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Curriculum Vitae

Christopher Mark Waters, Ph.D.

Place of Birth: Chattanooga, TN

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EDUCATION:

Ph.D. Biomedical Engineering	Vanderbilt University Nashville, TN	August, 1991
M.S. Biomedical Engineering	University of Miami (FL)	June, 1987
B.S.E. Chemical Engineering Summa Cum Laude (4.0 GPA)	University of Tennessee at Chattanooga	August, 1985

PROFESSIONAL EXPERIENCE:

2017-present	Dr. Donald T. Frazier Professor, Department of Physiology, College of Medicine, University of Kentucky, Lexington, KY.
2017-present	Professor of Physiology, Saha Cardiovascular Research Center, College of Medicine, University of Kentucky, Lexington, KY.
2016-2017	Interim Chair, Department of Physiology, College of Medicine, The University of Tennessee Health Science Center, Memphis, TN.
2005-2017	Professor of Physiology, College of Medicine, The University of Tennessee Health Science Center, Memphis, TN.

2007-2016	Vice Chair of Physiology, College of Medicine, The University of Tennessee Health Science Center, Memphis, TN.
2006-2007	Interim Chair, Department of Physiology, College of Medicine, The University of Tennessee Health Science Center, Memphis, TN.
2006-2017	Professor of Medicine, Division of Pulmonary, Critical Care and Sleep Medicine, College of Medicine, The University of Tennessee Health Science Center, Memphis, TN.
2012-2017	Professor of Orthopaedic Surgery and Biomedical Engineering, The University of Tennessee Health Science Center, Memphis, TN.
2001-2012	Assistant Professor of Biomedical Engineering and Imaging, The University of Tennessee Health Science Center, Memphis, TN.
2000-2017	Adjunct Faculty, Department of Biomedical Engineering, The University of Memphis, Memphis, TN.
2004-2006	Associate Professor of Medicine, Division of Pulmonary, Critical Care and Sleep Medicine, College of Medicine, The University of Tennessee Health Science Center, Memphis, TN.
1999-2005	Associate Professor of Physiology (with tenure), College of Medicine, The University of Tennessee Health Science Center, Memphis, TN.
1992-1999	Assistant Professor of Biomedical Engineering (Joint Appointment, 1996), Department of Biomedical Engineering, Northwestern University, Evanston, IL.
1992-1999	Assistant Professor of Anesthesiology, Department of Anesthesiology, Northwestern University School of Medicine, Chicago, IL.
1998-1999	Assistant Professor of Medicine, Department of Medicine, Northwestern University School of Medicine, Chicago, IL.
1993-1999	Member, Feinberg Cardiovascular Research Institute, Northwestern University School of Medicine, Chicago, IL.
1991-1992	Post-Doctoral Fellow, Department of Biomedical Engineering, Vanderbilt University, Nashville, TN.
1987-1991	N.I.H. Pre-Doctoral Trainee (National Research Service Award), Department of Biomedical Engineering, Vanderbilt University, Nashville,

	TN.
1987	Assistant Research Engineer, Cordis Research Corporation, Miami, FL.
1985-1987	Research Assistant, Department of Biomedical Engineering, University of Miami, FL.
1985	Engineering Assistant, Management and Industrial Technology Associates, Chattanooga, TN.

RESEARCH INTERESTS:

Lung injury and repair; Acute respiratory distress syndrome; Ventilator-induced lung injury; Mechanotransduction/Mechanobiology; Epithelial wound healing and cell migration; Cellular biomechanics and transport; Asthma; Airway mechanics; Pulmonary fibrosis; Vascular endothelial and lung epithelial cell barrier function and the effects of mechanical stresses; Growth factors and receptors: function and regulation; Mass transport in the pulmonary circulation; Drug transport and metabolism by vascular endothelium in the lungs and the brain; Mathematical modeling of cellular and physiological systems.

HONORS AND AWARDS:

Chair-elect, Program Committee for Respiratory Cell and Molecular Biology Assembly of the American Thoracic Society International Conference Committee, 2020-2022.
Fellow of the American Physiological Society, 2019.
Chair, Member Conflicts: Respiratory Sciences Special Emphasis Panel, National Institutes of Health, 2018.
Member, Pulmonary Medicine Merit Review Board, Department of Veterans Affairs, 2015-present.
Publications Policy Committee, American Thoracic Society, 2016-present.
Search Committee, Editor-in-Chief for *Annals of the American Thoracic Society*, 2019.
Star Reviewer, American Journal of Physiology: Lung Cellular and Molecular Physiology, 2015.
Member, Lung Injury, Repair, and Remodeling Study Section, National Institutes of Health, 2005-2009 (co-chair 06/08, 10/08).
Experimental Biology Meeting, Joint Program Committee Representative for the Respiration Section of the American Physiological Society, 2011-2015.
American Physiological Society, Committee on Committees, 2015-2017.
The Physiological Society/American Physiological Society Joint Meeting, Program Committee, Dublin, Ireland, 2016
International Scientific Committee, World Congress of Biomechanics, Munich, Germany, 2006.
Giles F. Filley Memorial Award for Excellence in Respiratory Physiology and Medicine

(American Physiological Society), 1998
Distinguished Citizen of Hamilton County, TN, 1991
Vanderbilt Graduate School Dissertation Enhancement Award, 1990
IBM Fellowship, 1987-1991
Schoolfield Memorial Award, 1988
Summa Cum Laude, 1985
Paul Curtis Jr. Senior Engineering Award, 1985
Project manager of senior engineering class design project, 1985
Engineering Super-Scholar Award, 1983, 1984
Paul Koblentz Memorial Award for Outstanding Rising Junior, 1983
Tracy Wolfe Freshman Engineering Award, 1982
Chattanooga Half Century Club Scholarship, 1981-1985.

PROFESSIONAL AND HONOR SOCIETIES:

Biomedical Engineering Society
American Physiological Society
American Thoracic Society
American Association for Cancer Research
Microcirculatory Society
Sigma Xi
American Association for the Advancement of Science

STUDY SECTION: GRANT REVIEW

Medical Research Council, United Kingdom, March, 2020.
National Institutes of Health, ad hoc, Lung Injury, Repair, and Remodeling Study Section; February, 2020.
National Institutes of Health, Chair, Special Emphasis Panel, Member Conflicts: Respiratory Sciences, August, 2018.
Inserm internal grant review, Institut Européen de Chimie et Biologie, 2015.
Department of Veterans Affairs, Merit Review Panel for Pulmonary Medicine; December, 2014-present.
National Institutes of Health, Special Emphasis Panel, Lung Injury, Repair, and Remodeling conflicts; November, 2014.
Marsden Fund – Royal Society of New Zealand, external reviewer, July, 2014.
National Institutes of Health, ad hoc, Lung Injury, Repair, and Remodeling Study Section, June, 2014.
National Institutes of Health, ad hoc, Program Project Grant Review – National Heart, Lung, and Blood Institute; February, 2014.
American Thoracic Society Scientific Advisory Committee, ad hoc, grant review, 2013.
Swiss National Science Foundation, grant reviewer, November, 2013.

National Institutes of Health, ad hoc, Program Project Grant Review – Inflammation and Cardiovascular Disease; March, 2011; January, 2012.
National Institutes of Health, member, Lung Injury, Repair, and Remodeling Study Section, 2005-2009 (co-chair 06/08, 10/08).
Michael Smith Foundation for Health Research, British Columbia; external reviewer, 2008.
National Institutes of Health, ad hoc, Lung Injury, Repair, and Remodeling Conflicts Study Section, July, 2007.
Canadian Lung Association/Thoracic Society; external reviewer, National Grant Review, 2005.
National Institutes of Health, ad hoc, Lung Injury, Repair, and Remodeling Study Section, June, 2004.
National Institutes of Health, ad hoc, Lung Biology and Pathology Study Section, February, 2002.
National Institutes of Health, International Cooperative Program, Feb., 2000; July, 2000; Feb., 2001.
National Institutes of Health, Special Study Section - Tissue Engineering and Bioengineering, July, 2000; November, 2000; March, 2001; July, 2001; November, 2001; July, 2002.
National Institutes of Environmental Health Sciences, Special Emphasis Panel – Program Project Grant Review, Site visit, October, 2001.
American Heart Association, Southern and Ohio Valley Research Consortium, March, 2001; April, 2002; April, 2004; April, 2005.
American Lung Association, National Research Grant Review Committee, January, 2002; January, 2003; November, 2003; November, 2004.

EDITORIAL BOARDS

American Journal of Physiology: Lung Cellular and Molecular Physiology, 2006-present.

American Journal of Respiratory and Critical Care Medicine, 2010-present.

American Journal of Respiratory Cell and Molecular Biology, 2012-present.

Physiological Reports, 2013-2018, 2019-present.

PEER REVIEWER FOR THE FOLLOWING JOURNALS:

Journal of Biological Chemistry
Journal of Cellular Physiology
Annals of Biomedical Engineering
Cardiovascular Anesthesiology
Biotechnology and Bioengineering
American Journal of Physiology: Lung Cellular and Molecular Physiology

American Journal of Physiology: Heart and Circulatory Physiology
American Journal of Physiology: Regulatory, Integrative, and Comparative Physiology
American Journal of Physiology: Cell Physiology
American Journal of Respiratory and Critical Care Medicine
American Journal of Respiratory Cell and Molecular Biology
Journal of Applied Physiology
Biotechnology Progress
Experimental Lung Research
In Vitro Cellular and Developmental Biology
Biotechniques
Endothelium
Biochimica et Biophysica Acta
Microvascular Research
Journal of Biomechanical Engineering
FASEB Journal
Respiratory Research
Journal of Clinical Investigation
Drug Metabolism and Disposition
Critical Care Medicine
Journal of Applied Physics
Current Respiratory Medicine Reviews
Respiratory Physiology and Neurobiology
Comprehensive Physiology
European Respiratory Journal
Translational Research
Acta Biomaterialia
Antioxidants and Redox Signaling
International Journal of Medical Sciences
American Journal of Translational Research
FEBS Journal
PLOSOne
Biophysical Journal
Scientific Reports
Physiological Reports
PLOS Pathogens

MASTERS THESIS: "Concentration profiles of platelet-sized latex beads in blood suspensions flowing through capillary tubes," University of Miami, Coral Gables, FL, 1987. Advisor: Eugene C. Eckstein.

DOCTORAL THESIS: "Modeling of epidermal growth factor: receptor dynamics and the effects of cellular transformation," Vanderbilt University, Nashville, TN, 1991. Advisors: Knowles A. Overholser and

Waters, Christopher M. (continued)

Graham Carpenter.

