

Mesia Moore Steed, Ph.D.
Curriculum Vitae

Part I: Administrative, Research, Service, Publication Information

Mesia Moore, Steed
Assistant Professor of Cellular and Molecular Biology

Office

Winston Salem State University
Department of Life Sciences
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EDUCATION:

- | | |
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| 1998 | B.S., Exercise Science and Sport Medicine
University of Louisville
Louisville, KY |
| 2005 | M.S., Physiology & Biophysics
University of Louisville-Louisville, KY |
| 2008 | Ph.D., Physiology & Biophysics
University of Louisville
Louisville, KY
Suresh C. Tyagi Ph.D., advisor
<u>Dissertation</u> : "Differential Role of NOS isoforms in Homocysteine-Mediated Vascular Remodeling" |

POSTDOCTORAL TRAINING AND EMPLOYMENT:

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| 2011-June 2013 | Postdoctoral Fellow
Wake Forest University
Hypertension & Vascular Research Center
Project: Influence of renin angiotensin system on blood brain barrier disruption
Debra Diz, Ph.D., advisor |
| 2008-March 2011 | Postdoctoral Fellow
Wake Forest University
Department of Physiology & Pharmacology
Project: Role of matrix metalloproteinase in insulin resistance mediated vascular remodeling
David Busija Ph.D., advisor |

1999-March 2003 Health Coordinator
University of Louisville, North West Area Health Education Center
Louisville, KY

OTHER PROFESSIONAL APPOINTMENTS AND INSTITUTIONAL SERVICE:

2011-May 2013 Co-Director, Student Navigation Program
Maya Angelou Center for Health Equity
Wake Forest University School of Medicine

Standing/Institutional Committees

2010-present Wake Forest University, Postdoctoral Association Co-Chair

2009-present Wake Forest University, Office of Postdoctoral Affairs Steering
Committee member

2010-present Wake Forest University, Professional Development Advisory
Committee member

2010-present Wake Forest University, Graduate Student Association Council,
Postdoc Liaison

2005-2007 University of Louisville, Women's Center Steering Committee

External Committee

2012 Strategic Planning Education Task Force, American Physiological
Society

2011-present National Postdoctoral Association, Diversity Officer

PROFESSIONAL MEMBERSHIPS:

2011-present Western North Carolina Chapter of the Society for Neuroscience

2008-present National Postdoctoral Association (NPA)

2005-present American Physiological Society (APS)

2005-present American Heart Association (AHA)

HONORS/AWARDS/OFFICES

2011 Postdoctoral Scholar Research Integrity Ambassador Award,
Health and Human Service, Office of Research Integrity

2011 Professional Development Award, Wake Forest University, Office
of Postdoctoral Affairs

- 2011 FASEB Symposium Co-Chair, Title: What makes the mitochondria a killer?
- 2008 Graduate Deans Citation, University of Louisville, School of Medicine
- 2008 The John Richard Binford Memorial Award, University of Louisville, Graduate School
- 2006 The first, NIDDK K-12 Minority Outreach Fellow, American Physiological Society
- 2005 NIH/NHLBI Awardee Session-Poster Presentation, American Heart Association Scientific Sessions
- 2005 Research Louisville 2nd Place Graduate PhD Award: University of Louisville
- 2004 M. Celeste Nichols Professional Development Award: University of Louisville, Women's Center
- 2004 Ida B. King Memorial Scholarship: Zeta Phi Beta Sorority, Inc.

Invited Seminars:

- 2010 FASEB Invited Oral Presenter, Session: Cardiovascular Consequences of the Metabolic Syndrome
- 2008 FASEB Invited Oral Presenter, Session: Arteriogenesis and Vascular Remodeling
- 2007 NIH/NHLBI Awardee Session-Oral Presentation, American Heart Association Scientific Sessions

FUNDING

- 2008-present NIH/NHLBI Postdoctoral Research Supplement
- 2004-2008 NIH/NHLBI Graduate Research Supplement Award
- 2002-2004 Integrated Programs in Biomedical Sciences (IPIBS) Fellowship: University of Louisville

Travel Awards

- 2012 Quest for Research Excellence 2012 Conference
- 2011 National Postdoctoral Association, Annual Meeting
- 2010 Wake Forest University, Provost Faculty Fund to First Annual Conference for Pre-Tenure Women at Purdue University, Indiana

2009	NIDDK Travel Award, American Physiological Society to Experimental Biology
2008	NIDDK Travel Award, American Physiological Society to Experimental Biology
2007	NIDDK Travel Award, American Physiological Society to Experimental Biology
2006	NIDDK Travel Award, American Physiological Society to Experimental Biology
2005	NIDDK Travel Award, American Physiological Society to Experimental Biology

BIBLIOGRAPHY:

Journal Articles

Insulin-induced generation of reactive oxygen species and uncoupling of nitric oxide synthase underlie the cerebrovascular insulin resistance in obese rats. Katakam PV, Snipes JA, Steed MM, Busija DW. *J Cereb Blood Flow Metab.* 2012 Jan 11. [Epub ahead of print].

Mechanisms of Cardiovascular Remodeling in Hyperhomocysteinemia. Steed MM, Tyagi SC. *Antioxid Redox Signal.* 2011 Oct 1;15(7):1927-43. Epub 2011 Apr 21. Review.

