManna: Vascular perfusion and blood-brain glucose transport in acute and chronic hyperglycemia. *J.Neurochem.* **51**:1924-1929 (1988).
54. LaManna JC, RC Crumrine, and DL Jackson: No correlation between cerebral blood flow and neurologic recovery after reversible total cerebral ischemia in the dog. *Exptl.Neurol.* **101**:234-247 (1988).
55. Shockley RP and JC LaManna: Determination of rat cerebral cortical blood volume changes by capillary mean transit time analysis during hypoxia, hypercapnia, and hyperventilation. *Brain Res.* **454**:170-178 (1988).
56. Kikano GE, JC LaManna, and SI Harik: Brain perfusion in acute and chronic hyperglycemia. *Stroke* **20**:1027-1031 (1989).
57. LaManna JC, KA McCracken, M Patil, and OJ Prohaska: Stimulus activated changes in brain tissue temperature in the anesthetized rat. *Metab.Br.Dis.* **4**:225-237 (1989).
58. Riachi NJ, JC LaManna, and SI Harik: Entry of 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine into the rat brain. *J.Pharmacol.Exp.Ther.* **249**:744-748 (1989).
59. Sick TJ, TS Whittingham, and JC LaManna: Determination of intracellular pH in the *in vitro* hippocampal slice preparation by transillumination spectrophotometry of neutral red. *J.Neurosci.Meth.* **27**:25-34 (1989).
60. Whittingham TS, E Warman, H Assaf, TJ Sick, and JC LaManna: Manipulating the intracellular environment of hippocampal slices: pH and high energy phosphates. *J.Neurosci.Meth.* **28**:83-91 (1989).
61. Assaf HM, AJ Ricci, TS Whittingham, JC LaManna, RA Ratcheson, and WD Lust: Lactate compartmentation in hippocampal slices: Evidence for a transporter. *Metab.Br.Dis.* **5**:143-154 (1990).
62. Crumrine RC and JC LaManna: Protein kinase C activity in rat brain cortex. *J.Neurochem.* **55**:826-831 (1990).
63. Crumrine RC, G DUBYAK, and JC LaManna: Decreased protein kinase C activity during cerebral ischemia and after reperfusion in the adult rat. *J.Neurochem.* **55**:2001-2007 (1990).
64. Selman WR, RC Crumrine, AJ Ricci, JC LaManna, WD Lust, and RA Ratcheson: Impairment of metabolic recovery with increasing periods of middle cerebral artery occlusion in the rat. *Stroke* **21**:467-471 (1990).

65. Selman WR, AJ Ricci, RC Crumrine, JC LaManna, RA Ratcheson, and WD Lust: The evolution of focal ischemic damage: A metabolic analysis. *Metab.Br.Dis.* **5**:33-44 (1990).
66. Zhang R, SG Kelsen, and JC LaManna: Measurement of intracellular pH in hamster diaphragm by absorption spectrophotometry. *J.Appl.Physiol.* **68**:1101-1106 (1990).
67. Crumrine RC and JC LaManna: Regional cerebral metabolites, blood flow, plasma volume and mean transit time in total cerebral ischemia in the rat. *J.Cereb.Blood Flow Metab.* **11**:272-282 (1991).
68. Crumrine RC, JC LaManna, and WD Lust: Regional changes in intracellular pH determined by neutral red histophotometry and high energy metabolites during cardiac arrest and following resuscitation in the rat. *Metab.Br.Dis.* **6**:145-155 (1991).
69. Selman WR, RC Crumrine, CC Rosenstein, C Jenkins, JC LaManna, RA Ratcheson, and WD Lust: Rapid metabolic failure in spontaneously hypertensive rats after middle cerebral artery ligation. *Metab.Br.Dis.* **6**:57-64 (1991).
70. Crumrine RC, WR Selman, JC LaManna, and WD Lust: Protein kinase C activity in permanent focal cerebral ischemia. *Mol.Chem.Neuropath.* **16**:85-94 (1992).
71. Griffith JK, BR Cordisco, C-W Lin, and JC LaManna: Distribution of intracellular pH in the rat brain cortex after global ischemia as measured by color film histophotometry of neutral red. *Brain Res.* **573**:1-7 (1992).
72. LaManna JC, LM Vendel, and RM Farrell: Brain adaptation to chronic hypobaric hypoxia in rats. *J.Appl.Physiol.* **72**:2238-2243 (1992).
73. LaManna JC, JK Griffith, BR Cordisco, C-W Lin, and WD Lust: Intracellular pH in rat brain in vivo and in brain slices. *Can.J.Physiol.Pharmacol.* **70**:S269-S277(1992).
74. Lin C-W, JC LaManna, and Y Takefuji: Quantitative measurement of two-component pH-sensitive colorimetric spectra using multilayer neural networks. *Biol.Cyber.* **67**:303-308 (1992).
75. Pelligrino DA, JC LaManna, RB Duckrow, RM Bryan, Jr., and SI Harik: Hyperglycemia and blood-brain barrier glucose transport. *J.Cereb.Blood Flow Metab.* **12**:887-899 (1992).
76. LaManna JC, JF Harrington, LM Vendel, K Abi-Saleh, WD Lust, and SI Harik: Regional blood-brain lactate influx. *Brain Res.* **614**:164-170 (1993).
77. Lin C-W, TS Whittingham, and JC LaManna: Intracellular pH regulation mechanism of hippocampal brain slices - optical measurement by neutral red. *Biomed.Eng.Appl.Basis Comm.* **5**:759-772 (1993).
78. Lin C-W, TS Whittingham, and JC LaManna: The design and development of a ratio spectral and ratio imaging system for measuring intracellular pH from brain tissues. *Biomed.Eng.Appl.Basis Comm.* **5**:613-621 (1993).
79. Gault LM, C-W Lin, JC LaManna, and WD Lust: Changes in energy metabolites, cGMP, and intracellular pH during cortical spreading depression. *Brain Res.* **641**:176-180 (1994).
80. Harik SI, RA Behmand, and JC LaManna: Hypoxia increases glucose transport at blood-brain barrier in rats. *J.Appl.Physiol.* **77**:896-901 (1994).
81. Hoffman TL, JC LaManna, S Pundik, WR Selman, TS Whittingham, RA Ratcheson, and WD Lust: Early reversal of acidosis is a first step to metabolic recovery following ischemia. *J.Neurosurg.* **81**:567-573 (1994).
82. Mironov V, MA Hritz, JC LaManna, AG Hudetz, and SI Harik: Architectural alterations in rat cerebral microvessels after hypobaric hypoxia. *Brain Res.* **660**:73-80 (1994).
83. Ferimer HN, KL Kutina, and JC LaManna: Delayed normalization of brain intracellular pH by methyl isobutyl amiloride after cardiac arrest in rats. *Crit.Care Med.* **23** :1106-1111 (1995).
84. Harik SI, WD Lust, SC Jones, KL Lauro, S Pundik, and JC LaManna: Brain glucose metabolism in hypobaric hypoxia. *J.Appl.Physiol.* **79**:136-140 (1995).
85. Harik SI, MA Hritz, and JC LaManna: Hypoxia-induced brain angiogenesis in the adult rat. *J.Physiol.(Lond.)* **485.2**:525-530 (1995).
86. Kreisman NR, JC LaManna, S-C Liao, ER Yeh, and JR Alcalá: Light transmittance as an index of cell volume in hippocampal slices: Optical differences of interfaced and submerged positions. *Brain Res.* **693**:179-186 (1995).
87. LaManna JC, JK Griffith, BR Cordisco, HE Bell, C-W Lin, S Pundik, and WD Lust: Rapid recovery of rat brain intracellular pH after cardiac arrest and resuscitation. *Brain Res.* **687**:175-181 (1995).
88. Yao H, MD Ginsberg, DD Eveleth, JC LaManna, BD Watson, OF Alonso, JY Loor, and R Busto: Local cerebral glucose utilization and cytoskeletal proteolysis as indices of evolving focal ischemic injury in core and penumbra. *J.Cereb.Blood Flow Metab.* **15**:398-408 (1995).
89. Al-Mudallal AS, JC LaManna, WD Lust, and SI Harik: Diet-induced ketosis does not cause cerebral acidosis. *Epilepsia* **37**:258-261 (1996).

90. Harik N, SI Harik, N-T Kuo, K Sakai, RJ Przybylski, and JC LaManna: Time course and reversibility of the hypoxia-induced alterations in cerebral vascularity and cerebral capillary glucose transporter density. *Brain Res.* **737**:335-338 (1996).
91. LaManna JC, KL Kutina-Nelson, MA Hritz, Z Huang, and MTT Wong-Riley: Decreased rat brain cytochrome oxidase activity after prolonged hypoxia. *Brain Res.* **720**:1-6 (1996).
92. LaManna JC, MA Haxhiu, KL Kutina-Nelson, S Pundik, B Erokwu, ER Yeh, WD Lust, and NS Cherniack: Decreased energy metabolism in brainstem during central respiratory depression in response to hypoxia. *J.Appl.Physiol.* **81**:1772-1777 (1996).
93. Lin C-W, RN Kalaria, SN Kroon, J-Y Bae, LM Sayre, and JC LaManna: The amiloride-sensitive Na^+/H^+ exchange antiporter and control of intracellular pH in hippocampal brain slices. *Brain Res.* **731**:108-113 (1996).
94. Carlson GD, Y Minato, A Okada, CD Gorden, KE Warden, JM Barbeau, CL Biro, E Bahniuk, HH Bohlman, and JC LaManna: Early time-dependent decompression for spinal cord injury: vascular mechanisms of recovery. *J.Neurotrauma* **14**:951-962 (1997).
95. Carlson GD, KE Warden, JM Barbeau, E Bahniuk, KL Kutina-Nelson, CL Biro, and JC LaManna: Viscoelastic relaxation and regional blood flow response to spinal cord compression and decompression in a dog. *Spine* **22**:1285-1291 (1997).
96. LaManna JC and WD Lust: Nutrient consumption and metabolic perturbations. *Neurosurg.Clin.North Am.* **8**:145-163 (1997).
97. Stewart PA, H Isaacs, JC LaManna, and SI Harik: Ultrastructural concomitants of hypoxia-induced angiogenesis. *Acta Neuropathol.* **93**:579-584 (1997).
98. Yeh ER, B Erokwu, JC LaManna, and MA Haxhiu: The paraventricular nucleus of the hypothalamus influences respiratory timing and activity in the rat. *Neurosci.Lett.* **232**:63-66 (1997).
99. Kalaria RN, DL Cohen, DRD Premkumar, S Nag, JC LaManna, and WD Lust: Vascular endothelial growth factor in Alzheimer's disease and experimental cerebral ischemia. *Mol.Br.Res.* **62**:101-105 (1998).
100. Kalaria RN, DRD Premkumar, C-W Lin, SN Kroon, J-Y Bae, LM Sayre, and JC LaManna: Identification and expression of the Na^+/H^+ exchanger in mammalian cerebrovascular and choroidal tissues: characterization by amiloride-sensitive [^3H]MIA binding and RT-PCR analysis. *Mol.Br.Res.* **58**:178-187 (1998).
101. Dore-Duffy P, R Balabanov, T Beaumont, MA Hritz, SI Harik, and JC LaManna: Endothelial activation following prolonged hypobaric hypoxia. *Microvasc.Res.* **57**:75-85 (1999).
102. Hoxworth JM, K Xu, Y Zhou, WD Lust, and JC LaManna: Cerebral metabolic profile, selective neuronal loss, and survival of acute and chronic hyperglycemic rats following cardiac arrest and resuscitation. *Brain Res.* **821**:467-479 (1999).
103. Kreisman NR and JC LaManna: Rapid and slow swelling during hypoxia in the CA1 region of rat hippocampal slices. *J.Neurophysiol.* **82**:320-329 (1999).
104. Kuo N-T, D Benhayon, RJ Przybylski, RJ Martin, and JC LaManna: Prolonged hypoxia increases vascular endothelial growth factor mRNA and protein in adult mouse brain. *J.Appl.Physiol.* **86**:260-264 (1999).
105. Lauro KL, HM Kabert, and JC LaManna: Methyl isobutyl amiloride alters regional brain reperfusion patterns after resuscitation from cardiac arrest. *Brain Res.* **831**:64-71 (1999).
106. Patil MM, DM Durand, JC LaManna, TS Whittingham, and MA Haxhiu: Effects of oxygen deprivation on parapyramidal neurons of the ventrolateral medulla. *Resp.Physiol.* **115**:11-22 (1999).
107. Pichiule P, JC Chávez, K Xu, and JC LaManna: Vascular endothelial growth factor upregulation in transient global ischemia induced by cardiac arrest and resuscitation in rat brain. *Mol.Br.Res.* **74**:83-90 (1999).
108. Agani F, P Pichiule, JC Chávez, and J LaManna: The role of mitochondria in the regulation of hypoxia-inducible factor 1 expression during hypoxia. *J.Biol.Chem.* **275**:35863-35867 (2000).
109. Aliev G, J Shi, G Perry, RP Friedland, and JC LaManna: Decreased constitutive nitric oxide synthase, but increased inducible nitric oxide synthase and endothelin-1 immunoreactivity in aortic endothelial cells of Donryu rats on a cholesterol-enriched diet. *Anat.Rec.* **260**:16-25 (2000).
110. Aliev GM, ShKh Samedov, D Seyidova, JC LaManna, MA Smith, G Perry, and EK Gasimov: The pathogenesis of cerebrovascular lesions in Alzheimer's disease. *Dok.Akad.Nauk Azer.* **56**:236-242 (2000).
111. Carlson GD, CD Gorden, S Nakazowa, E Wada, K Warden, and JC LaManna: Perfusion-limited recovery of evoked potential function after spinal cord injury. *Spine* **25**:1218-1226 (2000).
112. Chávez JC, F Agani, P Pichiule, and JC LaManna: Expression of hypoxic inducible factor 1 in the brain of rats during chronic hypoxia. *J.Appl.Physiol.* **89**:1937-1942 (2000).
113. Friedland RP, J Shi, JC LaManna, MA Smith, and G Perry: Prospects for noninvasive imaging of brain amyloid beta in Alzheimer's disease. *Ann.N.Y.Acad.Sci.* **903**:123-128 (2000).

