

NIKOLAOS M. TSOUKIAS

Associate Professor
Department of Biomedical Engineering
Florida International University
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EDUCATION

- Ph.D.: Engineering, 1999
Dissertation Title: "Characterization of Nitric Oxide exchange in human lungs"
Dissertation Advisor: Steven C. George
University of California, Irvine
- M.S.: Chemical & Biochemical Engineering, 1997
University of California, Irvine
- B.S.: Chemical Engineering, 1994
National Technical University, Athens, Greece

EMPLOYMENT

- (2015-) *Associate Professor*, School of Chemical Engineering, NATIONAL TECHNICAL UNIVERSITY, Athens, Greece.
- (2009-) *Associate Professor*, Department of Biomedical Engineering, FLORIDA INTERNATIONAL UNIVERSITY, Miami.
- (2003- 09) *Assistant Professor*, Department of Biomedical Engineering, FLORIDA INTERNATIONAL UNIVERSITY, Miami.
- (2001-02) *Lecturer*, Whiting School of Engineering, JOHNS HOPKINS UNIVERSITY, Baltimore.
- (2000-03) *Postdoctoral Fellow*, Center for Computational Medicine and Biology, Department of Biomedical Engineering, JOHNS HOPKINS UNIVERSITY SCHOOL OF MEDICINE, Baltimore.
- (1999-00) *Postdoctoral Fellow*, Department of Chemical and Biochemical Engineering UNIVERSITY OF CALIFORNIA, Irvine.

HONORS & AWARDS

- The 2006 Arthur Guyton Award for Excellence in Integrative Physiology
- Support of Competitive Research (SCORE) Research Advancement Award (NIH)

TEACHING EXPERIENCE

- Biological Fluid and Solid Mechanics. (Johns Hopkins Graduate Course)
- Mathematical Modeling of Physiological Systems. (BME 6715: FIU Graduate Course)
- Mathematical Modeling of Cellular Systems. (BME 6716: FIU Graduate Course)
- Nonlinear Systems in Life Sciences. (BME 6705: FIU Graduate Course)
- Biomedical Engineering Modeling and Simulation. (BME 2740: FIU Undergraduate Course)
- Introduction to Biomedical Engineering Computing. (BME 1054L: FIU Undergraduate Course)

ADVISEES

Research Assistant Professors

- Adam Kapela, PhD (2005-)
- Mahesh Joshi, PhD (2008- 13)

PhD Students

- Sridevi Nagaraja (2006-11) Shabnam Namin (2006-12)
- Kumpal Madrasi (2007- 12) Tushar Gadkari (2007-13)
- Jaimit Parikh (2009-15) Arash Moshkforoush (2014-)
-

MS Students (Thesis Option)

- Manu Kanwar (2003-2005) David Isaza (2003-2005)
- Rohit Chawla (2004-2006) Sara Nofallah (2005-2007)
- Danniell Rodriguez (2014-)

Undergraduate Students

- Haroldo Silva (2003-06) Jennifer Hall (2005-06)
- Luis Alonso (2006-2008) Roxana Ordonez (2006-07)
- Zenith Acosta (2008-10) Carolina Bautista (2008-10)
- Ana Pena (2008-11) Janny Garcia(2009-11)
- Kostantinos Sebekos(2009-11) Caterina Pette (2009-11)
- Cyntia Crespo (2009-10) Natalie Cortes (2011-12)
- Florencia Goluboff (2012-13) Danniell Rodriguez (2012-14)
- Isabella Febbo (2013-14) Claudia Valle (2014-15)

SERVICE AND MEMBERSHIPS

Memberships:

- American Heart Association (AHA)
- American Physiological Society (APS)
- Biomedical Engineering Society (BMES)

- Microcirculatory Society (MCS)

Editorial Boards:

- Microcirculation

Grant Reviewerships:

- American Heart Association
- National Science Foundation
- National Institutes of Health

Manuscript Reviewerships:

- American Journal of Physiology- Cell Physiology; American Journal of Physiology- Heart and Circulatory Physiology; Biophysical Journal; Journal of Applied Physiology; American Journal of Physiology- Regulatory, Integrative and Comparative Physiology; Microcirculation; Annals of Biomedical Engineering; Journal of Theoretical Biology; European Respiratory Journal; Respiratory Physiology and Neurobiology; Medical Engineering & Physics; American Journal of Physiology- Renal Physiology; Biophysical Chemistry; Journal of Experimental Nanoscience; Contrast Media and Molecular Imaging; Applied Mathematics and Computation; Mathematical Biosciences; Acta Physiologica; Plos Computational Biology; Journal of Physiology; Nitric Oxide Journal; Frontiers in Physiology, Plos One.