PUBLICATIONS IN PEER-REVIEWED JOURNALS:

1. Rybolt, T.R., R.L. Mitchell, and **C.M. Waters**. Monatomic gas adsorption and the structure of the 5A and 13X zeolites. Langmuir 3: 326-331, 1987.

2. Eckstein, E.C., D.L. Bilsker, **C.M. Waters**, J.S. Kippenhan, and A.W. Tilles. Transport of platelets in flowing blood. Blood in Contact with Natural and Artificial Surfaces, E.F. Leonard, V.T. Turrito, and L. Vroman (eds.), Annals N.Y. Acad. Sci. 516: 442-452, 1987. PMID: 3439741

3. Bilsker, D.L., **C.M. Waters**, J.S. Kippenhan, and E.C. Eckstein. A freeze-capture method for the study of platelet-sized particle distributions. Biorheology 26: 1031-1040, 1989. PMID: 2624893

4. Eckstein, E.C., J.F. Koleski, and **C.M. Waters**. Concentration profiles of 1 and 2.5 micrometer beads during blood flow. ASAIO Trans. 35: 188-190, 1989. PMID: 2597441

5. **Waters, C.M.**, and E.C. Eckstein. Concentration profiles of platelet-sized latex beads for conditions relevant to hollow-fiber hemodialyzers. Artificial Organs 14: 7-13, 1990. PMID: 2302078

6. **Waters, C.M.**, K.O. Oberg, G. Carpenter, and K.A. Overholser. Rate constants for binding, dissociation, and internalization of epidermal growth factor: effect of receptor occupancy and ligand concentration. Biochemistry 29: 3563-3569, 1990. PMID: 2354152

7. Sorkin, A., **C.M. Waters**, K.A. Overholser, and G. Carpenter. Multiple autophosphorylation site mutations of the epidermal growth factor receptor: analysis of kinase activity and endocytosis. J. Biol. Chem., 266: 8355-8362, 1991. PMID: 2022651

8. Sorkin, A., K. Helin, **C.M. Waters**, G. Carpenter, and L. Beguinot. Multiple autophosphorylation sites of the epidermal growth factor receptor are essential for receptor kinase activity and internalization: contrasting significance of tyrosine 992 in the native and truncated receptors. J. Biol. Chem., 267: 8672-8678, 1992. PMID: 1314835

9. **Waters, C.M.**, K.A. Overholser, A. Sorkin, and G. Carpenter. Analysis of the influences of the E5 transforming protein on kinetic parameters of epidermal growth factor binding and metabolism. J. Cell. Physiol. 152: 253-263. 1992. PMID: 1639860

10. Sorkin, A., and **C.M. Waters**. Endocytosis of growth factor receptors. Bioessays 15: 375-382, 1993. PMID: 8395172

11. **Waters, C.M.**, J.S. Alexander, T.R. Harris, and F.R. Haselton. Perilla ketone increases endothelial cell monolayer permeability *in vitro*. J. Appl. Physiol. 74: 2493-250, 1993. PMID: 7687599

12. Harris, T.R., **C.M. Waters**, and F.R. Haselton. The use of scaling theory to relate *in vivo* and *in vitro* measures of endothelial barrier permeability. J. Appl. Physiol. 77: 2496-2505, 1994. PMID: 7868472

13. **Waters, C.M.** Flow-induced modulation of the permeability of endothelial cells cultured on microcarrier beads. J. Cell. Physiol. 168: 403-411, 1996. PMID: 8707876

14. **Waters, C.M.**, J. Taylor, A. Molteni, and W.F. Ward. Dose-response effects of radiation on endothelial cell permeability in culture. Radiation Res. 146: 321-328, 1996. PMID: 8752311

15. Behnia, R., A. Molteni, **C.M. Waters**, R.J. Panos, W.F. Ward, H.W. Schnaper, and C.H. Ts'ao. Early markers of ventilator-induced lung injury in rats. Annals Clin. Lab. Sci. 26: 437-450, 1996. PMID: 8879362

16. **Waters, C.M.**, M.R. Glucksberg, N. DePaola, J. Chang, and J.B. Grotberg. Shear stress alters pleural mesothelial cell permeability in culture. J. Appl. Physiol. 81: 448-458, 1996. PMID: 8828697

17. **Waters, C.M.**, J. Chang, M.R. Glucksberg, N. DePaola, and J.B. Grotberg. Mechanical forces alter growth factor release by pleural mesothelial cells. Am. J. Physiol. 272 (*Lung Cell. Mol. Physiol.*): L552-L557, 1997. PMID: 9124613

18. **Waters, C.M.**, U. Savla, and R. Panos. Keratinocyte growth factor prevents hydrogen peroxide-induced increases in airway epithelial cell permeability, Am. J. Physiol. 272 (*Lung Cell. Mol. Physiol.*): L681-L689, 1997. PMID: 9142942

19. Rezania, A., C.H. Thomas, A.B. Branger, **C.M. Waters**, and K.E. Healy. The detachment strength and morphology of bone cells contacting materials modified with a peptide derived from bone sialoprotein, J. Biomed. Mater. Res. 37: 9-19, 1997. PMID: 9335344

20. Savla, U., P.H.S. Sporn, and **C.M. Waters**. Cyclic stretch of airway epithelium inhibits prostanoid synthesis, Am. J. Physiol. 273 (*Lung Cell. Mol. Physiol.*): L1013-L1019, 1997. PMID: 9374729

21. Savla, U., and **C.M. Waters**. Mechanical strain inhibits repair of airway epithelium in vitro, Am. J. Physiol. 274 (*Lung Cell. Mol. Physiol.*): L883-L892, 1998. PMID: 9609726

22. Savla, U., and **C.M. Waters**. Barrier function of airway epithelium: effects of radiation

and protection by keratinocyte growth factor, Radiation Res. 150: 195-203, 1998. PMID: 9692365

23. Wagers, A.J., **C.M. Waters**, L.M. Stoolman, and G.S. Kansas. Interleukin 12 and interleukin 4 control T cell adhesion to endothelial selectins through opposite effects on a1,3-fucosyltransferase VII gene expression, J. Exp. Med. 188: 2225-2231, 1998. PMID: 9858509

24. **Waters, C.M.**, M.A. Avram, T.C. Krejcie, and T.K. Henthorn. Uptake of fentanyl in pulmonary endothelium, J. Pharmacol. Exper. Therapeutics 288: 157-163, 1999. PMID: 9862766

25. Gillis, P., U. Savla, O.V. Volpert, B. Jimenez, **C.M. Waters**, R.J. Panos, and N. Bouck. Keratinocyte growth factor induces angiogenesis and protects endothelial barrier function, J. Cell Science 112: 2049-2057, 1999. PMID: 10341222

26. **Waters, C.M.**, K. Ridge, G. Sunio, K. Venetsanou, and J.I. Sznajder. Mechanical stretching of alveolar epithelial cells increases Na,K-ATPase activity, J. Appl. Physiol. 87: 715-721, 1999. PMID: 10444632

27. **Waters, C.M.**, and U. Savla. Keratinocyte growth factor accelerates wound closure in airway epithelium during cyclic mechanical strain, J. Cell. Physiol., 181: 424-432, 1999. PMID: 10528228

28. Albuquerque, M.L., **C.M. Waters**, U. Savla, H.W. Schnaper, and A. Flozak. Shear stress enhances human endothelial cell wound closure, Am. J. Physiol. Heart Circ. Physiol. 279: H293-H302, 2000. PMID: 10899069

29. **Waters, C.M.**, T.C. Krejcie, and M.A. Avram. Facilitated uptake of fentanyl, but not alfentanil, by human pulmonary endothelial cells, Anesthesiology 93: 825-831, 2000. PMID: 10969317

30. Haber,R., J.B. Grotberg, M.R. Glucksberg, G. Miserocci, D. Venturoli, M. Del Fabbro and **C.M. Waters**. Steady-state pleural fluid flow and pressure and the effects of lung buoyancy, J. Biomech. Engr. 123: 485-492, 2001. PMID: 11601734

31. Savla, U., H.J. Appel, P.H.S. Sporn, and **C.M. Waters**. Prostaglandin E_2 regulates wound closure of airway epithelial cells, Am. J. Physiol. Lung Cell. Mol. Physiol. 280: L421-L431, 2001. PMID: 11159024

32. **Waters, C.M.**, M.R. Glucksberg, E.P. Lautenschlager, C.-W. Lee, R.M. VanMatre, R.J. Warp, U. Savla, K.E. Healy, B. Moran, D.G. Castner, and J.P. Bearinger. A system to impose prescribed homogeneous strains on cultured cells, J. Appl. Physiol. 91: 1600-1610, 2001. PMID: 11568141

33. Chapman, K.E., **C.M. Waters**, and W.M. Miller. Continuous exposure of airway epithelial cells to hydrogen peroxide: protection by KGF, J. Cell. Physiol. 192: 71-80, 2002. PMID: 12115738

34. **Waters, C.M.**, P.H.S. Sporn, M. Liu, and J.J. Fredberg. Cellular biomechanics in the lung, Am. J. Physiol. Lung Cell. Mol. Physiol. 283: 503-509, 2002. PMID: 12169567

35. Leffler, C.W., L. Balabanova, A.L. Fedinec, **C.M. Waters**, and H. Parfenova. Mechanism of glutamate stimulation of CO production in cerebral microvessels, Am. J. Physiol. Heart Circ. Physiol. 285: H74-H80, 2003. PMID: 12623781

36. Boardman, K.C., W.M. Miller, and **C.M. Waters**. Actin redistribution in response to hydrogen peroxide in airway epithelial cells, J. Cell. Physiol. 199: 57-66, 2004. PMID: 14978735

37. Savla, U., L.E. Olson, and **C.M. Waters**. Mathematical modeling of airway epithelial wound closure during cyclic mechanical strain, J. Appl. Physiol. 96: 566-574, 2004. PMID: 14715680

38. Zhuang, D., A.-C. Ceacareanu, Y. Lin, B. Ceacareanu, M. Dixit, K. Chapman, **C.M. Waters**, G.N. Rao, and A. Hassid. Nitric oxide attenuates insulin- or IGF1-stimulated aortic smooth muscle cell motility by decreasing hydrogen peroxide levels: essential role of cyclic GMP, Am. J. Physiol. Heart Circ. Physiol. 286: H2103-H2112, 2004. PMID: 14751855

39. Leggas, M., J. Welden, X. Nguyen, **C.M. Waters**, C.F. Stewart. Microbore high performance liquid chromatography assay for rapid separation of carboxylate and lactone forms of topotecan using online microdialysis sampling, J. Pharmaceut. Sci. 93: 2284-2295, 2004.