114. Radakrishnan K, JC LaManna, and ME Cabrera: A quantitative study of oxygen as a metabolic regulator. *Appl.Cardiopulm.Pathophysiol.* **9**:363-367 (2000).
115. Aliev G, MA Smith, M Turmaine, ML Neal, TV Zimina, RP Friedland, G Perry, JC LaManna, and G Burnstock: Atherosclerotic lesions are associated with increased immunoreactivity for inducible nitric oxide synthase and endothelin-1 in thoracic aortic intimal cells of hyperlipidemic watanabe rabbits. *Exp.Mol.Pathol.* **71**:40-54 (2001).
116. Aliev G, MA Smith, G Perry, ShKh Samedov, D Seyidova, RP Friedland, JC LaManna, and EK Gasimov: The experimental model of Alzheimer's disease and its selective pharmacological treatments. *Dok.Akad.Nauk Azer.* **57**:112-118 (2001).
117. Aliev G, D Seyidova, ML Neal, J Shi, T Vigan, A Hernandez, G Folco, AH Soas, TV Zimina, Smith, G Perry, JC LaManna, and RP Friedland: The effect of agonists and antagonists on the morphology of non-transformed human smooth muscle cell in vitro. *J.Submicrosc.Cytol.Pathol.* **33**:141-149 (2001).
118. Aliev GM, ShKh Samedov, D Seyidova, A Mironov, G Burnstock, JC LaManna, G Perry, MA Smith, and EK Gasimov: The morphological features of the development of atherosclerosis in Watanabe heritable hyperlipidemic rabbits (WHHL). *Vita Medical Journal* **2**:11-16 (2001).
119. Agani FH, P Pichiule, CJ Carlos, and JC LaManna: Inhibitors of mitochondrial complex I attenuate the accumulation of hypoxia-inducible factor-1 during hypoxia in Hep3B cells. *Comp Biochem.Physiol A Mol.Integr.Physiol* **132**:107-109 (2002).
120. Agani FH, JC Chavez, P Pichiule, MA Puchowicz, and JC LaManna: Role of nitric oxide in the regulation of HIF-1 alpha expression during hypoxia. *Am.J.Physiol.* **283**:C178-C186 (2002).
121. Aliev G, MA Smith, D Seyidova, ML Neal, J Shi, M Loizidou, M Turmaine, RP Friedland, I Taylor, G Burnstock, G Perry, and JC LaManna: Increased expression of NOS and ET-1 immunoreactivity in human colorectal metastatic liver tumours is associated with selective depression of constitutive NOS immunoreactivity in vessel endothelium. *J.Submicrosc.Cytol.Pathol.* **34**:37-50 (2002).
122. Aliev G, MA Smith, D Seyidova, ML Neal, BT Lamb, A Nunomura, EK Gasimov, HV Vinters, G Perry, JC LaManna, and RP Friedland: The role of oxidative stress in the pathophysiology of cerebrovascular lesions in Alzheimer's disease. *Brain Pathol* **12** :21-35 (2002).
123. Aliev G, D Seyidova, ML Neal, J Shi, BT Lamb, SL Siedlak, HV Vinters, E Head, G Perry, JC LaManna, RP Friedland, and CW Cotman: Atherosclerotic lesions and mitochondria DNA deletions in brain microvessels as a central target for the development of human AD and AD-like pathology in aged transgenic mice. *Ann.N.Y.Acad.Sci.* **977**:45-64 (2002).
124. Chavez JC and JC LaManna: Activation of hypoxia inducible factor-1 in the rat cerebral cortex after transient global ischemia: potential role of insulin like growth factor-1. *J.Neurosci.* **22**:8922-8931 (2002).
125. Pichiule P and JC LaManna: Angiopoietin-2 and rat brain capillary remodeling during adaptation and de-adaptation to prolonged mild hypoxia. *J.Appl.Physiol.* **93**:1131-1139 (2002).
126. Shi J, G Perry, MS Berridge, G Aliev, SL Siedlak, MA Smith, JC LaManna, and RP Friedland: Labeling of cerebral amyloid beta deposits *in vivo* using intranasal basic fibroblast growth factor and serum amyloid P component in mice. *J.Nucl.Med.* **43**:1044-1051 (2002).
127. Aliev G, D Seyidova, BT Lamb, ME Obrenovich, SL Siedlak, HV Vinters, RP Friedland, JC LaManna, MA Smith, and G Perry: Mitochondria and vascular lesions as a central target for the development of Alzheimer's disease and Alzheimer disease-like pathology in transgenic mice. *Neurol.Res.* **25**:665-674 (2003).
128. Aliev G, D Seyidova, AK Raina, ME Obrenovich, ML Neal, SL Siedlak, BT Lamb, HV Vinters, JC LaManna, MA Smith, and G Perry: Vascular hypoperfusion, mitochondria failure and oxidative stress in Alzheimer disease. *Proc.Indian natn.Sci.Acad.* **B69**:209-238 (2003).
129. Carlson GD, CD Gorden, HS Oliff, JJ Pillai, and JC LaManna: Sustained spinal cord compression: part I: time-dependent effect on long-term pathophysiology. *J.Bone Joint Surg.Am.* **85-A**:86-94 (2003).
130. Carlson GD, CD Gorden, S Nakazawa, E Wada, JS Smith, and JC LaManna: Sustained spinal cord compression: part II: effect of methylprednisolone on regional blood flow and recovery of somatosensory evoked potentials. *J.Bone Joint Surg.Am.* **85-A**:95-101 (2003).
131. Pichiule P, JC Chavez, and JC LaManna: Hypoxic regulation of angiopoietin-2 expression in endothelial cells. *J Biol.Chem.* **279**:12171-12180 (2004).
132. Puchowicz MA, K Xu, D Magness, C Miller, WD Lust, TS Kern, and JC LaManna: Comparison of glucose influx and blood flow in retina and brain of diabetic rats. *J.Cereb.Blood Flow Metab.* **24**:449-457 (2004).
133. Darabi K, AY Karulin, BO Boehm, HH Hofstetter, Z Fabry, JC LaManna, JC Chavez, M Tary-Lehmann, and PV Lehmann: The third signal in T cell-mediated autoimmune disease? *J Immunol.* **173**:92-99 (2004).

134. Drew KL, MB Harris, JC LaManna, MA Smith, XW Zhu, and YL Ma: Hypoxia tolerance in mammalian heterotherms. *J.Exp.Biol.* **207**:3155-3162 (2004).
135. LaManna JC, JC Chavez, and P Pichiule: Structural and functional adaptation to hypoxia in the rat brain. *J.Exp.Biol.* **207**:3163-3169 (2004).
136. Ward NL and JC LaManna: The neurovascular unit and its growth factors: coordinated response in the vascular and nervous systems. *Neurol.Res.* **26**:870-883 (2004).
137. Xu K, MA Puchowicz, and JC LaManna: Renormalization of regional brain blood flow during prolonged mild hypoxic exposure in rats. *Brain Res.* **1027**:188-191 (2004).
138. Aminova LR, JC Chavez, J Lee, H Ryu, A Kung, JC LaManna, and RR Ratan: Pro-survival and pro-death effects of HIF-1 α stabilization in a murine hippocampal cell line. *J.Biol.Chem.* **280**:3996-4003 (2005).
139. Ma YL, X Zhu, PM Rivera, O Toien, BM Barnes, JC LaManna, MA Smith, and KL Drew: Absence of cellular stress in brain after hypoxia induced by arousal from hibernation in Arctic ground squirrels. *Am J Physiol Regul.Integr.Comp Physiol* **289**:R1297-R1306(2005).
140. Siddiq A, IA Ayoub, JC Chavez, L Aminova, S Shah, JC LaManna, SM Patton, JR Connor, RA Cherny, I Volitakis, AI Bush, I Langsetmo, T Seeley, V Gunzler, and RR Ratan: Hypoxia-inducible factor prolyl 4-hydroxylase inhibition. A target for neuroprotection in the central nervous system. *J Biol.Chem.* **280**:41732-41743 (2005).
141. Zhu X, MA Smith, G Perry, Y Wang, AP Ross, HW Zhao, JC LaManna, and KL Drew: MAPKs are differentially modulated in arctic ground squirrels during hibernation. *J Neurosci.Res.* **80**:862-868 (2005).
142. Kanaan A, R Farahani, RM Douglas, JC LaManna, and GG Haddad: Effect of chronic continuous or intermittent hypoxia and reoxygenation on cerebral capillary density and myelination. *Am J Physiol Regul.Integr.Comp Physiol* **290**:R1105-R1114 (2006).
143. Xu K and JC LaManna: Chronic hypoxia and the cerebral circulation. *J Appl.Physiol* **100**:725-730 (2006).
144. Xu K, MA Puchowicz, WD Lust, and JC LaManna: Adenosine treatment delays postischemic hippocampal CA1 loss after cardiac arrest and resuscitation in rats. *Brain Res.* **1071**:208-217 (2006).
145. Aliev, G, SKh Samedov, ME Obrenovich, AA Mironov, G Burnstock, JC LaManna, MA Smith, G Perry and EK Gasimov: Molecular features of the the development of atherosclerosis in Watanabe heritable hyperlipidemic rabbits. *Dok Nat Akad Azer* **62**: 57-66 (2006).
146. Aliev G, JP Miller, DW Leifer, ME Obrenovich, JC Shenk, MA Smith, JC LaManna, G Perry, WD Lust, and AR Cohen: Ultrastructural analysis of a murine model of congenital hydrocephalus produced by overexpression of transforming growth factor- β 1 in the central nervous system. *J Submicrosc Cytol Pathol* **38**: 85-91 (2006).
147. Puchowicz MA, K Xu, X Sun, A Ivy, D Emancipator, and JC LaManna: Diet-induced ketosis increases capillary density without altered blood flow in rat brain. *Am J Physiol* **292**:E1607-E1615 (2007).
148. Ward NL, E Moore, K Noon, N Spassil, E Keenan, TL Ivanco, and JC LaManna: Cerebral angiogenic factors, angiogenesis, and physiological response to chronic hypoxia differ amongst four commonly used mouse strains. *J Appl.Physiol* **102**: 1927-1935 (2007).
149. Occhipinti R, MA Puchowicz, JC LaManna, E Somersalo, and D Calvetti: Statistical analysis of metabolic pathways of brain metabolism at steady state. *Ann.Biomed.Eng* **35**:886-902 (2007).
150. Nbuduizu O, and JC LaManna: Brain tissue oxygen concentration measurements. *Antioxidants & Redox Signaling* **9**: 1207-1219 (2007).
151. Dore-Duffy P, and JC LaManna: Physiologic angiodynamics in the brain. *Antioxidants & Redox Signaling* **9**: 1363-1371 (2007).
152. LaManna JC: Hypoxia in the central nervous system. *Essays in Biochemistry* **43**:139-152 (2007).
153. Bishop GM, MA Smith, JC LaManna, AC Wilson, G Perry, and CS Atwood: Iron homeostasis is maintained in the brain, but not the liver, following mild hypoxia. *Redox.Rep.* **12**:257-266 (2007).
154. LaManna JC: In situ measurements of brain tissue hemoglobin saturation and blood volume by reflectance spectrophotometry in the visible spectrum. *J Biomed.Opt.* **12**:062103(2007).
155. Ratan RR, A Siddiq, N Smirnova, K Karpisheva, R Haskew-Layton, S McConoughey, B Langley, A Estevez, PT Huerta, B Volpe, S Roy, CK Sen, I Gazaryan, S Cho, M Fink, and J LaManna: Harnessing hypoxic adaptation to prevent, treat, and repair stroke. *J Mol.Med.* **85**:1331-1338 (2007).
156. Milner R, S Hung, B Erokwu, P Dore-Duffy, JC LaManna, and GJ del Zoppo: Increased expression of fibronectin and the α 5 β 1 integrin in angiogenic cerebral blood vessels of mice subject to hypobaric hypoxia. *Mol.Cell Neurosci.* **38**:43-52 (2008). PMID: PMC2588547
157. Puchowicz MA, JL Zechel, J Valerio, DS Emancipator, K Xu, S Pundik, JC LaManna, and WD Lust: Neuroprotection in diet-induced ketotic rat brain after focal ischemia. *J Cereb.Blood Flow Metab* **28**:1907-1916 (2008). PMID:

PMC3621146

158. Kawanami D, Mahabeleshwar GH, Lin Z, Atkins GB, Hamik A, Haldar SM, Maemura K, LaManna JC, Jain MK. Kruppel-like factor 2 inhibits hypoxia-inducible factor 1alpha expression and function in the endothelium. *J.Biol.Chem.* **284**(31):20522-30 (2009) PMID: PMC2742816
159. Ndubuizu OI, Chavez JC, LaManna JC. Increased prolyl 4-hydroxylase expression and differential regulation of hypoxia-inducible factors in the aged rat brain. *Am.J.Physiol Regul.Integr.Comp Physiol* **297**(1):R158-R165(2009) PMID:PMC 2711700
160. Shenk JC, Liu J, Fischbach K, Xu K, Puchowicz M, Obrenovich ME, Gasimov E, Alvarez LM, Ames BN, LaManna JC, Aliev G. The effect of acetyl-L-carnitine and R-alpha-lipoic acid treatment in ApoE4 mouse as a model of human Alzheimer's disease. *J.Neurol.Sci.* **283**(1-2):199-206 (2009)
161. Xu K, LaManna JC. The loss of hypoxic ventilatory responses following resuscitation after cardiac arrest in rats is associated with failure of long-term survival. *Brain Res* **1258**:59-64 (2009) PMID: PMC2649988
162. Kc P, Balan KV, Tjoe SS, Martin RJ, LaManna JC, Haxhiu MA, Dick TE. Increased vasopressin transmission from the paraventricular nucleus to the rostral medulla augments cardiorespiratory outflow in chronic intermittent hypoxia-conditioned rats. *J.Physiol* **588**(Pt 4):725-40 (2010) PMID 2828143
163. Xu K, Puchowicz MA, Sun X, LaManna JC. Decreased brainstem function following cardiac arrest and resuscitation in aged rat. *Brain Res.* **1328**:181-9 (2010) PMID: PMC2877401
164. Donovan L, Welford SM, Haaga J, LaManna J, Strohl KP. Hypoxia implications for pharmaceutical developments. *Sleep Breath.* **4**(4):291-8 (2010)
165. Liu Y, Xu K, Chen LM, Sun X, Parker MD, Kelly ML, LaManna JC, Boron WF. Distribution of NBCn2 (SLC4A10) splice variants in mouse brain. *Neuroscience* **169**(3):951-64 (2010) PMID: PMC2914179
166. Li L, Welser JV, Dore-Duffy P, del Zoppo GJ, LaManna JC, Milner R. In the hypoxic central nervous system, endothelial cell proliferation is followed by astrocyte activation, proliferation, and increased expression of the alpha 6 beta 4 integrin and dystroglycan. *Glia* **58**(10):1157-67 (2010) PMID: PMC2914614
167. Mazumdar J, O'Brien WT, Johnson RS, LaManna JC, Chavez JC, Klein PS, Simon MC. O2 regulates stem cells through Wnt/beta-catenin signalling. *Nat.Cell Biol.* **12**(10):1007-13 (2010) PMID: PMC3144143
168. Ndubuizu OI, Tsipis CP, Li A, LaManna JC. Hypoxia-inducible factor-1 (HIF-1)-independent microvascular angiogenesis in the aged rat brain. *Brain Res.* **17**:1366:101-9 (2010) PMID:PMC3378376.
169. Benderro GF, LaManna JC. Hypoxia-induced angiogenesis is delayed in aging mouse brain. *Brain Res.* 2011 1389:50-60. PMID: PMC3082052
170. Crumrine RC, Marder VJ, Taylor GM, Lamanna JC, Tsipis CP, Scuderi P, Petteway SR Jr, Arora V. Intra-arterial administration of recombinant tissue-type plasminogen activator (rt-PA) causes more intracranial bleeding than does intravenous rt-PA in a transient rat middle cerebral artery occlusion model. *Exp Transl Stroke Med.* 2011 Sep 20;3(1):10. PubMed PMID: 21933438; PubMed Central PMID: PMC3184064.
171. Bambakidis NC, Petrullis M, Kui X, Rothstein B, Karampelas I, Kuang Y, Selman WR, Lamanna JC, Miller RH. Improvement of neurological recovery and stimulation of neural progenitor cell proliferation by intrathecal administration of Sonic hedgehog. *J Neurosurg.* 2012 Feb 10. [Epub ahead of print] PubMed PMID: 22324418 [PubMed - indexed for MEDLINE]
172. Crumrine RC, Marder VJ, Taylor GM, Lamanna JC, Tsipis CP, Novokhatny V, Scuderi P, Petteway SR Jr, Arora V. Safety evaluation of a recombinant plasmin derivative lacking kringles 2-5 and rt-PA in a rat model of transient ischemic stroke. *Exp Transl Stroke Med.* 2012 May 16;4(1):10. PMID: PMC3464715.
173. Benderro GF, Sun X, Kuang Y, Lamanna JC. Decreased VEGF expression and microvascular density, but increased HIF-1 and 2alpha accumulation and EPO expression in chronic moderate hyperoxia in the mouse brain. *Brain Res.* 2012 Aug 30;1471:46-55. Epub 2012 Jul 20. PMID: PMC3454487.
174. Correia SC, Santos RX, Santos MS, Casadesus G, Lamanna JC, Perry G, Smith MA, Moreira PI. Mitochondrial abnormalities in a streptozotocin-induced rat model of sporadic Alzheimer's disease. *Curr Alzheimer Res.* 2013 May 1;10(4):406-19. PubMed PMID: 23061885. [PubMed - in process]
175. Zhang Y, Kuang Y, Xu K, Harris D, Lee Z, LaManna JC, Puchowicz MA: Ketosis Proportionately Spares Glucose Utilization in Brain, *J Cereb Blood Flow Metab*, June 2013

Book Chapters and Proceedings

1. Jöbsis FF, M Rosenthal, JC LaManna, E Lothman, G Cordingley, and G Somjen: Metabolic activity in epileptic seizures. In: "*Brain Work, Alfred Benzon Symposium VIII*," Ingvar D et al., eds., Munksgaard, Copenhagen, pp. 185-196 (1975).

2. Austin G, W Schuler, G Haugen, J Willey, J LaManna, and F Jöbsis: Brain Metabolism in the cat during brief transient ischemia. In: "**Contemporary Aspects of Cerebral Vascular Disease**," Austin GM., ed., Professional Information Library, Dallas, pp. 46-58 (1976).
3. Rosenthal M, FF Jöbsis, DL Martel, and JC LaManna: Oxidative metabolism in situ: Changes in mitochondrial functioning due to ischemia insult. In: "**Contemporary Aspects of Cerebral Vascular Disease**," Austin GM., ed., Professional Information Library, Dallas, pp. 25-37 (1976).
4. Austin GM, W Haugen, and JC LaManna: Cortical oxidative metabolism following microanastomosis for brain ischemia. In: "**Oxygen and Physiological Function**," Jöbsis FF., ed., Professional Information Library, Dallas, pp. 531-544 (1977).
5. Mandel LJ, TG Riddle, and JC LaManna: A rapid scanning spectrophotometer and fluorometer for in vivo monitoring of steady-state and kinetic optical properties of respiratory enzymes. In: "**Oxygen and Physiological Function**," Jöbsis FF., ed., Professional Information Library, Dallas, pp. 79-89 (1977).
6. Rosenthal M and JC LaManna: Oxidative metabolism and neurophysiological function. In: "**Oxygen and Physiological Function**," Jöbsis FF., ed., Professional Information Library, Dallas, pp. 515-530 (1977).
7. Jöbsis FF and JC LaManna: Kinetic aspects of intracellular redox reactions: In vivo effects during and after hypoxia and ischemia. In: "**Extrapulmonary Manifestations of Respiratory Disease (Lung Biology in Health and Disease, v. 8)**," Robin E., ed., Marcel Dekker, Inc., New York, pp. 63-106 (1978).
8. LaManna JC, SJ Peretsman, AI Light, and M Rosenthal: Oxygen sufficiency in the working brain. In: "**Advances in Physiological Sciences, v. 25, Oxygen Transport to Tissue**," Kovach AGB et al., eds., Pergamon Press, New York, pp. 95-96 (1981).
9. Pikarsky SM, M Rosenthal, and JC LaManna: Computer-assisted scanning spectrophotometry of brain metabolism. In: "**DECUS Symposium Proceedings, Spring 1981**," Anonymouspp. 1091-1097 (1981).
10. Rosenthal M and JC LaManna: Applications of optical techniques to brain physiology. In: "**Advances in Physiological Science, volume 8: Cardiovascular Physiology, Peripheral Circulation and Methodology**," Kovách AGB et al., eds., Akademiai Kiado, Budapest, pp. 343-352 (1981).
11. Rosenthal M, RB Duckrow, JC LaManna, JE Levasseur, and JL Patterson, Jr.: Consequences of cerebral injury on oxidative energy metabolism measured in situ. In: "**Head Injury: Basic and Clinical Aspects**," Grossman RG et al., eds., Raven Press, New York, pp. 69-79 (1982).
12. Kreisman NR, M Rosenthal, JC LaManna, and TJ Sick: Cerebral oxygenation during recurrent seizures. In: "**Status Epilepticus: Mechanisms of Brain Damage and Treatment (Advances in Neurology, v. 34)**," Delgado-Escueta AV et al., eds., Raven Press, New York, pp. 233-241 (1983).
13. Jackson DL and JC LaManna: Neurologic implications of cardiopulmonary resuscitation. In: "**Handbook of Critical Care Neurology and Neurosurgery**," Henning RJ et al., eds., Praeger Publishers, New York, pp. 71-88 (1985).
14. LaManna JC and SI Harik: Noradrenergic modulation of cerebral cortical oxidative metabolism. In: "**Oxygen Transport to Tissue VI (Advances in Experimental Medicine and Biology, v. 180)**," Bruley D et al., eds., Plenum Press, pp. 211-220 (1985).
15. LaManna JC, KA McCracken, TS Whittingham, and WD Lust: Determination of intracellular pH by color film histophotometry of frozen *in situ* rat brain. In: "**Oxygen Transport to Tissue VIII (Advances in Experimental Medicine and Biology, v. 200)**," Longmuir IS., ed., Plenum Publishing Corporation, New York, pp. 253-259 (1986).
16. LaManna JC and RP Shockley: Determination of cerebral cortical capillary blood volume from mean transit time analysis. In: "**Oxygen Transport to Tissue IX (Advances in Experimental Medicine and Biology, v. 215)**," Silver IA et al., eds., Plenum Press, New York, pp. 29-34 (1987).
17. Prohaska OJ, F Kohl, P Goiser, F Olcaytug, G Urban, A Jachimowicz, K Pirker, W Chu, M Patil, J LaManna, and R Vollmer: Multiple Chamber-type Probe for Biomedical Application. In: "**International Conference on Solid-State Sensors and Actuators: Digest of Technical Papers**," AnonymousIEEE, Piscataway, NJ, pp. 812-815 (1987).
18. Sick TJ, JC LaManna, G Hollinden, and M Rosenthal: Optical studies of metabolism and intracellular ion homeostasis in the hippocampal slice. In: "**Brain Slices: Fundamentals, Applications and Implications**," Schurr A et al., eds., Karger, Basel, pp. 70-87 (1987).
19. Harik SI, NJ Riachi, and JC LaManna: MPTP neurotoxicity and the "biochemical" blood-brain barrier. In: "**Progress in Parkinson Research**," Hefti FF et al., eds., Plenum Publishing Corporation, New York, pp. 93-100 (1988).
20. LaManna JC, KA McCracken, M Patil, and OJ Prohaska: Brain tissue temperature: activation-induced changes determined with a new multisensor probe. In: "**Oxygen Transport to Tissue X (Advances in Experimental Medicine and Biology, v. 222)**," Mochizuki M et al., eds., Plenum Press, New York, pp. 383-389 (1988).