University Service:

- Search Committees for Faculty Positions, Member (2004), Chair (2008, 2009, 2011)
- Computational Advisory Committee of the Engineering College, member (2004-06)
- Faculty Council on Governance (2007- 09), (2011-12)
- Curriculum Committee of the College of Engineering, member (2004-06) (2007- 09), chair(09-10, 13-15)
- Biomedical Engineering Graduate Committee (2006-)
- Biomedical Engineering Society, Faculty Mentor (2007-10)
- College of Engineering Research Committee (2010-10)

PUBLICATIONS

A) PEER-REVIEWED JOURNALS:

- A1 Tsoukias, N. M., Z. Tannous, A. F. Wilson and S. C. George. Single Exhalation Profiles of NO and CO₂ in Humans: Effect of Dynamically Changing Flow Rate. *Journal of Applied Physiology* 85(2):642-652, 1998.
- A2 Tsoukias, N. M. and S. C. George. A Two-Compartment Model of Pulmonary Nitric Oxide Exchange Dynamics. *Journal of Applied Physiology* 85(2):653-666, 1998.
- A3 Tsoukias, N. M., A. F. Wilson and S. C. George. Effect of Alveolar Volume and Sequential Filling on the Diffusing Capacity of the Lung: I Theory. *Respiration Physiology* 120(3):231-250, 2000.
- A4 Tsoukias, N. M., D. Dabdub, A. F. Wilson and S. C. George. Effect of Alveolar Volume and Sequential Filling on the Diffusing Capacity of the Lung: II Experiment. *Respiration Physiology* 120(3):251-271, 2000.

- A5 Tsoukias, N. M. and S. C. George. A Single Breath technique with variable flow rate to characterize Nitric Oxide Exchange Dynamics in the Lungs. *Journal of Applied Physiology* 91(1):477-487, 2001.
- A6 Tsoukias, N.M. and S.C. George. Effect of a Volume Dependent Diffusing Capacity on the Exhalation Profile of NO. *Annals of Biomedical Engineering* 29(9):731-739, 2001.
- A7 Tsoukias, N.M. and A.S. Popel. Erythrocyte consumption of Nitric Oxide in the presence and absence of plasma-based Hemoglobin. *American Journal of Physiology* 282(6):H2265-77, 2002.
- A8 Kavdia M., N.M. Tsoukias and A.S. Popel. A model of Nitric Oxide diffusion in an arteriole: impact of hemoglobin based blood substitutes. *American Journal of Physiology* 282(6):H2245-53, 2002.
- A9 Tsoukias, N.M. and A.S. Popel. A model of nitric oxide capillary exchange. *Microcirculation* 10(6): 479-95, 2003.
- A10 Tsoukias, N.M., M. Kavdia and A.S. Popel. A theoretical model of nitric oxide transport in arterioles: frequency vs amplitude dependent control of cGMP formation. *American Journal of Physiology* 286(3):H1043-56, 2004.
- A11 Kapela, A., Tsoukias N.M. and A. Bezerianos. New aspects of vulnerability in heterogeneous models of ventricular wall and its modulation by loss of cardiac sodium channel function. *Medical & Biological Engineering & Computing* 43(3):387-94, 2005.
- A12 Ji, J.W., N.M. Tsoukias, D. Goldman, and A.S. Popel. A computational model of oxygen transport in skeletal muscle for sprouting and splitting modes of angiogenesis. *Journal of Theoretical Biology* 241(1):94-108, 2006.
- A13 Kapela, A., A. Bezerianos and N.M. Tsoukias. Integrative Mathematical Modeling for Analysis of Microcirculatory Function. *Biological and Medical Data Analysis. Lecture Notes in Bioinformatics*: 161-171, 2006.
- A14 Bezerianos A., A. Kapela and N.M. Tsoukias. Theoretical Investigation of Ca^{2+} Dynamics in Normal and Hypertensive Vascular Walls. *Computers in Cardiology*: 205-208, 2006.
- A15 Silva H.S., A. Kapela and N.M. Tsoukias. A mathematical model of plasma membrane electrophysiology and calcium dynamics in vascular endothelial cells. *American Journal of Physiology* 293(1):c277-93, 2007.
- A16 Tsoukias, N. M., D. Goldman, A. Vadapalli, R. N. Pittman and A. S. Popel. A computational model of oxygen delivery by hemoglobin-based oxygen carriers in three dimensional microvascular networks. *Journal of Theoretical Biology* 248(4):657-74, 2007.
- A17 Kapela A., A. Bezerianos, and N.M. Tsoukias. A mathematical model of Ca^{2+} dynamics in rat mesenteric smooth muscle: agonist and NO stimulation. *Journal of Theoretical Biology* 253: 238-60, 2008.
- A18 Tsoukias N.M. Nitric Oxide bioavailability in the microcirculation: Insights from mathematical models. *Microcirculation* 15(8): 2008.
- A19 Kapela A., A. Bezerianos and N.M. Tsoukias. A mathematical model of vasoreactivity in rat mesenteric arterioles: I Myoendothelial communication. *Microcirculation* 16(8):694-713, 2009.

