

Curriculum Vitae
ANN LINDA BALDWIN
2011

EDUCATION

University of Bristol, U.K. B.S. 1975 Physics Honors
Middlesex Hospital Medical School,
University of London, U.K. M.S. 1976 Radiation Physics
Imperial College,
University of London, U.K. Ph.D. 1979 Physiology

Thesis Title: *Computer-assisted enhancement of images obtained from the gamma-camera*

Dissertation Title: *Effects of pressure on the structure and mechanics of the rabbit thoracic aorta*

Dissertation Director: Professor C.G. Caro

MAJOR FIELDS OF RESEARCH

Effects of environmental stress on cardiovascular function and behavior. Use of Biofeedback techniques to promote sympatho-vagal balance, reduce stress and enhance performance in Parkinson's patients, athletes and people under physical, emotional or mental stress. Exploration of horse-human bonding using heart rate variability. Measurement of effects of energy healing modalities, such as Reiki, on cardiac function, peripheral blood flow and skin conductance in rodents, humans and non-human primates.

ACADEMIC APPOINTMENTS

1979-1981 Postdoctoral Research Assistant, Imperial College, London
1981-1983 Research Associate in Physiology, Columbia University, New York
1983-1985 Research Associate in Physiology, University of Arizona
1986-1991 Research Assistant Professor, University of Arizona
1991-1994 Assistant Professor, University of Arizona
1994-2000 Associate Professor, University of Arizona
2000-2007 Professor, University of Arizona
2007-present Research Professor, University of Arizona

HONORS AND AWARDS

1975 Graduation with honors in Physics
1975/76 Medical Research Council Scholarship
1976/79 Science Research Council Scholarship
1984 Young Investigator Travel Award to attend Third World Congress for Microcirculation
1986 Lamport Award of the Cardiovascular Section of the American Physiological Society

- 1986 Travel Award from European Society for Micro circulation to attend 14th International Conference in Sweden
- 1987 Robert S. Flinn Merit Award for Junior Investigators, American Heart Association, Arizona Affiliate
- 1989 Travel Award from American Physiological Society to attend IUPS Conference in Helsinki
- 1993 Fellow of Cardiovascular Section of American Physiological Society
- 1996 Editorial Board, American Journal of Physiology
- 1999 Editorial Board, Microcirculation
- 1999 Sarver Award, University of Arizona Heart Center
- 1996-2000 Member of NIH Study Section, Cardiovascular and Renal
- 2001 Frontiers in Physiology Summer Research Teacher Host Investigator Awardee
- 2005 Benjamin Meaker Visiting Fellowship for University of Bristol, UK

SERVICE ACTIVITIES

Outreach

Local

- 1993 Gave 2 presentations to students of Wakefield Middle School, Tucson, AZ, about science as a career
- 1993 Gave 2 presentations to students of McGee Middle School, Tucson, AZ, for American Heart Association Speakers' Bureau
- 1995 Gave presentation to students of Lineweaver Elementary School, Tucson, AZ during 'Love of Reading' week.
- 1996 Gave 2 presentations to students of Lineweaver Elementary School, Tucson, AZ during 'Love of Reading' week.
- 1996 Gave demonstration to K-3 students of Satori School, Tucson, AZ on anatomy of the brain.
- 1997 Mentored a High School Student for a day in conjunction with the "Women in Science and Engineering" (WISE) Mentoring Program.
- 1998 Gave a "Science Connection" learning activity to second grade students at Lineweaver Elementary School, Tucson, AZ.
- 1998 Taught a class on "Arthropods" for Doolen Middle School "GATE" program
- 1998-2004 Taught a session on the circulation to disabled students attending the NSF Access Summer Camp (Accessing Career Choices in Engineering and the Sciences, University of Arizona)
- 1999 Taught a class on "Adaptations of desert plants" for Lineweaver Elementary School "GATE" program
- 2001 Panel Speaker for Expanding Your Horizons Conference, New Frontiers, Arizona's Statewide Educational Equity Program
- 2001, 2002 Mentored a High School Student for a day in conjunction with the "Women in Science and Engineering" (WISE) Mentoring Program.
- 2002 Assisted a student from Palo Verde High School, Tucson with his Science Fair Project

- 2002 Presented a poster, "Selenium reduces hemoglobin-induced microvascular leakage in rat mesentery", at 51st Annual Scientific Session of ACCO, Sarver Heart Center.
- 2004 Talked to a group of High School girls about "Careers in Physiology" in conjunction with the "Women in Science and Engineering" (WISE) Mentoring Program.
- 2004 Hosted a High School Teacher and Student for an NIH-sponsored Summer Research Program.
- 2007 Panel Speaker for Expanding Your Horizons Conference with the "Women in Science and Engineering" (WISE), Mentoring Program.
- 2008 Gave Biofeedback Instruction to students at 'Stress Busters', Student Recreation Center, University of Arizona
- 2009 Answered High Schooler's questions about cardiac effects of stress
- 2009 Assisted UA Master's student with research project at 'Teen Outreach' to educate teen mothers about health and exercise
- 2009 Spoke as a member of a Reiki Panel for Institute of Noetic Sciences, Tucson branch, August 7.
- 2011 Spoke to Dr. Wayne Peate's 'Well America' group about Biofeedback, February 3.
- 2011 Spoke to Arizona Women's Society of Certified Public Accountants about stress reduction, February 16.
- 2011 Spoke to massage staff at Peaceful Spirit Wellness and Massage Center about Biofeedback, March 4

State

- 1996 Judge for International Science and Engineering Fair
- 2001 Panel Speaker for Expanding Your Horizons Conference, New Frontiers, Arizona's Statewide Educational Equity Program
- 2001 Talked to a class of High School girls about "Careers in Physiology" for "New Frontiers", Arizona's Statewide Educational Equity Program.

International

- 2011 Advisor for Alison Sanford, University of Greenwich, London, UK for her BSc Honours thesis, "Reducing stress in stabled horses using Reiki" for which she gained a distinction.

Citizenship **Intramural**

Departmental (Physiology)

- 1985-1989 Seminar Committee, Department of Physiology, University of Arizona
- 1987-1988 Chairperson of Seminar Committee, Department of Physiology, University of Arizona
- 1997-1998 Search Committee for Cardiovascular Physiology Faculty Position
- 2000-2002 Department of Physiology Peer Review Committee

College (Medicine)

- 1989-1991 Biophysics Seminar Committee, University of Arizona
- 1989-1992 Admissions Committee for the College of Medicine, University of Arizona
- 1994-2000 Interviewed potential medical students for College of Medicine
- 1995-1998 Student Progress Committee, College of Medicine
- 1996 CCAP Basic Science Planning Group University Committees
- 2000-2003 Member of College of Medicine Ad Hoc Review Committee
- 2000-2003 Member of Student Appeals Committee

University

- 1987-1988 Committee to Review University Childcare, University of Arizona
- 1989-2002 Grading of Upper Level Writing Proficiency Exams, University of Arizona
- 1999-2000 Member of General Education Committee
- 2006 Member of Search Committee for Chair of Immunobiology

Interdisciplinary

- 1989-1991 Biophysics Seminar Committee, University of Arizona
- 1991-1992 Co-Director of "Open Forum" (Seminar Series for students of Physiological Sciences Program)
- 1993-1998 Executive Committee of Physiological Sciences Program (Teaching)
- 1997- pres. Member of Institutional Animal Care and Use Committee (IACUC)
- 1998 Member of advisory panel to investigate allegations of unfair examination proceedings
- 1998-2000 Member of hearing panel to investigate fraud allegations concerning a University Professor
- 1999 Member of General Education Committee
- 2000 Member of Student Appeals Committee
- 2000-2007 Biomedical Engineering Program Committee
- 2002-2005 Member of the Graduate Interdisciplinary Programs Advisory Council
- 2003-pres Executive Committee of Physiological Sciences Program (Resources)
- 2004 Member of Academic Program Review team for Cancer Biology
- 2004-2005 Chair of the Graduate Interdisciplinary Programs Advisory Council
- 2006-2007 Chair of Biomedical Engineering Program Committee
- 2006-2007 Member of Search Committee for Head of Immunobiology
- 2011 Judge at Biomedical Engineering IDGP poster session

VAMC

- 1992-1993 Research and Development Space Sub-Committee
- 1993-1994 Institution Animal Care and Use Committee
- 1993 Participated in VAMC "Career Day" for High School students
- 1995-pres. Research and Development Committee

1995 Participated in "Arizona Research Day", Tucson, VAMC, and appeared on "Arizona Illustrated" on Public Television

Extramural

State/Local

1993- Member of Peer Review Consortium of Arizona Affiliate of American Heart Association
 1995- 2004 Reviewer of VAMC Merit Award Applications, Tucson, Arizona
 2003- Volunteer horse handler for Therapeutic Riding of Tucson
 2009- Board Member for EponaQuest