21. Prohaska OJ, F Olcaytug, F Kohl, G Urban, W Chu, R Vollmer, and J LaManna: Medical Applications of Miniaturized Chamber-type Electrochemical Sensors. In: "**Microsensors and Catheter-Based Imaging Technology (SPIE Proceedings v. 904)**," West AI., ed., SPIE, Bellingham, WA, pp. 13-16 (1988).
22. Harrington JF, M Buczek, TS Whittingham, WD Lust, AJ Ricci, HM Assaf, LL Sternau, JC LaManna, and RA Ratcheson: Effects of metabolic stress on the release of glutamate and GABA from hippocampal slices. In: "**Neurotransmission and Cerebrovascular Function I**," Seylaz J et al., eds., Elsevier Science Publishers BV, Amsterdam, pp. 433-436 (1989).
23. LaManna JC, GE Kikano, and SI Harik: Brain blood flow and sucrose space in acute and chronic hyperglycemia. In: "**Neurotransmission and Cerebrovascular Function I**," Seylaz J et al., eds., Elsevier Science Publishers BV, Amsterdam, pp. 89-92 (1989).
24. LaManna JC, KA McCracken, and KP Strohl: Changes in regional cerebral blood flow and sucrose space after 3-4 weeks of hypobaric hypoxia (0.5 ATM). In: "**Oxygen Transport to Tissue XI (Advances in Experimental Medicine and Biology, v. 248)**," Rakusan K et al., eds., Plenum Publishing Corp, New York, pp. 471-477 (1989).
25. LaManna JC, RC Crumrine, H Assaf, TS Whittingham, and TJ Sick: Postischemic astrocytic swelling: An hypothesis. In: "**Cerebrovascular diseases**," Ginsberg MD et al., eds., Raven Press, New York, pp. 247-250 (1989).
26. Mateescu GD, GM Yvars, DI Pazara, NA Alldridge, JC LaManna, WD Lust, M Mattingly, and W Kuhn: Combined ¹⁷O/¹H Magnetic Resonance Microscopy in Plants, Animals and Materials: Present Status and Potential. In: "**Synthesis and Applications of Isotopically Labelled Compounds 1988**," Baillie TA et al., eds., Elsevier, Amsterdam, pp. 499-508 (1989).
27. Harik SI, NJ Riachi, RN Kalaria, and JC LaManna: The role of the blood-brain barrier in preventing MPTP neurotoxicity. In: "**Pathophysiology of the Blood-Brain Barrier**," Johansson BB et al., eds., Elsevier Science Publishers, Amsterdam, pp. 255-267 (1990).
28. LaManna JC and KA McCracken: Carbonic anhydrase inhibition and cerebral cortical oxygenation in the rat. In: "**Oxygen Transport to Tissue XII (Advances in Experimental Medicine and Biology, v. 277)**," Piiper J et al., eds., Plenum Press, New York, pp. 335-343 (1990).
29. LaManna JC: Determination of intracellular pH in tissues by quantitative spectrophotometry of neutral red. In: "**Quantitative Spectroscopy in Tissue**," Frank K et al., eds., pmi Verlagsgruppe GmbH, Frankfurt, pp. 84-97 (1992).
30. LaManna JC, JF Harrington, LM Vendel, K Abi-Saleh, WD Lust, and SI Harik: Regional blood to brain transport of lactate. In: "**The Role of Neurotransmitters in Brain Injury**," Globus MYT et al., eds., Plenum Press, New York, pp. 293-298 (1992).
31. LaManna JC: Rat brain adaptation to chronic hypobaric hypoxia. In: "**Oxygen Transport to Tissue XIV (Advances in Experimental Medicine and Biology, v.317)**," Erdmann W et al., eds., Plenum Press, New York, pp. 107-114 (1992).
32. Selman WR, JC LaManna, RA Ratcheson, and WD Lust: Metabolic correlates of focal ischemia. In: "**Neurochemical Correlates of Cerebral Ischemia (Advances in Neurochemistry, v. 7)**," Bazan NG et al., eds., Plenum Publishing Corp., New York, pp. 9-39 (1992).
33. LaManna JC, BR Cordisco, DE Kneuse, and AG Hudetz: Increased capillary segment length in cerebral cortical microvessels of rats exposed to 3 weeks of hypobaric hypoxia. In: "**Oxygen Transport To Tissue XV (Advances in Experimental Medicine and Biology, v. 345)**," Vaupel P et al., eds., Plenum Publishing Corp., New York, pp. 627-632 (1994).
34. LaManna JC, KD Boehm, V Mironov, AG Hudetz, MA Hritz, JK Yun, and SI Harik: Increased fibroblastic growth factor mRNA in the brains of rats exposed to hypobaric hypoxia. In: "**Oxygen Transport to Tissue XVI**," Hogan MC et al., eds., Plenum Publishing Corp., New York, pp. 497-502 (1994).
35. Lin C-W and JC LaManna: Quantitative multicomponent spectral analysis using neural networks. In: "**Oxygen Transport To Tissue XV (Advances in Experimental Medicine and Biology, v. 345)**," Vaupel P et al., eds., Plenum Publishing Corp., New York, pp. 651-658 (1994).
36. Harik SI and JC LaManna: Adaptation of the brain to prolonged hypobaric hypoxia: Alterations in the microcirculation and in glucose metabolism. In: "**Hypoxia and the Brain**," Sutton JR et al., eds., Queen City Printers, Burlington, VT, pp. 18-30 (1995).
37. Sick TJ and JC LaManna: Intrinsic optical properties of brain slices: useful indices of electrophysiology and metabolism. In: "**Brain Slices in Basic and Clinical Research**," Schurr A et al., eds., CRC Press, Inc., Boca Raton, pp. 47-63 (1995).
38. LaManna JC: Hypoxia/Ischemia and the pH Paradox. In: "**Oxygen Transport to Tissue XVII (Advances in Experimental Medicine and Biology v. 388)**," Ince C et al., eds., Plenum Press, New York, pp. 283-292 (1996).
39. Chelimsky TC, KM Mcneeley, B Comfort, CA Piantadosi, and JC LaManna: Effect of exercise and ischemia on tissue oximetry and cytochrome in normal subjects, patients with chronic limb pain, and patients with mitochondrial mitopathies.

- In: "*Oxygen Transport to Tissue XVIII (Advances in Experimental Medicine and Biology, v. 411)*," Nemoto EM et al., eds., Plenum Press, New York, pp. 445-451 (1997).
40. Harik SI, AS Al-Mudallal, JC LaManna, WD Lust, and BE Levin: Ketogenic diet and the brain. In: "*Frontiers of Neurology: A Symposium in Honor of Fred Plum*," Anonymous New York Academy of Sciences, New York, pp. 218-224 (1997).
 41. LaManna JC and SI Harik: Brain metabolic and vascular adaptations to hypoxia in the rat. In: "*Oxygen Transport to Tissue XIX (Advances in Experimental Medicine and Biology, v. 428)*," Harrison DK et al., eds., Plenum Press, New York, pp. 163-167 (1997).
 42. LaManna JC, MA Haxhiu, KL Kutina-Nelson, S Pundik, B Erokwu, and NS Cherniack: Regional differences in metabolism and intracellular pH in response to moderate hypoxia. In: "*Oxygen Transport to Tissue XVIII (Advances in Experimental Medicine and Biology v. 411)*," Nemoto EM et al., eds., Plenum Publishing Corp., New York, pp. 23-32 (1997).
 43. Lauro KL and JC LaManna: Adequacy of cerebral vascular remodeling following three weeks of hypobaric hypoxia examined by an integrated composite analytical model. In: "*Oxygen Transport to Tissue XVIII (Advances in Experimental Medicine and Biology v. 411)*," Nemoto EM et al., eds., Plenum Publishing Corp., New York, pp. 369-376 (1997).
 44. Chávez JC, P Pichiule, MA Haxhiu, and JC LaManna: Local injection of NaCN into the nucleus locus ceruleus of the rat brain induces respiratory depression. In: "*Oxygen Transport to Tissue XX (Advances in Experimental Medicine and Biology v.454)*," Hudetz AG et al., eds., Plenum Press, New York, pp. 461-465 (1998).
 45. LaManna JC, N-T Kuo, and WD Lust: Hypoxia induced brain angiogenesis: Signals and consequences. In: "*Oxygen Transport to Tissue XX (Advances in Experimental Medicine and Biology v.454)*," Hudetz AG et al., eds., Plenum Press, New York, pp. 287-293 (1998).
 46. LaManna JC and WD Lust: Intrinsic and extrinsic optical probes of cerebrovascular and metabolic function. In: "*Cerebrovascular Disease: Pathophysiology, Diagnosis, and Treatment, Vol 1*," Ginsberg MD et al., eds., Blackwell Science, Boston, pp. 806-823 (1998).
 47. LaManna JC and KL Lauro: Absorbance pH Indicators. In: "*pH and Brain Function*," Kaila K et al., eds., Wiley-Liss, Inc, New York, pp. 109-127 (1998).
 48. Pichiule P, JC Chávez, RJ Przybylski, and JC LaManna: Increase of neuronal nitric oxide synthase during chronic hypoxia. In: "*Oxygen Transport to Tissue XX (Advances in Experimental Medicine and Biology v.454)*," Hudetz AG et al., eds., Plenum Press, New York, pp. 319-323 (1998).
 49. Pichiule P, JC Chávez, K Xu, and JC LaManna: Upregulation of VEGF protein levels in global ischemia induced by cardiac arrest and resuscitation in rat brain. In: "*Maturation Phenomenon in Cerebral Ischemia III*," Ito U et al., eds., Springer-Verlag, Berlin, pp. 111-116 (1999).
 50. Xu K, Y Zhou, WD Lust, and JC LaManna: Adenosine improves cerebral recovery in rat after cardiac arrest and resuscitation. In: "*Oxygen Transport to Tissue XXI (Advances in Experimental Medicine and Biology, v.471)*," Eke A et al., eds., Plenum Press, New York, pp. 217-222 (1999).
 51. LaManna JC, IR Kaiserman-Abramof, K Xu, S Daugherty, JC Chávez, and P Pichiule: Acute and delayed effects of transient global ischemia on rat brain capillary endothelial cells in vivo. In: "*Ischemic Blood Flow in the Brain (Keio University Symposia for Life Science and Medicine, vol. 6)*," Fukuuchi Y et al., eds., Springer-Verlag, Tokyo, pp. 319-325 (2001).
 52. LaManna JC, NL Neubauer, and JC Chávez: Formation of 4-hydroxy-2-nonenal-modified proteins in the rat brain following transient global ischemia induced by cardiac arrest and resuscitation. In: "*Maturation Phenomenon in Cerebral Ischemia IV*," Bazan NG et al., eds., Springer-Verlag, Berlin, pp. 223-227 (2001).
 53. Agani F, JC Chavez, P Pichiule, and JC LaManna: Brain microvascular and metabolic adaptation to prolonged mild hypoxia. In: "*Oxygen Sensing: Response and Adaptation to Hypoxia*," Lahiri S et al., eds., Marcel Dekker, Inc., New York, pp. 109-122 (2003).
 54. Chavez JC and JC LaManna: Hypoxia-inducible factor-1 alpha accumulation in the rat brain in response to hypoxia and ischemia is attenuated during aging. In: "*Oxygen Transport to Tissue XXIII (Advances in Experimental Medicine and Biology v. 510)*," Wilson DF et al., eds., Kluwer Academic/Plenum Publishers, New York, pp. 337-341 (2003).
 55. LaManna JC: The redox state of cytochrome oxidase in brain in vivo: an historical perspective. In: "*Oxygen Transport to Tissue XXIV (Advances in Experimental Medicine and Biology, v.530)*," Dunn JF et al., eds., Kluwer Academic/Plenum Publishers, New York, pp. 535-546 (2003).
 56. LaManna JC, M Neal, K Xu, and MA Haxhiu: Differential expression of intracellular acidosis in rat brainstem regions in response to hypercapnic ventilation. In: "*Chemoreception (Adv. Exp.Med.Biol. v536)*," Pequignot J-M et al., eds., Kluwer Academic/Plenum Publishers, New York, pp. 407-413 (2003).

