

CURRICULUM VITAE

February, 2011

Robert A. Linsenmeier

Mailing address

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PROFESSIONAL EXPERIENCE

Professor	9/95 –
Biomedical Engineering Department	
Department of Neurobiology and Physiology	
Department of Ophthalmology (Courtesy appointment as of 1/08)	
Associate Professor	9/89 - 9/95
Biomedical Engineering Department	
Department of Neurobiology and Physiology	
Assistant Professor	9/83 - 9/89
Biomedical Engineering Department	
Department of Neurobiology and Physiology	
Northwestern University (50% appointment in each department)	
Member, Interdepartmental Graduate Program in Neuroscience, Institute for Neuroscience, and Interdepartmental Neuroscience Program	9/1983 –
Associate Director	10/09 -
Northwestern University Interdepartmental Neuroscience Program (NUIN)	
Director and Chair of Steering Committee	12/06 –
Northwestern Center for Engineering Education Research (NCEER)	
Visiting Professor	9/03-12/03
Harvard-MIT Division of Health Sciences and Technology	
Chair, Biomedical Engineering Department	9/97 – 8/02
Northwestern University	
Director, Integrated Science Program	9/93 - 12/96
College of Arts and Sciences	
Northwestern University	
Assistant Research Physiologist	9/79 - 6/83
Department of Physiology	
University of California, San Francisco, CA	
EDUCATION	
Postdoctoral	9/77 - 9/79
Northwestern University, Evanston, IL	
Graduate	9/72 - 9/77
Northwestern University, Evanston, IL	
Ph.D., Biomedical Engineering, 1978	
M.S., Biomedical Engineering, 1975	
Undergraduate	9/68 - 6/72
Carnegie-Mellon University, Pittsburgh, PA	
B.S., Chemical Engineering, 1972	

HONORS AND AWARDS

Fellow, Association for Research in Vision and Ophthalmology, 2009
Associated Student Government Faculty Honor Roll, 2008
Theo C. Pilkington Outstanding Educator Award, Biomedical Engineering Division, American Society for Engineering Education, 2007
Fellow, Biomedical Engineering Society, 2005
Bette and Neison Harris Professor of Teaching Excellence, Northwestern University, 9/2003 - 8/2006
Senior Member, Biomedical Engineering Society, 2003
Fellow, American Institute of Medical and Biological Engineering, 1999
Scoutmaster Award of Merit, BSA, 1996
Individual National Research Service Award 1977-1979
Tau Beta Pi (engineering)

RESEARCH INTERESTS

Retinal neurophysiology; physiological transport processes; regulation of the microenvironment of the retina, primarily in mammals; retinal diseases involving the microenvironment; bioengineering and biology education.

PROFESSIONAL SOCIETIES

Biomedical Engineering Society
American Institute of Medical and Biological Engineering
American Society for Engineering Education
Association for Research in Vision and Ophthalmology (ARVO)
American Association for the Advancement of Science
International Society for Oxygen Transport to Tissue