40. **Waters, C.M.** Reactive oxygen species in mechanotransduction, Editorial comment, Am. J. Physiol. Lung Cell. Mol. Physiol. 287: L484-L485, 2004. PMID: 15308497

41. Ahmed, A., **C.M. Waters**, C.W. Leffler, and J. Jaggar. Ionic mechanisms mediating the myogenic response in newborn porcine cerebral arteries, Am. J. Physiol. Heart Circ. Physiol. 287: H2061-H2069, 2004. PMID: 15284060

42. Desai, L.P., A.M. Aryal, B. Ceacareanu, A. Hassid, and **C.M. Waters**. RhoA and Rac1 are both required for efficient wound closure of airway epithelial cells, Am. J. Physiol. Lung Cell. Mol. Physiol. 287: L1134-L1144, 2004. PMID: 15298851

43. Tomar, A., Y. Wang, N. Kumar, S. George, A. Hassid, K.E. Chapman, A.M. Aryal, **C.M. Waters**, and S. Khurana. Regulation of cell motility by tyrosine phosphorylated villin, Mol. Biol. Cell. 15: 4807-4817, 2004. PMID: 15342783

44. Geiger, R.C., **C.M. Waters**, D.W. Kamp, and M.R. Glucksberg. KGF prevents oxidant-mediated damage in ARPE-19 cells, Invest. Opthalmol. Vis. Sci. 46: 3435-3441, 2005. PMID: 16123449

45. Chapman, K.E., S.E. Sinclair, A. Hassid, D. Zhuang, L.P. Desai, and **C.M. Waters**. Cyclic mechanical strain increases reactive oxygen species production in pulmonary epithelial cells, Am. J. Physiol. Lung Cell. Mol. Physiol. 289: 834-841, 2005. PMID: 15964900

46. Ceacareanu, A.-C., B. Ceacareanu, R. Ray, L. Desai, K.E. Chapman, **C.M. Waters**, and A. Hassid. Nitric oxide attenuates IGF-1-induced aortic smooth muscle cell motility by decreasing Rac1 activity: essential role of PTP-PEST and p130cas, Am. J. Physiol. Cell Physiol. 290: C1263-C1270, 2006. PMID: 16354758

47. Motl, S., Y. Zhuang, **C.M. Waters**, and C.F. Stewart. Pharmacokinetic considerations in the treatment of CNS tumors, Clinical Pharmacokinetics 45 (9): 871-903, 2006. PMID: 16928151

48. Y. Zhuang, C.H. Fraga, K.E. Hubbard, N. Hagedorn, J.C. Panetta, **C.M. Waters**, and C.F. Stewart. Topotecan central nervous system penetration is altered by a tyrosine kinase inhibitor, Cancer Research 66 (23): 11305-11313, 2006. PMID: 17145877

49. Kumar, N., J. Mishra, V.S. Narang, and **C.M. Waters**. Janus kinase 3 regulates interleukin-2-induced mucosal wound repair through tyrosine phosphorylation of vilin, J. Biol. Chem. (*accelerated publication*) 282: 30341-30345, 2007. PMID: 17537734

50. Desai, L.P., S.E. Sinclair, K.E. Chapman, A. Hassid, and **C.M. Waters**. High tidal volume mechanical ventilation with hyperoxia alters focal adhesions of alveolar type II cells, Am. J. Physiol. Lung Cell. Mol. Physiol. 293: L769-L778, 2007. PMID: 17601798

51. Sinclair, S.E., R.C. Molthen, S.A. Hayworth, C.A. Dawson, and **C.M. Waters**. Airways strain during mechanical ventilation in an intact animal model, Am J. Resp. Crit. Care Med. 176: 786-794, 2007. PMID: 17626911

52. Xi, Q., A. Adebiyi, G. Zhao, K.E. Chapman, **C.M. Waters**, A. Hassid, and J.H. Jaggar. IP_3 constricts cerebral arteries via IP_3 receptor-mediated TRPC3 channel activation and independently of sarcoplasmic reticulum Ca^{2+} release, Circ. Res. 102: 1118-1126, 2008. PMCID: PMC2430658

53. Wagh, A.A., E. Roan, K.E. Chapman, L.P. Desai, D. Rendon, E.C. Eckstein, and **C.M. Waters**. Localized elasticity measured in epithelial cells migrating at a wound edge using atomic force microscopy, Am. J. Physiol. Lung Cell. Mol. Physiol. 295: L54-L60, 2008. PMCID: PMC2494778

54. Narang, V.S., C. Fraga, N. Kumar, J. Shen, S. Throm, C.F. Stewart, and **C.M. Waters**.

Dexamethasone increases expression and activity of multi-drug resistance transporters at the rat blood-brain barrier, Am. J. Physiol. Cell Physiol. 295: C440-C450, 2008. PMCID: PMC2518425

55. Desai, L.P., K.E. Chapman, and **C.M. Waters**. Mechanical stretch decreases migration of alveolar epithelial cells through mechanisms involving Rac1 and Tiam1, Am. J. Physiol. Lung Cell. Mol. Physiol. 295: L958-L965, 2008. PMCID: PMC2584892

56. Shen, J. A.M. Carcaboso, E. Hubbard, H.G. Wynn, J.C. Panetta, **C.M. Waters**, M. Elmeliegy, C.F. Stewart. Compartment-specific roles of P-glycoprotein and breast cancer resistance protein at the blood-brain and blood-CSF barriers define differential topotecan distribution in brain parenchyma and CSF, Cancer Res. 69: 5885-5892, 2009. PMCID: PMC2729173

57. Desai, L.P., S.R. White, and **C.M. Waters**. Mechanical stretch decreases FAK phosphorylation and reduces cell migration through loss of JIP3-induced JNK phosphorylation, Am. J. Physiol. Lung Cell. Mol. Physiol. 297: L520-529, 2009. PMCID: PMC2739770

58. Mugabe, B.E., F.A. Yaghini, C.Y. Song, C.K. Buharalioglu, **C.M. Waters**, and K.U. Malik. Angiotensin II-induced migration of vascular smooth muscle cells is mediated by p38-MAPK activated c-Src through spleen tyrosine kinase and EGFR transactivation, J. Pharmacol. Exp. Ther. 332: 116-124, 2010. PMCID: PMC2802473

59. Desai, L.P., S.R. White, and **C.M. Waters**. Cyclic mechanical stretch decreases cell migration by inhibiting phosphatidylinositol 3-kinase- and focal adhesion kinase-mediated JNK1 activation, J. Biol. Chem. 285: 4511-4519, 2010. *JBC paper of the week*. PMCID: PMC2836056

60. Crosby, L.M., and **C.M. Waters**. Epithelial repair mechanisms in the lung, Am. J. Physiol. Lung Cell. Mol. Physiol. 298: L715-L731, 2010. PMCID: PMC2886606

61. Carcaboso, A.M., M.A. Elmeliegy, J. Shen, S.J. Juel, Z.M. Zhang, C. Calabrese, L. Tracey, **C.M. Waters**, and C.F. Stewart. Tyrosine kinase inhibitor gefitinib enhances topotecan penetration of gliomas, Canc. Res. 70: 4499-4508, 2010. PMCID: PMC2880208

62. Tagen, M., Y. Zhuang, F. Zhang, K.E. Harstead, J. Shen, P. Schaiquevich, C.H. Fraga, J.C. Panetta, **C.M. Waters**, and C.F. Stewart. P-glycoprotein, but not multidrug resistance protein 4, plays a role in the systemic clearance of irinotecan and SN-38 in mice, Drug Metabolism Letters 4: 195-201, 2010.

63. Makena, P.S., C.L. Luellen, L. Balazs, M.C. Ghosh, K. Parthasarathi, **C.M. Waters**, S.E. Sinclair. Pre-exposure to hyperoxia causes increased lung injury and epithelial apoptosis in mice ventilated with high tidal volumes, Am. J. Physiol. Lung Cell. Mol. Physiol. 299:

L711-L719, 2010. PMCID: PMC2980385

64. Crosby, L.M., C. Luellen, Z. Zhang, L.L. Tague, S.E. Sinclair, and **C.M. Waters**. The balance of life and death in alveolar epithelial type II cells: proliferation, apoptosis, and the effects of cyclic stretch on wound healing, Am. J. Physiol. Lung Cell. Mol. Physiol. 301: L536-L546, 2011. PMCID: PMC3191757

65. Makena, P.S., V.K. Gorantla, M.C. Ghosh, L. Bezwada, L. Balazs, C. Luellen, K. Parthasarathi, **C.M. Waters**, and S.E. Sinclair. Lung injury caused by high tidal volume mechanical ventilation and hyperoxia is dependent upon oxidant-mediated c-Jun NH_2-terminal kinase (JNK) activation, J. Appl. Physiol. 111: 1467-1476, 2011. PMCID: PMC3220303

66. Roan, E., and **C.M. Waters**. What do we know about mechanical strain in lung alveoli? Am. J. Physiol. Lung Cell. Mol. Physiol. 301: L625-L635, 2011. PMCID: PMC3213982

67. Schwingshackl, A., B. Teng, M. Ghosh, A.N. West, P. Makena, V. Gorantla, S. Sinclair, and **C.M. Waters**. Regulation and function of the two-pore domain (K2P) potassium channel Trek-1 in alveolar epithelial cells, Am. J. Physiol. Lung Cell. Mol. Physiol. 302: L93-L102, 2012. PMCID: PMC3349376

68. **Waters, C.M.**, E. Roan, and D. Navajas. Mechanobiology in lung epithelial cells: Measurements, Perturbations, and Responses, Comprehensive Physiology 2: 1-29, 2012. PMCID: PMC4457445

69. Makena, P.S., V.K. Gorantla, M.C. Ghosh, L. Bezawada, K. Kandasamy, L. Balazs, C. Luellen, K.E. Thompson, K. Parthasarathi, H. Ichijo, **C.M. Waters**, and S.E. Sinclair. Deletion of apoptosis signal regulating kinase-1 prevents ventilator-induced lung injury in mice, Am. J. Resp. Cell Mol. Biol. 46: 461-469, 2012. PMCID: PMC3359950

70. Mishra, J., **C.M. Waters**, N. Kumar. Molecular mechanisms of interleukin-2-induced mucosal homeostasis, Am. J. Physiol. Cell Physiol. 302: C735-C747, 2012. PMCID: PMC3311301