57. Pichiule P, JC Chavez, and JC LaManna: Oxygen and oxidative stress modulate the expression of uncoupling protein-5 in vitro and in vivo. In: "**Oxygen Transport to Tissue XXV (Adv. Exp. Med. Biol. v. 540)**," Thorniley MS et al., eds., Kluwer Academic/Plenum Publishers, New York, pp. 103-107 (2003).
58. Pichiule P, F Agani, JC Chavez, K Xu, and JC LaManna: HIF-1 alpha and VEGF expression after transient global cerebral ischemia. In: "**Oxygen Transport to Tissue XXIV (Advances in Experimental Medicine and Biology, v.530)**," Dunn JF et al., eds., Kluwer Academic/Plenum Publishers, New York, pp. 611-617 (2003).
59. Pichiule P and JC LaManna: Expression of angiopoietin-1 and -2 in the rat brain during chronic hypoxia and de-adaptation. In: "**Oxygen Transport to Tissue XXIII (Advances in Experimental Medicine and Biology v. 510)**," Wilson DF et al., eds., Kluwer Academic/Plenum Publishers, New York, pp. 331-335 (2003).
60. Puchowicz MA, K Xu, and JC LaManna: Single pass dual-label indicator method: Blood-to-brain transport of glucose and short-chain monocarboxylic acids. In: "**Blood-Brain Barrier: Biology and Research Protocols**," Nag S., ed., Human Press, Totowa, New Jersey, pp. 265-276 (2003).
61. Radhakrishnan K, JC LaManna, and ME Cabrera: A quantitative study of oxygen as a metabolic regulator. In: "**Oxygen Transport to Tissue XXIV (Advances in Experimental Medicine and Biology, v.530)**," Dunn JF et al., eds., Kluwer Academic/Plenum Publishers, New York, pp. 547-554 (2003).
62. Fisher EM and JC LaManna: Gut dysoxia: comparison of sites to detect regional gut dysoxia. *Adv.Exp.Med.Biol.* **566**:151-157 (2005).
63. Puchowicz MA, DS Emancipator, K Xu, DL Magness, OI Ndubuizu, WD Lust, and JC LaManna: Adaptation to chronic hypoxia during diet-induced ketosis. *Adv.Exp.Med.Biol.* **566**:51-57 (2005).
64. Puchowicz MA, K Radhakrishnan, K Xu, DL Magness, and JC LaManna: Computational study on use of single-point analysis method for quantitating local cerebral blood flow in mice. *Adv.Exp.Med.Biol.* **566**:99-104 (2005)
65. Fisher EM, RP Steiner, and JC LaManna: Intracellular pH in gastric and rectal tissue post cardiac arrest. *Adv.Exp.Med.Biol.* **578**:11-16 (2006).
66. LaManna JC, X Sun, AD Ivy, and NL Ward: Is cyclooxygenase-2 (COX-2) a major component of the mechanism responsible for microvascular remodeling in the brain? *Adv.Exp.Med.Biol.* **578**:297-303 (2006).
67. LaManna JC, JC Chavez, and P Pichiule: Genetics and Gene Expression of Glycolysis. In: "**Handbook of Neurochemistry & Molecular Neurobiology**," Gibson G et al., eds., Springer, pp. 771-788 (2007).
68. Xu K, X Sun, MA Puchowicz, and JC LaManna: Increased sensitivity to transient global ischemia in aging rat brain. *Adv.Exp.Med.Biol.* **599**:199-206 (2007).
69. Fisher EM, X Sun, BO Erokwu, and JC LaManna: Hypobaric hypoxia reduces GLUT2 transporter content in rat jejunum more than in ileum. *Adv.Exp.Med.Biol.* **614**:345-352 (2008).
70. Koppaka SS, Puchowicz, JC LaManna, and JE Gatica: Effect of alternate energy substrates on mammalian brain metabolism during ischemic events. *Adv.Exp.Med.Biol.* **614**:361-370 (2008).
71. Xu K, MA Puchowicz, X Sun, and JC LaManna: Mitochondrial dysfunction in aging rat brain following transient global ischemia. *Adv.Exp.Med.Biol.* **614**:379-386 (2008). PMID:PMC3071507
72. Zhou H, GM Saidel, and JC LaManna: Cerebral blood flow adaptation to chronic hypoxia. *Adv.Exp.Med.Biol.* **614**:371-377 (2008).
73. Puchowicz MA, SS Koppaka, and JC LaManna: Brain metabolic adaptations to hypoxia. In: "**Metabolic Encephalopathy**," McCandless D., ed., Springer, pp. 15-30 (2009).
74. LaManna JC, P Pichiule, K Xu, and JC Chavez: Brainstem sensitivity to hypoxia and ischemia. In: "**Brain Hypoxia and Ischemia: Emphasis on Developmental Aspects**," Haddad GG et al., eds., Humana Press, pp. 213-223 (2009).
75. LaManna JC, Salem N, Puchowicz M, Erokwu B, Koppaka S, Flask C, Lee Z. Ketones suppress brain glucose consumption. *Adv.Exp.Med.Biol.* **645**:301-306 (2009). PMID:PMC2874681
76. Xu K, Sun X, Erokwu BO, Tsipis CP, Puchowicz MA, LaManna JC. Diet-induced ketosis improves cognitive performance in aged rats. *Adv.Exp.Med.Biol.* **662**:71-75 (2010). PMID: PMC2874682
77. Xu K, Sun X, Erokwu BO, Cernak I, Lamanna JC. A heat-shock protein co-inducer treatment improves behavioral performance in rats exposed to hypoxia. *Adv Exp Med Biol.* 2011;701:313-8. PubMed PMID: 21445803.
78. Kc P, Balan KV, Martin RJ, Lamanna JC, Haxhiu MA, Dick TE. Chronic intermittent hypoxia-induced augmented cardiorespiratory outflow mediated by vasopressin-V₁A receptor signaling in the medulla. *Adv Exp Med Biol.* 2011;701:319-25. PubMed PMID: 21445804.
79. Xu K, Radhakrishnan K, Serhal A, Allen F, Lamanna JC, Puchowicz MA. Regional brain blood flow in mouse: quantitative measurement using a single-pass radio-tracer method and a mathematical algorithm. *Adv Exp Med Biol.* 2011;701:255-60. PubMed PMID: 21445795.
80. LaManna JC. The Western Reserve, Edward Morley, and oxygen: a brief historical introduction. *Adv Exp Med Biol.*

2011;701:3-8. PubMed PMID: 21445762.

81. LaManna JC. Angioplasticity and cerebrovascular remodeling. *Adv Exp Med Biol*. 2012;737:13-7. PubMed PMID: 22259075.

82. Xu K, LaManna JC, Puchowicz MA. Neuroprotective properties of ketone bodies. *Adv Exp Med Biol* (2012); 737:97-102 PMID: 22259088 [PubMed - in process]

83. Zhang Y, Kuang Y, LaManna JC, Puchowicz MA: Contribution of Brain Glucose and Ketone Bodies to Oxidative Metabolism. *Adv Exp Med Biol* (in press)

LETTER TO THE EDITOR, EDITORIAL COMMENTS, etc.

1. Harik SI, and JC LaManna: Altered glucose metabolism in microvessels from patients with Alzheimer's disease (Marcus et al, *Ann. Neurol.* 26:91-94, 1989). *Annals of Neurology* 29:573, 1991.
2. LaManna JC, Editorial Comment (Tomlinson, et al, *Stroke* 24:435-443, 1993). *Stroke*, 24:443, 1993.
3. LaManna JC, Editorial Comment (Tomlinson, et al, *Stroke* 24:2030-2040, 1993). *Stroke*, 24:2040, 1993.
4. LaManna JC, Editorial Comment (Lin, et al, *Stroke* 26:2166-2171, 1995). *Stroke*, 26:2171, 1995.

BOOKS EDITED

1. Nemoto EM, and JC LaManna: "Oxygen Transport to Tissue XVIII (Advances in Experimental Medicine and Biology", vol 411), Plenum Press, New York, 608 pp., 1997.
2. LaManna JC, MA Puchowicz, and K Xu: "Oxygen Transport to Tissue XXXII (Advances in Experimental Medicine and Biology", vol 701), Springer Publications, New York, 368 pp., 2011.

BOOK REVIEWS

1. **Gas Exchange (Handbook of Physiology, Section 3: The Respiratory System, Vol. 4)**, edited by LE Farhi and SM Tenney (section editor AP Fishman), American Physiological Society, 1987.
-*Neurology* 37(10):1696, Oct 1987.
2. **Cerebrovascular Diseases: Fifteenth Research (Princeton) Conference**, edited by WJ Powers and ME Raichle, Raven Press, 1987.
-*Neurology* 38(1):173, Jan 1988.
3. **Brain Edema: A Pathogenetic Analysis**, edited by G Mchedlishvili, J Cervos-Navarro, K-A Hossmann, and I Klatzo, Akadémiai Kiadó, 1986.
-*Neurology* 38(2):338, Feb 1988.
4. **Traumatic Brain Edema**, edited by F Cohadon, A Baethmann, KG Go, and JD Miller, Springer-Verlag, 1987.
-*Neurology* 38(3):511, Mar 1988.
5. **Encyclopedia of Medical Devices and Instrumentation**, editor-in-chief JG Webster, Wiley, 1988.
-*Neurology* 39(3):460, Mar 1989.
6. **Proton Passage Across Cell Membranes**, edited by G Bock and J Marsh, Wiley, 1988.
-*Neurology* 39(11):1561-1562, Nov 1989.
7. **Brain Imaging: Techniques and Applications**, edited by NA Sharif and ME Lewis, Horwood, 1988.
-*Neurology* 40(3):565-566, Mar 1990.
8. **Oxygen in Physiology and Medicine**, KK Jain and B Fischer, Charles C. Thomas, 1989.
-*Neurology* 40(6):1013, Jun 1990.
9. **Brain Fluids and Metabolism**, GA Rosenberg, Oxford University Press, 1990.
-*Neurology* 41(4):613-614, Apr 1991.
10. **Brain Edema VIII**, H-J Reulen, A Baethmann, J Fenstermacher, A Marmarou, and M Spatz, Springer-Verlag, 1990.
-*Neurology* 42(8):1647-1648, Aug 1992.
11. **The Nervous System: Its Function and Interaction with the World**, LD Partridge and LD Partridge, MIT Press, 1993
-*Neurology* 43(12):2733, Dec 1993.
12. **Basic Human Neuroanatomy (5th ed.)**, C Watson, Little Brown and Co., 1995; **Survey of Functional Neuroanatomy (3rd ed.)**, B Garoutte, Mill Valley Medical Pub., 1994
-*Neurology* 47(7):316, July 1996.
13. **Ischemia and Loss of Vascular Autoregulation in Ocular and Cerebral Diseases: A New Perspective**, ME Langham, Springer-Verlag, 2009.