PROFESSIONAL ACTIVITIES

Member, Council of Chairs of Biomedical Engineering Departments, 1997 – 2002
Treasurer, Council of Chairs of Biomedical Engineering Departments, 2000 – 2002
Member, Academic Council, American Institute of Medical and Biological Engineering, 1997- 2002
Chair, Academic Council, American Institute of Medical and Biological Engineering, 2002
Session Organizer and Chair for “Curriculum, Taxonomies and Needs in BME Education,”
Biomedical Engineering Society Annual Meeting, October, 2001
External Reviewer, Bioengineering Program, Syracuse University, 2001
Organizational Committee, Chicago Universities Bioengineering Industry Conference (CUBIC),
2001 – 2004
Associate Director, VaNTH Engineering Research Center for Bioengineering Educational Technologies,
2002 - 2008
External Reviewer, Provost’s Committee on Promotion, Case Western Reserve University, 2002
Session Organizer and Chair for “Innovations in Curricula and Teaching Materials for the Subjects
and Domains of Biomedical Engineering,” Biomedical Engineering Society Annual Meeting,
October, 2002
Education Track Chair, Biomedical Engineering Society Annual Meetings, October, 2003 and 2005
Chair, Communications Committee, American Institute of Medical and Biological Engineering, 2003 - 2008
Advisory Board Member, Bioengineering Department, University of Illinois at Chicago, 2004 -
Advisory Board Member, Biomedical Engineering Department, Ohio State University, 2005 –
Vice President, American Institute of Medical and Biological Engineering. 2005-2007
Session organizer, Biomedical Engineering and Industry, American Society for Engineering Education
Annual Meeting, Chicago, IL, 2006
Conference Chair, Biomedical Engineering Society Annual Meeting, Chicago, IL, October, 2006
Session Moderator, Biomedical Engineering Core Curriculum, American Society for Engineering Education
Annual Meeting, Honolulu, HI, 2007
Chair, Meetings Oversight Committee, Biomedical Engineering Society, Fall 2007- 2009
Organizing Committee, Midwest Biomedical Engineering Conference, Chicago, April, 2008
Meeting Chair, Third Biomedical Engineering Education Summit Meeting, St. Charles IL, June, 2008
Secretary/Treasurer, American Institute of Medical and Biological Engineering, 2008 – 2010
Member, Planning Committee, Innovating for Continence: The Engineering Challenge, April 2009
Member, External Advisory Board, North Carolina A&T NSF Engineering Research Center, 2009-

Chair, Education Advisory Board, North Carolina A&T NSF Engineering Research Center, 2009-
Chair, College of Fellows, American Institute of Medical and Biological Engineering, 2010
Member, Organizing Committee, Midwest Biomedical Engineering Conference, Chicago, April, 2011
Member, Planning Committee, Innovating for Continence: The Engineering Challenge, April 2011

Peer Review

Member, Fellowship Review Panel of the Fight for Sight Research Division of the National Society to Prevent Blindness, 1994-1996
Reviewer for National Science Foundation
Member, "Special Emphasis Panels" of National Institutes of Health Study Sections (Visual Sciences B and C), 1992, 1993
Ad Hoc Reviewer, NIH Visual Sciences C Study Section, 1997, 2002
Ad Hoc Reviewer, Special Emphasis Panel, NIH Nutrition and Metabolism Study Section, 1998
Member, Special Emphasis Panel on Diabetic Complications, NIH Nutrition and Metabolism Study Section, 1999
Member, Special Emphasis Panel, NIH Center for Scientific Review (Research Resource Application), 2000
Member, Editorial Board, *Documenta Ophthalmologica*, 1995 – 2002
Guest Editorial Board Member, *Investigative Ophthalmology and Visual Science*, 1999
Member, Editorial Board, *Current Eye Research*, 2001- 2008
Grant Reviewer, The Wellcome Trust, 2001
Member, Special Emphasis Panel on Surrogate Endpoints for Diabetic Microvascular Complications, NIH, August, 2002
Ad hoc Reviewer, Biology and Diseases of the Posterior Eye Study Section, NIH, 2004, 2005
Member, Special Emphasis Panel on Retinopathy, NIH, July, 2005
Ad Hoc Reviewer, NIH, 2008
Grant Reviews, NSF, 2007 - 2008
Grant Review, Veteran's Administration, 2007
Grant Review, Chicago Biomedical Consortium, 2008
Co-Editor in Chief, *Current Eye Research*, 9/2008-

Reviewer for:

American Journal of Physiology, Annals of Biomedical Engineering, ASEE Proceedings, Clinical Vision Sciences, Current Eye Research, Medical and Biological Engineering and Computing, Documenta Ophthalmologica, Experimental Eye Research, Investigative Ophthalmology and Visual Science, International Journal of Engineering Education, Journal of Applied Physiology, Journal of General Physiology, Journal of Neurochemistry, Journal of Neurophysiology, Journal of Neuroscience, Journal of Physiology, Microvascular Research, Optometry and Visual Science, Physiological Measurement, Vision Research, Visual Neuroscience

INVITED PRESENTATIONS AT MEETINGS (since 2000)