- A20 Tercero J., S. Namin, D. Lahiri, K. Balani, N.M. Tsoukias and A. Agarwal. Effect of Carbon Nanotube and Aluminum Oxide Addition on Plasma Sprayed Hydroxyapatite Coating's Mechanical Properties and Biocompatibility. *Materials Science and Engineering C* 29(7):2195-2202, 2009.
- A21 Lahiri D., Rouzaud, F., Namin, S., Keshri A., Valdes K., Kos L., Tsoukias N., Agarwal, A. Carbon Nanotube Reinforced Polylactide-Caprolactone Copolymer: Mechanical Strengthening and Interaction with Human Osteoblasts in- vitro. *ACS Applied Materials & Interfaces* 1(11): 2470-76, 2009.
- A22 Kapela A. and N.M. Tsoukias. A mathematical model of vasoreactivity in rat mesenteric arterioles: II Conducted vasoreactivity. *American Journal of Physiology* 298(1):H52-65, 2010.
- A23 Tsoukias N.M. Calcium dynamics and signaling in vascular regulation: computational models. *Wiley Interdisciplinary Reviews: Systems Biology and Medicine*. 3(1):93-106, 2011.
- A24 Kapela A, Tsoukias N. Multi-Scale FEM Modeling of Vascular Tone: From Membrane Currents to Vessel Mechanics. *IEEE Trans Biomed Eng*. 58(12):3456-59, 2011.
- A25 Kapela A, Nagaraja S, Parikh J, Tsoukias NM. Modeling Calcium signaling in the microcirculation: intercellular communication and vasoreactivity. *Critical Review of Biomedical Engineering* 39(5):435-60, 2011.
- A26 A. Aviram, N. M. Tsoukias, S. J. Melnick, A. P. Resek and C. Ramachandran. Inhibition of Nitric Oxide Synthesis in Mouse Macrophage Cells by Feverfew Supercritical Extract. *Phytother. Res.*, 26(4):541-5, 2012.
- A27 Kapela A., Parikh J. and N.M. Tsoukias. A unifying theory of cell synchronization in vasomotion. *Biophysical Journal* 102(2):211-20, 2012.
- A28 C.H T. Tran, M. S. Taylor, F. Plane, S. Nagaraja, N.M. Tsoukias, E.J. Vigmond and D.G. Welsh. Endothelial Ca^{2+} wavelets and the induction of myoendothelial feedback. *American Journal of Physiology* 302(8):C1226-42, 2012.
- A29 Nagarja.S., A. Kapela and N. M. Tsoukias. Intercellular communication in the vascular wall: A modeling perspective. *Microcirculation*; 19(5):391-402, 2012.
- A30 Hong Yu , Hongwei Shao , Jing Yan , Nikolaos M. Tsoukias and Ming-Sheng Zhou. Bone Marrow Transplantation Improves Endothelial Function in Hypertensive Dahl Salt-Sensitive Rats. *Journal of the American Society of Hypertension*; 6(5):331-7, 2012.
- A31. K. Madrasi, T. Gadkari, M. S. Joshi and N.M. Tsoukias. Glutathyl Radical as an Intermediate in the Glutathione Nitrosation. *Free Radic Biol Med*; 53(10):1968-76, 2012.
- A32 Namin S., S. Nofallah, M. Joshi and N.M. Tsoukias. Kinetic analysis of Diaminofluorescein activation by NO: Toward calibration of a NO-sensitive fluorescence probe. *Nitric Oxide*;28:39-46, 2013.
- A33 S. Nagaraja, A. Kapela, C. Tran, D. Welsh and N.M. Tsoukias. Myoendothelial projections in vasoreactivity: a theoretical study. *Journal of Physiol*; 591(11): 2795-2812, 2013.