- J. Alz. Disease (in press) 2009.

SCIENTIFIC PRESENTATIONS, LECTURESHIPS, PROGRAM PARTICIPATION

Invited Seminars and Lectures:

1. Department of Medicine, Medical College of Virginia, Richmond, Virginia, September, 1974.
2. New Orleans Neuroscience Society, Tulane University Medical School, February, 1978.
3. Neurological surgery section, Loma Linda University Hospital, Loma Linda, California, July 1979.
4. "Optical methods for monitoring cerebral metabolism in vivo." Pre-clinical Research Department, Sandoz, A.G. Basel, Switzerland, June 13, 1980.
5. "Energy supply and demand in the central nervous system," Department of Physiology, Ohio State University, Columbus, Ohio, February 16, 1983.
6. "The role of oxygen in biology," Steamboat Springs High School, Steamboat Springs, Colorado, January 26, 1984.
7. Department of Physiology, Duke University Medical School, November, 1984.
8. Department of Neurosurgery, Medical College of Virginia, August 5, 1985.
9. Department of Biomedical Engineering, Akron University, September 18, 1987.
10. Department of Biology, Cleveland State University, January 8, 1988.
11. "Cerebrovascular Function During Seizures", Selected Topics in Epilepsy: Third Annual Update, Cleveland, Ohio, April 1 1989.
12. "Optical Methods for Determination of Intracellular pH in Intact Tissues", Faculte de Pharmacie, INSERM, Dijon, France, June 6, 1989.
13. "The Measurement of Intracellular pH in Rat Brain by Optical Techniques", Instituto Superiore di Sanita, Rome, Italy, June 20, 1989.
14. "Optical Methods for the Determination of Intracellular pH in Intact Tissues", Fachbereich Biologie/Chemie, Universitat Osnabruck, Osnabruck, Federal Republic of Germany, July 17, 1989.
15. "Determination of Intracellular pH in Tissue by Quantitative Spectroscopy of Neutral Red", Institut fur Physiologie und Kardiologie, Universitat Erlangen-Nurnberg, Erlangen, Federal Republic of Germany, July 19, 1989.
16. "Cerebral Capillary Adaptations to Acute and Chronic Hypoxia", Department of Neurosurgery, Medical College of Virginia, September 21, 1989.
17. "Animal Models of Cerebral Ischemia: Focal and General", Squibb Institute for Medical Research, February 23, 1990.
18. "Neurologic Implications of Cardiopulmonary Resuscitation", Department of Emergency Medicine, Wright State University School of Medicine, February 21, 1992.
19. "Brain Metabolism and Microvascular Adaptation to Chronic Hypobaric Hypoxia", Laboratory of Cellular Neurophysiology, Czechoslovak Academy of Sciences and Charles University, Prague, Czechoslovakia, September 1, 1992.
20. "Intracellular pH Measurement in Rat Brain in vivo and in Brain Slices", 2nd Department of Physiology, Semmelweis University, Budapest, Hungary, September 3, 1992.
21. "Intracellular pH Measurement in Rat Brain in vivo", Laboratory of Cerebrovascular Research (CNRS), Paris, France, September 8, 1992.
22. "The Role of Intracellular pH Homeostasis in Recovery from Total Cerebral Ischemia", Department of Neurosurgery, University of Kentucky, Lexington, March 9, 1993.
23. "Brain Adaptation to Chronic Hypobaric Hypoxia in Rats", University of Pennsylvania Medical Center, Institute for Environmental Medicine, September 17, 1993.
24. "Hypoxia/Ischemia and the pH Paradox", Burroughs Wellcome Company, Research Triangle Park, North Carolina, October 8, 1993.
25. "Intracellular pH in Rat Brain in Vivo and in Brain Slices", Department of Cell Physiology, Duke University Medical Center, Durham, North Carolina, October 11, 1993.
26. "The Cerebral Circulation: Regulation and Ischemia", Geriatric Anesthesia : Update on Hypertension, Arrhythmias, and Carotid Occlusive Disease, Cleveland, Ohio, November 6, 1994.
27. "Cerebral Ischemia and the pH Paradox", and "Metabolic and Vascular Adaptation to Chronic Hypoxia in the Rat Brain", Visiting Professor, Department of Pathology; and the Oklahoma Center for Neurosciences, The University of Oklahoma Health Science Center, Oklahoma City, Oklahoma, October 19 and 20, 1995.
28. "Microvascular and Metabolic Adaptation to Prolonged Mild Hypoxia in the Rat Brain", Department of Physiology and Biophysics, University of Arkansas Medical College, March 26, 1998.

29. "CNS Aspects of Recovery from Cardiac Arrest and Resuscitation", Department of Neurology, University of Arkansas Medical College, March 27, 1998.
30. "The Time Course of Metabolic Recovery in Brain After Cardiac Arrest and Resuscitation", Fondazione Sigma-Tau Lecture, Roma, Italia, April 15, 1998.
31. "Microvascular and Metabolic Adaptation to Prolonged, Mild Hypoxia in Rat Brain", Special Seminar, School of Medicine in Shreveport, Louisiana State University, July 29, 1998.
32. "CNS Aspects of Recovery from Cardiac Arrest and Resuscitation", Department of Neurology, Wayne State University, Detroit, May 14, 1999.
33. "The Redox State of Cytochrome Oxidase in Brain: An Historical Perspective", Department of Medical Physics, University College London, London, England, December 17th, 1999.
34. "The Central Nervous System Aspects of Cardiac Arrest and Resuscitation in a Rat Model of Transient Global Ischemia", Department of Neurosurgery, King=s College Hospital, London, England, December 17th, 1999.
35. "The MS in Applied Anatomy Program at CWRU School of Medicine", Department of Anatomy, University of Arizona, Tucson, April 13, 2000.
36. "Microvascular and Metabolic Adaptation to Prolonged Mild Hypoxia in the Rat Brain", University College of Dublin, Dublin, Ireland, May 16, 2000.
37. "Microvascular and Metabolic Adaptation to Prolonged Mild Hypoxia in the Rat Brain", Neuroimaging Sciences Training Program, Yale University, October 31, 2000.
38. "Microvascular and Metabolic Adaptation to Prolonged Mild Hypoxia in the Rat Brain", Elizabeth Dunaway Burnham Visiting Scientist Seminar, Dartmouth Medical School, Hanover, New Hampshire, March 20, 2002
39. "Microvascular and Metabolic Adaptation to Prolonged Mild Hypoxia in the Rat Brain", Institute of Arctic Biology, University of Alaska, Fairbanks, Alaska, May 31, 2002.
40. "Microvascular and Metabolic Adaptation to Prolonged Mild Hypoxia in the Rat Brain", Dept Anatomy, East Carolina School of Medicine, Greenville, North Carolina, August 18, 2002.
41. "Microvascular and Metabolic Adaptation to Prolonged Mild Hypoxia in the Rat Brain", CBV Path Group, MRC Unit, Newcastle General Hospital, Newcastle upon Tyne, England, December 7, 2002.
42. "Microvascular and Metabolic Adaptation to Prolonged Mild Hypoxia in the Rat Brain", Dept Neurobiology, NEOUCOM, Rootstown, Ohio, December 19, 2002.
43. "Microvascular and Metabolic Adaptation to Prolonged Mild Hypoxia in the Rat Brain", Dept of Physiology, University of Utah, School of Medicine, Salt Lake City, Utah, January 24, 2003.
44. "Microvascular and Metabolic Adaptation to Prolonged Mild Hypoxia in the Rat Brain", Dept Physiology and Biophysics, Howard University School of Medicine, February 24, 2003.
45. "The Central Nervous System Aspects of Cardiac Arrest and Resuscitation in a Rat Model of Global Ischemia", Dept Neurology, Howard Univ. School of Medicine, February 25, 2003.
46. "The Central Nervous System Aspects of Cardiac Arrest and Resuscitation in a Rat Model of Global Ischemia", Depts of Integrated Physiology and Pharmacology & Neuroscience, University of North Texas, Ft Worth, TX, October 17, 2003.
47. "Microvascular Adaptation to Prolonged Hypoxia in the Rat Brain", Biomedical Sciences Seminar, Loma Linda University Medical School, Loma Linda, California, April 1, 2004.
48. "Central Nervous System Aspects of Cardiac Arrest and Resuscitation in a Rat Model of Global Ischemia", Perinatal Biology Seminar, Loma Linda University Medical School, Loma Linda, California, April 2, 2004.
49. "Metabolic and Vascular Adaptation to Prolonged Mild Hypoxia in the Rat Brain", Department of Pharmacology and Physiology and Cellular and Molecular Basis of Medicine Cluster, University of Rochester School of Medicine, Rochester NY, December 6, 2004.
50. "Structural and Functional Adaptation to Hypoxia in the Rat Brain", Burke Medical Research Institute, White Plains, NY, February 15, 2005.
51. "Microvascular Adaptation to Prolonged Hypoxia in the Rat Brain", Department of Neurosciences, Medical University of Ohio, Toledo, October 25, 2005
52. "Hypoxia and Microvascular Remodeling in the Mature Rat Brain", Department of Cell and Structural Biology, University of Texas Health Science Center at San Antonio, February 12th, 2007.
53. "Brain Angioplasticity: Microvascular Remodeling in the Mature Brain", University of Kentucky School of Medicine, July 19th, 2007.
54. "Microvascular plasticity in the adult rat and mouse brain", The Panum Institute, University of Copenhagen, Copenhagen, Denmark, September 3, 2007.

55. "Brain Angioplasticity: Microvascular Remodeling in the Mature Brain", Center for Neuroscience, West Virginia University, Morgantown, October 28, 2007.
56. "Brain Angioplasticity: Microvascular Remodeling in the Mature Rodent Brain", Perinatal Biology Seminar, Loma Linda University Medical School, Loma Linda, California, October 16, 2008.
57. "Brain Angioplasticity: Microvascular Remodeling in the Mature Rodent Brain", Department of Pathobiology, Cleveland Clinic Foundation, Jan 20th, 2009.
58. "The Metabolism of a Computer Mouse" (with Dr. Daniela Calvetti, Mathematics, CWRU), Science Café Cleveland, Great Lakes Brewing Co., May 10, 2010.
59. "Brain Angioplasticity: Microvascular Remodeling in the Aging Rodent Brain", 1782nd conference of the Keio Medical Society, Tokyo, Japan, September 29th, 2010.
60. "Hypoxia and Microvascular Remodeling in the Mature Rodent Brain", Peter Lutz Memorial Lecture, Florida Atlantic University, Boca Raton, FL, February 22, 2011.
61. "Angioplasticity and Cerebrovascular Remodeling", Seminars in Neuroscience, University of Louisville School of Medicine, Louisville, KY, February 24, 2011.
62. "Brain Angioplasticity in Physiological Adaptation and Pathophysiological Insult", Neurology Grand Rounds, University of New Mexico, Albuquerque, April 1, 2011.
63. "Angioplasticity and Cerebrovascular Remodeling", BRaIN Center Seminar, University of New Mexico, Albuquerque, April 1, 2011.
64. "Ketones, Angiogenesis and Redox Modulation of HIF-1 in the Rat Brain", University of Arkansas Medical Sciences Symposium: "Cutting Edge Neuroscience for Cutting Edge Clinicians", June 4, 2011, Little Rock, Arkansas.

