

**Curriculum Vitae**  
**ANN LINDA BALDWIN**  
2016

**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 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 humans, rodents and horses.

**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-present 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 51<sup>st</sup> 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.
- 2013 Provided sample Reiki treatments at Wellness Fair, College of Nursing, University Medical Center, November 20.
- 2013 Spoke to Arizona Women’s Society of Certified Public Accountants about Biofeedback, February 14.
- 2013 Gave workshop, “Stop Struggling, Start Riding” in collaboration with Dr. Anne Bowen, Dept. Psychology, University of Arizona, to riders at Blue Banner Stables, Oro Valley, AZ, November 24.
- 2014 Provided sample Reiki treatments at Wellness Fair, Bookmans Speedway, Tucson, AZ, January 18.
- 2015 Panel Speaker for Human and Animal Interaction Research Institution, University of Arizona on “Equine Assisted Therapy, March 3.
- 2015 Co-presenter of workshop, “Returning to Nature, Returning to Health” at Tucson Botanical Gardens, October 3.
- 2015 Co-presenter of seminar, “Stress, Nerves and Bacteria: The Link” at Natural Grocers, Tucson, AZ, December 9.
- 2016 Resilience Advantage Workshop for Graduate Center Healthy Living Program, University of Arizona, February 9 and 16.
- 2016 Gave workshop, “Use your Senses in the Garden to Reduce Stress” in collaboration with Sheila Shea MA, Tucson Botanical Gardens, March 2.
- 2016 Resilience Advantage Workshop for nursing fellows, College of Nursing, University of Arizona, March 21, 22.
- 2016 Equine Facilitated Learning Workshop for nursing fellows, College of Nursing, University of Arizona, March 23.

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 Pathology  
 American Journal of Physiology  
 Anesthesiology  
 Antioxidants and Redox Signaling  
 Arteriosclerosis, Thrombosis and Vascular Biology  
 ASME Journal of Biomechanical Engineering  
 Bioelectromagnetics  
 BMC Immunology  
 Cell Biology and Toxicology  
 Circulation Research  
 Complementary Therapies in Medicine  
 Faseb Journal  
 Hypertension Reviews  
 Journal of Alternative and Complementary Medicine  
 Journal of American Assoc for Laboratory Animal Science  
 Journal of Physiology, Lond.  
 Journal of Yoga and Physical Therapy  
 Medical Science Monitor  
 Microcirculation  
 Microvascular Research  
 World Academic Publishing

### **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  
 2012 (Dec) Blue Cross Blue Shield of Kansas City (BCBSKC) Outcomes Research Grant  
 Program through Lytmos Group  
 2013 (Dec) Blue Cross Blue Shield of Kansas City (BCBSKC) Outcomes Research Grant  
 Program through Lytmos Group  
 2013 (Dec) NIH Ad Hoc Reviewer, Mechanisms of Emotion, Stress and Health Study Section  
 2014 (June) NIH proposal concept evaluation through Lytmos Group

### **Peer Review and Advisory Boards**

2008-pres Editor-in-Chief, Center for Reiki Research  
 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
April, May 2014:	Consulted with Sandra Hickman, Digital Homeopathic Practitioner about research project on digital homeopathic plant remedies

## **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. Porohyperelastic 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 porohyperelastic 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 Soslowky, 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 $\alpha$  and  $\gamma$ 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, 2002.
- 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.
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- Tay K and Baldwin AL. Effects of breathing practice in vinyasa yoga on heart rate variability in university students: a pilot study. *Yoga & Physical Therapy*, 5(4): 214. doi:10.4172/2157-7595.1000214. 2015.
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### 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, Arizona Daily Wildcat, January 23<sup>rd</sup>, 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](http://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](http://www.reikitalkshow.com))
- 2010 (Dec) One-hour radio interview by Eamon Hameed, Healing PAQ, on healing. <http://www.blog.talkradio.com/spirituality>. TalkID 347858852
- 2012 (Sept) One-hour radio interview by Phyllis Furumoto about my new Reiki research ([www.reikitalkshow.com](http://www.reikitalkshow.com))