Role of the choroid in retinal oxygenation. Annual meeting of the Association for Research in Vision and Ophthalmology, May, 2000.
The VaNTH Center – A National Center for Bioengineering Education. International Academy for Medical and Biological Engineering, Chicago, July, 2000.
The VaNTH Bioengineering Curriculum Project. Biomedical Engineering Society Annual Meeting, October, 2002 (With T.R. Harris and S.A. Olds)
The role of the pH microenvironment in retinal diseases. Biomedical Engineering Society Annual Meeting, October, 2002 (With E. Budzynski and C.K. Chung)
Teaching Biology to Bioengineers, American Institute for Medical and Biological Engineering Annual Event, February, 2005.
Communications in Science and Engineering – Work in the VaNTH Engineering Research Center at Northwestern (with P. Hirsch and D. Gatchell), workshop at Excellence in Teaching Mathematics and Science Symposium, Northwestern University, March, 2005
Ocular Oxygen Supply, Third International University Programme on Ocular Ischemia, Århus, Denmark, September, 2005
Oxygen in the Retina, UIC Fall Vision Symposium, September, 2006
Technologies in Support of Improved Pedagogy in the VaNTH Engineering Research Center in Bioengineering Educational Technologies, Dane Miller Symposium, Center for Advancement of

Scholarship in Engineering Education, October, 2006
What Makes a Biomedical Engineer, Midwest Biomedical Engineering Conference, April, 2008
Charting the Needs and Realities of the Undergraduate Biomedical Engineering Curriculum, Recovery of Biological Products, XIII, Quebec, CA, June, 2008
Design in BME Education, Inaugural Event, Workshop on the Future of Biomedical Engineering, UC San Diego, December, 2008
Ocular Physiology, Illinois Eye Review Course, University of Illinois at Chicago, March, 2010
Connections between Retinal Metabolism and Function, Great Lakes Vision Conference, Ann Arbor, MI, September, 2010

OTHER INVITED PRESENTATIONS (since 2000)

Department of Ophthalmology, University of Alabama, Birmingham, 2000
Department of Pharmacology and Toxicology, Medical College of Wisconsin, 2000
Department of Ophthalmology, University of Iowa, 2001
Department of Biomedical Engineering, University of Iowa, 2001
College of Optometry, University of Houston, 2002
Bioengineering Department, University of Illinois at Chicago, 2003
Department of Anatomy and Cell Biology, Wayne State University, 2004
Engineering School, University of Pittsburgh, 2004
Department of Ophthalmology, Vanderbilt University, 2005
Biomedical Engineering Department, Carnegie Mellon University, 2006
Engineering School Retreat, University of New Mexico, 2007
Department of Ophthalmology, Emory University, 2007
Cole Eye Center, Cleveland Clinic, January, 2010
Department of Ophthalmology, Penn State University at Hershey, February, 2010
Acucela, Inc., Bothell, WA, August, 2010
School of Optometry, Indiana University, December, 2010

STUDENT SUPERVISION

Graduate students

Thomas C. Chatters, MS, Biomedical Engineering, 1988
An investigation of the light-evoked changes in oxygen consumption in the outer retina of cat
Emile P.-C. Chen, PhD, Biomedical Engineering, 1989
The neural circuitry of the cat retinal ganglion cells: a combined pharmacological and electrophysiological investigation
Charles M. Yancey, PhD, Neuroscience, 1989
The oxygen distribution and electrophysiology of the cat retina during elevated intraocular pressure
Hang Duk Roh, PhD, Chemical Engineering, 1989
Local oxygen diffusion coefficients in the cat retina and cornea
Wai-Lam Kwok, MS, Biomedical Engineering, 1990
Improved fabrication of carbon fiber microelectrodes
Timothy J. Rimmer, PhD, Biomedical Engineering, 1991
Intraretinal electrophysiology in experimental diabetes
Laura M. Haugh, MS, Biomedical Engineering, 1988
A model of oxygen distribution and consumption in the cat retina in light and darkness
Laura M. Haugh, PhD, Biomedical Engineering, 1992
Oxygen consumption and light-evoked oxygen responses in the isolated toad retina
Rod D. Braun, PhD, Chemical Engineering, 1992
Retinal oxygen tension, inner and outer retinal oxygen consumption and the electroretinogram during retinal artery occlusion in the cat
Jameel Ahmed, MS, Biomedical Engineering, 1993
The oxygen distribution in the cat optic nerve head
Jameel Ahmed, PhD, Biomedical Engineering, 1997
The control of blood flow through the retinal circulation: a study using fluorescent microspheres
Monique A. McRipley, MS, Biomedical Engineering, 1994
Fabrication of a hydroquinonesulfonate mediated glucose oxidase recessed microelectrode for the amperometric determination of glucose