Invited Meeting and Symposia Participation:

1. Organizer/Moderator, Workshop on Optical Techniques, at the Annual Meeting of the International Society for Oxygen Transport to Tissues, La Jolla, California, July 28, 1979.
2. Session co-chairman, abstract session III, at the Annual Meeting of the International Society for Oxygen Transport to Tissues, La Jolla, California, July 28, 1979.
3. "Applications of optical techniques to brain physiology", Presented at the XVIIIth International Congress of Physiological Sciences, Budapest, Hungary, July, 1980.
4. Panel presentation: "Catecholamine regulation of cerebral oxidative metabolism," 15th Annual Winter Conference on Brain Research, Steamboat Springs, Colorado, January, 1982.
5. Panel presentation: "Acclimatization to altitude," 17th Annual Winter Conference on Brain Research, Steamboat Springs, Colorado, January, 1984.
6. Workshop organizer and participant: "New concepts in brain oxidative metabolism developed through optical techniques in vivo," 17th Annual Winter Conference on Brain Research, Steamboat Springs, Colorado, January, 1984.
7. Session co-chairman, "Muscle/cerebral circulation: Metabolic control," at the 35th Annual Fall Meeting of the American Physiological Society, Lexington, Kentucky, August, 1984.
8. Session co-chairman, International Society for Oxygen Transport to Tissues, Raleigh, North Carolina, July, 1985.
9. "Intracellular pH Determination by Absorption Spectrophotometry of Neutral Red", International Society for Oxygen Transport to Tissues Satellite, Durham, North Carolina, July, 1985.
10. Session co-chairman, International Society for Oxygen Transport to Tissues Satellite, Durham, North Carolina, July, 1985.
11. Workshop presentation, "Molecular and behavioral changes following traumatic insults to the brain and spinal cord." 19th Annual Winter Conference on Brain Research, Keystone, Colorado, January, 1986.
12. Session Co-chairman, International Society for Oxygen Transport to Tissue, Sapporo, Japan, July, 1987.
13. Session Co-Chairman, International Society for Oxygen Transport to Tissue, Ottawa, Canada, August, 1988.
14. Workshop organizer and participant, "Intracellular pH", 22nd Winter Conference on Brain Research, Snowbird, Utah, January, 1989.
15. Co-Chairman, Session V: "The basal forebrain and cerebral circulation", Neurotransmission and Cerebrovascular Function Satellite to the XIVth International Symposium on Cerebral Blood Flow and Metabolism, La Napoule, France. June 3, 1989.
16. Session Chairman, "Cerebral Ischemia", FASEB Annual Meeting, Washington, D.C., April 2, 1990
17. Workshop organizer and participant, "Biochemical and Physiological Adaptations to High Altitude", 24th Winter Conference on Brain Research, Vail, Colorado, January, 1991.

18. "Intracellular pH in Rat Brain in Vivo and in Brain Slices", Presented at the IBRO Satellite Meeting "Ions-Water-Energy in Brain Cells", Saskatoon, Canada, August 10-14, 1991.
19. Workshop participant, "Is There Capillary Recruitment in the Brain", 25th Winter Conference on Brain Research, Steamboat Springs, Colorado, January, 1992.
20. Invited Speaker, "The Role of Intracellular Acidosis in Recovery from Ischemia", International Workshop on Energy Production in Hypertrophied Hearts, Beaune, France, September 10-11, 1992.
21. Invited Speaker, "Hypoxia/Ischemia and the pH Paradox", 22nd Annual Meeting of the International Society for Oxygen Transport to Tissue, Istanbul, Turkey, August, 1994.
22. Invited Speaker, "Hypoxia/Ischemia and the pH Paradox", Physiological and Pathological Aspects of Neuron-Glia Interaction, EUSEB Meeting on Basic and Clinical Neuroscience, Prague, Czech Republic, September, 1994
23. Invited Participant, The Will Foundation Workshop on the Blood Brain Barrier, Chicago, Illinois, November 11-13, 1994.
24. "Brain Metabolism and Blood Flow", Steamboat Springs High School, Steamboat Springs, Colorado, January 25, 1995.
25. Symposium Speaker, "Adaptation to Chronic Hypoxia in Rat Brain", Experimental Biology >95 Meeting, Atlanta, Georgia, April 12, 1995.
26. Invited Speaker, "Angiogenesis", 23rd Annual Meeting of the International Society for Oxygen Transport to Tissue, Pittsburgh, PA, August, 1995.
27. "Adaptation To Hypoxia", ISOTT95 Satellite Symposium, August 27 - 29, 1995, Organizer and Host.
28. Invited Speaker, Interactive Panel "New Evidence for Angiogenesis in the Adult Brain: Physiology and Pathophysiology", 29th Annual Winter Conference on Brain Research, Snowmass, Colorado, January 27, 1996.
29. Invited Colloquium Speaker, "The Physiological Concomitants of Brain Angiogenesis in Hypobaric Hypoxia", 27th Annual Meeting of the American Society for Neurochemistry, Philadelphia, Pennsylvania, March 3, 1996.
30. "Brain Adaptation to Altitude", Breckenridge High School, Breckenridge CO, January 1997.
31. "Oxygen and the Brain", Lone Peak Elementary School, Sandy, Utah, January 1998.
32. "Upregulation of VEGF Protein Levels in Global Ischemia Induced by Cardiac Arrest and Resuscitation in Rat Brain", Maturation Phenomenon in Cerebral Ischemia III, Pozzilli, Italia, April 21, 1998.
33. "Brain Metabolic and Vascular Adaptations to Hypoxia in the Rat", 3rd International Conference on Hypoxia in Medicine, Moscow, Russia, June 17, 1998.
34. "Ischemia and Shock", Session Co-Chair, 26th Annual Meeting of the International Society for Oxygen Transport to Tissue, Budapest, Hungary, August 27th, 1998.
35. "Cerebral Vascular Adaptation to Changing Metabolic Demand in Hypoxia and Ischemia", 1998 Annual Meeting of the Biomedical Engineering Society, Cleveland, Ohio October 12th, 1998.
36. "Oxygen and the Brain", Aspen High School, Aspen, Colorado, January 1999.
37. "Critical PO₂", Session Co-Chair, 27th Annual Meeting of the International Society for Oxygen Transport to Tissue, Dartmouth, New Hampshire, September 1st, 1999.
38. "Changes in Intracellular pH in Spreading Depression", Pre-Retirement Symposium for George Somjen, Duke University, Durham, North Carolina, October 21st, 1999.
39. "Formation of 4-Hydroxy-2-Nonenal-Modified Proteins in the Rat Brain Following Transient Global Ischemia Induced by Cardiac Arrest and Resuscitation" Maturation Phenomenon in Cerebral Ischemia IV, New Orleans, Louisiana, November 1st, 1999.
40. "Acute and delayed effects of transient global ischemia on rat brain capillary endothelial cells in vivo", 6th Keio International Symposium for the Life Sciences and Medicine, Tokyo, Japan, November 24-27, 1999.
41. "Chronic Hypoxia and Vascular Remodeling in Cerebral Cortex", Invited Speaker in the Symposium on Oxygen & the Brain, 100th Meeting of the British Physiology Society, University of Birmingham, England, December 20th, 1999.
42. "The Role of Vascular Endothelial Growth Factor in the Adaptation of Rat Brain to Prolonged Hypoxic Exposure", European Winter Conference on Brain Research, Villars, Switzerland, March 2000.
43. "Organ Oxygenation", Session Chair, 28th Annual Meeting of the International Society for Oxygen Transport to Tissue, Nijmegen, The Netherlands, August 22nd, 2000.
44. "Hypoxia and Mountain Medicine", Steamboat Springs Middle School, Steamboat Springs, Colorado, January, 2001.
45. "The Role of Hypoxia-inducible Factor in the Adaptation of Rat Brain to Prolonged Hypoxic Exposure", European Winter Conference on Brain Research, Les Arc, France, March 2001.
46. Invited Speaker, Panel "Metabolic Demand in Neurodegenerative Disease, Hibernation, and Anoxia Tolerance: The Less You Want the More You Have", 35th Annual Winter Conference on Brain Research, Snowmass, Colorado, January 29, 2002.

46. Invited Speaker, Panel "Adaptation to Altitude: Brain Hypoxia and Gene Response", 35th Annual Winter Conference on Brain Research, Snowmass, Colorado, January 31, 2002.
47. Poster Presentation, "Inhibition of hypoxia inducible factor-1 alpha accumulation by MPTP in the mouse nigrostriatal system is regulated by nitric oxide", First International Symposium on NAD(P)H oxidases, Marburg, Germany, April 30 - May 3, 2002.
48. Invited Symposium Speaker/Organizer, "Cerebrovascular Remodeling During Prolonged Hypoxia and the Role of Hypoxia-Inducible Factor-1 accumulation", 4th International Congress of Pathophysiology (ISP-2002), Budapest, Hungary, June 2002.
49. Invited Symposium Speaker, "Oxygen and Oxidative Stress Modulate the Expression of Uncoupling Protein-5 in vitro and in vivo", 30th Annual Meeting of the International Society for Oxygen Transport to Tissue, Manchester, England, August 2002.
50. Invited Symposium Speaker, "Identification of Rat Brainstem Regions that Undergo Mild Acidification in Response to Hypercapnic Ventilation", 15th International ISAC Symposium, Lyon, France, November 2002.
51. Invited Participant, "Structural and Functional Adaptation to Chronic Hypoxia in the Rat Brain", at the Journal of Experimental Biology Discussion Meeting: Defenses Against Brain Hypoxia: Molecule to Organism, Tuscany, Italy, September 13 - 17, 2003.
52. Invited Speaker, Panel "Microvascular and Metabolic Adaptation to Mild Prolonged Hypoxia in the Rat Brain", 37th Annual Winter Conference on Brain Research, Copper Mountain, Colorado, January 26, 2004.
53. Invited Participant, 24th Princeton Conference, Baltimore, MD, April 2 - 4, 2004.
54. Invited Participant, NIH Trans-Institute Angiogenesis Research Program Workshop, Towson MD, May 10-12, 2004.
55. Participant, "Structural plasticity of the neurovascular unit" presented at the Brain Energy Metabolism & Blood Flow Gordon Research Conference, Colby College, Maine August 8 - 13, 2004.
56. Invited Speaker, "Is cyclooxygenase-2 (cox-2) a major component of the mechanism responsible for microvascular remodeling in the brain?", 32nd Annual Meeting of the International Society for Oxygen Transport to Tissue, Bari, Italy, August 2004.
57. "Increased Sensitivity to Transient Global Ischemia in Aging Rat Brain", 33rd Annual Meeting of the International Society on Oxygen Transport to Tissue, Brisbane, Australia August , 2005.
58. Participant, NIH Town Hall Meeting on NRSA Tuition Support, FASEB Representative, Bethesda, MD, November 30, 2005.
59. Invited Speaker, Panel "A Brain Divided Against Itself Cannot Stand: The Importance of Teamwork Exemplified by the Neurovascular Unit", 39th Winter Conference on Brain Research, Steamboat Springs, CO, Panel Presentation, January 25, 2006.
60. Invited Speaker, Panel "The Influence of Ketones on Cerebral Oxidative Energy Metabolism", European Winter Conference on Brain Research, Villars sur Ollon, Switzerland, March 4-11, 2006.
61. Organizer and Co-Chair of Session, "Diverse Stem Cell Niches", Experimental Biology Annual Meeting, San Francisco, CA, April 4, 2006
62. Invited Speaker, "Adaptive Mechanisms in the Hypoxic Mammalian Brain", Session on "Life With and Without Oxygen - A Tribute to Peter Lutz", Society for Experimental Biology, Canterbury, UK, April 6-7, 2006.
63. Invited Participant, 25th Princeton Conference, Portland, OR, May 18-21, 2006
64. Invited Participant, NINDS Workshop: Cell Biology of Vascular Cognitive Impairment, Arlington, VA, June 1-2, 2006.
65. Participant, Gordon Research Conference "Brain Energy Metabolism and Blood Flow", Magdalen College, Oxford, UK August 20-25, 2006
66. Invited Speaker, "Microvascular Adaptation to Prolonged Hypoxia in the Rat Brain", NINDS Angiogenesis Workshop, Bethesda, MD, December 2006.
67. Invited Workshop Organizer and Speaker, "Angiodynamics in Hypoxia and Ischemia", presented in "Workshop I – Mechanisms of Cerebral Hypoxia and Ischemia, 3rd International Congress of Vas-Cog, San Antonio, July 10-14, 2007.
68. Invited Symposium Speaker, "Cerebrovascular Remodeling", Merck Research Labs, Boston MA, October 10th, 2007.
69. Invited Participant, Trans-Institute Angiogenesis Research Program (TARP) 2007 Workshop: Inflammation and Perivascular Environment, November 18-20, 2007.
70. Invited Speaker, Panel: "The Brain Does Not Live by Glucose Alone: Alternate Fuels for Brain Metabolism", 41st Winter Conference on Brain Research, Snowbird, Utah, January 27th, 2008.
71. Invited Speaker, Panel: "To Be or Not To Be: Hanging in the Balance", 41st Winter Conference on Brain Research, Snowbird, Utah, January 28th, 2008.