A34 Gadkari T. V., N. Cortes, N M. Tsoukias, and M. S. Joshi. Agmatine Induced NO Dependent Rat Mesenteric Artery Relaxation and its Impairment in Salt-Sensitive Hypertension. (*Nitric Oxide*, 35C:65-71, 2013).

A35 J. Parikh, Kapela A. and N.M. Tsoukias. Stochastic model of a TRPV4 Calcium sparklet: Effect of bursting and cooperativity on endothelial-derived hyperpolarization. *Biophysical Journal* accepted, 2015.

In progress:

A36 J. Parikh, Kapela A. and N.M. Tsoukias. Nitric oxide-mediated endothelial feedback response to smooth muscle stimulation: modulation by endothelial Hemoglobin α .

A37 Madrasi K., N.M. Tsoukias and M. S. Joshi. Nitrite Transport and Reduction by sGC in Smooth Muscle Cells.

A38 Kapela A. ,E.J. Behringer, S.S. Segal and N.M. Tsoukias. A theoretical analysis of conducted responses along endothelial tubes.

A39 Gadkari T. V., M. Joshi, N.M. Tsoukias. Regulation of arteriolar diameter by the frequency of endothelial Ca^{2+} transients.

B) PEER REVIEWED PAPERS IN CONFERENCE PROCEEDINGS:

B40 Tsoukias, N.M., D. Dabdub, A.F. Wilson, and S.C. George. Alveolar volume and Sequential Filling Impact the Estimation of D_{LCO} and D_{LNO} . *Proceedings of the First Joint BMES/EMBS Conference. Piscataway, NJ, USA: IEEE. p.346 vol.1, 1999.*

B41 Popel A.S., M. Kavdia, N.M. Tsoukias. Effect of Hemoglobin-based blood substitutes on Nitric Oxide transport: Mathematical models. *Keio University International Symposia for Life Sciences and Medicine Vol. 12. Artificial Oxygen Carrier: Its Frontline. 2005*

B42 Kapela A., T. Gadkari, S. Nagaraja, N.M. Tsoukias. Multiscale Mathematical Modeling of Microvascular Tone Regulation. 25th Southern Biomedical Engineering Conference, Miami. IFMBE Proceedings 24: 297-98, 2009.

C) SELECTED ABSTRACTS IN CONFERENCE PROCEEDINGS:

C1 Tsoukias, N. M., D. S. Mukai, A. F. Wilson and S. C. George. Flow Rate Dependence of Endogenous Nitric Oxide in Humans. *AJRCCM* 155(4):A558, 1997.

C2 Tsoukias, N. M. and S. C. George. A Two-Compartment Model for the Exchange of Endogenous Nitric Oxide in Human Lungs. *Annals Biomed. Engineer.* 25(1):S10, 1997.

C3 Tsoukias, N. M. and S. C. George. Elimination Rate: A Technique to Identify Alveolar and Airway Contributions to Exhaled NO. *AJRCCM* 157(3):A369, 1998.

