CURRICULUM VITAE

GREGORY E. R. WELLER, MD, PhD

Assistant Professor of Anesthesiology
Penn State College of Medicine
Penn State Milton S. Hershey Medical Center
500 University Drive, Mail Code H187
Hershey, PA 17033

EMPLOYMENT

Assistant Professor of Anesthesiology (2010 – current)
Penn State Milton S. Hershey Medical Center
Penn State College of Medicine
Hershey, PA
Department of Anesthesiology

Specialty: Pediatric Anesthesiology

EDUCATION/ TRAINING

Children's Hospital of Philadelphia Philadelphia, PA	Fellowship Aug 2009 - Aug 2010	Pediatric Anesthesiology
University of Pennsylvania Philadelphia, PA	Residency Jul 2006 – Jun 2009	Anesthesiology & Critical Care
University of Pittsburgh - Shadyside Pittsburgh, PA	Internship Jun 2005 – Jun 2006	Internal Medicine/Pediatrics
University of Pittsburgh Pittsburgh, PA	MD May 2005	Medicine
University of Pittsburgh Pittsburgh, PA	PhD Mar 2003	Bioengineering
Johns Hopkins University Baltimore, MD	BS May 1995	Biomedical Engineering

RESEARCH

Current Research. Penn State Hershey Medical Center
Investigating the role of the nociceptin/NOP opioid system in the vascular inflammation and dysfunction associated with sepsis and heart failure.

Research during Residency. University of Pennsylvania (2007-2009)
As part of the Targeted Therapeutics group at Penn, investigated the specific **adhesion of targeted drug-delivery nanoparticles** to endothelial ligands using single-molecule recognition atomic force microscopy.

Post-Doctoral Research. University of Pittsburgh (2003)

Designed and characterized multi-targeted acoustic contrast microbubbles, and investigated targeted imaging of angiogenesis in the setting of tumorigenesis.

PhD Dissertation Research. University of Pittsburgh (1997 – 2003)

Advisors: William R. Wagner, PhD (Departments of Bioengineering and Surgery)
Flordeliza S. Villanueva, MD (Division of Cardiology)

In the field of **cardiovascular targeted molecular imaging**, investigated liposome-like acoustic contrast microbubbles that were specifically targeted to molecular markers of endothelial dysfunction. Using appropriate hydrodynamic, cellular, and adhesion force engineering models, the binding characteristics of targeted microbubbles were quantified using *in vitro* perfusion devices, and numerous design parameters were modeled, optimized, and proven in rigorous *in vitro* and *ex vivo* setups. The clinical feasibility of this molecular imaging technique was demonstrated using *in vivo* models of cardiac allograft rejection and tumor angiogenesis.

LICENSURE & CERTIFICATIONS

ABA Board-eligible
Pennsylvania Medical License - Active
ACLS certification
PALS certification

COMMITTEES, MEMBERSHIPS, & ACTIVITIES

Committees: Anesthesiology Faculty Research Committee (2010 - present)
Anesthesiology research faculty recruitment committee (2011)

Memberships: American Society of Anesthesiologists
Society for Pediatric Anesthesia

TY Chief Resident, Transitional Year Coordinating Committee,
University of Pittsburgh - Shadyside (2005 - 2006)
Voting member, Admissions Committee, School of Medicine, University of Pittsburgh (2004 - 2005)
Adjunct member, Bioengineering Departmental Steering Committee,
University of Pittsburgh (2003 - 2005)
Chair, Student Interviewing Committee, MD/PhD Program, University of Pittsburgh (2000 - 2001)
Water Polo, Varsity team, Johns Hopkins (1991 - 1995)

AWARDS

FAER Resident Scholar, 2007 ASA Annual Meeting
First Place award for Best Research Presentation, American Heart Association Pennsylvania/Delaware Fellows' Research Day, 2003
Beneficial Hodson Scholarship – Johns Hopkins University
Tau Beta Pi national engineering honor society

GRANTS

Penn State College of Medicine Physician-Scientist Stimulus Program (Oct 2010 – Oct 2013)
Salary support for 50% research effort for 3 year period
Mentors: Victor Ruiz-Velasco, PhD and Piotr Janicki, MD, PhD

American Heart Association Pre-Doctoral Fellowship Grant (1999 – 2001)
Pennsylvania-Delaware Affiliate
Reference #9910071U
Title: Development and characterization of ultrasound contrast agents targeted to dysfunctional endothelium

PUBLICATIONS

Peer-reviewed Articles (most recent first):

Liu J, **Weller GER**, Zern B, Ayyaswamy PS, Eckmann DM, Muzykantov VR, Radhakrishnan R. Computational model for nanocarrier binding to endothelium validated using in vivo, in vitro, and atomic force microscopy experiments. *Proc. Natl. Acad. Sci. USA.* 107:16530-16535, 2010.