71. Ghosh, M.C., P.S. Makena, V. Gorantla, S.E. Sinclair, and **C.M. Waters**. CXCR4 regulates migration of lung alveolar epithelial cells through activation of Rac1 and matrix metalloproteinase-2 (MMP-2), Am. J. Physiol. Lung Cell. Mol. Physiol. 302: L846-L856, 2012. PMCID: PMC3362158

72. Roan, E., K. Wilhelm, A. Bada, P.S. Makena, V.K. Gorantla, S.E. Sinclair, and **C.M. Waters**. Hyperoxia alters the mechanical properties of alveolar epithelial cells, Am. J. Physiol. Lung Cell. Mol. Physiol. 302: L1235-L1241, 2012. *Editorial Focus*. PMCID: PMC3379045

73. Schwingshackl, A., B. Teng, M. Ghosh, K.G. Lim, G. Tigyi, D. Narayanan, J. Jaggar, and **C.M. Waters**. Regulation of interleukin-6 secretion by the two-pore-domain potassium (K2P) channel Trek-1 in alveolar epithelial cells, Am. J. Physiol. Lung Cell. Mol. Physiol. 304: L276-L86, 2013. PMCID: PMC3567358

74. Ghosh, M.C., V. Gorantla, P.S. Makena, C. Luellen, S.E. Sinclair, and **C.M. Waters**. Insulin like growth factor-1 stimulates differentiation of ATII cells to ATI-like cells through activation of Wnt5a, Am. J. Physiol. Lung Cell. Mol. Physiol. 305: L222-L228, 2013. PMCID: PMC3743013

75. Schwingshackl, A., B. Teng, M. Ghosh, and **C.M. Waters**. Regulation of MCP-1 secretion by Trek-1 in alveolar epithelial cells, Am. J. Translational Res. 5(5): 530-542, 2013. PMCID: PMC3745440

76. Wilhelm, K., E. Roan, M. Ghosh, K. Parthasarathi, and **C.M. Waters**. Hyperoxia increases the elastic modulus of alveolar epithelial cells through Rho kinase, FEBS J. 281: 957-969, 2014. PMCID: PMC3916181

77. Roan, E., **C.M. Waters**, B. Teng, M. Ghosh, and A. Schwingshackl. The 2-pore domain potassium channel TREK-1 regulates stretch-induced detachment of alveolar epithelial cells, PLOS One 9(2): e89429, 2014. PMCID: PMC3929719

78. Samak, G., R. Gangwar, L.M. Crosby, L.P. Desai, K. Wilhelm, **C.M. Waters**, R.K. Rao. Cyclic stretch disrupts apical junctional complexes in Caco-2 cell monolayers by a c-Jun N-terminal kinase-2, c-Src and myosin light chain kinase-dependent mechanism, Am. J. Physiol. Gastrointest. Liver Physiol. 306 (11): G947-G958, 2014. PMCID: PMC4042113

79. Toutounchian, J.T., J.J. Steinle, P. Makena, M. Wilson, B.G. Haik, D.D. Miller, **C.M. Waters**, and C.R. Yates. Modulation of radiation injury response in retinal endothelial cells by quinic acid derivative KZ-41 involves p38 MAPK, PLOS One 9(6): e100210, 2014. PMCID: PMC4067294

80. Schwingshackl, A., B. Teng, P. Makena, M. Ghosh, S.E. Sinclair, C. Luellen, L. Balasz, C. Rovnaghi, R.M. Bryan, E. Lloyd, E. Fitzpatrick, J.S. Saravia, S. Cormier, and **C.M. Waters**. Deficiency of the two-pore potassium (K2P) channel Trek-1 promotes hyperoxia-induced lung injury, Crit. Care Med. 42(11): e692-e701, 2014. PMCID: PMC4199872

81. Lee, S.-C., Y. Fujiwara, J. Liu, J. Yue, Y. Wang, R. Tsukahara, E. Szabo, R. Patil, S. Banerjee, D.D. Miller, L. Balazs, M.C. Ghosh, **C.M. Waters**, T. Oravecz, and G.J. Tigyi. Autotaxin, Lysophosphatidic Acid Receptors 1 and 5 Exert Different Functions in Tumor Cells Versus the Host tissue Microenvironment in Melanoma Invasion and Metastasis, Mol. Cancer Res. 13(1): 174-185, 2015.

82. Rapalo, G., J.D. Herwig, R. Hewitt, K. Wilhelm, **C.M. Waters**, and E. Roan. Live cell imaging during mechanical stretch, J. Vis. Exp (JoVE) (102): e52737, 2015. PMCID: PMC4692539.

83. Schwingshackl, A., E. Roan, B. Teng, and **C.M. Waters**. TREK-1 Regulates Cytokine Secretion From Cultured Human Alveolar Epithelial Cells Independently Of Cytoskeletal Rearrangements, PLOS One 10(5): e0126781, 2015. PMCID: PMC4441361.

84. Roan, E., K. Wilhelm, A. Bada, and **C.M. Waters**. Kymographic imaging of the elastic modulus of epithelial cells during onset of migration, Biophys. J. 109 (10): 2051-2057, 2015. PMCID: PMC4656878.

85. Andrews, K., M.C. Ghosh, A. Schwingshackl, G. Rapalo, C. Luellen, **C.M. Waters**, and E.A. Fitzpatrick. Chronic hypersensitivity pneumonitits caused by long-term exposure to *Saccharopolyspora rectivirgula* is not associated with a switch to a Th2 response, Am. J. Physiol. Lung Cell. Mol. Physiol. 310(5): L393-402, 2016. PMCID: PMC4773842.

86. R. Gangwar, A.S. Meena, P.K. Shukla, A.S. Nagaraja, P.L. Dorniak, S. Pallikkuth, B. Kalyanaraman, **C.M. Waters**, A. Sood, and R.K. Rao. Calcium-mediated mitochondrial oxidative stress is a common denominator in the mechanism of tight junction disruption by different types of stress in the intestinal epithelium, Biochem. J. 474(5): 731-749, 2017.

87. Ghosh, M.C., P.S. Makena, J. Kennedy, B. Teng, C. Luellen, S.E. Sinclair, and **C.M. Waters**. A heteromeric molecular complex regulates the migration of lung alveolar epithelial cells during wound healing, Sci. Rep. 7(1): 2155, 2017. PMCID: PMC5438388.

88. Michael, C.F., **C.M. Waters**, K. LeMessurier, A. Samarasinghe, C.Y. Song, K.U. Malik, and D.B. Lew. Airway epithelial repair by a prebiotic mannan derived from Saccharomyces cerevisiae, J. Immunol. Res. 2017: ID 8903982, 2017. PMCID: PMC5523272.

89. Schwingshackl, A., B. Lopez, B. Teng, C. Luellen, F. Lesage, J. Belperio, R. Olcese, and **C.M. Waters**. Hyperoxia treatment of TREK-1/TREK-2/TRAAK-deficient mice is associated with a reduction in surfactant proteins, Am. J. Physiol. Lung Cell. Mol. Physiol., 313(6): L1030-L1046, 2017. PMCID: PMC5814704.

90. Xiao, Z., J. Baudry, L. Cao, J. Huang, H. Chen, C.R. Yates, W. Li, **C.M. Waters**, J. Smith, L.D. Quarles. Polycystin-1 interacts with TAZ to stimulate osteoblastogenesis and inhibit adipogenesis, J. Clin. Invest. 128(1): 157-174, 2018. PMCID: PMC5749530.

91. Immanuel, C.N., B. Teng, B.E. Dong, E.M. Gordon, J.A. Kennedy, C.L. Luellen, A. Schwingshackl, S.A. Cormier, E.A. Fitzpatrick, and **C.M. Waters**. Apoptosis signal regulating kinase-1 promotes inflammasome priming in macrophages, Am. J. Physiol.

Waters, Christopher M. (continued)

Lung Cell. Mol. Physiol., 316: L418-L427, 2019. PMCID: PMC6459294.

92. Phung, T.K., S.E. Sinclair, P. Makena, R.C. Molthen, and **C.M. Waters**. Dynamic airway constriction in rats: heterogeneity and response to deep inspiration, Am. J. Physiol. Lung Cell. Mol. Physiol., 317: L39-L48, 2019. PMCID: PMC6689744.

93. Mancarella, S., S. Kamatham, **C.M. Waters**, and A. Schwingshackl. TREK-1 protects the heart against ischemia reperfusion-induced injury and from adverse remodeling after myocardial infarction, Pflügers Archiv. – Eur. J. Physiol., 471 (10): 1263-1272, 2019.

Manuscripts submitted or in preparation:

1. S.E. Sinclair, S. Majd, R.C. Molthen, **C.M. Waters**. Changes in mechanical strain in airways following acute acid injury, manuscript in preparation.

2. Immanuel, C.N., B. Teng, T. Tatum, J.A. Kennedy, C. Luellen, S. Cormier, E.A. Fitzpatrick, A. Schwingshackl, and **C.M. Waters**. Inhibition of TREK-1 increases NLRP3-independent IL-1β secretion from alveolar macrophages, manuscript in preparation.

3. Makena, P., B. Teng, B. Dong, E.M. Gordon, S. Sinclair, and **C.M. Waters**. ASK1 differentially regulates p38 and JNK in ventilator-induced lung injury, manuscript in preparation.

4. Zyrianova, T., B. Lopez, R. Olcese, J. Belperio, **C.M. Waters**, L. Wong, V. Nguyen, S. Talapaneni, A. Schwingshackl. K2p2.1 (TREK-1) potassium channels protect against hyperoxia-induced lung injury, submitted.

5. Ghosh, M., B. Teng, J.A. Tatum, C. Luellen, G.U. Meduri, **C.M. Waters**. CXCL12 as a biomarker in ARDS patients, manuscript in preparation.

ORAL PRESENTATIONS/CONFERENCE ORGANIZATION (*INVITED):

1.* Association of University Anesthesiologists; Chicago, IL; 1994; "Flow-Induced Changes in Endothelial Permeability."

2.* Dept. of Pharmacology, Rush-Presbyterian-St. Lukes Medical School, Chicago, IL; 1994; "Flow-Induced Increases in Endothelial Permeability."

3.* Division of Pulmonary Medicine, Michael Reese Hospital, Chicago, IL; 1994; "Endothelial Barrier Function: Effects of Mechanical Shear."

4.* Biomedical Engineering Society Fall Meeting, Symposium on Cellular and Molecular Interactions in the Cardiopulmonary System, Tempe, AZ, 1994; "Endothelial Barrier Function and Fluid Flow."