Lissa B. Padnick, MS, Biomedical Engineering, 1996
 Effect of a perfluorochemical emulsion on brain oxygenation under hyperoxic conditions

Tracey B. Ristow, MS, Neurobiology and Physiology, 1998
 Proposed epidemiological study of Leber's Hereditary Optic Neuropathy

Monique A. McRipley, PhD, Biomedical Engineering, 1999
 Evaluation of the contribution of glycolysis to energy metabolism in the intact cat retina during arterial occlusion and hyperoxia

Jennifer J. Kang Derwent, PhD, Biomedical Engineering, 1999
 Effects of hypoxemia on photoreceptors: A study using the a-wave of the electroretinogram in dark-adapted intact cat retina

Lissa Padnick-Silver, PhD, Biomedical Engineering, 2000
 Characterization of anaerobic metabolism and the effect of acute hyperglycemia in the cat retina through in vivo pH and oxygen measurements

Ursula Ramirez, PhD candidate, NUIIN, research rotation, 1999

Ewa Budzynski, MS, Biomedical Engineering, 2002;
 Intraretinal H⁺ distribution in the diabetic cat.

Lori Crosson, MS, Biomedical Engineering, 2002
 Development of a novel assay system for detecting inhibition of the ERK1/ERK2 MAP kinase cascade (coadvised with Joseph Moskal)

Christina K. Chung, MS, Biomedical Engineering, 2003
 Effects of carbogen on retinal oxygenation

Ewa Budzynski, PhD, Biomedical Engineering, 2005
 Effects of photocoagulation on PO₂ in the cat retina

Shufan Wang, PhD, Biomedical Engineering, 2006
 Effects of hyperoxia on retinal metabolism and function in the detached cat retina

Christine Lee, MS, Biomedical Engineering, 2006
 Effects of argon laser photocoagulation on choroidal blood flow in cats

Lori Crosson, PhD, Biomedical Engineering, 2006
 Effect of hypoxia on mRNAs in the rat retina

Jack Russo, MS, Biotechnology Program, 2006

Robert Flynn, MS, Biomedical Engineering,

Jennifer Lau, PhD candidate, Chemical and Biological Engineering, PhD expected 2011

Desmond Henderson, MS Candidate, Interdepartmental Neuroscience Program, degree expected 2011

Eric Behar, MS Candidate, Neurobiology and Physiology, degree expected 2011

Postdoctoral Fellows and other

Emile P.-C. Chen, 1990

Robert Dunn, Jr., 1991-1992

Norbert Wangsa-Wirawan, 2000- 2005

David Gatchell, 2003 - 2007

Gulnur Birol, Research Asst. Professor, 2001-2005

Shufan Wang, 2006 - 2007

Nicholas Marion, 2006-2007

Jennifer Younker Cole, 2008-2009

Recent Undergraduate Research Supervision (since 2003)

Cara Rieger, Rice University, Bioengineering, VaNTH REU student, summer 2002, 2003