Mandel JE, **Weller GER**, Chennupati S, Mirza N. Transglottic high frequency jet ventilation for management of laryngeal fracture associated with air bag deployment injury. *J Clin Anes.* 20:369-371, 2008.

Weller GER, Villanueva FS, Tom E, Wagner WR. Targeted ultrasound contrast agents: In vitro assessment of endothelial dysfunction and multi-targeting to ICAM-1 and sialyl Lewis^{x}. *Biotech Bioeng.* 92:780-788, 2005.

Weller GER, Wong MKK, Modzelewski RA, Lu E, Klibanov AL, Wagner WR, Villanueva FS. Ultrasonic imaging of tumor angiogenesis using ultrasound contrast microbubbles targeted via the tumor-binding peptide arginine-arginine-leucine. *Cancer Res.* 65:533-539, 2005.

Weller GER, Lu E, Csikari MM, Klibanov AL, Fischer D, Wagner WR, Villanueva FS. Ultrasound imaging of acute cardiac transplant rejection with microbubbles targeted to intercellular adhesion molecule-1. *Circulation.* 108:218-224, 2003.

Weller GER, Villanueva FS, Klibanov AL, Wagner WR. Modulating targeted adhesion of an ultrasound contrast agent to dysfunctional endothelium. *Ann Biomed Eng.* 30:1012-1019, 2002.

Eng J, Mysko WK, **Weller GER**, Renard R, Gitlin JN, Bluemke DA, Magid D, Kelen GD, Scott WW. Interpretation of emergency department radiographs: A comparison of emergency medicine physicians with radiologists, residents with faculty, and film with digital display. *Am J Roentgenology.* 175(5):1233-1238, 2000.

Stormer J, Bolle SR, Sund T, **Weller GER**, Gitlin JN. ROC-study of a teleradiology workstation versus film readings. *Acta Radiologica.* 38(1):176-180, 1997.

Scott WW, Jr., Bluemke DA, Mysko WK, **Weller GER**, Kelen GD, Reichle RL, Weller JC, Gitlin JN. Interpretation of emergency department radiographs by radiologists and emergency physicians: teleradiology workstation versus film readings. *Radiology.* 195(1):223-229, 1995.

Book Chapters:

Weller G, Litman RS. Strabismus repair. In Fleisher LA and Roizen MF, eds.: Essence of Anesthesia Practice, 3rd ed. Elsevier, Philadelphia, 2011, pg. 535.

Abstracts (most recent first):

Wong MKK, Chen SC, **Weller GE**, Villanueva FS, Modzelewski RA. Targeted molecular imaging of tumors in intact animals using tumor endothelium homing peptides. *J Immunotherapy* 28:610, 2005.

Modzelewski RA, **Weller GE**, Wong MK, Brown CK, Lu E, Klibanov AL, Wagner WR, Villanueva FS. Targeted tumor imaging with ultrasound in tumor-bearing mice by means of a tumor endothelium-specific binding peptide conjugated to perfluorobutane. Proceedings of the AACR, vol. 45, abstract 937, 2004.

Wong MKK, Modzelewski RA, **Weller G**, Villanueva FS, Henry D, Kirk JS, Brown CK, Wagner WR. Ultrasound contrast visualization of tumor vasculature in vivo by targeted microbubbles. *J Clin Oncol* 22(14Suppl):3198, 2004.

Weller GER, Tom EM, Felix MM, Wagner WR, Villanueva FS. Multi-targeting enhances adhesion of ultrasound contrast microbubbles to inflammatory endothelium. *Circulation* 108(Suppl IV):2355, 2003.

Weller GER, Wong MKK, Modzelewski RA, Lu E, Klibanov AL, Wagner WR, Villanueva FS. Tumor vasculature can be imaged with ultrasound contrast microbubbles targeted via tumor-binding peptides. *Circulation* 108(Suppl IV):2348, 2003.