5.* Biomedical Engineering Society Fall Meeting, Symposium on Pleural Physiology: Biomechanics and Transport, Tempe, AZ, 1994; "The Response of Cultured Pleural Mesothelial Cells to Shear Stress."

6. Experimental Biology Meeting, Symposium on Shear Stress and Strain Effects on Cell Function; Washington, D.C., 1996; "Effect of Cyclic Stretch on Wound Healing of Airway Epithelial Cells."

7. Biomedical Engineering Society Fall Meeting, Symposium on Cardiopulmonary and Respiratory Engineering: Airway, Tissue, and Cell Mechanics, State College, PA, 1996; "Cyclic Strain Inhibits Prostaglandin Synthesis in Airway Epithelial Cells: Effect on Wound Healing."

8.* Tulane University, Dept. Of Biomedical Engineering, New Orleans, LA, 1996; "Cellular Biomechanics in Airway Epithelium."

9.* University of Virginia, Dept. Of Biomedical Engineering, Charlottesville, VA, 1996; "Wound Healing in Airway Epithelium."

10.* Experimental Biology Meeting, Symposium on Cytoskeleton and Adhesion in Endothelial Cells, New Orleans, LA, 1997; "Endothelial Barrier Function: Regulation by Shear Stress and Protein Kinase C."

11.* National Simulation Resource Workshop: Modeling Heterogeneity, Hemodynamics, Metabolism, and Transport in Biological Systems, Milwaukee, WI, 1997; "Permeability of Endothelial Monolayers to Hydrophilic Solutes."

12. 17th Southern Biomedical Engineering Conference, San Antonio, TX, 1998; "Keratinocyte Growth Factor Accelerates Wound Closure of Airway Epithelium During Cyclic Strain."

13.* Experimental Biology Meeting, Symposium on Cellular and Tissue Response to Mechanical Stress, San Francisco, CA, 1998; "KGF Stimulates Airway Epithelial Cell Migration in Static and Cyclically Stretched Monolayers."

14.* Marquette University, Dept. Of Biomedical Engineering, Milwaukee, WI, 1998; "Mechanics of Wound Healing in Airway Epithelium."

15.* Biomedical Engineering Society Fall Meeting, Session on Ventilator Induced Lung Injury, Cleveland, OH, 1998; "Mechanical Stretching of Alveolar Epithelial Cells

Increases Na,K-ATPase Activity."

16.* Biomedical Engineering Society Fall Meeting, Session on Cell and Connective Lung Tissue Mechanics, Cleveland, OH, 1998; "Regulation of Cylooxygenase Expression by Cyclic Stretch in Airway Epithelium."

17.* Summer Bioengineering Conference, Session on Biological Mass Transfer, Big Sky, MT, 1999; "Endothelial Uptake of Fentanyl Occurs by Both Diffusional and Specific Transporter Pathways."

18.* Summer Bioengineering Conference, Session on Cell Mechanics and Mechanotransduction in the Lung, Big Sky, MT, 1999; "Wound Closure in Airway Epithelium During Cyclic Strain: Experiments and Mathematical Modeling."

19.* Northwestern University, Division of Pulmonary Medicine, Chicago, IL, 2000; "Cellular Biomechanics in Airway Epithelium."

20.* Vanderbilt University, Dept. of Biomedical Engineering, Nashville, TN, 2000; "Cellular Biomechanics in Airway Epithelium."

21.* International Conference on Mechanics in Medicine and Biology, Session on Cell Mechanics (Session Chair), Maui, HA, 2000; "Cellular Mechanics in Human Blood Eosinophils."

22. * University of Toronto, Division of Respirology, Faculty of Medicine, Toronto, Ontario, Canada, 2000; "Wound healing in airway epithelium: role of cellular biomechanics."

23. * The Mayo Clinic, Department of Physiology and Biophysics, The Mayo Graduate School, Rochester, MN, 2000; "Cellular biomechanics in airway epithelium."

24.* American Society of Mechanical Engineers Summer Bioengineering Conference, Snowbird, Utah, 2001; "Cellular mechanics in human blood eosinophils and leukotriene C4 synthesis."

25.* Joint Program in Biomedical Engineering, The University of Tennessee, Memphis, and the University of Memphis, 2001; "Cellular biomechanics in airway epithelium."

26.* Experimental Biology Meeting, organized and chaired symposium on Cellular Biomechanics in the Lung, New Orleans, LA, 2002; "Biomechanics and wound healing in airway epithelial cells."

27.* Fourth World Congress of Biomechanics, Calgary, Alberta, Canada, 2002; "Dynamics of wound healing in airway epithelial cells: GFP-actin remodeling."

28.* Organizer and Session Chair for Poster Discussion, American Heart Association Grover

Conference on Proinflammatory Signaling Mechanisms in the Pulmonary Circulation, Sedalia, CO, 2002; invited conference faculty.

29.* The University of Tennessee at Chattanooga, Department of Chemistry, Chattanooga, TN, 2003; "Wound Healing in Lung Epithelium: Cytoskeleton, Signaling, and Mechanotransduction."

30.* Organizer and Session Chair for two symposia on "Cellular Biomechanics: Cytoskeleton," Biomedical Engineering Society Meeting, Nashville, TN, 2003.

31.* University of Arkansas Medical School, Visiting Professor, Departments of Physiology and Pediatrics, Little Rock, AR, 2004; "Wound Healing and Biomechanics in the Lung."

32. Session Chair for symposium on "Respiratory Bioengineering: Lung Injury and Repair," Biomedical Engineering Society Meeting, Philadelphia, PA, 2004.

33.* Division of Pulmonary and Critical Care Medicine, University of Tennessee Health Science Center, Memphis, TN, 2005; "Biomechanics and Lung Injury."

34.* Department of Pediatrics, University of Tennessee Health Science Center, Memphis, TN, 2005; "Biomechanics and Lung Injury."

35.* Organizer and session chair for symposium on "Lung Cell Stress Injury," Biomedical Engineering Society Meeting, Baltimore, MD, 2005. Oral presentation: "Mechanical ventilation and hyperoxia reduce activation of FAK and Akt."

36.* Arkansas Children's Research Hospital Institute, Little Rock, AR, 2005; "Mechanotransduction and Wound Healing in the Lungs."

37.* University of Southern California, Division of Pulmonary and Critical Care Medicine, Department of Medicine, Los Angeles, CA, 2006; "Mechanotransduction and Wound Healing in the Lungs."

38.* Organizer and session chair for poster session on "Respiratory Engineering," World Congress of Biomechanics, Munich, Germany, 2006. Member of the International Scientific Committee.

39.* University of Vermont, Environmental Pathology and Laboratory Medicine, Burlington, VT, 2006; "Mechanotransduction and Wound Healing in the Lungs."

40.* Organizer and track chair for Respiratory Bioengineering, Biomedical Engineering Society Annual Meeting, Chicago, IL, 2006.

41.* Joint Program in Biomedical Engineering, The University of Tennessee, Memphis, and the University of Memphis, 2007; "Biomechanics and Wound Healing in Acute Lung

Injury."

42.* Biomedical Engineering Society Fall Meeting, Session on Lung Injury, Los Angeles, CA, 2007; "Mechanical Stretch and Rho GTPases in Lung Epithelial Repair Mechanisms."

43.* Department of Pediatrics, Division of Pulmonary and Critical Care, University of Tennessee Health Science Center, Memphis, TN, 2007; "Biomechanics and Wound Healing in Acute Lung Injury."

44.* Vanderbilt University, Department of Medicine, Division of Pulmonary and Critical Care, Nashville, TN, 2007; "Biomechanics and Wound Healing in Acute Lung Injury."

45.* Session Chair and organizer for Poster Discussion session on "Airway Epithelium: Nexus of Injury and Repair," American Thoracic Society International Conference, Toronto, Ontario, Canada, 2008.

46.* Session Chair and organizer for Poster Discussion session on "Crossing the Channel: Ion and Fluid Transport," American Thoracic Society International Conference, Toronto, Ontario, Canada, 2008.

47.* Facilitator for Thematic Poster session on "Epithelial Cell Biology II," American Thoracic Society International Conference, Toronto, Ontario, Canada, 2008.

48.* University of Pennsylvania, Institute for Environmental Medicine, Philadelphia, PA, 2009; "Mechanotransduction in Acute Lung Injury."

49.* American Physiological Society, Respiration Section Program Committee for Experimental Biology, 2009-present.

50.* Session Chair and organizer for Poster Discussion session on "Cellular and tissue response to mechanical stress," American Thoracic Society International Conference, San Diego, CA, 2009.

51.* Session Chair and organizer for Symposium on "Mechanotransduction in lung injury, repair, and fibrosis: may the force be with us," American Thoracic Society International Conference, San Diego, CA, 2009.

52.* American Thoracic Society meeting, "Mechanical force regulation of epithelial migration," San Diego, CA, 2009.

53.* Visiting Scholar, Dean's Distinguished Scientist Seminar, University of South Alabama, Mobile, AL, 2010, "Mechanotransduction in Acute Lung Injury."

54.* Distinguished Scientist Lecturer, Oklahoma State University, Stillwater, OK, 2010, "Mechanotransduction in Acute Lung Injury."

55. Session Chair for symposium on "Mechanobiology in the lung," Biomedical Engineering Society Meeting, Hartford, CT, 2011.

56.* Department of Medicine, Division of Pulmonary and Critical Care, University of Tennessee Health Science Center, Memphis, TN, 2011; "Mechanotransduction in Acute Lung Injury."

57.* Society for Physical Regulation in Biology and Medicine-Biomedical Engineering Society Conference on Cell Motility, Matrix, Mechanobiology, and Regeneration, "Spatial and Temporal Changes in Elastic Modulus During Cell Migration," San Juan, Puerto Rico, 2012.

58. Session Chair and organizer for symposium on "Mechanobiology in the lungs," Experimental Biology Meeting, San Diego, CA, 2012.

59.* Joint Program in Biomedical Engineering, The University of Tennessee, Memphis, and the University of Memphis, 2012; "Mechanobiology in Acute Lung Injury."

60.* Department of Microbiology, Immunology, and Biochemistry, The University of Tennessee, Memphis, 2012; "Mechanobiology in Acute Lung Injury."

61.* Department of Physiology, The University of Tennessee Health Science Center, Memphis, TN, 2012; "Mechanobiology in Acute Lung Injury."

62. Session Chair and organizer for symposium on "Mechanochemical background in the intact lung and the role of contextual cell biology for the study of lung injury and repair in vitro," Experimental Biology Meeting, Boston, MA, 2015.