C4 Tsoukias, N. M., A. F. Wilson and S. C. George. D_{LNO} as A Function of the Alveolar Volume: Effect on Exhaled Nitric Oxide. *Annals Biomed. Engineer.* 25(1):S10, 1998.

- C5 Tsoukias, N. M. and S. C. George. Effect of Production Rates and $D_{L,NO}$ on the Shape of the Nitric Oxide Exhalation Profile: A Theoretical Study. *FASEB J.* 12(4):A499, 1998.
- C6 Tsoukias, N. M. and S. C. George. Modeling the Effect of Inspiratory Conditions on the Nitric Oxide Exhalation Profile. *European Respiratory Society*, 1998.
- C7 Tsoukias, N. M. and S. C. George. A New Method to Measure the Dependence of D_{LNO} and D_{LCO} on Alveolar Volume. *AJRCCM* 159(3):A843, 1999.
- C8 Tsoukias N.M., and S.C. George. Does endogenous Nitric Oxide approach an equilibrium concentration in the alveoli at end-exhalation? *AJRCCM* 161(3):A000, 2000.
- C9 Tsoukias, N.M., and S.C. George. A Single Breath Technique with Variable Flow Rate for the measurement of exhaled NO. *European Respiratory Society*, 2000.
- C10 Tsoukias N.M., A. Vadapalli, D. Goldman, and A.S. Popel. A computational study of oxygen transport in microvascular networks in the presence of Hemoglobin Based Oxygen Carriers. *Artificial Cells, Blood Substitutes and Immobilization Biotechnology*,29(2):173, 2001.
- C11 Tsoukias N.M., M. Kavdia, and A.S. Popel. Modeling nitric oxide transport in arterioles in the presence of hemoglobin based oxygen carriers. *Annals Biomed. Engineer.* 29(S1):S58, 2001.
- C12 Tsoukias N.M., A. Vadapalli, D. Goldman, and A.S. Popel. A computational study of tissue oxygenation by hemoglobin based oxygen carriers. *Annals Biomed. Engineer.* 29(S1):S73, 2001.
- C13 Tsoukias, N.M., M. Kavdia, and A.S. Popel. A theoretical model of nitric oxide transport in arterioles: transient versus sustained NO production. *FASEB J.* 16(5):A853, 2002.
- C14 Tsoukias N.M., A. Vadapalli, D. Goldman, and A.S. Popel. A computational study of oxygen delivery by hemoglobin-based oxygen carriers from complex microvascular networks. *FASEB J.* 16(5):A83, 2002.
- C15 Kavdia M., N.M. Tsoukias, A.S. Popel. Effect of hemoglobin-based oxygen carrier on smooth muscle nitric oxide availability. *FASEB J* 16 (5): A853-A853, 2002.
- C16 Kavdia M., N.M. Tsoukias, A.S. Popel. A model of nitric oxide distribution in arterioles in the presence of hemoglobin-based blood substitutes. *IVth International Symposium on Current Issues in Blood Substitutes Research*, Stockholm, Sweden, 2002.
- C17 Tsoukias N.M. and A.S. Popel. Is there frequency encoded information in EDRF? *FASEB J*, 2004.
- C18 Isaza D., M. Kanwar and N.M. Tsoukias. Experimental determination of Nitric Oxide consumption by red blood cells. *Annals Biomed. Engineer.*, 2004.
- C19 Isaza D., and N.M. Tsoukias. Negligible membrane resistance in Nitric Oxide consumption by red blood cells. *FASEB J*, 2005.
- C20 M. Kanwar, R. Chawla and N.M. Tsoukias. Simultaneous measurement of NO and Ca^{2+} concentrations in isolated perfused rat mesenteric arterioles. *Annals Biomed. Engineer.*, 2005.