Weller GER, Villanueva FS, Wong MKK, Modzelewski RA, Wagner WR. Contrast-enhanced ultrasound technique for the targeted molecular imaging of tumors. Proceedings of the 2003 BMES Annual Meeting, Abstract 8.6.4, 2003.

Weller GER, Villanueva FS, Lu E, Klibanov AL, Fischer DW, Csikari MM, Wagner WR. Targeted molecular imaging of transplant rejection using contrast-enhanced ultrasound. Proceedings of the 2003 BMES Annual Meeting, Abstract 8.6.5, 2003.

Weller GER, Wagner WR, Klibanov AL, Villanueva FS. Ultrasound contrast microbubbles targeted to ICAM-1 can discern degree of endothelial inflammation. *J Am Soc Echocardiogr* 16:560, 2003.

Weller GER, Lu E, Csikari MM, Klibanov AL, Fischer DW, Wagner WR, Villanueva FS. Ultrasound contrast microbubbles targeted to ICAM-1 detect acute heart transplant rejection. *Circulation* 106(Suppl II):II-378, 2002.

Weller GER, Wong MKK, Modzelewski RA, Klibanov AL, Wagner WR, Villanueva FS. Angiogenesis-targeted ultrasound contrast microbubbles preferentially adhere to tumor derived endothelium. *Circulation* 106(Suppl II):II-378, 2002.

Weller GER, Villanueva FS, Klibanov AL, Wagner WR. Shear modulates adhesion of ultrasound contrast microbubbles targeted to dysfunctional endothelium. Proceedings of the Second Joint EMBS-BMES Conference 2002, Abstract 4.3.10.3, pgs. 899-900.

Weller GER, Villanueva FS, Wong MKK, Modzelewski RA, Klibanov AL, Wagner WR. Ultrasound contrast microbubbles targeted to tumor angiogenesis specifically bind tumor-derived endothelial cells. Proceedings of the Second Joint EMBS-BMES Conference 2002, Abstract 4.3.10.2, pgs. 897-898.

Weller GER, Klibanov AL, Wagner WR, Villanueva FS. Variable antibody density on contrast microbubbles modulates targeted adhesion to dysfunctional endothelium. *Circulation*. 104(Suppl II):II-352, 2001.

Weller GER, Klibanov AL, Villanueva FS, Wagner WR. Controlling ultrasound contrast microbubble targeting to dysfunctional endothelium. *Ann Biomed Eng*. 29(Suppl. I):S-63, 2001.

Clay C, **Weller G**, Klibanov A, Podell S, Greener Y, Jablonski E, Wagner W, Villanueva F. Does fluorescent tagging of albumin microbubbles affect adhesion to endothelial cells?: An in vitro study. *Circulation*. 100:I-441, 1999.

Eng J, Scott WW, Mysko WK, **Weller GE**, Renard RL, Gitlin JN. The value of teleradiology and radiology resident interpretation of emergency department radiographs: a comparison of emergency medicine physicians and radiologists, residents and faculty, and film and digital display. *Radiology*. 213P:1250, 1999.

Clay C, Wagner W, Golec B, Podell S, Fenyus M, **Weller G**, Lohrmann R, Villanueva F. New insights into mechanisms of albumin microbubble adhesion to coronary endothelium using chemically modified microbubbles. *J Am Coll Cardiol*. 33(Suppl. 2):407A, 1999.

Scott WW, Gitlin JN, Bluemke DA, Magid D, Mysko WK, **Weller GE**. Teleradiology workstation – interpretation of emergency department radiographs by radiologists and emergency medicine physicians. *Radiology*. 197 (Suppl. S):377, 1995.

Weller GER, Bluemke DA, Gitlin JN, Kelen GD, Mysko W, Reichle RL, Scott, Jr. W. A comparison of film and screen interpretations of radiographic examinations performed in the emergency department. Proceedings of the Symposium for Computer Assisted Radiology: Computer Applications to Assist Radiology. 405-411, 1994.

Bluemke DA, Scott, Jr. W, Reichle RL, Kelen GD, **Weller GER**, Weller JC, Gitlin JN. Emergency department radiograph evaluation by radiologists and emergency medicine physicians: teleradiology workstation versus film interpretation. *Am J Roentgenology*. 162 (Suppl. 3):146, 1994.