63.* Invited speaker, Max Planck Institute/University of Giessen and Marburg Lung Center Annual Retreat, Molecular Biology and Medicine of the Lung, International Graduate Program, 13th Annual Retreat, Rauischholzhausen, Germany, 2015.

64. Session Chair and organizer for symposium on "Environmental Exposures, Oxidative Stress, and Lung Disease," Experimental Biology Meeting, San Diego, CA, 2016.

65. Session Chair for Poster Discussion session on "Protectors of the Lung: Innate Immune Responses in Acute Lung Injury," American Thoracic Society International Conference, San Francisco, CA, 2016.

66.* Panel member, Faculty Development Seminar, "The Roadmap to Success in Early Academic Career Development: Your First Five Years," American Thoracic Society International Conference, San Francisco, CA, 2016.

67.* American Thoracic Society, Respiratory Cell and Molecular Biology Section Program

Committee for ATS 2017-2018.

68.* Nationwide Children's Hospital/Ohio State University, Center for Perinatal Research Invited Lecture, "Mechanical and Biochemical Signaling in Hyperoxia and Ventilator-Induced Lung Injury," Columbus, OH, 2016.

69.* Association of Chairs of Departments of Physiology Leadership Retreat, "Mechanical and biochemical signaling in hyperoxia and ventilator-induced lung injury," Los Cabos, Mexico, 2016.

70.* National Conference on Undergraduate Research, "Panel discussion with American Physiological Society Professionals," Memphis, TN, 2017.

71.* Session Chair for Mini-Symposium on "Impact of Inflammation on Acute Lung Injury," American Thoracic Society International Conference, Washington, DC, 2017.

72.* Northwestern University, Department of Medicine, Division of Pulmonary and Critical Care, Chicago, IL, 2018; "ASK(1) me about mechanobiology and acute lung injury."

73.* University of Kentucky, Department of Molecular and Cellular Biochemistry, Lexington, KY, 2018; "ASK(1) me about mechanobiology and acute lung injury."

74.* University of Washington, Center for Lung Biology, Division of Pulmonary, Critical Care, and Sleep Medicine, Visiting Lecturer, Seattle, WA, 2018; "ASK(1) me about mechanobiology and acute lung injury."

75.* Invited speaker, World Congress of Biomechanics, Dublin, Ireland, 2018; "Dynamic imaging of airways during bronchoconstriction in rats."

76.* University of Kentucky, Department of Pharmacology and Nutritional Sciences, Lexington, KY, 2018; "Mechanisms of acute lung injury: ASK me about cell stiffness."

77.* Louisiana State University, Department of Biomedical Sciences, Baton Rouge, LA, 2018; "Acute lung injury: ASK(1) me about mechanobiology."

78. Session Chair and organizer for Featured Topic on "Inflammasome Activation in Diseases of the Lung," Experimental Biology Meeting, Orlando, FL, 2019.

79.* Invited speaker, Physiology 2019, Aberdeen, Scotland, 2019; "TREK1 regulates K+ efflux during LPS-induced inflammasome activation."

80.* Co-presenter, Kentucky Research Alliance for Lung Disease, University of Kentucky, Lexington, KY, 2020; "Update on COVID-19."

81.* Co-presenter, Department of Physiology, University of Kentucky, Lexington, KY, 2020;

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"COVID-19 at the University of Kentucky: the disease, clinical trials, and a biobank."

RESEARCH FUNDING:

Previous:

Principal Investigator: "Modulation of Endothelial Barrier by Fluid Mechanical Shear," Northwestern University Medical School Intramural Research Grant (supported by NIH grant RR-05370), 06/01/93-10/31/94.

Co-Investigator: "Pulmonary Mechanics and Transport: An Integrated Cellular and Organ Level Approach," The Whitaker Foundation, J.B. Grotberg, P.I., 01/01/94-08/31/97.

Principal Investigator: "Shear- and Stretch-Induced Modulation of Epithelial Barrier," American Lung Association of Metropolitan Chicago Research Award, 07/01/94-06/30/96.

Principal Investigator: "Shear Stress and Human Coronary Artery Endothelial Cells: Morphology and Secretion of Soluble Factors," Feinberg Cardiovascular Research Institute, 07/01/95-03/31/97.

Co-Investigator: "Pulmonary Uptake and Kinetics of IV Anesthetics," National Institutes of Health, T. Henthorn, P.I., 07/01/95-06/30/98.

Principal Investigator: "Adaptation to Strain in Airway Epithelium," Cornelius Crane Asthma Center, Northwestern University, 09/15/97-09/14/98.

Principal Investigator: "Regulation of Epithelial Na,K-ATPase by Stretch," American Lung Association, 07/01/97-06/30/99.

Training Faculty (Executive Committee): "Biotechnology Predoctoral Training," National Institutes of Health, E.T. Papoutsakis, P.I., 07/01/93-6/30/99.

Co-Investigator: "Intrathoracic Artificial Lungs," National Institutes of Health, L.F. Mockros, P.I., 12/1/98-11/30/01.

Principal Investigator: Research for Engineering Undergraduates. Supplement to "Effects of Cyclic Strain and Oxidative Damage on Airway Epithelial Cell Permeability," National Science Foundation (BES-9705600), 09/15/97-09/14/00.

Co-Investigator: "Mechanical Strain and Eosinophil Leukotriene Synthesis," American Lung Association of Metropolitan Chicago, P.H.S. Sporn, P.I., 9/1/98-8/31/99.

Principal Investigator: "Effects of Cyclic Strain and Oxidative Damage on Airway Epithelial Cell Permeability," National Science Foundation (BES-9996421), 09/15/97-08/31/01.

Giles F. Filley Memorial Award for Excellence in Respiratory Physiology and Medicine (American Physiological Society) 1998.

Principal Investigator: "Physiologic Adaptation to Strain in Airway Epithelium," National Institutes of Health (R01 HL064981), 9/01/99-3/31/04.

Collaborator: "Regulation of Epithelial Cell Motility by Villin," National Institutes of Health (R01 DK065006), Seema Khurana, P.I., 4/01/04-3/31/08.

Mentor: "Ventilator-Induced Lung Injury: Mechanisms and Consequences," National Institutes of Health (K08 HL04479), Scott E. Sinclair, P.I., 9/01/02-6/30/06.

Collaborator: "Mechanotransduction and Eosinophil Function," National Institutes of Health (R01), P.H.S. Sporn, P.I, 4/01/03-3/31/08.

Mentor: "Role of JAK3-villin interaction in the restitution of intestinal epithelial cells," Chrohn's and Colitis Foundation of America (#1351), Narendra Kumar, P.I., 7/01/05-6/30/08.

Principal Investigator: "ABC Transporters in CNS Penetration of Camptothecins," National Institutes of Health (R01 GM71321); 7/01/04-6/30/09.

Principal Investigator: "Biomechanics and Wound Healing in Lung Epithelial Cells," National Institutes of Health (renewal of R01 HL064981); 4/01/04-3/31/10.

Principal Investigator, sub-contract: "Regulation of Airway Epithelial Repair," National Institutes of Health (R01 HL080417), Steven R. White, P.I. (University of Chicago); 07/01/06-06/30/11.

Co-Investigator: "Stretch and Hyperoxia in Ventilator-Induced Lung Injury," National Institutes of Health (R01 HL081297), Scott Sinclair, P.I.; 07/01/06-06/30/11.

Co-Investigator: "CAREER: Integrated Computational Optical Framework for Quantitative Space-Invariant Imaging in Live-Cell Fluorescence Microscopy," National Science Foundation (NSF 0844682), Chrysanthe Preza, P.I.; 03/01/09-02/28/12.

Mentor: "The role of 2-pore domain potassium channels in acute lung injury," Pediatric Critical Care Scientist Development Program (K12), National Institutes of Health, Dr. Andreas Schwingshackl, P.I.; 01/01/13-02/01/14.

Mentor: "Prevention of Bronchopulmonary Dysplasia and Importance of Growth Factors in Lung Development," Le Bonheur Children's Foundation Research Institute, Dr. Ramesh

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Krishnan, P.I.; 07/01/12-06/30/13.

Mentor: "Stretch-Activated Ion Channels Regulate Inflammatory Mediator Release in the Lung," Le Bonheur Children's Foundation Research Institute, Dr. Andreas Schwingshackl, P.I.; 07/01/11-06/30/13.

Principal Investigator: "Mechanotransduction in Acute Lung Injury," National Institutes of Health (R01 HL094366); 04/01/09-03/31/14.

Principal Investigator: Administrative Supplement to "Mechanotransduction in Acute Lung Injury," Research experience for undergraduates, National Institutes of Health (R01 HL094366-01); 06/01/09-08/31/11.

Co-Mentor: "Role of Cytokine Signaling in Intestinal Restitution," Career Development Award (K01 DK081661), Dr. Narendra Kumar, P.I., Texas A&M University; 04/01/09-03/31/14.

Mentor: "The role of the 2-pore domain potassium channel Trek-1 in acute lung injury," American Lung Association, Dr. Andreas Schwingshackl, P.I.; 07/01/13-06/30/15.

Mentor: "TNF-α Induced Increase in Alveolar Epithelial Cell Stiffness and Lung Injury," (K01 HL120912-01), National Institutes of Health, Dr. Esra Roan, P.I.; 07/01/15-06/30/20; (relinquished).

Mentor: "The role of 2-pore domain potassium channels in acute lung injury," K08, National Institutes of Health, (K08 HL118118), Dr. Andreas Schwingshackl, P.I.; 0/01/14-05/31/19; (relocated to UCLA, but served as co-mentor).

Principal Investigator: "Ex vivo lung model for high throughput drug screening," Igniting Research Collaboration pilot project, University of Kentucky; 07/01/18-1/31/2019.

Principal Investigator: "CXCR4 signaling in lung epithelial repair," National Institutes of Health, (R01 HL123540); 07/08/14-03/31/20.

Principal Investigator, "Biophysical mechanisms of ventilator-induced lung injury," Veterans Administration Merit Award (I01-BX004873); 01/01/20-12/31/23. Awarded but declined to accept NIH R01.

Current:

Principal Investigator: "ASK1 and ventilator-induced lung injury," National Institutes of Health (R01 HL131526); 12/15/16-11/30/20.

Co-investigator: "Regulation and Function of IL33 During Neonatal RSV Infection," National Institutes of Health (R01AI090059), Dr. Stephania Cormier, P.I.; 07/01/16-06/30/21.