National/International

Meetings Chaired

1985 Co-chaired session on "Exchange" at The Microcirculatory Society
 1991 Chaired and organized a one day symposium, "Modulation of Endothelial Permeability; Direct Measurements in Vivo and in Vitro" prior to Fifth World Congress for Microcirculation
 1993 Chaired session on "Endothelial Function" at The Microcirculatory Society
 1994 Chaired session on "Microcirculation" at Second World Congress of Biomechanics
 2000 Co-chaired symposium on "Capillaries: How their Structure and Function Can Alter to Meet Tissue Demands", American Physiological Society, Experimental Biology 2000
 2003 Inflammation. British Microcirculation Society Scientific Meeting 2003.
 2005 Co-chaired session on "Toxicity of Blood Substitutes" at Xth International Symposium on Blood Substitutes, Brown University
 2005 Organized and Co-chaired First Joint Conference of British and American Microcirculatory Societies
 2009 Chaired session at International Academic and Community Conference on Animals and Society: Minding Animals, Newcastle, Australia
 2011 Chaired session at Testing Times: A Symposium on the Ethics and Epistemology of Animal Experimentation, Macquarie University, NSW Australia

Committees

1987-1988 Publications Committee, The Microcirculatory Society
 1990-1993 Membership Committee, The Microcirculatory Society
 1993-1996 Nominating Committee, The Microcirculatory Society - Chairman 1995-96
 1992-1995 Education and Public Affairs Committee, Biomedical Engineering Society
 2000-2004 Treasurer and Chair of Finance Committee, The Microcirculatory Society
 2002-2005 Member of American Physiological Society Awards Committee (Cardiovascular Section)

Journal Referee

American Journal of Physiology
 Hypertension Reviews

Microvascular Research
 ASME Journal of Biomechanical Engineering
 Circulation Research
 Journal of Physiology, Lond.
 Faseb Journal
 Anesthesiology
 American Journal of Pathology
 BMC Immunology
 Medical Science Monitor
 Microcirculation
 Journal of Alternative and Complementary Medicine
 Journal of American Assoc for Animal Science
 Antioxidants and Redox Signaling
 Bioelectromagnetics

Editorial Boards

1996-1999 American Journal of Physiology (Heart and Circulatory Physiology)
 1999-pres Microcirculation
 2000-pres American Journal of Physiology (Gastrointestinal Physiology)
 2004-pres Medical Science Monitor
 2006-pres Insights into Integrative Medicine
 2008-pres Editor-in-Chief of Reiki Research Group
 2011-pres Behavioral Sciences

Grant Reviews

1996-2000 Member of NIH Cardiovascular and Renal Study Section
 1993, 1999 American Heart Research Consortium Study Group
 1999 North Carolina Biotechnology Center
 1999-2002 American Heart Center, Arizona Affiliate
 2001 Invited to join National Research Council to review grants
 2001 (Dec) NSF SBIR Phase 1 Review Panel
 2002 (Jan) NIH Program Project Reviewer
 2002 (Sept) NHLB Special Emphasis Panel
 2003 (Feb) NHLB Special Emphasis Panel
 2003 (Jul) NHLB Special Emphasis Panel
 2006 (March) BTSS Special Emphasis Panel
 2007 (Jan) NIH Program Project Reviewer
 2008 (Feb) NIH Program Project Reviewer
 2008 (Oct) NSF Ad Hoc Reviewer
 2009 (Apr) NSF Ad Hoc Reviewer
 2011 (Sept) Macquarie University, NSW, Australia, Research Fellowships Scheme

Peer Review and Advisory Boards

2010-2011 Member of Research Peer Review Team for International Society for the Study of
 Subtle Energies and Energy Medicine
 2008-pres Member of Institutional Review Board of the Helen Foundation

2010-pres Member of Board of Advisors for The Epona Foundation

Consultant Work

1996-1997: Consulted for Somatogen, Inc., Boulder, Colorado.
 July 1996: Consulted for Hemosol, Toronto, Canada
 June, 1997: Selected as one of a small group of "Opinion Leaders" from Europe and USA, by Carolyn Ruble and Assocs. to give advice concerning a new oxygen therapeutic
 Dec. 1997: Invited to become a member of a Working Group on Cardiovascular Local Drug, Gene and Radiation Delivery (associated with Amer. Heart Assoc.)
 Jan. 2000: Invited to be a member of international panel for "Current Drugs", U.K.
 July 2001: Invited to be a member of The Council of Healthcare Advisors
 March 2003: Reviewed a grant on blood substitutes for US Army
 August 2003: Reviewed a grant for Energy Biofield Center, University of Arizona
 January 2004: Invited to be on Steering Committee for Energy Biofield Center
 April 2004: Member of Academic Program Review team for Cancer Biology
 Feb 2005: Consulted with JP Morgan regarding Polyheme blood substitute
 Feb 2005: Consulted with Cooper Hill Partners regarding Polyheme blood substitute
 Feb 2005: Consulted with Oracle regarding Polyheme blood substitute
 Oct 2005: Consulted with Morgan Stanley Proprietary Trading regarding blood substitutes
 April 2006: Consulted with Synzyme regarding blood substitutes
 April 2006: Invited to be a member of Microdose Medical Advisory Committee
 June 2006: Consulted with LifeTech Research regarding blood substitutes
 Oct 2006: Consulted with Third Point, LLC, NY regarding blood substitutes
 April 2009: Consulted with Sangart, Inc., San Diego, California about blood substitutes

PUBLICATIONS

Chapters in Scholarly Books and Invited Papers

Based on original research:

Caro CG, MJ Lever, AL Baldwin and A Tedgui. Influence of convection and of vasoactive agents on the mass transport properties of the arterial wall. In: Fluid Dynamics as a Localizing Factor in Atherogenesis, H Morl, ed. Springer-Verlag, Berlin, 1983.
 Gore RW and AL Baldwin. Mesenteric and intestinal preparations. In: Physical Techniques in Biology and Medicine Chapter A-5, CH Baker and WL Nastuk (eds.), Academic Press, 1986, pp. 65-81.
 Simon BR, MV Kaufmann, MA McAfee and AL Baldwin. Finite element models for arterial wall mechanics. Proc. 1993 Bioengineering Conference, ASME BED - Vol.24, NA Lagrana, MH Freidman and ES Grood (eds.). Invited presentation at the ASME Summer Bioeng. Conf., Breckenridge, Colorado, 1993.

- Simon BR, MV Kaufmann, MA McAfee and AL Baldwin. Poroelastic theory and finite element models for soft tissues with application to arterial mechanics. In: "Mechanics of Poroelastic Media", APS Salvadurai, (ed.), Kluwer Acad. Publishers. 1994
- Reinking RM, Wright SW, Yool AJ, Lynch RM, and Baldwin A. Cell, the Computer Enhanced Learning Linkage Project. In: The Official SEAM '95 Conference CD- ROM, ed M. Duncan, Worcester, MA:MacSciTech. 1995
- Baldwin AL, LM Wilson and B Simon. Effects of nitric oxide on transmural arterial transport properties. Proc. 1995 Bioengineering Conference, ASME BED-Vol.29, p135-136, RM Hochmuth, NA Langrana and MS Hefzy (eds). Invited presentation at the Summer Bioeng. Conf., Beaver Creek, Colorado, 1995.
- Simon BR, MV Kaufmann, MA McAfee and AL Baldwin. Finite element models for soft tissues based on poroelastic transport - swelling theory. Proc. 1995 Bioengineering Conference, ASME BED-Vol.29, p311-312, RM Hochmuth, NA Langrana and MS Hefzy (eds). Invited presentation at the Summer Bioeng. Conf., Beaver Creek, Colorado, 1995.
- Kaufmann MV, BR Simon, MA McAfee, AL Baldwin. Poroelastic finite element formulation including coupled transport and swelling effect. Proc. 1995 Bioengineering Conference, ASME BED-Vol.29, p315-316, RM Hochmuth, NA Langrana and MS Hefzy (eds). Invited presentation at the Summer Bioeng. Conf., Beaver Creek, Colorado, 1995.
- Baldwin AL, TW Secomb and BR Simon. Convection and diffusion of albumin through artery walls: implications for local drug delivery. Proc. 1997 Bioengineering Conference, K.B. Chandran, R. Vanderby, and M.S. Hefzy, eds., BED-Vol. 35, 93-94, 1997.
- Simon BR, Liu J. Kaufmann MV and Baldwin AL. Data reduction methods for determination of material properties for poroelastic-transport-swelling (PHETS) finite element of large arteries. Proc. 1997 Bioengineering Conference, K.B. Chandran, R. Vanderby, and M.S. Hefzy, eds., BED-Vol. 35, 35-36, 1997.
- Baldwin AL. Blood Substitutes and the Intestinal Microcirculation: Extravasation and Ultrastructural Alterations. In: "Advances in Blood Substitutes: Industrial Opportunities and Medical Challenges", R.M. Winslow, K.D. Vandergriff, and M. Intaglietta, 19-37, 1997.
- Baldwin AL, Wilson LM and McGuire BJ. Effect of charge on the distribution and retention of macromolecules in the artery wall. Proc. 1999 Bioengineering Conference, VK Goel, RL Spilker, GA Ateshian and LJ Soslowsky, eds., BED-Vol. 42, 475-476, 1999.
- Baldwin AL and Wiley EB. PHP-HT VitaResc Biotech. *Idrugs* 4(4), 452-456, 2001.
- Baldwin AL, Alberding J, Barton JK and Wiley EB. Use of optical coherence tomography to measure mechanical and transport properties of pulsing arterial walls. Proc. 2001 Bioengineering Conference, RD Kamm, GW Schmid-Schonbein, GA Ateshian and MS Hefzy, eds., BED-Vol.50, 677-678, 2001.
- Baldwin AL. Hemoglobin-induced microvascular dysfunction. In: "Encyclopedia of the Microvasculature", ed. D. Shepro, Elsevier Inc., Chapter 94, 589-594, 2005.
- Baldwin AL. Mast cell activation by stress. In: "Methods in Molecular Biology", vol 315: Mast Cells: Methods and Protocols, ed. G. Krishnaswamy and D. Chi, Humana Press Inc, Totowa, NJ, 353-365. 2005.
- Baldwin AL. The role of inflammation in the toxicity of hemoglobin-based oxygen carriers. In: "Blood Substitutes", ed. RW Winslow, Elsevier Inc., Chapter 22, 235-245, 2006.