- C21 Kapela A., H. Silva, A. Bezerianos and N.M. Tsoukias. A mathematical model of integrated NO/Ca²⁺ dynamics in rat mesenteric microvessels. *Annals Biomed. Engineer.*, 2005.
- C22 Kapela A. and N.M. Tsoukias. ‘Conducted vasomotor responses in a multicellular mathematical model of a rat mesenteric arteriole. *Annals Biomed. Engineer.* 2006.
- C23 Kapela A., H. Silva, A. Bezerianos, N.M. Tsoukias. ‘Mathematical model of endothelium-smooth muscle interaction in regulating microcirculatory tone’, *FASEB J.* 20(4):A283, 2006.
- C24 Silva H., A. Kapela, N.M. Tsoukias. ‘A mathematical model of plasma membrane electrophysiology and calcium dynamics in rat mesenteric endothelial cells’, *FASEB J.* 20(4):A410, 2006.
- C25 Kapela A., R. Banerjee and N.M. Tsoukias. Mathematical model of microcirculatory vasoreactivity in spontaneously hypertensive rats. *Annals Biomed. Engineer.* 2007.
- C26 Nofallah S., R. Ordoñez, J. Hall-Ippolito, and N.M. Tsoukias. Estimation of acetylcholine-induced endothelial NO release in vitro using fluorescence microscopy. *Annals Biomed. Engineer.* 2007
- C27 Namin S.M. and N.M. Tsoukias. Experimental and theoretical studies to determine smooth muscle nitric oxide availability. *FASEB J.* 22:835.10, 2008.
- C28 Kapela A., Gadkari T., N. M. Tsoukias. A multiscale computational model of microcirculatory vasoreactivity: Linking subcellular events to macroscale responses in health and disease. *FASEB J.*, 2009.
- C29 Namin S., M. S. Joshi, C. Bautista, S. Nofallah and N. M. Tsoukias An experimental and theoretical study of DAF-FM activation by NO: Toward calibration of an NO-sensitive fluorescent dye. *FASEB J.*, 2009.
- C30 Kapela A., Nagaraja S, and N. M. Tsoukias. A theoretical study of myoendothelial communication: K⁺-mediated EDHF signaling and the role of myoendothelial projections. *FASEB J.*, 2009.
- C31 Anat Aviram, Nikolaos M. Tsoukias, Steven Melnick, and Cheppail Ramachandran Inhibition of nitric oxide production by feverfew supercritical extract as part of a migraine model in vitro. *FASEB J.*; 23: 902.3, 2009.
- C32 A. Kapela, S. Nagarajan, N.M. Tsoukias, Multiscale Modeling in the Microcirculation: Signal Transduction in Vasoreactivity. *Annals Biomed. Engineer.* 2009.
- C33 N.M. Tsoukias. Multiscale modeling in the microcirculation: intra- and intercellular signaling in vasoreactivity. *Frontiers in Microcirculation: Control Processes and Clinical Applications.* Fall 2009 meeting of the microcirculatory society, 2009
- C34 K. Madrasi, M. Joshi, N.M. Tsoukias, Kinetics of nitrosation of GSH using NO donors. *FASEB J.*, 2010.
- C35 A. Kapela, S. Nagaraja, and , N.M. Tsoukias, Microprojections amplify EC response to SMC stimulation: A theoretical study. *FASEB J.*, 2010
- C36 M. Joshi, T. Gadkari and, N.M. Tsoukias, Agmatine-mediated rat mesenteric artery relaxation via NO synthesis. *FASEB J.*, 2010