Principal Investigator, "Biophysical mechanisms of hyperoxia-induced lung injury," National Institutes of Health (R01 HL151419); 4/15/20-3/31/24.

Principal Investigator (Multi-PI): "Kentucky Research Alliance for Lung Disease (K-RALD)," Academic Research Alliance, College of Medicine, University of Kentucky; 1/1/2019-12/31/2020.

Co-investigator: "Exposure to E-cigarette vapor alters gene expression and induces inflammatory responses," National Institute of Environmental Health Sciences (P30 ES026529); UK-CARES Innovation and High Impact Award; Dr. David Orren (P.I.); 05/01/20-03/31/21.

Co-investigator: "Development of Non-Invasive Cage-Based Breathing Tracking for Mouse Models of COVID-19," UK-CURE COVID-19 Pilot Grant; Dr. O'Hara (P.I.).

Pending:

Principal Investigator: "Supplement to ASK1 and Ventilator-Induced Lung Injury," National Institutes of Health.

Co-investigator: "Novel Avian Lung-Based Respiratory Assist Device"," CDRMP, Dept. of Defense; Dr. Daniel Weiss (P.I.; University of Vermont).

Co-investigator: "Promoting and understanding recovery of breathing after chronic spinal cord injury," National Institutes of Health, Administrative Supplement; Dr. Warren Alillain, P.I.

Co-investigator: "Investigating Lung Injury After Cervical Spinal Cord Injury," National Institutes of Health (R21); Dr. Warren Alillain, P.I.

TEACHING EXPERIENCE (PRIMARY INSTRUCTOR OR DIRECTOR):

1. Transport Fundamentals for Biomedical Engineers - BME C50 - Spring, 1997, 1998, Northwestern University; overall student ratings 4.4 and 5.1 (6.0 scale).

2. Fundamentals of Cellular Biomechanics - BME D95-20 - Fall, 1995, new course developed for the department, Northwestern University; overall student rating 3.5 (4.0 scale).

3. Introductory Biomedical Fluid Mechanics - BME C95 - Winter, 1994, new course developed for the department, Northwestern University; overall student rating 3.3 (4.0 scale).

4. Problem Based Learning - Medical School - Block 202 (facilitator for second year

medical student analysis of clinical case studies - parallels basic science curriculum) - Winter, 1997 and 1998, Northwestern University.

5. Problem Based Learning - Medical School - Block 102 (facilitator for first year medical student analysis of clinical case studies - parallels basic science curriculum) - Winter, 1995 and 1996, Northwestern University.

6. Pharmacy Physiology - Respiratory Physiology Section - Spring, 2000, University of Tennessee.

7. Advanced Respiratory Physiology - Fall, 2000; Spring, 2004; Spring 2006, Fall, 2013; University of Tennessee.

8. Physiology for Pharmacy and Dental students - Respiratory Physiology Section, Spring, 2001; Spring, 2002; Spring 2003; Spring 2004, University of Tennessee.

9. Physiology for Dental Students - Respiratory Physiology Section, Spring, 2005-2016; University of Tennessee.

10. Scientific Foundations of Medicine – Pulmonary System Module co-director, 2nd year medical students, Fall, 2012-2017, University of Tennessee.

11. Pharmacology Masters students – Respiratory Physiology Section, Fall, 2013-2016, University of Tennessee.

12. Medical Physiology for Physician Assistants – Respiratory Physiology, Spring, 2013-2014, University of Tennessee.

13. Back to Basics – capstone rotation for 4th year medical students, Spring, 2014-2015, University of Tennessee.

ADDITIONAL TEACHING:

1. Guest lecturer - BME C02/D02 - Systems Physiology, Northwestern University.

2. Guest lecturer - BME C75 - Pulmonary Mechanics, Northwestern University.

3. Project adviser - BME C90 - BME design, Northwestern University.

4. Vascular Biology - Medical School Integrated Graduate Program in the Life Sciences - 1402-D47 - Winter, 1998, Northwestern University; new course developed by five faculty members; Geoffrey Kansas, course director.

5. Medical Physiology - Group Conference on Hemodynamics - Spring, 2000, University of Tennessee.

6. Pharmacy Physiology - Group Conference on Blood Gases - Spring, 2000, University of Tennessee.

7. Medical Physiology - Group Conference on Hemodynamics - Spring, 2001, University of Tennessee.

8. Dental and Pharmacy Physiology - Group Conference on Spirometry (conference leader) - 2001-2007; 2007-2017, Dental Physiology only; University of Tennessee.

9. Guest lecturer - Cardiovascular and Pulmonary Aspects of Perinatal Physiology - Fall, 2003, 2005, 2007; University of Tennessee.

10. Medical Physiology - Group Conference on Spirometry (conference leader) - 2003-2017; University of Tennessee.

COMMITTEES AT THE UNIVERSITY OF TENNESSEE HEALTH SCIENCE CENTER:

1. College of Medicine Faculty Organization: Dean's Faculty Advisory Committee, Feb. 2000-2005; President-Elect 2003-2004; President 2004-2005.

2. Department of Physiology Graduate Committee, Sept. 1999-2017.

3. Graduate School Recruitment Enhancement Committee, Jun. 2000-2006.

4. Graduate School Faculty Credentials Committee, Sept. 2000-2016.

5. Department of Biomedical Engineering and Imaging, Tenure and Promotions Committee, 2004-2006; 2007-2012.

6. Integrated Program in Biomedical Sciences, Integrative Systems Biology Track head, 2005-2006.

7. Graduate Studies Council, 2005-2006.

8. Chair, Search Committee for Chair of Department of Biomedical Engineering, 2006; search was cancelled.

9. UTHSC Strategic Planning Committee, Research Committee, 2006-2007.

10. Search Committee, J.R. Hyde Chair of Excellence, Department of Orthopaedic Sugery, University of Tennessee Health Science Center, 2007-2009; search was suspended.

11. Search Committee, Chair of Anatomy and Neurobiology, UTHSC, 2007-2008.

12. Cumulative Performance Review (CPR) Committee, 2007-2008; 2014-2016.

13. Search Committee, Department of Physiology, 2007-2017.

14. Organizing Committee, American Lung Association of West Tennessee, Asthma Walk, 2009.

15. Progress and Promotions Committee for Medical School Class of 2013, 2009-2014.

16. Medical School Curriculum Revision Committee – co-chair of Pulmonary section, 2011-2014.

17. College Appointment, Promotion, and Tenure (CAPT) Committee for the College of Medicine, 2011-2014.

18. Faculty Senate, member of Research Subcommittee, 2011-2014; chair, 2014.

19. Development of bridge funding policy for the College of Medicine, chair, 2011.

20. Department of Physiology Equipment Committee, 2011-2016.

21. Department of Physiology web page conversion, 2011-2012.

22. Search Committee, Dean of the College of Graduate Health Sciences, 2012.

23. UT Alumni Association Public Service Award Advisory Committee, 2013-2014.

24. Research Goal Committee, UTHSC strategic planning, 2013.

25. Faculty Senate Executive Committee, 2013-2014.

26. Vice Chancellor for Research faculty advisory committee, 2014-2016.

27. Progress and Promotions Committee for Medical School Class of 2018, 2015-2017.

28. Post Doc Advisory Committee, 2014-2017.

29. UTHSC College of Graduate Health Sciences, Career Development Implementation Team, 2015.

30. College of Medicine Curriculum Committee – 2015-2017.

31. Program Director, Institute for Research, Innovation, Synergy, and Health Equity (iRISE) Translational Scholars Career Development Program, 2015-2017.

32. UTHSC Research Conflict of Interest Committee, 2016-2017.

COMMITTEES AT THE UNIVERSITY OF KENTUCKY:

1. Department of Physiology Research Committee, 2017-present.

2. IACUC Committee Member, Lexington Veterans Affairs Medical Center, 2018-present.

3. Co-Chair, Kentucky Research Alliance for Lung Disease (K-RALD), 2017-present.

4. College of Medicine, Appointments, Promotion, and Tenure (APT) Committee, 2019-present.

5. MD/PhD Internal Advisory Committee, 2019-present.

6. COVID-19 Unified Research Experts (CURE) Alliance team, 2020-present.

7. Chair, internal committee, Dept. of Physiology Periodic Review, 2020-2021.

8. COVID-19 Biobank Executive Steering Committee, 2020-present.

9. COVID-19 CURE Alliance Core 1 Executive Committee, 2020-present.

GRADUATE STUDENTS, UNDERGRADUATES, FELLOWS, TRAINEES, MENTORING:

1. Master's Thesis advisor for Julie Chang, Biomedical Engineering graduate student, M.S. June, 1995; The effects of physical forces on growth factor production and growth stimulation by pleural mesothelial cells.

2. Ph.D. advisor for Ushma Savla, Biomedical Engineering graduate student, Ph.D. June 1999; M.S. December, 1996; Modeling airway epithelial wound closure during cyclic strain.

3. Master’s Thesis advisor for Annette Branger, Biomedical Engineering graduate student, M.S. June, 1996; A parallel plate flow chamber to investigate endothelial wound healing under shear stress.

4. Research advisor for Charles Lee, Biomedical Engineering undergraduate; The design and construction of a device for applying cyclic strain to airway epithelial cells.

5. Research advisor for Seema Kapadia, Biomedical Engineering undergraduate student; Development of image processing techniques for cell visualization.

6. Research advisor for Lisa Ludvig, Biomedical Engineering undergraduate student; Image analysis of cyclic strain of airway epithelial cells.

7. Research advisor for Richard Warp, Biomedical Engineering undergraduate student; Construction of device for applying biaxial strain to cultured cells.

8. Research advisor for Heidi Appel, MD, 1997-1999, critical care fellow at Children's Memorial Hospital; Regulation of cyclooxygenase activity and expression by cyclic strain in airway epithelium.

9. Research advisor for Kendrick C. Boardman, Biomedical Engineering graduate student working toward PhD; Regulation of epithelial barrier by oxidant damage and cyclic strain; MS, December, 1999.

10. Research advisor for Kenneth Chapman, Biomedical Engineering graduate student; MS, June, 2000; PhD, June 2005.

11. Research advisor for Stephanie Lyke, Biomedical Engineering graduate student; M.S. 1998.

12. Research advisor for Ashish Aryal, Biomedical Engineering graduate student, MS, 2002.

13. Mentor for Jarita McCoach, American Heart Association Summer Research Award participant, 2000.

14. Mentor for Torsha White, Summer Minority Training Program participant (NIH-sponsored), 2000.

15. Research co-advisor for Mark Leggas, Biomedical Engineering graduate student, PhD, 2003.

16. Mentor for G. Andrew Ransford, U.T. Center for Health Sciences Summer Research Scholar, 2001.

17. Research co-advisor for Chris Geiger, Northwestern University Biomedical Engineering graduate student, PhD, 2003.

18. Mentor for Chandra Boone, U.T. Center for Health Sciences Summer Research Scholar, 2002.

19. Research advisor for Ajay Wagh, University of Memphis Biomedical Engineering

graduate student, MS, 2003.