Jean Verrette, University of Buffalo, VaNTH REU student, summer, 2004

Brooke Marshall, Hampton University, SROP student, summer, 2004

Adam D. Hart, Biomedical Engineering, 2004-2005

Karen Tenenhaus, Biomedical Engineering, 2005 –

David Lipps, Tulane University, VaNTH REU student, summer, 2005, 2007

Jigar Choksey, Biomedical engineering, 2005 – 2006

David Liss, Biology, 2006

Kathryn Dwyer, Vanderbilt University, VaNTH REU student, summer, 2006

Philip Chan, Biomedical Engineering, summer 2007 – fall, 2008

Thomas Wallace, Biomedical Engineering, summer 2007

Alyce Miller, Biomedical Engineering, summer 2007

Kurt Qing, Biomedical Engineering, summer 2007 – fall 2009
 Eugenia Gabrielov, Biomedical Engineering, summer 2007
 Paul Han, Biomedical Engineering, summer, 2008 – spring 2009
 Aaron Goldstein, Biomedical Engineering, summer, 2008
 Heetabh Patel, Biomedical Engineering, summer, 2008
 Nicholas McHugh, Louisiana Tech Biomedical Engineering student, SINE program, summer, 2008
 Omar Hassan, Biomedical Engineering, 2009 - present
 Joshua Eassa, Biology, summer, 2009 - present
 Janesh Lakhoo, Biomedical Engineering, Fall, 2009 – present
 Stacy Cheng, Biomedical Engineering, Fall, 2009 – Fall, 2010
 Melvin McElrath, Biomedical Engineering, Marquette University, summer, 2010 (REU student)
 Esteban Molino, Biomedical Engineering, Florida International Univ. Summer, 2010 (REU student)
 Zachary Moy, ISP and Biology, Fall 2010- present

RECENT TEACHING RESPONSIBILITIES

Biomedical Engineering Department

BME 101 Introduction to Biomedical Engineering Spring, 2007; Winter, 2004 – 2010
 Seminar course to introduce students to major and field of biomedical engineering.
 Course organizer and instructor for more than half the sessions. 24 to 38 students.

BME 303 Systems Physiology Spring, 1989 – 1997, 2001 -
 Human renal, digestive, endocrine and metabolic physiology from a quantitative
 perspective. 40 to 80 students. Instructor.

BME 403 Advanced Systems Physiology Spring, 1991 – Spring, 2001, 2003 -
 Graduate seminar in renal, digestive, endocrine and metabolic physiology focusing on artificial
 internal organs and engineering applications to these systems. 5 to 14 students. Instructor.

Department of Neurobiology and Physiology

Biol 325 Animal Physiology Fall, 2004 –
 Required course for physiology track of the biology major. Covers respiratory, cardiovascular,
 metabolic, renal, digestive and motor systems physiology from an animal rather than human,
 systems perspective. Instructor. 42- 65 students.

NBP 402 Advanced Neurobiology and Physiology Winter, 2009, 2011
 Reading and discussion course for NBP MS students. Responsible for one week's sessions. 5-10
 students.

Institute for Neuroscience

NUIN 510 Advanced Topics in Visual Science Fall, 1990 –
 Seminar organizer (with Steven DeVries) and speaker

Medical School

Scientific Basis of Medicine Spring, 2001 –
 One lecture to second year medical students on physiology of the eye

CURRENT UNIVERSITY SERVICE

(All applicable in 2010-2011 and 2011-2012 academic years except as noted)

University

Advisory Board, Searle Center for Teaching Excellence
 Mentor and member of Admissions and Education Committee, CLIMB program
 (Collaborative Learning and Integrated Mentoring in the Biosciences)
 Search Committee for Chair of Ophthalmology Department (2010-2011)
 Advisory Board, Center for Education and Career Development (CECD) of NUCATS (2010-2011)
 HHMI Biology Program Advisory Committee

Committee on Animal Resources (2011-2012)
Associate Director, NUIN
Director, Northwestern Center for Engineering Education Research
Faculty Advisor, Phi Mu Alpha Sinfonia (Music Fraternity)

McCormick School of Engineering and Applied Science

Director, Northwestern Center for Engineering Education Research
Ad hoc committee for tenure process (2010-2011)

Biomedical Engineering Department

Executive Committee
Undergraduate Committee

Weinberg College of Arts and Sciences

Ad hoc committee for tenure process (2011-2012)

Department of Neurobiology and Physiology

Biological Imaging Facility Advisory Board

CURRENT FUNDING

Exploring the Role of Computational Adaptive Expertise in Design and Innovation
Ann F. McKenna, PI; RAL was Co-PI; acting PI from Aug 09 – Jan 1 2010.
NSF Engineering Education Programs 0648316
4/1/07 – 3/31/10