- Baldwin AL. Roles of Reactive Oxygen Species in the Microcirculation. Forum Editorial. Antioxidants and Redox Signaling 8(7-8), 2006
- Baldwin AL and Bekoff M. Too stressed to work. New Scientist, p24, 9 June 2007.
- Baldwin AL. The stressful life of laboratory animals. Project Syndicate, 2007. (<http://www.project-syndicate.org/commentary/baldwin/>) Translated into Spanish,, Russian, French, German, Czech, Chinese and Arabic.
- Baldwin AL. Reiki – what animals can tell us. International Therapist 82(May/June): 14-16, 2008.
- Baldwin, AL. Stress in Laboratory Animals, in: “Encyclopedia of Animal Rights and Animal Welfare”, second edition, ed. Marc Bekoff, ABC-CLIO, 2009.
- Baldwin, AL, Heart Rate Variability Biofeedback for Treatment of Hypertension. Readings for training fellows in Arizona Center for Integrative Medicine, 2010.
- Baldwin, AL, Heart Rate Variability Biofeedback for Anxiety and Depression. Readings for Training Fellows in Arizona Center for Integrative Medicine, 2010.
- Baldwin, AL, Biofeedback. Readings for training fellows in Arizona Center for Integrative Medicine, 2010.
- Baldwin AL. Scientific evidence for beneficial effects of Reiki. Reiki News Magazine, Fall: 29-31, 2011.

Book Reviews

- The Resistance Vasculature. JA Bevan, W Halpern, and MJ Mulvany (eds.), Humana Press, Totowa, New Jersey, 1991. Reviewed in: Annals of Biomed. Eng. 21(6):749-750, 1993.

Refereed Journal Articles

- Baldwin AL, CP Winlove and CG Caro. Effects of in situ collapse on the ultrastructure of the rabbit thoracic aorta. Artery 10:420-439, 1982.
- Winlove CP, J Davis, A Baldwin and A Chabanel. Effects of particle size and perfusate composition on the uptake of colloidal gold by the rabbit thoracic aorta in situ. Atherosclerosis 44:99-111, 1982.
- Baldwin AL, MJ Lever and CG Caro. Effect of noradrenalin, sodium nitrite and isosorbide dinitrate on albumin transport in the wall of the excised rabbit common carotid artery. Atherosclerosis 46:1-11, 1983.
- Baldwin AL, CP Winlove and CG Caro. Effects of perfusate composition on binding of Ruthenium red and gold colloid to glycocalyx of rabbit aortic endothelium. J. Histochem. Cytochem. 32(3):259-266, 1984.
- Baldwin AL and S Chien. Endothelial transport of anionized and cationized ferritin in the rabbit thoracic aorta and vasa vasorum. Arteriosclerosis 4(4):372-382, 1984.
- Baldwin AL and S Chien. Regulation of aortic vesicular uptake of cationized ferritin by plasmalemmal binding. Atherosclerosis 55:233-245, 1985.
- Baldwin AL and S Chien. Effect of plasma proteins on endothelial binding and vesicle loading of anionic ferritin in the rabbit aorta. Arteriosclerosis 5(5):451-458, 1985.
- Baldwin AL and S Chien. Effect of dextran 40 on endothelial binding and vesicle loading of ferritin in the rabbit aorta. Arteriosclerosis 8(2):140-146, 1988.

- Baldwin AL and RW Gore. Simultaneous measurement of capillary compliance and hydraulic conductance. *Microvasc. Res.* 38(1):1-22, 1989.
- Baldwin AL, J Rozum and RW Gore. Routes of water and small solute transport between blood and lymph in *Rana pipiens*. *Journal of Physiological Zoology* 63(6):1141-1156, 1990.
- Simon BR, AL Baldwin, Y Yuan and LM Wilson. Poroelastic material property determination for rabbit aortas. *Advances in Bioengineering, BED-Vol. 17:37-38, ASME-WAM*, 1990.
- Baldwin AL, N Wu and D Stein. Endothelial surface charge of intestinal mucosal capillaries and its modulation by dextran. *Microvasc. Res.* 42(2):160-178, 1991.
- Baldwin AL, LM Wilson and BR Simon. Effect of pressure on aortic hydraulic conductance. *Arteriosclerosis and Thrombosis* 12:163-171, 1992.
- Wu NZ and AL Baldwin. Possible mechanisms for permeability escape of venules during histamine application. *Amer. J. Physiol. (Heart and Circ. Physiol.)* 262(4):H1238-H1247, 1992.
- Wu NZ and AL Baldwin. Transient venular permeability increase and endothelial gap formation induced by histamine. *Microvasc. Res.* 44:334-352, 1992.
- Baldwin AL, P Ferrer, JS Rozum and RW Gore. Regulation of water balance between blood and lymph in frog, *Rana pipiens*. *Lymphology.* 26:4-18, 1993.
- Baldwin AL and LM Wilson. Endothelium increases medial hydraulic conductance of aorta, possibly by release of EDRF. *Amer. J. Physiol. (Heart and Circ. Physiol.)*, 264:H26-H32, 1993.
- Simon BR, MV Kaufmann, MA McAfee and AL Baldwin. Determination of material properties for soft tissues using a porohyperelastic constitutive law. *Advances in Bioengineering, ASME, BED-Vol. 26:7-10*, 1993.
- Simon BR, MV Kaufmann, MA McAfee and AL Baldwin. Finite element models for arterial wall mechanics. *J. Biomech. Eng.* 115:489-496, 1993.
- Baldwin AL and LM Wilson. Stationary red cells induce a negative charge on mucosal capillary endothelium. *Amer. J. Physiol.* 266 (Gastrointest. Liver Physiol. 29):G685-G694, 1994.
- Thurston G and AL Baldwin. The endothelial actin cytoskeleton in the microvasculature of the rat mesentery. *Amer. J. Physiol.* 266 (Heart and Circ. Physiol. 35):H1896-H1909, 1994.
- Thurston G, AL Baldwin and LM Wilson. Changes in endothelial actin cytoskeleton at leakage sites in the rat mesenteric microvasculature. *Amer. J. Physiol.* 266 (Heart and Circ. Physiol. 37):H316-H329, 1995
- Baldwin AL and G Thurston. Changes in endothelial actin cytoskeleton with time after histamine treatment. *Amer. J. Physiol.* 269(Heart and Circ. Physiol. 38):H1528-H1537, 1995
- Baldwin AL, LM Wilson, Gradus-Pizlo I, Wilensky R. and March K. Effect of atherosclerosis on transmural convection and arterial ultrastructure: implications for local intravascular drug delivery. *Arteriosclerosis, Thrombosis and Vascular Biology* 17:3365-3375, 1997.
- Merkle, CJ, LM Wilson, and AL Baldwin. Acute blood stasis reduces the interstitial uptake of albumin from intestinal microcirculatory networks. *American J. Physiol.* 274 (Heart and Circ. Physiol. 43):H600-H608, 1998.
- Simon BR, MV Kaufmann, MA McAfee and AL Baldwin. Porohyperelastic finite element analysis of large arteries using Abacus. *J. Biomech. Eng.* 120:296-298, 1998.
- Simon BR, MV Kaufmann, MA McAfee, AL Baldwin and LM Wilson. Identification and determination of material properties for porohyperelastic analysis of large arteries. *J. Biomech. Eng.* 120:188-194, 1998.