20. Research advisor for Dr. Leena Desai, PhD, post doc, 2001-2009.

21. Mentor for Dr. Scott Sinclair, MD, for K08 award from NIH.

22. Research co-advisor for David Rendon, University of Memphis Biomedical Engineering graduate student, MS, 2005.

23. Research advisor for Vishal Narang, PhD, post doc, 2005-2007.

24. Research co-advisor for Yanli Zhuang, UTHSC, Pharmaceutical Sciences graduate student, PhD, 2006.

25. Research co-advisor for Jun Shen, UTHSC graduate student, PhD, 2008.

26. Mentor for Dr. Narendra Kumar, PhD, Instructor, Department of Physiology, 2006-2008.

27. Research co-advisor for Shervin Majd, University of Memphis Biomedical Engineering graduate student, PhD, 2008.

28. Research advisor for Dana Hunter, University of Memphis Biomedical Engineering undergraduate.

29. Mentor for Alisha Hassell, UTHSC Summer Research Scholar, 2006.

30. Research advisor for Lynn Crosby, PhD, post doc, 2007-2011.

31. Research advisor for Nico West, PhD, post doc, 2007, 2009, 2010.

32. Research co-advisor for Catherine Cozad, University of Memphis Biomedical Engineering graduate student, 2008-2010.

33. Research advisor for Gabriel Rapalo, Biomedical Engineering graduate student (previously worked as an undergraduate), 2009-2014; received Research Recognition Award from the Respiration Section of the American Physiological Society at Experimental Biology 2011 and 2014.

34. Research advisor for Dr. Manik Ghosh, PhD, post doc, 2009-2014.

35. Mentor for Dr. Andreas Schwingshackl, MD, Assistant Professor of Pediatrics, 2009-2019.

36. Mentor for Dr. Esra Roan, PhD, Assistant Professor of Mechanical Engineering and Biomedical Engineering, University of Memphis, 2008-2017.

37. Research advisor for Dr. Kristina Wilhelm, PhD, post doc, 2010-2014.

38. Co-mentor/research advisor for Dr. Astrid Gutierrez-Zapada, MD, Pediatric Critical Care Fellow, Le Bonheur Children's Hospital, 2011-2012.

39. Mentor for Dr. Ramesh Krishnan, MD, Assistant Professor of Neonatology, 2011-2017.

40. Mentor for Thien-Khoi Phung, Biomedical Engineering undergraduate student, 2012-2014; awarded summer fellowship from the American Physiological Society 2013; named outstanding engineering student, College of Engineering, University of Memphis, 2014.

41. Mentor and scholarship oversight committee, Camille Immanuel, Pediatric Critical Care Fellow, Le Bonheur Children's Hospital, 2014-2019.

42. Research advisor for Joseph Kennedy, Integrated Biomedical Sciences graduate student (Physiology), 2015-2016.

43. Research advisor for Samuel Valenca, PhD, post doc, 2019-present.

44. Research advisor for Saisha Dhar, high school student, 2019-present; District Science Fair overall winner, 2020.

FACULTY MENTORING COMMITTEES:

1. Dr. David Bridges, PhD, Assistant Professor of Physiology, 2013-2016.

2. Dr. Amali Samarasinghe, Assistant Professor of Pediatrics, 2014-2017.

3. Dr. Valeria Vasquez, PhD, Assistant Professor of Physiology, 2014-2017.

4. Dr. Dahui You, PhD, Assistant Professor of Pediatrics, 2014-2017.

5. Dr. Heather Smallwood, PhD, Assistant Professor of Pediatrics, 2017.

6. Dr. Catalina Velez-Ortega, PhD, Assistant Professor of Physiology, 2020-present.

DOCTORAL COMMITTEE MEMBER:

1. Roy Kimura, Northwestern University, Chemical Engineering, Ph.D., 1996.
2. Paul Collins, Northwestern University, Chemical Engineering, Ph.D., 1997.

Waters, Christopher M. (continued)

3. Christi McDowell, Northwestern University, Chemical Engineering, Ph.D., 1997.
4. James A. Zanghi, Northwestern University, Chemical Engineering, Ph.D., 1997.
5. Alireza Rezania, Northwestern University, Biomedical Engineering, Ph.D., 1998.
6. Ushma Savla, Northwestern University, Biomedical Engineering, committee chair, Ph.D., 1999.
7. Keith Cooke, Northwestern University, Biomedical Engineering graduate student.
8. Vivian de Zengotita, Northwestern University, Chemical Engineering graduate student.
9. Kenneth Chapman, Northwestern University, Biomedical Engineering graduate student, committee chair, Ph.D., 2005.
10. Hong Yuan, U.T. Biomedical Engineering graduate student, Ph.D., 2003.
11. Mark Leggas, U.T. Biomedical Engineering graduate student, Ph.D., 2003.
12. Chris Geiger, Northwestern University, Biomedical Engineering graduate student, Ph.D., 2003.
13. JoDe Lavine, U.T. Biomedical Engineering graduate student, Ph.D., 2008.
14. Jun Shen, U.T. Integrated Program in Biomedical Sciences graduate student, Ph.D., 2008.
15. Aloksingh Tomar, U.T. Integrated Program in Biomedical Sciences graduate student, Ph.D., 2007.
16. Shen Li, U.T. Pharmaceutical Sciences graduate student, Ph.D., 2005.
17. Yanli Zhuang, U.T. Pharmaceutical Sciences graduate student, Ph.D., 2006.
18. Sudhir Aggarwal, U.T. Integrated Program in Biomedical Sciences graduate student, Ph.D., 2010.
19. David Rendon, U.T. Biomedical Engineering graduate student, Ph.D., 2010.
20. Christy Wilson, U.T. Biomedical Engineering graduate student, Ph.D., 2009.
21. Shervin Majd, University of Memphis Biomedical Engineering graduate student, Ph.D., 2008.
22. Les Stuart, U.T. Pharmaceutical Sciences graduate student.
23. Suneet Jain, U.T. Integrated Program in Biomedical Sciences graduate student, Ph.D., 2011.
24. Shuyu E, U.T. Physiology graduate student, Ph.D., 2008.
25. Damodaran Narayanan, U.T. Integrated Program in Biomedical Sciences graduate student, Ph.D., 2010.
26. Mitzi Dunagan, U.T. Integrated Program in Biomedical Sciences graduate student, Ph.D., 2012.
27. Benjamin Patchell, University of British Columbia graduate student; external reviewer, Ph.D., 2009.
28. Amy Bogard, U.T. Pharmacology graduate student, Ph.D., 2013.
29. Kelly Andrews, U.T. Integrated Program in Biomedical Sciences graduate student, Ph.D., 2013.
30. Hossam Abdelsamed, U.T. Integrated Program in Biomedical Sciences graduate student, Ph.D., 2012.
31. Hazem Ghoneim, U.T. Integrated Program in Biomedical Sciences graduate student, Ph.D., 2013.
32. Jordan Toutounchian, U.T. Pharmaceutical Sciences graduate student, Ph.D., 2016.
33. Bhargavi Manda, U.T. Integrated Program in Biomedical Sciences graduate student, Ph.D., 2016.

34. Bishwas Shrestha, U.T. Integrated Program in Biomedical Sciences graduate student, Ph.D., 2017.
35. Dan Hao, U.K. graduate student.
36. Shadan Hadi, U.K. graduate student.

MASTERS DEGREE COMMITTEE MEMBER:

1. Bruce Bedford, Northwestern University, Biomedical Engineering, M.S., 1994.
2. Julie Chang, Northwestern University, Biomedical Engineering, committee chair, M.S., 1995.
3. Sanjay D. Patel, Northwestern University, Chemical Engineering, M.S., 1996.
4. Daniel Cavanaugh, Northwestern University, Biomedical Engineering, M.S., 1996.
5. Vanitha Sankaran, Northwestern University, Biomedical Engineering, M.S., 1996.
6. Ushma Savla, Northwestern University, Biomedical Engineering, committee chair, M.S., 1996.
7. Annette B. Branger, Northwestern University, Biomedical Engineering, committee chair, M.S., 1996.
8. Stan Szeto, Northwestern University, Biomedical Engineering, M.S., 1997.
9. Keith Cook, Northwestern University, Biomedical Engineering, M.S., 1998.
10. Melodee Smith, Northwestern University, Biomedical Engineering, M.S., 1998.
11. Stephanie Lyke, Northwestern University, Biomedical Engineering, committee chair, M.S., 1998.
12. Chris Geiger, Northwestern University, Biomedical Engineering, M.S., 1999.
13. Kendrick Boardman, Northwestern University, Biomedical Engineering, committee co-chair, M.S., 1999.
14. Kenneth Chapman, Northwestern University, Biomedical Engineering, committee co-chair, M.S., 2000.
15. Ashish Aryal, U.T., Biomedical Engineering, committee chair, M.S., 2002.
16. Ajay Wagh, U.T., Biomedical Engineering, committee chair, M.S., 2003.
17. Guatam Kale, U.T., Biomedical Engineering, M.S., 2004.
18. David Rendon, U.T., Biomedical Engineering, M.S., 2005.
19. Ankur Seth, U.T., Biomedical Engineering, M.S., 2005.
20. Bharath Kumar, U.T., Biomedical Engineering, M.S., 2006.
21. Catherine Cozad, University of Memphis, Biomedical Engineering, M.S., 2010.
22. Vimeetha Myneni, University of Memphis, Electrical and Computer Engineering, M.S., 2009.
23. Gabriel Rapalo, U.T. Biomedical Engineering student, committee chair, M.S., 2013.
24. Kelly Salb, U.T. Biomedical Engineering student.
25. Alex Bada, University of Memphis Biomedical Engineering, M.S., 2011.
26. Corey Holt, University of Memphis Biomedical Engineering graduate student, M.S., 2014.
27. Adetoun Komolafe, University of Memphis Biomedical Engineering graduate student, M.S., 2014.
28. James Tatum, University of Memphis Biomedical Engineering graduate student, M.S., 2016.

Waters, Christopher M. (continued)

29. Josh Herwig, University of Memphis, Biomedical Engineering graduate student, M.S., 2016.