Multidisciplinary Training Grant in Visual Science, Vijay Sarthy/Steve DeVries (Ophthalmology), PIs
NIH/NEI
RAL is Associate Director
2/1/05 – 1/31/11 (not renewed)

REU Site: Bioengineering Education Research
NSF
RAL is co-PI with Stacy Gardner at Vanderbilt
9/1/09-8/31/12

Improvements to the Biomechanics Curriculum
Murphy Society of McCormick School of Engineering and Applied Science
RAL is PI
12/1/09 –

PUBLICATIONS

Publications in refereed journals

1. Linsenmeier, R.A. and Jakiela, H.G. (1979) Non-linear spatial summation in cat retinal ganglion cells at different background levels. Exp. Brain Res. 36: 301-309.
2. Linsenmeier, R.A. and Hertz, B.G. (1979) Eye movements in paralyzed cats induced by drugs and sympathetic stimulation. Vision Res. 19: 1249-1252.
3. Enroth-Cugell, C., Goldstick, T.K., Linsenmeier, R.A. (1980) The contrast sensitivity of cat retinal ganglion cells at reduced oxygen tensions. J. Physiol. 304: 59-81.
4. Linsenmeier, R.A., Goldstick, T.K., Blum, R.S. and Enroth-Cugell, C. (1981) Estimation of retinal oxygen transients from measurements made in the vitreous humor. Exp. Eye Res. 32: 369-379.

5. Frishman, L.J. and Linsenmeier, R.A., (1982) Effects of picrotoxin and strychnine on non-linear responses of Y-type cat retinal ganglion cells. J. Physiol. 324: 347-363.
6. Linsenmeier, R.A., Frishman, L.J., Jakiela, H.J. and Enroth-Cugell, C. (1982) Receptive field properties of X and Y cells in the cat retina derived from contrast sensitivity measurements. Vision Res. 22: 1173-1183.
7. Linsenmeier, R.A. and Steinberg, R.H. (1982) Origin and sensitivity of the light peak in the intact cat eye. J. Physiol. 331: 653-673.
8. Linsenmeier, R.A., Mines, A.H. and Steinberg, R.H. (1983) Effects of hypoxia and hypercapnia on the light peak and electroretinogram of the cat. Invest. Ophthalmol. Visual Sci. 24: 37-46.
9. Linsenmeier, R.A. and Steinberg, R.H. (1983) A light evoked interaction of apical and basal membranes of the retinal pigment epithelium: the c-wave and the light peak. J. Neurophysiol. 50: 136-147.
10. Steinberg, R.H., Linsenmeier, R.A. and Griff, E.R. (1983) Three light-evoked responses of the retinal pigment epithelium. Vision Res. 23: 1315-1323.
11. Linsenmeier, R.A. and Steinberg, R.H. (1984) Delayed basal hyperpolarization of the cat retinal pigment epithelium, and its relation to the fast oscillation of the DC ERG. J. Gen. Physiol. 83: 213-232.
12. Linsenmeier, R.A. and Steinberg, R.H. (1984) Effects of hypoxia on K⁺ homeostasis and pigment epithelial cells in the cat retina. J. Gen. Physiol. 84: 945-970.
13. Linsenmeier, R.A. and Steinberg, R.H. (1986) Mechanisms of hypoxic effects on the cat DC electroretinogram. Invest. Ophthalmol. Visual Sci. 27: 1386-1394.
14. Linsenmeier, R.A. (1986) Effects of light and darkness on oxygen distribution and consumption in the intact cat retina. J. Gen. Physiol. 88: 521-542.
15. Linsenmeier, R.A. and Steinberg, R.H. (1987) Mechanisms of azide induced increases in the c-wave and standing potential of the intact cat eye. Vision Research 27: 1-8.
16. Linsenmeier, R.A., Smith, V.C. and Pokorny, J. (1987) The light rise of the electrooculogram during hypoxia. Clinical Vision Sciences 2: 111-116.
17. Linsenmeier, R.A. and Yancey, C.M. (1987) Improved fabrication of double-barreled recessed cathode oxygen microelectrodes. J. Appl. Physiol. 63: 2554-7.
18. Yancey, C.M. and Linsenmeier, R.A. (1988) The electroretinogram and choroidal PO₂ in the cat during elevated intraocular pressure. Invest. Ophthalmol. Visual Sci. 29: 700-707.
19. Linsenmeier, R.A. and Yancey, C.M. (1989) Effects of hyperoxia on oxygen distribution in the intact cat retina. Invest. Ophthalmol. Vis. Sci. 30: 612-618.
20. Yancey, C.M. and Linsenmeier, R.A. (1989) Oxygen distribution and consumption in the cat retina at elevated intraocular pressure. Invest. Ophthalmol. Vis. Sci. 30: 600-611.
21. Chen, E. P.-C. and Linsenmeier, R.A. (1989) Effects of 2-amino-4-phosphonobutyric acid on responsivity and spatial summation of X cells in the cat retina. J. Physiol. 419: 59-75.
22. Chen, E. P.-C. and Linsenmeier, R.A. (1989) Center components of cone-driven cat retinal ganglion cells: differential sensitivity to 2-Amino-4-phosphonobutyric acid. J. Physiol. 419: 77- 93.
23. Haugh, L.M., Linsenmeier, R.A. and Goldstick, T.K. (1990) Mathematical models of the spatial distribution of retinal oxygen tension and consumption, including changes upon illumination. Annals of Biomedical Engineering 18: 19-36.