- Simon BR, MV Kaufman, J Liu and AL Baldwin. Poroelastic transport swelling theory, material properties and finite element models for large arteries. *Int. J. Solid Structures* 35:5021-5031, 1998.
- Wilson LM and AL Baldwin. Effects of environmental stress on the architecture and permeability of the rat mesenteric microvasculature. *Microcirculation* 5(4):299-308, 1998.
- Baldwin AL, G Thurston and H Al Naemi. Inhibition of nitric oxide increases venular permeability and alters endothelial actin cytoskeleton. *American J. Physiol.* 274 (Heart and Circ. Physiol. 43):H1776-H1784, 1998.
- Baldwin AL, LM Wilson and JE Valeski. Ultrastructural effects of intravascularly-injected polyethylene glycol-hemoglobin in intestinal mucosa. *American J. Physiol.* 275(Heart and Circ. Physiol. 44):H615-H625, 1998.
- Wong RK, AL Baldwin and RL Heimark. Redistribution of cadherin-5 at sites of TNF α and γ IFN induced macromolecular permeability in mesenteric venules. *Amer. J. Physiol.* 276(Heart and Circ. Physiol. 45):H736-H748, 1999.
- Wilson LM and AL Baldwin. Environmental stress causes mast cell degranulation, endothelial and epithelial changes, and edema in the rat intestinal mucosa. *Microcirculation* 6(3):189-198, 1999.
- Valeski JE and AL Baldwin. Effect of early transient adherent leukocytes on venular permeability and endothelial actin cytoskeleton. *Amer. J. Physiol.* 277(Heart and Circ. Physiol. 46):H569-H575, 1999.
- Baldwin AL. Modified hemoglobins produce venular endothelial gaps and albumin leakage in the rat mesentery. *Amer. J. Physiol.* 277(Heart and Circ. Physiol. 46):H650-H659, 1999.
- Al Naemi H and AL Baldwin. Nitric oxide: role in venular permeability recovery after histamine challenge. *Amer. J. Physiol.* 277(Heart and Circ. Physiol. 46):H2010-H2016, 1999.
- Alaya-Fierro, AL Baldwin, LM Wilson and DE Carter. Structural alterations in the rat kidney after acute arsine exposure. *Lab. Invest.* 80(1):1-10, 2000.
- Al Naemi H, AL Baldwin. Nitric oxide protects venules against histamine-induced leaks. *Microcirculation* 7(3):215-223, 2000.
- Baldwin AL. A brief history of capillaries and their apparently strange behavior. *Clinical and Experimental Pharmacology and Physiology*, 27, 821-824, 2000.
- Baldwin AL and G Thurston. Mechanics of endothelial cell architecture and vascular permeability. *Critical Reviews in Biomedical Engineering*, 29(2):247-278, 2001.
- Baldwin AL and EB Wiley. Selenium reduces hemoglobin-induced epithelial damage to intestinal mucosa. *Artificial Cells, Blood Substitutes and Immobilization Biotechnology*, 30(1):1-22, 2002.
- Baldwin AL, EB Wiley and AI Alayash. Comparison of effects of two hemoglobin-based oxygen carriers on intestinal integrity and microvascular leakage. *American Journal of Physiology* 283:H1292-H1301, 2003.
- Baldwin AL, EB Wiley, AG Summers and AI Alayash. Sodium selenite reduces hemoglobin-induced venular leakage in the rat mesentery. *American Journal of Physiology* 284:H81-H91, 2003.
- Jain M and AL Baldwin. Are laboratory animals stressed by their housing environment and are investigators aware that stress can affect physiological data? *Medical Hypotheses*. 60(2):284-289, 2003.

- Valeski JE and AL B Baldwin. Role of the actin cytoskeleton in regulating endothelial permeability in venules. *Microcirculation* 10(5):411-420, 2003.
- Baldwin AL, EB Wiley and AI Alayash. Differential effects of sodium selenite in reducing tissue damage caused by three hemoglobin-based oxygen carriers. *Journal of Applied Physiology* 96:893-903, 2004.
- Ginsburg MI and AL Baldwin. Disodium cromoglycate stabilizes mast cell degranulation while reducing the number of hemoglobin-induced microvascular leaks in rat mesentery. *American Journal of Physiology* 286:H1750-H1756, 2004.
- Alberding JP, AL Baldwin, JK Barton and EB Wiley. Onset of pulsatile pressure causes transiently increased filtration through artery wall. *American Journal of Physiology* 286:H1827-H1835, 2004.
- Baldwin AL. Blood substitutes and redox responses in the microcirculation. *Antioxidants and Redox Signaling* 6(6):1019-1030, 2005.
- Baldwin AL, L DeMaria and EB Wiley. Effects of phosphorothioate oligodeoxynucleotide on hemoglobin-induced damage to intestinal mucosa. *Artificial Cells, Blood Substitutes and Biotechnology* 33:1-25, 2005.
- Alberding JP, AL Baldwin, JK Barton and E Wiley. Effects of pulsation frequency and endothelial integrity on enhanced arterial transmural filtration produced by pulsatile pressure. *American Journal of Physiology* 289:H931-H937, 2005.
- Baldwin AL, RL Primeau and WE Johnson. Effect of noise on the morphology of the intestinal mucosa in laboratory rats. *J. Amer. Assoc. for Laboratory Animal Science* 45(1):74-82, 2006.
- Baldwin AL and GE Schwartz. Personal interaction with a Reiki practitioner decreases noise-induced microvascular damage in an animal model. *The Journal of Alternative and Complementary Medicine*, 12(1): 15-22, 2006.
- Burke TK, Teng X, Patel RP and Baldwin AL. Effects of S-nitrosation on hemoglobin-induced microvascular damage. *Antioxidants and Redox Signaling*, 8(7-8):1093-1101, 2006.
- Burwell AK and Baldwin AL. Do audible and ultrasonic sounds of intensities common in animal facilities affect the autonomic nervous system of rodents? *Journal of Applied Animal Welfare Science*, 9(3):179-199, 2006.
- Baldwin AL, Schwartz GE and Hopp DH. Are investigators aware of environmental noise in animal facilities and that such noise may affect experimental data? *J. Amer. Assoc. for Laboratory Animal Science*, 46(1):45-51, 2007.
- Baldwin AL and Bell IR. Effect of noise on microvascular integrity in laboratory rats. *J. Amer. Assoc. for Laboratory Animal Science*, 46(1):58-65, 2007.
- Goriely AR, Baldwin AL and Secomb TW. Transient diffusion of albumin in aortic walls: Effects of binding to medial elastin layers. *American Journal of Physiology: Heart and Circulatory Physiology*, 292: H2195-H2201, 2007.
- Cudilo E, Al Naemi H, Marmorstein L and Baldwin AL. Knockout mice: is it just genetics? Effects of enrichment on fibulin-4^{+/-} mice. *PLoS ONE*, 2(2): e229, 2007.
- Baldwin AL. Effects of noise on rodent physiology. *Journal of Comparative Psychology*, 20(2-3): 134-144, 2007.
- Wright AJ, Soto NA, Baldwin AL, Bateson, M, Beale CM, Clark C, Deak T, Edwards EF, Fernandez, A, Godinho A, Martineau D, Romero LM, Weilgart, LS, Wintle BA, Notarbartolo-di-Sciara, Martin V. Anthropogenic noise as a stressor in animals: a

- multidisciplinary perspective. *Journal of Comparative Psychology*, 20(2-3): 250-273, 2007.
- Wright AJ, Soto NA, Baldwin AL, Bateson, M, Beale CM, Clark C, Deak T, Edwards EF, Fernandez, A, Godinho A, Martineau D, Romero LM, Weilgart, LS, Wintle BA, Notarbartolo-di-Sciara, Martin V. Do marine mammals experience stress related to anthropogenic noise? *Journal of Comparative Psychology*, 20(2-3): 274-316, 2007.
- Alberding JP, Heimark RL and Baldwin AL. Effects of transient pressure gradient on endothelial F-actin and beta-catenin. *Journal of Medical and Biological Sciences*, 2(1):1-11, 2008 (<http://www.scientificjournals.org/journals2008/articles/1286.pdf>)
- Baldwin AL, Wagers C and Schwartz GE. Reiki improves heart rate homeostasis in laboratory rats. *The Journal of Alternative and Complementary Medicine*, 14(4): 417-422, 2008.
- Brauner AE, Kurjiaka DT, Ibragimov A and Baldwin AL. Impact of cage size and enrichment (tube and shelf) on heart rate variability in rats. *Scandinavian journal of laboratory animal science*, 37(3): 141-146, 2010.
- Baldwin AL, Vitale A, Brownell E, Kearns M, Rand W. The Touchstone Process: an ongoing critical evaluation of Reiki in the scientific literature. *Holistic Nursing Practice*, 24 (5): 260-276, Sept/Oct 2010.
- Baldwin AL. Does lack of enrichment invalidate scientific data obtained from rodents? *The Enrichment Record*, 5: 10-12, 2010.
- Gehrke EK, Baldwin AL and Schiltz PM. Heart rate variability in horses engaged in equine-assisted activities. *Journal of Equine Veterinary Science*, 31: 78-84. 2011.
- Dolgoff-Kaspar R, Baldwin A, Johnson MS, Edling N and Sethi GK. Effect of laughter therapy on mood and heart rate variability in patients awaiting organ transplantation: a pilot study, *Alternative Therapies in Health and Medicine* (in press).
- Baldwin AL and Schwartz GE. Physiological changes in energy healers during self-practice. *Complementary Therapies in Medicine* (under review).
- Baldwin AL. Does Lack of Enrichment Invalidate Scientific Data Obtained from Rodents by Compromising their Welfare? *Between the Species* (in press).