72. Invited Speaker, Session: "To Be or Not To Be: Hanging in the Balance", 28th European Winter Conference on Brain Research, ARC 2000, France, March 9th, 2008.
73. Invited Participant, 26th Princeton Conference, Houston, TX, March 27-30, 2008.
74. Invited Speaker, "Brain angioplasticity: microvascular remodeling in the mature rodent brain", 5th International Symposium on Neuroprotection and Neurorepair: Cerebral Ischemia and Stroke, Magdeburg, Germany, May 17-20, 2008.
75. Invited Speaker, "Brain Capillary Plasticity Responds to Oxidative Metabolic Energy Factors: Roles of Hypoxia, Ischemia, Epilepsy and Diet", Cleveland Clinic Center for Cerebrovascular Research Symposium on Leucocyte Blood-Brain Barrier Interactions as a Clinical Target in Neurological Diseases, Cleveland, March 31st, 2009.
76. Invited Speaker, Panel: "Ketogenic Cerebral Angiogenesis", 42nd Winter Conference on Brain Research, Breckenridge, Colorado, January 28th, 2010.
77. Keynote Speaker, "Angioplasticity and Cerebrovascular Remodeling", 38th Annual Meeting of the International Society for Oxygen Transport to Tissue, Ascona, Switzerland, July 19th, 2010.
78. Featured Speaker: "Cerebrovascular Remodeling: Brain Angiogenesis & Angioplasticity in Physiological Adaptation and Pathophysiological Insult", Ischemic Brain Forum 2010, Tokyo, Japan, September 30, 2010.
79. Invited Speaker, "Thinking Evolutionarily: Evolution Education Across the Life Sciences", National Research Council/National Academy of Sciences, Washington DC, October 25, 2011.
80. Invited Speaker, "Challenging Times Ahead", Association of Chairs of Departments of Physiology 2011 Annual Retreat, Playa del Carmen, Mexico, December 3, 2011.
81. Invited Participant, National Institute of Food and Agriculture (NIFA), Agriculture and Food Research Initiative Stakeholder Listening Session, Washington DC, February 22, 2012.
82. Invited Speaker, "Angioplasticity and Cerebral Microvascular Remodeling"- Pharmacology and Neuroscience Department at the University of North Texas Health Science Center at Fort Worth, TX, October 23, 2012

Intramural Seminars and Lectures (CWRU/UH/Metro):

1. "Definition of oxygen sufficiency for the cerebral cortex." Neuroscience Research Conference, September 16, 1981.
2. "Measurement of mitochondrial activity from intact brain cortex by optical techniques." Physiology Research Seminar Series, February 10, 1982.
3. "Brain oxidative metabolic recovery from ischemia and head trauma." Neuroscience Research Conference, February 24, 1982.
4. "Oxidative metabolism of head trauma." Neuroscience Grand Rounds, August 12, 1982.
5. "Energy supply and demand in the central nervous system." Neuroscience Grand Rounds, June 9, 1983.
6. "Stroke." Neurology Residents Lecture, August 30, 1983, September 20, 1983.
7. "Oxygen toxicity." Saturday Morning Residents Teaching Series, October 29, 1983.
8. "In situ monitoring of brain oxidative metabolism by optical techniques." Biomedical Engineering Seminar Series, November 22, 1983.
9. "Regional comparisons of blood flow and unidirectional glucose transport in rat brain." Physiology Research Seminar Series, February 22, 1984.
10. "Barbiturates in stroke." Neuroscience Grand Rounds, March 1, 1984.
11. "Oxygen Toxicity." Saturday Morning Residents Teaching Series, January 5, 1985.
12. "Animal models of focal stroke." Neuroscience Grand Rounds, March 4, 1985.
13. "Measurements of brain intracellular pH." Neurobiology Lunch Bunch, March 12, 1986.
14. "Vascular role in maintenance of cerebral oxygenation." Department of Environmental Health Sciences/Radiation Biology Seminar Series, May 23, 1986.
15. "Brain work and cerebrovascular function." Pulmonary Research Seminar, February 20, 1987.
16. "Optical Methods in Physiological Research", EBME Lecture and Lab Demonstration, August 16, 1988.
17. "Intracellular pH in nervous and muscle tissue", Pulmonary Research Seminars, April 17, 1989.
18. "Intracellular pH as a factor in recovery from cerebral ischemia", Respiratory Group Tuesday Morning Seminar, January 16, 1990.
19. "Cerebrovascular response to acute and chronic hypoxia", Department of Physiology Research Seminar Series, September 21, 1990.
20. "Brain metabolism and blood flow", Pulmonary and Critical Care Fellowship Conference, December 4, 1990.
21. "Cerebrovascular response to chronic hypoxia", Department of Environmental Health Sciences Seminar series, December 5, 1990.

22. "Brain metabolism and blood flow", Neurosurgery Residents' Saturday Morning Conference, December 15, 1990.
23. "Brain metabolism and blood flow", Neurology Residents' Saturday Morning Conference, January 12, 1991.
24. "Cerebral Blood Flow and Metabolism", Pulmonary and Critical Care Fellows Conference, December 3, 1991.
25. "Cerebrovascular Adaptation to Hypoxia", Case Western Reserve University Neuroscience Alliance, December 19, 1991.
26. "Cerebral Blood Flow", Neurology/Neurosurgery Residents' Saturday Morning Neuroscience Teaching Series, June 6, 1992.
27. "Sensory Receptors", Neurology/Neurosurgery Residents' Saturday Morning Neuroscience Teaching Series, February 20, 1993.
28. "Neuronal Metabolism", Psychiatry Resident's Basic Science Lecture Series, February 24, 1993.
29. "Effect of Chronic Hypobaric Hypoxia on Brain Glucose Metabolism", Cleveland Neuroscience Seminars, March 23, 1993.
30. "Structural and Functional Adaptation to Chronic Hypoxia in Rat Brain", Department of Anatomy Seminar, February 15, 1994.
31. "Neuronal Metabolism", Psychiatry Resident's Basic Science Lecture Series, February 23, 1994.
32. "Oxygen and Physiological Function", Enrichment Series Lectures, July 11, 1994.
33. "Brain Ischemia and the pH Paradox", Department of Biology Seminar Series, September 15, 1994.
34. "Ischemic Alterations in CBF and Metabolism", Neurology & Neurosurgery Residents Neuroscience Conference, December 14, 1994.
35. "The pH Paradox in Brain Hypoxia and Ischemia" Department of Physiology Research Update Series, February 17, 1995.
36. "Neuronal Metabolism", Psychiatry Residents Neuroscience Didactic Seminar, March 22, 1995.
37. "CNS Aspects of Recovery from Cardiac Arrest and Resuscitation", Neurology Grand Rounds, April 21, 1995.
38. "Neuronal Metabolism", Psychiatry Residents Neuroscience Didactic Seminar, March 13, 1996.
39. "Adaptation to Low pO₂ environment", Summer Minority Student Program, June 12, 1996.
40. "Cerebral Hypoxia/Ischemia", Summer Undergraduate Research Program, June 27, 1996.
41. "Anomalous Findings in Brain Metabolism and Intracellular pH following Complete Ischemia", A Program on Cell Death, Cleveland, Ohio, July 9, 1996.
42. "Cerebrovascular Adaptation to Hypoxia", Division of Neonatology, September 20, 1996.
43. "Cerebrovascular Adaptation to Hypoxia", Department of Pathology, October 7, 1996.
44. "Cerebrovascular Adaptation to Hypoxia", Division of Pulmonary and Critical Care Medicine, Grand Rounds, November 22, 1996.
45. "Cerebrovascular Adaptations to Hypoxia", Neuroscience Grand Rounds, February 21, 1997.
46. "Adaptation to Low pO₂ Environment", Horizons on Biomedical Science Summer Course, June 12, 1997.
47. "CNS Aspects of Recovery from Cardiac Arrest and Resuscitation", Neuroscience Grand Rounds, February 20, 1998.
48. "The Physiological Concomitants of Brain Angiogenesis in Hypobaric Hypoxia", Physiology Department Research Update, June 26, 1998.
49. "Life, Death and Oxygen", The Jeanette M. and Joseph S. Silber Research Fund for the Study of Brain Sciences Lecture, January 20, 2000.
50. "Cerebrovascular Adaptation to Hypoxia", Division of Neonatology, September 15, 2000.
51. "Microvascular and Metabolic Adaptation to Prolonged Mild Hypoxia in the Rat Brain", Department of Physiology Seminar, Metrohealth Hospital Rammelkamp Center, October 17th, 2000.
52. "Microvascular and Metabolic Adaptation to Prolonged Mild Hypoxia in the Rat Brain", Department of Neurosciences Seminar, February 14, 2001.
53. "Hypoxia and Vascular Remodeling", Division of Neonatology, February 13, 2004.
54. "Microvascular and Metabolic Adaptation to Prolonged Mild Hypoxia in the Rat Brain", Diabetes Research Seminar, October 5th, 2004.
55. "Ketones and Cerebral Blood Flow and Metabolism", Department of Neurology, Epilepsy Grand Rounds, May 14th, 2007.
56. "Hypoxia and Vascular Remodeling: An Update", Division of Neonatology, November 30, 2007.
57. "Microvascular plasticity in the adult rat and mouse brain", Neuroscience Grand Rounds, December 7, 2007.
58. "Brain angioplasticity: microvascular remodeling in the mature rodent brain", Case Cardiovascular Research Institute Seminar Series (CRISS), May 28th, 2008.
59. "Brain angioplasticity: microvascular remodeling in the mature rodent brain", Department of Physiology & Biophysics

Seminar, June 23, 2008.

60. "Cerebral Blood Flow and Metabolism", UHCMC Vascular Neurology Basic Science Lecture Series, September 30, 2008.
61. "Laboratory of Experimental Stroke and Cerebrovascular Diseases", Department of Physiology & Biophysics Retreat, October 2, 2008.
62. "Oxygen, Hypoxia and the Brain", Critical Care and Sleep Medicine Grand Rounds, September 4, 2009.
63. "Cerebrovascular Remodeling: Brain Angiogenesis & Angioplasticity in Physiological Adaptation and Pathophysiological Insult", Neuroscience Grand Rounds, December 10, 2010.
64. "Cerebral Blood Flow and Metabolism", UHCMC Vascular Neurology Basic Science Lecture Series, December 21, 2010.
65. "Angioplasticity in the Adult Rodent Brain", Epilepsy Grand Rounds, March 7, 2011.
66. "Neonatal Hypoxic Exposure With and Without Hypercapnia Alters Adult Ventilatory Control and Cerebral Angiogenesis", Sleep Grand Rounds, October 11, 2011.
67. "Influence of Acute Neonatal Hypoxia With and Without Hypercapnia on Adult Responses to Hypoxia and Hypercapnia", Department of Physiology & Biophysics Retreat, November 4, 2011.
68. "Cerebral Blood Flow and Metabolism", UHCMC Vascular Neurology Basic Science Lecture Series, September 25, 2012.
69. "Oxygen Dependency of Brain Capillary Density: Mechanisms of Angiogenesis", Neurology Grand Rounds, December 28, 2012.