- C37 Ming-Sheng Zhou, Hong Yu, Hongwei Shao, Ivonne H. Schulman, Leopoldo Raij, Nikolaos Tsoukias. Bone Marrow Transplantation Improves Endothelial Function In Hypertensive Dahl Salt-Sensitive Rats. *Arteriosclerosis, Thrombosis, and Vascular Biology*, 2010.
- C38 Madrasi, Kumpal; Tsoukias, Nikolaos; Joshi, Mahesh. Nitrite reduction to NO in rat aortic smooth muscle cells by soluble guanylate cyclase. *NITRIC OXIDE-BIOLOGY AND CHEMISTRY* (24) : S40-S40, 2011.
- C39 Ana Pena, Mahesh Joshi, and Nikolaos Tsoukias. Gene Expression of Calcium Channel Components in Dahl Salt-Resistant Rat Mesenteric Arteries by RT-PCR. *FASEB J* 2011 25:662.8
- C40 Kumpal Madrasi, Nikolaos Tsoukias, and Mahesh Joshi. Soluble Guanylate Cyclase Catalyzes Nitrite reduction to Nitric Oxide in Rat Aortic Smooth Muscle Cells. *FASEB J*, 2011 25:643.17.
- C41 Tushar Gadkari, Nikolaos Tsoukias, and Mahesh Joshi. Agmatine Produced by Arginine Decarboxylase Activity Causes NO Dependent Rat Mesenteric Artery Relaxation. *FASEB J*, 2011 25:643.18.
- C42 Cam Ha T Tran, Mark S Taylor, Frances Plane, Sridevi Nagaraja, Nikolaos Tsoukias, and Donald G Welsh. Solving the Enigma of Myoendothelial Feedback. *FASEB J*, 2011 25:817.7
- C43 Jaimit Bharat Parikh, Adam Kapela, and Nikolaos Tsoukias. Role of electrical current and diffusion of second messengers in Ca^{2+} synchronization during vasomotion in microcirculation: Theoretical models. *FASEB J*, 2011 25:816.14
- C44 Sridevi Nagaraja, Adam Kapela, and Nikolaos Tsoukias. Role of EC Projection in Myoendothelial Communication: A Theoretical Study. *FASEB J*, 2011 25:819.18
- C45A. Kapela, J. Parikh, S. Nagaraja, and N. M. Tsoukias. Theoretical modeling of intra- and intercellular spatiotemporal calcium patterns in vascular endothelial and smooth muscle cells.
- C46 T. Gadkari. N. Cortes, N. Tsoukias and M. Joshi. Agmatine-mediated arterial relaxation is impaired in salt-sensitive hypertension. *FASEB J* (26): 853.22, 2012.
- C47 K.J. Madrasi, N. Tsoukias and M. Joshi. sGC in SMC acts as nitrite reductase leading to NO formation.. *FASEB J*, (26):1131.8, 2012.
- C48 Kapela, Adam; Parikh, Jaimit; Tsoukias, Nikolaos M. Multiscale computational models of microvascular reactivity from ion channels to intercellular signaling. *FASEB J*, 27: 901.8, 2013.
- C49 Madrasi, Kumpal; Tsoukias, Nikolaos. Computational model of NO and NO oxidative species transport in the microcirculation. *FASEB J*, 27: 678.14, 2013.
- C50 Parikh, Jaimit; Kapela, Adam; Tsoukias, Nikolaos M. Role of localized calcium events in regulation of vascular tone: A theoretical investigation. *FASEB J*, 27 : 678.9, 2013.
- C51 Parikh, J., Kapela, A. and Tsoukias, N. M. Modeling localized calcium signals in vascular cells. Signaling Microdomains in the Vasculature. *Vascular Biology* 2013 , Cape Cod. (oral presentation).
- C52 Tsoukias, N. M. A multiscale model of biomechanics: From ion channel activity to vasomotor responses. 7th World Congress of Biomechanics, Boston 2014. (Invited presentation)

- C53 Tsoukias, N. M. Parikh, J., and Kapela, A. "Mechanisms regulating localized and global Ca²⁺ responses in vascular cells", British Microcirculation, July 21 - 26, Birmingham, UK, 2013
- C54 Kapela, A. and Tsoukias, N. M. Computational modeling of vascular reactivity" SBEC, May 5, Miami, FL, 2013.
- C55 Parikh, J., Kapela, A. Rodriguez D. and Tsoukias, N. M. Multi-scale modeling of microvascular reactivity. 4th IEEE International Conference on Computational Advances in Bio and Medical Sciences. Miami 2014.
- C56 Parikh, J., Kapela, A. and Tsoukias, N. M. Calcium oscillations and waves in vascular cells: Mechanisms of initiation and modulation. BMES 2014.
- C57 Parikh, J., Kapela, A. and Tsoukias, N. M. Regulation of vascular tone via localized calcium signaling in myoendothelial projections. BMES 2014.
- C58 Parikh, J., Kapela, A. and Tsoukias, N. M. Endothelial hemoglobin-alpha modulating NO mediated feedback response during smooth muscle stimulation. 11th International Symposium on Resistance Arteries (ISRA 2014) Ontario Canada.
- C59 Parikh, J., Kapela, A. and Tsoukias, N. M. Localized calcium events and endothelium derived signals in the modulation of vessel tone. 11th International Symposium on Resistance Arteries (ISRA 2014) Ontario Canada.