Media

- 1994 One of my photomicrographs, taken in conjunction with G. Thurston, "Capillaries of the rat mesentery showing F-actin (rhodamine phalloidin) and nuclei (Yo-Pro-1) using a confocal microscope" appeared as the cover of the journal "Microcirculation" for the year of 1994
- 1995 Participated in "Arizona Research Day", Tucson, VAMC, and appeared on "Arizona Illustrated" on Public Television
- 2004 (May) Some aspects of my Reiki experiments filmed for ABC News (aired in Phoenix, AZ on KGUN 9)
- 2004 (Nov) Participated in National Academy of Sciences Teleconference on Interdisciplinary Graduate Programs
- 2005 (Feb) Some aspects of my Reiki experiments described in: "The New Look of Reiki. As healing practice grows, science takes a closer look", *The Post and Courier* (Feb. 21, 2005)
- 2007 (Apr) MedStar TV crew filmed my Reiki experiments as part of a program involving research at the College of Medicine
- 2007 (Aug) 'Helping Cancer Patients Cope,' WKRG.com News 5, Mobile and Pensacola, FL

- 2008 (Jan) UANEWS.org. 'College of Medicine Researcher Studies Ancient Methods for Modern-Day Healing' (video)
- 2008 (Jan) Reiki and Stress Reduction, Wildcat, January 23rd, 2008.
- 2008 (Jun) UANEWS.org, 'UA Researcher Takes Energy Healing from the Laboratory to the Corral'
- 2008 (Jun) 'Energy Healing for Horses,' KVOA News 4, Tucson, AZ
- 2008 (Jul) 'Reiki – Alternative Healing Therapy to Help you Relax,' KUAT Arizona Illustrated, Tucson AZ
- 2009 (Apr) 'Biofeedback as a Treatment for Anxiety and Depression', instructional video for Integrative Medicine fellows, Center for Integrative Medicine, University of Arizona
- 2009 (Aug) Member of Panel Discussion on the US Catholic Bishops' Stance on Reiki. Recorded for radio broadcast, www.weboflight.com/?p=2615
- 2009 (Dec) Interviewed by Karen Cartwright, University Medical Center Marketing Coordinator, on Reiki for article, 'Healing Hands' in 'Vim and Vigor' (50,000 circulation)
- 2010 (Jul) Interviewed by Reiki Council, London, UK for article on Reiki
- 2010 (Jul) Two one-hour radio interviews by Phyllis Furumoto about my Reiki work (www.reikitalkshow.com)
- 2010 (Dec) One-hour radio interview by Eamon Hameed, Healing PAQ, on healing. <http://www.blog.talkradio.com/spirituality>. TalkID 347858852

SCHOLARLY PRESENTATIONS (1994-present)

Invited Seminars

Intramural: 1994-present

- Effect of pressure and EDRF on transport properties of arterial walls. University Heart Center, University of Arizona, June 7, 1995.
- Effects of environmental stress on the ultrastructure and microvascular permeability of the rat intestinal mucosa. Program of Integrative Medicine, Arizona Health Sciences Center, University of Arizona, Sept. 19, 1997.
- Blood Substitutes: can the problems be overcome? Biomedical Engineering Program, University of Arizona, Feb. 12, 1999.
- Role of the actin cytoskeleton in regulating endothelial permeability. Vascular Biology Group, University of Arizona, May 25, 1999.
- How rat accommodation can affect your experimental data. Tucson VAMC Research Conference, Aug 5, 1999.
- Role of the actin cytoskeleton in regulating endothelial permeability. Advisory Board Meeting, Sarver Heart Center, Jan. 28, 2000.
- The importance of stabilizing the endothelium with regard to preventing atherosclerosis. "Healthy Heart 2000", Sarver Heart Center, Feb. 12, 2000.
- Effects of inhibiting myosin light chain kinase on histamine-induced increases in microvascular permeability. Sarver Heart Center, May 10, 2000.

- Animal experiments: are your data as reliable as you think? Department of Physiology, University of Arizona, Sept. 8, 2000.
- Objectives and Methods of Three Published Papers by M.M.B. Kay. Third CAFT Panel, University of Arizona, February 20, 2001.
- Analysis of Data from Three Published Papers by M.M.B. Kay. Third CAFT Panel, University of Arizona, May 1, 2001.
- Treatments for Stress-Induced Inflammation. Exploratory Center on Injury Mechanisms and Related Responses, College of Nursing, University of Arizona, October 27, 2003.
- How your Mind Affects your Body. Auxiliary Board of Directors, Tucson Medical Center, May, 5, 2004.
- What Rats can tell us about Reiki and Homeopathy. Advances in Biofield Science Lecture Series, University of Arizona, July 29, 2004.
- Physiological effects of environmental noise on rodents. Department of Radiology, University of Arizona, October 12, 2004.
- Effects of Nitric Oxide on Permeability of Microvessels and Large Arteries. Nitric Oxide Group, University of Arizona, November 30, 2004.
- Scientific Evidence for Reiki. Program in Integrative Medicine, University of Arizona, March 10, 2005.
- Effects of the Environment on Rodent Physiology. University Animal Care, University of Arizona, February 10, 2006.
- Effects of Noise on Cardiovascular Function. Department of Physiology, University of Arizona, February 24, 2006.
- Toxicity of Hemoglobin-based Blood Substitutes. Program of Biomedical Engineering, University of Arizona, February 27, 2006.
- Are research animals stressed out of their minds? Implications and Solutions, Department of Psychology, University of Arizona, August 31, 2007.
- Microscopy Datablitz presentation. Frontiers in Medical Research Seminar Series, University of Arizona, November 13, 2007.
- Heart Rate Variability as a Measure of Autonomic Activity of the Heart, Vascular Health Group, University of Arizona, December 8, 2008.
- Biofeedback and Parkinson's Disease. Physiology Annual Datablitz presentation, Botanical Gardens, Tucson, AZ, June 4, 2010.

Extramural: 1994-present

- Kinetics of extravasation of hemoglobin from the intestinal microcirculation. Somatogen, Inc., Boulder, Colorado, November 1994.
- Regulation of microvascular permeability in the intestinal mucosa. Cardiovascular Research Institute, University of California, San Francisco. December 9, 1994.
- Possible Mechanisms to explain the transient permeability increase of venules induced by histamine, Physiological Flow Studies Unit, Dept. of Aeronautics, Imperial College of Science and Tech., University of London, London, UK. August 10, 1995
- Cellular alterations caused by extravasating hemoglobins in the intestine. Hemosol, Inc., Toronto, Canada, July 23, 1996.
- Time-course and pathways of extravasation of recombinant cross-linked hemoglobin in the intestinal mucosa. Somatogen, Inc., Boulder, Colorado, December, 18, 1996.

Blood Substitutes and the Intestinal Microcirculation: Extravasation and Ultrastructural Alterations. Presentation for the course: "Current Issues in Blood Substitute Research and Development, 1997", San Diego, California, March, 18, 1997.

Ways in which hemoglobin-based oxygen carriers affect intestinal ultrastructure. Somatogen, Inc., Boulder, Colorado, Sept. 24, 1997.

Effects of Environmental Stress on the Mesenteric Microcirculation and Intestinal Mucosa of the Rat. Department of Biological Sciences, Northern Arizona University, Nov. 30, 1998.

Possible mechanisms to explain the transient permeability increase of venules induced by histamine. Department of Physiology and Biophysics, University of Louisville, Sept. 28, 1999.

Effect of Noise Stress on Animal Physiology. Arizona Primate Foundation, Mesa, Arizona, October 15, 2002.

Effect of Pulsatility on Convection through the Artery Wall. Department of Cellular and Integrative Physiology, Indiana University School of Medicine, October 7, 2003.

Reiki for Horse and Rider: Modern Science meets Ancient Healing Art. Tucson Dressage Club, March 17, 2005.

Effects of Noise and Ultrasound on Rodent Physiology. Department of Neuroscience, University of Bristol, Bristol, Avon, England, November 11, 2006.

Effects of Noise and Ultrasound on Rodent Physiology. Department of Psychology, University of Portsmouth, Portsmouth, England, November 17, 2006.

Use of Radiotelemetry to Monitor Effects of Noise on Cardiovascular Function. Department of Neuroscience, University of Bristol, Bristol, Avon, England, November 25, 2006.

The Two Faces of Inflammation: The Importance of Control. The Helen Foundation, Mesa, AZ, January 19, 2006.

The Two Faces of Inflammation: The Importance of Control. The Helen Foundation, Tucson, AZ, January 20, 2006.

The Two Faces of Inflammation: The Importance of Control. The Helen Foundation, Las Vegas, NV, January 23, 2006.

Arthritis and Inflammation. The Helen Foundation, Mesa, AZ, January 18, 2007.

Arthritis and Inflammation. The Helen Foundation, Tucson, AZ, January 19, 2007.

Women and Heart Disease. American Heart Association, Arizona Affiliate at a trailer park in south Tucson, January 27, 2007.

Women and Heart Disease. American Heart Association, Arizona Affiliate at Davis Monthan Airforce Base, March 15, 2007.

The Science behind Reiki, Canyon Ranch, Tucson, AZ, May 20, 2007.

The Science behind Reiki. Canyon Ranch, Tucson, AZ, June 27, 2007.

The Science behind Reiki. Canyon Ranch, Tucson, AZ, August 1, 2007.

Women and Heart Disease, American Heart Association, Arizona Affiliate at Mahoney Group, Tucson Association of Insurance Professionals, September 13, 2007.

Stress Reduction and Biofeedback, Tucson Dressage Club, Pima County Fairgrounds, Tucson AZ, October 19, 2007.

Biofeedback for Parkinson's Disease, Parkinson's Disease Support Group, Green Valley, AZ, November 2, 2007.

Stress Reduction and Biofeedback, Institute for Noetic Sciences, Tucson, AZ, November 2, 2007.