- 2012 (Sept) Harp study in University Medical Center ICU with Carrol McLaughlin and Ann Marie Chaisson filmed for KVOA local news.
- 2012 (Sept) Collaboration aims to find correlation between music and medicine. Daily Wildcat, Sept. 11
- 2013 (July) Gave a 40-min. webinar on Scientific Evidence for Reiki for The Reiki Guild, UK (invited by Louise Gordon)
- 2014 (April) One-hour radio interview by Madeleine Amberger, PhD, Austrian Public Radio, on my work on stress in laboratory rodents and how it impacts scientific data.
- 2014 (June) Video of PSIO 415 class <https://www.youtube.com/watch?v=ALkvXPiynag>
- 2015 (Feb) Interview with LiveScience by Elizabeth Palermo, Staff Writer. What is Reiki? <http://www.livescience.com/40275-reiki.html>
- 2015 (Feb) Find your Zen at Mindful Meditation by Elise McClain. Arizona Daily Wildcat, February 18, 2015. <http://www.wildcat.arizona.edu/article/2015/02/find-your-zen-at-mindful-meditation>
- 2015 (Nov) Webinar: Heart-to-Heart Communication with Horses, hosted by the Institute of HeartMath, Boulder Creek, California. <https://www.heartmath.org/resources/downloads/heart-heart-communication-horses/>
- 2016 (Apr) Video on Biofeedback for College of Nursing (requested by Dr. Mary Koithan).

## **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.
- Physiological and Psychological Benefits of Equine Facilitated Learning, American Holistic Nurses Association, College of Nursing, University Medical Center, June 5, 2013.
- 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.

- Biofeedback and Reiki for Relaxation. La Mariposa Resort Health Club, Tucson, AZ, April 11, 2012.
- Reiki: What it is and how it can improve your life. Sun City Natural Health and Wellness Club, Oro Valley, AZ, June 20, 2012.
- Use of Reiki in Hospitals – seminar and demonstration for nurse practitioners attending workshop on Patients' Advocates at CDO Ranch, Oracle, AZ, October 11, 2012.
- The Benefits of Mindfulness Meditation: What Practice & Science Tell Us. La Mariposa Resort Health Club, Tucson, AZ, June 15, 2013.
- Relax and De-stress with Reiki & Biofeedback. Tucson Medical Center, Tucson, AZ, October 18, 2013.
- The Heart-Brain Connection & Stress Relief. Tucson Medical Center Senior Services, Tucson, AZ, February 12, 2014.
- Reiki & Mindful Breathing for Stress Control. Tucson Medical Center Senior Services, Tucson, AZ, April 14, 2014.
- Heart Rhythm, Biofeedback and Emotions. Patient Advocates, University Medical Center, Tucson, AZ, August 12, 2014.
- From Emotional Eating to Mindful Eating. Women At The Top. Botanical Gardens, Tucson, AZ, September 3, 2014.

#### **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, VIII<sup>th</sup> 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 53<sup>rd</sup> 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, 11<sup>th</sup> 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, 19<sup>th</sup> 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, 20<sup>th</sup> 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.
- Heart Rhythms, Emotions and Biofeedback. Bonnie Prodden Myotherapy Workshop, Tucson, AZ, June 22, 2012.