24. Linsenmeier, R.A. (1990) Electrophysiological consequences of retinal hypoxia. Graefes Archive for Clinical and Experimental Ophthalmology 228: 143-150
25. Linsenmeier, R.A. and Braun, R.D. (1992) Oxygen distribution and consumption in the cat retina during normoxia and hypoxemia. J. Gen. Physiol. 99: 177-197.
26. Braun, R.D., Goldstick, T.K., and Linsenmeier, R.A. (1992) New perfluorocarbon emulsion improves tissue oxygenation in cat retina. J. Appl. Physiol. 72: 1960-1968.
27. Braun, R.D., Linsenmeier, R.A. and Yancey, C.M. (1992) Spontaneous fluctuations in oxygen tension in the cat retina. Microvascular Res. 44: 73-84.
28. Ahmed, J., Braun, R.D., Dunn, R. and Linsenmeier, R.A. (1993) Oxygen distribution in the macaque retina. Invest. Ophthalmol. Visual Sci. 34: 516-521.
29. Rimmer, T.J. and Linsenmeier, R.A. (1993) Resistance of the diabetic rat ERG to hypoxemia. Invest Ophthalmol. Visual Sci. 34: 3246-3252.
30. Ahmed, J., Linsenmeier, R.A. and Dunn, R. (1994) The oxygen distribution in the prelaminar optic nerve head of the cat. Exp. Eye Research 59: 457-466.
31. Braun, R.D. and Linsenmeier, R.A. (1995) Retinal oxygen tension and the electroretinogram during retinal artery occlusion in the cat. Invest. Ophthalmol. Visual Sci. 36: 523-541.
32. Braun, R.D., Linsenmeier, R.A. and Goldstick, T.K. (1995) Oxygen consumption in the inner and outer retina of the cat. Invest. Ophthalmol. Visual Sci. 36: 542-554.
33. Haugh-Scheidt, L.M., Linsenmeier, R.A. and Griff, E.R. (1995) Oxygen consumption in the isolated toad retina. Exp. Eye Res. 61: 63-72.
34. Haugh-Scheidt, L.M., Griff, E.R., and Linsenmeier, R.A. (1995) Light-evoked oxygen responses in the isolated toad retina. Exp. Eye Res. 61: 73-81.
35. McRipley, M.A. and Linsenmeier, R.A. (1996) Fabrication of a glucose oxidase recessed microelectrode for the amperometric determination of glucose. J. Electroanal. Chem. 414: 235-246.
36. Neely, K.A., Ernest, J.T., Goldstick, T.K., Linsenmeier, R.A. and Moss, J. (1996) Isovolemic hemodilution increases retinal tissue oxygen tension. Graefes Arch. for Clinical and Experimental Ophthalmology 234: 688-694.
37. McRipley, M.A., Ahmed, J., Chen, E. P.-C., and Linsenmeier, R.A. (1997) Effects of adaptation level and hypoglycemia on function of the cat retina during hypoxemia. Visual Neuroscience 14: 339-350.
38. Linsenmeier, R. A., Braun, R.D., McRipley, M.A., Padnick, L.B., Ahmed, J., Hatchell, D.L., McLeod, D.S. and Luty, G.A. (1998) Retinal hypoxia in long term diabetic cats. Invest Ophthalmol Vis Sci 39: 1647-1657.
39. Padnick, L.B., Linsenmeier, R.A. and Goldstick, T.K. (1999) Oxygenation of the cat primary visual cortex. J. Applied Physiol. 86: 1490-1496
40. Padnick, L.B., Linsenmeier, R.A. and Goldstick, T.K. (1999) Perfluorocarbon emulsion improves oxygenation of the cat primary visual cortex. J. Applied Physiol. 86: 1497-1504.
41. Padnick, L.B. and Linsenmeier, R.A. (1999) Properties of the flash visual evoked potential in the cat primary visual cortex. Vision Research 39: 2983-2840
42. Linsenmeier, R.A. and Padnick-Silver, L. (2000) Metabolic dependence of photoreceptors on the choroid in the normal and detached retina. Invest Ophthalmol Vis Sci. 41: 3117-3123.