- Reiki and Biofeedback: Two Ways to Reduce Stress, Paradigm Shift, Oracle, AZ, November 18, 2007.
- Biofeedback for Relaxation. Lotus Massage & Wellness Center, Tucson, AZ, December 5, 2007; February 10, 2008; April 12, 2008; August 24, 2008; August 2, 2009.
- Biofeedback for Parkinson's Disease. Parkinson's Disease Support Group, Rancho Splendido, Tucson, AZ, February 20, 2008.
- Biofeedback for Relaxation. HealthSouth Rehab Institute of Tucson, March 17, 2008.
- Biofeedback for Relaxation. La Mariposa Resort Health Club, Tucson, AZ, April 6, 2008.
- Biofeedback for Parkinson's Disease. Parkinson's Disease Support Group, Payson, AZ, June 5, 2008; March 5, 2009.
- Heart Rate Variability as a Means to Explore Horse-Human Bonding, Tucson Dressage Club, Himmel Public Library, Tucson AZ, September 6, 2008.
- Heart to Heart Talk between Horses and Humans, Epona Equestrian Center, Apache Springs, Sonoita, AZ, November 21, 2008.
- Introduction to Reiki. Lotus Massage & Wellness Center, Tucson, AZ, September 7, 2008; January 11, 2009; May 12, 2009
- Biofeedback for Relaxation. Tucson Internal Medicine Northwest Medical Center, Tucson, AZ, September 30, 2008.
- Reiki and Biofeedback: Two Ways to Reduce Stress. AgeWell Longevity Program, Tucson Osteopathic Medical Foundation, Tucson, AZ, October 25, 2008.
- Women and Heart Disease, "Go Red". American Heart Association, Arizona Affiliate, for Insurance professionals, Tucson, AZ, March 12, 2009.
- Communication and Connection, Epona Equestrian Center, Apache Springs, Sonoita, AZ, March 18, 2009.
- How Biofeedback with Massage Promotes Full Relaxation, Lotus Massage & Wellness Center, Tucson, AZ, April 22, 2009; June 16, 2009; July 22, 2009.
- How Biofeedback with Massage Promotes Full Relaxation, Peaceful Spirit Massage & Wellness Center, October 28, 2009.
- Energy and Connection Workshop, Cloudcroft Ranch, Vail, AZ, November 7, 2009.
- Physiological Effects of Reiki and Reconnective Healing. Peking Union Medical Center, Beijing, China, January 4, 2010.
- Scientific Advances in Reiki. Reiki Council Annual General Meeting, London, UK, March 4, 2010.
- How Cage Environment of Rodents Affects Animal Welfare and Scientific Data. Royal Society for the Prevention of Cruelty to Animals, Horsham, Sussex, UK, March 5, 2010.
- Biofeedback and Parkinson's Disease. Mid-Valley Athletic Club, Tucson, AZ, April 2, 2010.
- Energy and Connection Workshop, Cloudcroft Ranch, Vail, AZ, April 3, 2010.
- Heart Rhythm and Biofeedback. Lotus Massage & Wellness Center, Tucson, AZ, September 15, October 20, 2010.
- Science of Reiki Workshop. Lotus Massage & Wellness Center, Tucson, AZ, October 12, 2010.
- Use of Reiki in Hospitals – seminar and demonstration for nurse practitioners attending workshop on Patients' Advocates at CDO Ranch, Oracle, AZ, March 25, 2011.
- Biofeedback for Relaxation. Peaceful Spirit Massage and Wellness Center, June 30, 2011.
- Use of Reiki in Hospitals – seminar and demonstration for nurse practitioners attending workshop on Patients' Advocates at CDO Ranch, Oracle, AZ, September 9, 2011.

Reiki and Acupuncture. Peaceful Spirit Massage and Wellness Center, June 30, 2011.
 How your State of Mind Affects Yourself and Others: New Insights from Animals and
 Technology. Arizona Integrative Wellness Coalition, Tucson, AZ, September 27, 2011.

Invited Symposia at National and International Conferences (1994-present)

- Interactions of endothelial cells with the immune system: role in immunotoxicology, by Ann L. Baldwin 34th Annual Meeting, Society of Toxicology, Baltimore, Maryland, March, 1995
- Endothelial cell morphology in relation to blood flow and stretch in arterioles and veins, by Ann L. Baldwin and G. Thurston, 9th International Congress of Biorheology, Big Sky, Montana, July, 1995.
- Lymphatic compartments and routes of lymph return in frogs, by Ann L. Baldwin and R.W. Gore, 4th International Congress of Comparative Physiology and Biochemistry, Birmingham, U.K., August 1995.
- Catheter-Based Systems: Hydraulics-Vascular Transport, by Ann L. Baldwin, 1st International Symposium on local cardiovascular drug delivery, Boston, MA, September 1995.
- Monitoring extravasation of macromolecules from the intestinal microcirculation using NIH Image, or "something for nothing", by Ann Baldwin, Microscopic Methods for Microvascular Research, Annual Arizona Imaging Workshop, University of Arizona, Tucson, AZ, May 1995.
- Time course of changes in permeability and endothelial cytoskeleton in venules after histamine treatment, by Ann Baldwin, New Perspectives in Microvascular Fluid Exchange: A Hundred Years after Starling, Broadway, Worcestershire, U.K., April 21-24.
- Hemoglobin-based blood substitutes: intestinal inflammation and reactive oxygen species, by Ann Baldwin, 12th Annual Tumor Microcirculation Retreat, Duke University, North Carolina, Feb. 21-22, 1998.
- Blood Substitutes: Can the Problems be Overcome? By Ann Baldwin, National Minority Research Symposium, Phoenix, Arizona, Nov. 11, 1999.
- Noise Stress and Physiological Results. By Ann Baldwin, Scientific Center for Animal Welfare Conference, Baltimore, Maryland, May 18, 2000.
- Regulation of Microvascular Permeability: Possible Role in Protein Losing Enteropathy. By Ann Baldwin, Protein Losing Enteropathy Symposium, The Children's Hospital of Buffalo, Buffalo, NY, September 22, 2000.
- Selenium Reduces Hemoglobin-Induced Epithelial Damage to Intestinal Mucosa. By Ann Baldwin and Elizabeth Wiley, VIIIth International Society for Blood Substitutes Symposium, San Diego, California, November 9, 2000.
- Electron Microscopy: The Way to See What's Going On. By Ann Baldwin, Celebrating a Life in Bioengineering: A Symposium, National Science Foundation, San Diego, California, June 23, 2001.
- Nitric Oxide and Microvascular Permeability: How Can We Find Out What's Really Going On? By Ann Baldwin, American Physiological Society Symposium: Microvascular Regulation in Genetic and Acquired eNOS Deficiency, New Orleans, LA, April 24, 2002.
- Women and Heart Disease. By Ann Baldwin, Arizona State Society of Radiologic Technologists 53rd Annual Conference, Tucson, AZ, May 17, 2002.
- Modified hemoglobins increase eosinophil migration into intestinal villus lamina propria, Ninth International Symposium on Blood Substitutes, Tokyo, Japan, March 5, 2003.

- Blood Substitutes and Redox Responses in Microcirculation, Tenth International Symposium on Blood Substitutes, Providence, RI, June 14, 2005.
- Effects of Noise on Animal Physiology. Music Therapy Symposium. Center for Frontier Medicine and Biofield Science, University of Arizona, Tucson, AZ, February 12, 2006.
- Effects of Meditation on Blood Perfusion in the Fingers, Eighth World Congress for Microcirculation, Milwaukee, WI, August 19, 2007.
- Effects of Meditation on Blood Perfusion in the Fingers, Fourteenth Conference of Complementary Healthcare, University of Exeter, Exeter, Devon, UK, December 12, 2007.
- White Noise Causes Inflammation; Reiki Heals. Conference of Music and Medicine, Indiana University Perdue University, Fort Wayne, IN, September 11, 2008.
- Reconnective Healing: Physiological Effects on the Healers, 11th Science and Consciousness Conference, San Diego, NM, March, 31, 2009.
- The Effect of Self-Directed Reiki on Finger Perfusion, International Society for the Study of Subtle Energies and Energy Medicine, 19th Annual Conference, Westminster, CO, June 25, 2009.
- The Heart and the Brain: Two organs that Reflect the Power of Energy Healing. International Society for the Study of Subtle Energies and Energy Medicine, 20th Annual Conference, Westminster, CO, June 26, 2010.
- The Heart and the Brain: Two organs that Reflect the Power of Energy Healing. Adventures in Awareness Annual Conference, Sonoita, AZ, August 13, 2010.
- Cardiovascular Disease and Biofeedback: The Heart-Brain Connection. Arizona Naturopathic Medical Association Annual Spring CME Conference, Phoenix, AZ, May 1, 2011.
- The Physiology of the Horse-Human Bond as Revealed by Heart Rate Variability, Brainwaves and the Energy Healing Process. Eighth Annual Gathering on Equine Assisted Learning and Mental Health Best Practices, Prescott, AZ, May 16, 2011.
- Does Lack of Enrichment Invalidate Data Obtained from Research Rodents? Testing Times: A Symposium on the Ethics and Epistemology of Animal Experimentation, Macquarie University, NSW Australia, September 21, 2011.

Submitted Symposia

- Effects of Environmental Stress on the Architecture and Permeability of the Rat Mesenteric Microvasculature, by Ann L. Baldwin. American Association for Laboratory Animal Science, University of Arizona, Tucson, Arizona, August, 1998.
- Effect of stimulation of audiomechanoreceptors on gastrointestinal structure and function, by Ann Baldwin and Richard Primeau, Symposium on Mechanics of Plants, Animals and Their Environments, "Sensors and Sensing in the Natural and Fabricated Worlds", Il Ciocco, Italy, June 12, 2000.