D) INVITED PRESENTATIONS:

- D1 4th European Symposium on Biomedical Engineering (University of Patras, June 20-25, 2004)
- D2 Department of Chemical & Biomedical Engineering at FAMU-FSU (Tallahassee, November 12, 2004)
- D3 Systems Analysis, Data Mining and Optimization in Biomedicine" (U. of Florida, February 2-4, 2005)
- D4 3rd Summer School on Emerging Technologies in Biomedicine (University of Patras, July 2-7, 2006)
- D5 Mathematical Biosciences Institute (Ohio State University, January 22-26, 2007)
- D6 2007 Experimental Biology (Washington DC, April 28-30, 2007)
- D7 Canadian Physiological Society. University of Victoria, British Columbia, Canada. (Victoria, 29-30 April, 2010).
- D8 8th International Conference on Pathways, Networks, and Systems Medicine. Rhodes 9-14 July, 2010)
- D9 62nd Annual Conference of the Hellenic Society of Biochemistry and Molecular Biology (Athens, December 2011)
- D10 Montreal Heart Institute, University of Montreal. (Montreal, May 2013)
- D11 A multiscale model of biomechanics: From ion channel activity to vasomotor responses. 7th World Congress of Biomechanics, Boston 2014. (Invited presentation)

E) THESIS :

- E1 Study of the shrinkage and porosity in air-drying fruits and vegetables. Diploma Thesis. National Technical University of Athens, Greece, 1994.
- E2 Characterization of Nitric oxide exchange in human lungs. Ph.D. Thesis. University of California, Irvine, 1999.

PATENTS :

- P1 George S.C. and N.M. Tsoukias. An apparatus and method for the estimation of flow independent parameters which characterize the relevant features of Nitric Oxide production and exchange in the human lungs. (*WO 01/82782; US 6,866,637*)
- P2 Kavallieratos, K. Tsoukias, N. M. and Lozano-Lewis; L. Organometallic fluorescent sensors for nitric oxide detection and imaging. (*US 8,906,694*).

RESEARCH FUNDING:

Completed:

- RF1 American Heart Association. National Scientist Development Grant (*PI*): Signal transduction in the regulation of microcirculatory vascular tone involving Nitric Oxide, 07/01/04-06/30/08. Award amount: \$260,000. [Top 1.28 percentile].
- RF2 National Institutes of Health. Access to Biomedical Research. Faculty Research Enhancement Award: NO/Ca²⁺ measurements in isolated vessels of the microcirculation, 2004. Award amount: \$5,000.
- RF3 American Physiological Society. Arthur C. Guyton award for excellence in integrative physiology, 2006. Award amount: \$15,000.
- RF4 Florida International University. Faculty Research Award (*PI*). In vitro models to investigate microcirculatory NO-Ca²⁺ dependent signaling in hypertension, 2007. Award amount: \$22,500.
- RF5 National Institutes of Health (1SC1HL095101). Support of Competitive Research (SCORE) Research Advancement Award (*Principal Investigator*): Theoretical and experimental investigations of microcirculatory signaling in hypertension, 07/01/08-06/30/13. Award amount: \$1,394,000.

Not awarded:

- RF6 American Heart Association Florida-Puerto Rico Affiliate. Grand-In-Aid (*PI*): Signal transduction in the regulation of microcirculatory vascular tone involving Nitric Oxide, 2004. Award amount: \$120,000. (Grant was not awarded as alternative to RF1).

RF7 National Institutes of Health (1R01HL095460) (*Principal Investigator*): Integrative computational physiology of the vasculature: Multiscale models for the regulation of vascular tone in health and disease. 07/01/09-06/30/14. (Grant was not awarded due to prior activation of RF5).

Active:

RF8 National Institutes of Health (1 R15HL121778). (*Principal Investigator*): Integrative modeling to link vascular phenotype to gene expression., 08/01/14-07/30/17. Award amount: \$423,680.