- Physiological Changes in Biofield Therapists During Healing States. A Systematic Review. Biofield Physiology: Framing a Field of Study. International Research Conference On Integrative Medicine and Health, Portland, OR, May 18, 2012.
- Measuring the Heart Field. Researching the Essence; Translational Medicine in Arizona Conference, Flagstaff, AZ, June 1, 2012.
- Reiki and Energy Healing. Translational Medicine in Arizona Conference, Flagstaff, AZ, June 2, 2012.
- Insights into Reiki from a Scientific Perspective. South West Institute of Healing Arts, Phoenix, AZ, 23 March, 2013.
- Physiological Correlates of the Healing State in Biofield Therapists. Symposium for Portland Area Research on Complementary and Alternative Medicine, Oregon Health & Science University, Portland, OR, May, 4, 2013.
- What makes Horses Effective Teachers in Equine-Facilitated Learning? Tenth Annual Gathering on Equine Assisted Learning and Mental Health Best Practices, Prescott, AZ, May 16, 2013.
- Stopping Emotional Eating. Plant-Based Nation Summer Conference, Tucson, AZ, June 22, 2013.
- Research on Reiki. Second Annual Science, Spirit & Health Symposium, Pima Community College, Tucson, AZ, November 8, 2013.
- Effects of Reiki & Reconnective Healing on Shoulder Mobility. International Research Conference on Integrative Medicine & Health, Miami, FL, May 16, 2014.
- Biofield/Bioenergetic Science: Recent Studies and Relevance to Integrative Medicine. International Research Conference on Integrative Medicine & Health, Miami, FL, May 16, 2014.
- Baldwin AL, Alden AC and Rector BK. The effects of an equine facilitated learning interaction on elder adults (55+) as measured by heart rate variability, self-esteem and immune function (sIgA). Presented at International Society of Anthrozoology, July 8, 2015, <http://www.isaz.net/isaz/wp-content/uploads/2014/07/ISAZ-2015.pdf> (p 71)
- Baldwin AL, Vitale A, Brownell E and Kryak E. Effects of Reiki on pain, anxiety and blood pressure in knee replacement patients. Presented at Conference of American Association of Holistic Nurses, Branson, MO, June 15, 2015.

### **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.
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## **GRANTS AND CONTRACTS – (1987-present)**

### **Federal**

- N.I.H. (HLB) Program Project, 5P01 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).
- FDC Foundation, "Effect of Reiki on pre and post-surgical pain and anxiety levels in orthopedic patients", \$6,600, 2011-12 (Investigator).

Institute for Integrative Health, “Use of a torsion pendulum to detect the human biofield”, \$2,000, 2013 (Co-P.I.)

Ruth McCormick Trust Fund, “Do horses, during equine facilitated learning, influence elder adults to focus on the present moment, leading to enhanced heart rate variability, immune function and self-esteem?” \$50,000, 2014 (PI); \$45,000, 2015 (PI)

### **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).

### **Private Donor**

“Effect of live harp music on cardiac surgery patients”, \$6,000, 2012 (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
2012	HNRS 1951	Reiki, Breath and Health	20 students
2012	Integrative Medicine	Biofeedback Elective	18 students

2012	Music	Biofeedback for Harp Fusion	12 students
2013	PSIO 489	Reiki, Breath and Health	30 students
2013	Integrative Medicine	Biofeedback Elective	20 students
2014	Integrative Medicine	Biofeedback Elective	20 students
2014	PSIO 415 (2 units)	Physiology of Mind-Body Interactions	18 students
2014	Continuing Educ.	Mindfulness Meditation	12 students
2015	PSIO 415 (2 units)	Physiology of Mind-Body Interactions	31 students
2015	Continuing Educ.	Mindfulness Meditation	5 students
2015	Integrative Medicine	Biofeedback Elective	32 students
2016	PSIO 415 (2 units)	Physiology of Mind-Body Interactions	29 students
2016	Integrative Medicine	Biofeedback Elective	30 fellows
2016	Integrative Medicine	Science of Reiki	20 students

#### Postdoctoral Fellows

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

#### Students Trained

##### Graduate Students

Name	Degree	Year Graduated	My Role
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

Elizabeth Dampsey	PhD	in progress	External Examiner
Sandra Hickman	PhD	in progress	Committee Member

## Undergraduate Students

Name	Study	Year	My Role
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
Kirstin Fuller	Independent Study	2012	Advisor
Shammy Benjamin	Independent Study	2013	Advisor
Kimberly Tay	Honors Thesis	2013-15	Advisor
Kimberly Pham	Honors Thesis	2013-15	Advisor
Brenda Sanchez	STEM Student	2013	Mentor
Cassandra Everly	Independent Study	2014-16	Advisor
Makenna Paule	Independent Study	2015	Advisor
Eryn Cameron	Independent Study	2015	Advisor
Jordan Clarke	Independent Study	2015	Advisor
Raeven Maxwell	Independent Study	2015	Advisor
Isabelle Chea	Honors Thesis	2015-16	Advisor
Madison Schuetz	Independent Study	2016	Advisor
Megan Yousefelahi	Independent Study	2016	Advisor
Andrew Jauregui	Independent Study	2016	Advisor