Conferences (1994-present)

- Baldwin AL and G Thurston. Histamine alters endothelial actin cytoskeleton of venules. Proc. Second World Congress of Biomechanics, Amsterdam, The Netherlands, 1994.
- Baldwin AL, LM Wilson and B Simon. Effect of pressure on arterial hydraulic conductance: role of endothelium. Proc. Second World Congress of Biomechanics, Amsterdam, The Netherlands, 1994.
- Merkle CJ, LM Wilson and AL Baldwin. Acute blood stasis reduces albumin interstitial uptake from intestinal microcirculatory networks. FASEB J. 8(5):A1051, M117, 1994.

- Thurston G and AL Baldwin. Endothelial cell morphology in relation to blood flow in arterioles of the rat mesentery. *FASEB J.* 8(5):A1060, M171, 1994.
- Baldwin AL, G Thurston and L Wilson. Effect of histamine on permeability and endothelial actin fibers of mesenteric venules. *FASEB J.* 8(5):A1033, M9, 1994.
- Baldwin AL and G Thurston. Endothelial cell morphology in relation to blood flow and stretch in arterioles and veins. *Biorheology* 32(2-3):S1.3, 1995
- Thurston G, AL Baldwin, P Baluk and DM McDonald. Rapid changes in the actin cytoskeleton of endothelial cells in inflamed venules. *Microcirculation* 2(1):O31, 1995
- Baldwin AL, G Thurston and LM Wilson. Time course of histamine induced changes in venular permeability and endothelial actin cytoskeleton. *Microcirculation* 2(1):154, 1995
- Baldwin AL and RW Gore Lymphatic compartments and routes of lymph return in frogs. *Physiological Zoology* 68(4):A8,59, 1995
- Baldwin A, L Hamlin and L Wilson. Effects of injected polyethylene glycol- hemoglobin (PEG-Hb) on blood flow in intestinal mucosal microvessels. *Microcirculation* 3(1):M4,79, 1996
- Baldwin A and L Wilson. Effects of intravascular polyethylene glycol- hemoglobin (PEG-Hb) on ultrastructure of intestinal mucosa. *Microcirculation* 3(1):M5,79, 1996
- Baldwin A, L Hamlin and L Wilson. Extravasation of polyethylene glycol- hemoglobin (PEG-Hb) from rat intestinal mucosa. *Microcirculation* 3(1):M6,79, 1996
- Baldwin A, G Thurston and L Wilson. Inhibition of nitric oxide increases venular permeability and alters endothelial cytoskeleton. *J. Vascular Research (IX Int. Vasc. Biol. Meeting)* 33(Suppl.1), p5,018, 1996
- Wilson L and A Baldwin. Effects of environmental stress on the ultrastructure of the rat intestine. *Microcirculation* 4(1):#176, 150, 1997
- Wong R, R Heimark and A Baldwin. Characterization of cytokine induced microvascular leaks in the rat mesenteric window. *Microcirculation* 4(1):#177, 150, 1997
- Baldwin A, G Thurston and L Wilson. Inhibition of nitric oxide increases venular permeability and alters endothelial cytoskeleton. *Microcirculation* 4(1):#178, 150, 1997
- Al-Naemi H, G Thurston and A Baldwin. Changes in venular permeability due to L-NMMA and histamine treatments. *Microcirculation* 4(1):#179, 150, 1997
- Baldwin AL and LM Wilson. Intravascularly injected hemoglobin produces excess reactive oxygen species in intestinal mucosa. *The FASEB Journal* 12(4):#127, A22, 1998
- Valeski JE and AL Baldwin. In vivo inhibition of venular leukocyte attachment is associated with decreased histamine-induced leak formation. *The FASEB Journal* 12(4):#161, A28, 1998.
- Al Naemi H and AL Baldwin. Venular permeability recovery: role of nitric oxide. *The FASEB Journal* 13(4):#1.4, A1, 1999.
- Valeski J, A Baldwin, J Anderson and W Montfort. In vivo inhibition of histamine-induced vascular leaks with kissing bug (*R. Prolixus*) salivary protein NP4. *The FASEB Journal* 13(4):#1.19, A4, 1999.
- Baldwin AL and LM Wilson. Effects of noise on mesenteric permeability in the rat. *The FASEB Journal* 13(4):#1.3, A1, 1999.
- Baldwin AL. Effect of noise on the intestinal exchange barrier. *The FASEB Journal* 14(4):#31.5, A22, 2000.
- Valeski J and A Baldwin. In vivo inhibition of histamine-induced leaks with protein kinase C (PKC) inhibitor staurosporine. *The FASEB Journal* 14(4):#31.4, A21, 2000.

- Al Naemi and A Baldwin. Immuno-gold electron microscopic localization of endothelial nitric oxide synthase. *The FASEB Journal* 14(4):#142.4, A191, 2000.
- Baldwin AL and EB Wiley. Selenium reduces hemoglobin-induced microvascular leakage in rat mesentery. *The FASEB Journal* 15(4):#41.22, A47, 2001.
- Baldwin AL and EB Wiley. Selenium reduces hemoglobin-induced epithelial damage to intestinal mucosa. *The FASEB Journal* 15(4):#41.23, A47, 2001.
- Valeski J. Edward and AL Baldwin. Role of the actin cytoskeleton in regulating endothelial permeability in venules. *The FASEB Journal* 15(4):#59.3, A56, 2001.
- Baldwin AL, EB Wiley and A Alayash. Comparison of effects of two hemoglobin-based oxygen carriers on intestinal integrity and microvascular leakage. *The FASEB Journal* 16(4):#480.18, A511, 2002.
- Baldwin AL, EB Wiley, J Mata and P Iversen. Effects of PS-ODN on hemoglobin-induced microvascular leakage in rat mesentery. *The FASEB Journal* 16(4):#410.19, A511, 2002.
- Baldwin AL, L DeMaria, EB Wiley, J Mata and P Iversen. Effects of PS-ODN on hemoglobin-induced damage to rat intestinal mucosa. *The FASEB Journal* 16(4):#873.3, A1166, 2002.
- Sims DE, MM Horne and AL Baldwin. Polarity of pericytes on ileal villus capillaries. *The FASEB Journal* 16(4):#780.10, A1096, 2002.
- Baldwin AL, E Cudilo, J Riggs and A Alayash. Nitric oxide reduces hemoglobin-induced venular leaks but not mast cell degranulation. *The FASEB Journal* 17(4):#101.23, A135, 2003.
- Baldwin AL and JE Valeski. Modified hemoglobins increase migration of eosinophils into intestinal villus lamina propria. *The FASEB Journal* 17(4):#346.8, A539, 2003.
- Valeski JE, MM Gritzuk and AL Baldwin. Role of complement in diaspirin cross-linked hemoglobin-induced intestinal mucosal injury. *The FASEB Journal* 18(4):#195.7, A243, 2004.
- Alberding JP, M Anderson, S Zaplinski and AL Baldwin. Effect of transient pressure gradient on endothelial actin cytoskeleton and beta-catenin. *The FASEB Journal* 18(4):#195.11, A244, 2004.
- Baldwin AL and MI Ginsberg. Mast cell stabilization does not effectively reduce hemoglobin-induced microvascular and epithelial damage. *The FASEB Journal* 18(4):#430.14, A622, 2004.
- Baldwin AL, M. Gritzuk, C. Vincifora and D. Hopp. Standard Housing of Laboratory Rats in Pairs Causes Extreme Nocturnal Aggression. Meeting of American College of Laboratory Animal Medicine, Tucson AZ, May, 2004.
- Baldwin AL and M Gritzuk. Vitamin E reduces microvascular inflammation caused by noise-induced stress. *The FASEB Journal* 19(5):#686.13, A1229, 2005.
- Burke T, R Patel and AL Baldwin. S-nitrosohemoglobin with glutathione causes microvascular leaks in rat mesentery. *The FASEB Journal* 19(5):#388.14, A703, 2005.
- Baldwin AL, Vincifora C, Burke T and Gritzuk G. Effect of rodent housing on behavior and microvascular leakage. *The FASEB Journal* 19(5):#691.11, A1263, 2005.
- Baldwin AL and Burwell AK. Effects of ultrasound on microvascular permeability and cardiovascular function. *The FASEB Journal* 20(4):#416.19, A643, 2006.
- Baldwin AL, Cudilo E. and Marmorstein L. Effects of enriched housing on fibulin-4 knockout mice. *The FASEB Journal* 20(4):#416.20, A643, 2006.
- Baldwin AL and Alberding J. Effects of pressure gradient on endothelial F-actin and beta-catenin. Fifth World Congress of Biomechanics, Munich, Germany, 2006.

Baldwin AL. Relaxation and Mental Effort Self-Monitoring for Rehabilitation. Toward a Science of Consciousness, Tucson, AZ, April, 2008.

Baldwin AL, A Brauner, D Kurjiaka and A Yusopova. Impact of Cage Environment on Rat Stress Levels. International Academic and Community Conference on Animals and Society: Minding Animals, Newcastle, Australia, OP020, 2009.

GRANTS AND CONTRACTS – (1987-present)

Federal

N.I.H. (HLB) Program Project, 5PO1 HL17421-16, "Regulation and exchange in the microcirculation", \$3,114,034, 1989-1992. Subsection "Structural determinants of fluid exchange in vivo", \$439,435, (P.I. 40% effort).