43. Kang Derwent, J. and Linsenmeier, R.A. (2000) Effects of hypoxemia on the a- and b-waves of the electroretinogram in the intact cat retina. Invest Ophthalmol Vis Sci. 41: 3634- 3642.
44. Kang Derwent, J. and Linsenmeier, R.A. (2001) Intraretinal analysis of the a-wave of the electroretinogram in the dark-adapted intact cat retina. Visual Neuroscience 18: 353-363.
45. Ahmed, J., Pulfer, M. and Linsenmeier, R.A. (2001) Measurement of blood flow through the retinal circulation of the cat during normoxia and hypoxemia using fluorescent microspheres. Microvascular Research 62: 143-153.
46. Kang Derwent, J. and Linsenmeier, R.A. (2001) Hypoglycemia increases the sensitivity of the cat retina to hypoxemia. Visual Neuroscience 18: 983-993.
47. Hoang, Q.V., Linsenmeier, R.A., Chung, C.K., and Curcio, C.A. (2002) Photoreceptor inner segments in monkey and human retina: mitochondrial density, optics and regional variation. Visual Neuroscience, 19: 395-407.
48. Padnick-Silver, L and Linsenmeier, R.A. (2002) Quantification of in vivo anaerobic metabolism in the normal cat retina through pH measurements. Visual Neuroscience, 19: 793-806.
49. Padnick-Silver, L and Linsenmeier, R.A. (2003) Effect of acute hyperglycemia on oxygen and oxidative metabolism in the intact cat retina. Invest. Ophthalmol. Visual Sci. 44: 745-750.
50. Wangsa-Wirawan, N. and Linsenmeier, R.A. (2003) Retinal oxygen: fundamental and clinical aspects. Archives of Ophthalmology, 121: 547-557.
51. Linsenmeier, R.A.. (2003) What makes a biomedical engineer? IEEE Engineering in Medicine and Biology Magazine, 22(4): 32-38.
52. Troy, J.B. and Linsenmeier, R.A. (2003) Optimizing the delivery of content in physiology education. IEEE Engineering in Medicine and Biology Magazine, 22(4): 80-87.
53. Birol, G., Budzynski, E., Wangsa-Wirawan, N., and Linsenmeier, R.A. (2004) Hyperoxia promotes electroretinogram recovery following retinal artery occlusion in cat. Invest. Ophthal. Visual Sci. 45: 3690-3696
54. Birol, G.B., Budzynski, E., Wangsa-Wirawan, N.D., and Linsenmeier, R.A. (2005) Retinal arterial occlusion leads to acidosis in the cat. Exp. Eye Res. 80 (4): 527-533 2005
55. Budzynski, E., Padnick-Silver, L., Wangsa-Wirawan, N.D., Hatchell, D.L., and Linsenmeier, R.A. (2005) Intraretinal pH distribution in diabetic cats, Current Eye Research 30: 229-240.
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