N.S.F. "Finite strain, poroelastic model for large arteries", \$173,838, 1992-1994. (Co-P.I. 5% effort).

American Heart Association, Grant-in-Aid, "Roles for EDRF and the cytoskeleton in stasis-induced permeability changes in capillaries, \$80,000, 1993-1995. (Co-P.I. 10% effort).

N.I.H. (RFA HL-93-018), "How hemoglobins change capillary permeability", \$327,650, 1994-1998. (P.I., 40% effort).

N.S.F. "Poroelastic transport models for large arteries", \$249,192, 1994-1996. (Co-P.I. 5% effort).

N.I.H. (RFA ES-97-002), "Stress, intestinal disease and reactive oxygen species", \$49,984, 1998-1999. (P.I. 20% effort)

N.I.H. (HLB) (HL53047) "Reactive oxygen species and hemoglobin-induced injury", \$722,729, 1999-2004. (P.I. 40% effort).

NCCAM (P20 AT00774), Pilot study for Center for Frontier Medicine in Biofield Science. "Simultaneous effects of biofield therapies on electrocardiograms of rodents receiving therapies, and human practitioners administering therapies", \$10,000, 2003-2005 (PI 10% effort).

NCCAM (P20 AT00774), Pilot study for Center for Frontier Medicine in Biofield Science. "Knock-out mice: effects of emotional stress and biofield therapies", \$10,000, 2003-2005.

N.I.H. (RO1 RR017358), "Ultrasound, intestinal and cardiac function in rats", \$250,000, 2003-2005. (P.I. 30% effort).

N.I.H. (R21 AT001124), "Animal model in Reiki efficacy on stress-induced damage", \$250,000, 2003-2005. (P.I. 30% effort).

N.I.H. (P20), Center on injury mechanisms and related responses. "Treatments for stress-induced inflammation", \$20,000, 2004-2005. (10% effort).

State

Robert S. Flinn Merit Award for Junior Investigators, "Permeability of fenestrated capillaries", American Heart Association, Arizona Affiliate, \$25,000/year, 1987-1989. (P.I. 100% effort).

Grant-in-Aid, "Transmural fluid motion in large arteries: effects of endothelial removal and applied stresses", American Heart Association, Arizona Affiliate, \$25,000/year, 1989-1991. (P.I. 20% effort).

Research Contract, "Does stasis affect microvascular surface charges and permeability?" Arizona Disease Control Research Commission, \$25,000/year, 1992-1995. (P.I. 20% effort).

Grant-in-Aid, "Effects of pressure and endothelial derived relaxing factor on transport properties of arterial walls", American Heart Association, Arizona Affiliate, \$25,000/year, 1992-1994. (P.I. 15% effort).

Foreign Travel Grant Program, \$500 to attend meeting of European Society for Microcirculation in London, U.K., July, 1992.

Research Contract, "What cellular mechanisms are responsible for histamine- induced alterations in microvascular permeability?", Arizona Disease Control Research Commission, \$50,000/year, 1996-1999. (P.I. 20% effort).

Grant-in-Aid, "Determination of optimal size and charge of carriers to be used in local drug delivery after angioplasty", American Heart Association, Arizona Affiliate, \$40,000/year, 1997-1999. (P.I. 20% effort)

ASU-UA Collaboration on Biomedical Research, "A digital media based biofeedback system for neural rehabilitation", Technology and Research Initiative Funding,. \$75,000/year 2007-2009, (Co-PI 20% effort).

University

Student/Faculty Interaction Program: Sept, 1995 (\$210); Sept. 1996 (\$210); Oct. 1997 (\$175).

Sarver Award, University Heart Center, "Role of the actin cytoskeleton in regulating endothelial permeability", 1999, \$10,000 (P.I., 15% effort)

Faculty Small Grants Program, "Light scattering as a tool to monitor aortic diameter", 1999, \$5,000 (P.I.)

International Affairs Foreign Travel Grant Committee, 2000, \$600 to attend conference: "Sensors and Sensing in the Natural and Fabricated Worlds", Il Ciocco, Italy.

Vice President for Research Funds, "Use of Optical Coherence Tomography to Measure Mechanical and Transport Properties of Pulsing Arterial Walls", 2001, \$10,000 (P.I.).

Private Foundation

Whitaker Foundation Research Award, "Structural determinants of fluid exchange in vivo", \$60,000/year, 1989-1992. (P.I. 40% effort).

Corporate Funding

Somatogen, Inc., "Kinetics and mechanisms of transendothelial passage of modified hemoglobin", \$120,000, 1994-1995. (P.I. 25% effort).

AVI Biopharmaceuticals Inc., "Use of an iron chelator to reduce damage caused by hemoglobins", 2001, \$20,000 (P.I.).

The Reconnection Center, "Physiological Measurements of Energy Healing", \$5,000, 2007 (Co-PI).

The Reconnection Center, "Physiological Measurements of Energy Healing", \$14,000, 2008 (PI).

The Reconnection Center, "Physiological Measures on Reconnective Healers and Controls to Assess Overall Well Being", \$11,818, 2009 (PI).

The Reconnection Center, "Physiological Measures on Novice Healers Before and After they Receive Training in Reconnective Healing Levels I and II", \$13,805, 2009 (PI).

The Reconnection Center, "Physiological Measures on Nurses to Assess Overall Well Being", \$8,731, 2010 (PI).

The Reconnection Center, “Physiological measures on people with limited range of motion of shoulder, before and after Reconnective Healing”, \$40,761, 2011 (PI).

LifeWave. “Doppler Laser Perfusion Imaging and Saliva Testing on the Energy Enhancer Patches”, \$11,000, 2011 (Investigator).

FDC Foundation, “Effect of Reiki on pre and post-surgical pain and anxiety levels in orthopedic patients”, \$6,600, 2011-12 (Investigator).

TEACHING

Classes taught (classes in bold I designed and coordinated):

1985-1995	PSIO 485 (3 units)	Cardiovascular Physiology	80-90 students
1995-2001	PSIO 601/801 (6)	Cardiovascular Physiology	110 medical students
1995-2002	PSIO 602 (2 units)	Physiology readings	20 doctoral students
2002-2007	AMES 466 (1 unit)	Biomechanical engineering	25 students
1995-2004	PSIO 195 (1 unit)	How the Body Works	20 students
1999-2007	PSIO 495t (2 units)	Inflammation and Disease	20 students
2005-2007	PSIO 430/530 (3)	Psychoneuroimmunology	90 students
2008, 2009	Integrative Medicine	Elective Rotation	18 students
2011	FCM 696M	Session on Reiki	20 students

Postdoctoral Fellows

Carrie Merkle	1991-1994
Carl Boswell	1993-1994
Jan Edward Valeski	1996-2004

Students Trained

Graduate Students

<i>Name</i>	<i>Degree</i>	<i>Year Graduated</i>	<i>My Role</i>
Lorraine Manciet	PhD	1989	Committee member
Ning Zhong Wu	PhD	1991	Advisor
Michael McAfee	MS	1994	Co-Advisor
Bei-xing Liu	PhD	1995	Committee member
Ray Wong	PhD	1995	Co-Advisor
Matthew Kaufmann	PhD	1996	Co-Advisor
Liu Jia	MS	1998	Committee member
Hamda Al Naemi	PhD	1999	Advisor
Paul Rigby	MS	2001	Committee member
Gabriel Gruionu	PhD	2001	Committee member
Jonathan Alberding	PhD	2004	Advisor
Nicola Stagg	PhD	2004	Committee member
Lindsay Goeller	PhD	2005	Committee member
Sarah Mitchell	MS	2005	Committee member
David Margoles	PhD	2005	Committee member

Tara Burke	MS	2005	Advisor
Anora Burwell	MS	2005	Advisor
Renata Ramos	PhD	2007	Committee member
Anna Brauner	MS	2009	Advisor
Erin Suellman	MS	2009	Co-Advisor

Undergraduate Students

<i>Name</i>	<i>Study</i>	<i>Year</i>	<i>My Role</i>
Iwona Palusinski	Honors thesis	1994	Advisor
Samantha Lipinski	Independent study	2001	Advisor
Michael Gritzuk	Independent study	2001, 2003	Advisor
Jessica Riggs	Independent study	2001	Advisor
Maxwell Ginsberg	Independent Study	2002, 2003	Advisor
Michael Anderson	Honors thesis	2003	Advisor
Elizabeth Cudilo	Honors thesis	2005	Advisor
Carmine Vincifora	Honors thesis	2005	Advisor
Pouria Owtad	Honors thesis	2005	Advisor
Jamie Mercer	Independent Study	2005	Advisor
Desiree Rubio	Independent Study	2007	Advisor
Anzhela Yusupova	Independent Study	2007	Advisor
Joseph Amorin	Independent Study	2008	Advisor
Prescott Love	Independent Study	2008	Advisor
Teresa Tejada	SRI Summer Study	2008	Advisor
David Nelson	Independent Study	2008	Advisor
Chase Foley	Independent Study	2008	Advisor
Ana Towe	Honors thesis	2008	Advisor
Aman Bassin	Independent Study	2009	Advisor
Maggie Nham	Independent Study	2010	Advisor
Nadia Silva	Independent Study	2010	Advisor
Kirstin Fuller	Independent Study	2011	Advisor