Functional consequences of collagen/elastin switch in vascular remodeling in hyperhomocysteinemic wild-type, eNOS^{-/-}, and iNOS^{-/-} mice. Steed MM, Tyagi N, Sen U, Schuschke DA, Joshua IG, Tyagi SC. *Am J Physiol Lung Cell Mol Physiol.* Sep; 299(3): 301-11, 2010.

Renal mitochondrial damage and protein modification in type-2 diabetes. Kartha GK, Moshal KS, Sen U, Joshua IG, Tyagi N, Steed MM, Tyagi SC. *Acta Diabetol.* Jun;45(2): 75-81, 2008.

Cardiac dys-synchronization and arrhythmia in hyperhomocysteinemia. Moshal KS, Camel CK, Kartha GK, Steed MM, Tyagi N, Sen U, Kang YJ, Lominadze D, Maldonado C, Tyagi SC. *Curr Neurovasc Res.* Nov;4(4):289-294, 2007.

Differential expression of gamma-aminobutyric acid receptor A (GABA(A)) and effects of homocysteine. Tyagi N, Lominadze D, Gillespie W, Moshal KS, Sen U, Rosenberger DS, Steed M, Tyagi SC. *Clin Chem Lab Med.* 45(12):1777-1784, 2007.

Regulation of Homocysteine-Induced MMP-9 by Extracellular Regulated Protein Kinase-1/2, ERK-1/2 Pathway. Moshal KS, Sen U, Tyagi N, Henderson B, Steed M, Ovechkin AV, Tyagi SC. *Am J Physiol Cell Physiol.* Mar;290(3):883-891, 2006.

3-Deazaadenosine mitigate arterial remodeling and hypertension in hyperhomocysteinemic mice. Ovechkin AV, Tyagi N, Sen U, Lominadze D, Steed MM, Moshal KS, Tyagi SC. *Am J Physiol Lung Cell Mol Physiol.* Nov;291(5):905-911, 2006.

Early Induction of Matrix Metalloproteinase -9 Transduces Signaling in Human Heart End Stage Failure. Moshal KS, Tyagi N, Moss V, Henderson B, Steed M, Ovechkin A, Aru GM, Tyagi SC. *J Cell Mol Med.* Jul-Sep;9(3):704-713, 2005.

Mitochondrial Mechanism of Oxidative Stress and Systemic Hypertension in Hyperhomocysteinemia. Tyagi N, Moshal KS, Ovechkin AV, Rodriguez W, Steed M, Henderson B, Roberts AM, Joshua IG, Tyagi SC. *J Cell Biochem.* Nov 1;96(4):665-671, 2005.

Mechanisms of Homocysteine-Induced Oxidative Stress. Tyagi N, Collins K, Steed MM, Ovechkin AV, Moshal KS, Tyagi SC. *Am J Physiol Heart Circ Physiol.* Dec;289(6):2649-656, 2005.

GABA receptors and nitric oxide ameliorate constrictive collagen remodeling in hyperhomocysteinemia. Shastry S, Moning L, Tyagi N, Steed M, Tyagi SC. *J Cell Physiol.* Dec;205(3):422-427, 2005.

Abstracts

Mesia M. Steed, Prasad V. Katakam, and David Busija. Insulin Resistance Mediated Changes in Matrix Metalloproteinase Expression and Activity in Diverse Vascular Beds. *FASEB J*, 24:978.13, 2010.

Prasad VG, Katakam, Mesia M Steed, James A Snipes, and David W Busija. Mitochondrial mediated vasodilation by BMS-191095, a selective mitochondrial KATP channel activator. *FASEB J*, 24:978.6, 2010.

Mesia M. Steed, Neetu Tyagi, David Busija, and Suresh C. Tyagi. The regulatory role of eNOS and iNOS in MMP activity, Tipping the scale from inhibition to activation. *FASEB J.* 23:592.14, 2009.

Mesia M. Steed, Neetu Tyagi, Walter Roderiguez, and Suresh C. Tyagi. Functional consequences of the collagen/elastin switch in vascular remodeling in Hyperhomocysteinemia *FASEB J.* 22:1147.8, 2008.

Dorothea Susanne Rosenberger, Walter E Rodriguez-Alvarez, Neetu Tyagi, Mesia Steed, Karni Moshal, Utpal Sen, Naira Metreveli, and Suresh C Tyagi. Hyperhomocysteinemia causes cardiac rhythm disturbances due to a shift in atrial and ventricular gap junction protein distribution *FASEB J.* 22:971.10, 2008.

Thomas Paul Vacek, Karni Singh Moshal, Utpal Sen, Neetu Tyagi, Mesia Steed, Munish Kumar, John Passmore, and Suresh Tyagi. Differential expression of Gs and Gi in mice with homocysteinemic heart failure. *FASEB J.* 22:1155.19, 2008.

Thomas Paul Vacek, Utpal Sen, Neetu Tyagi, Karni Singh Moshal, John Passmore, Munish Kumar, Mesia Steed, and Suresh Tyagi. Mechanism of homocysteine-induced modulation of GPCRs. *FASEB J.* 22:1155.20, 2008.

Thomas Paul Vacek, Neetu Tyagi, Utpal Sen, Karni Moshal, John Passmore, Munish Kumar, Mesia Steed, and Suresh Tyagi. Homocysteine modulates Gq11, G12/13, Gi/o G protein expression independent of protease activated receptor (PAR). *FASEB J.* 22:1155.21, 2008.

Mesia M. Steed, Neetu Tyagi, Karni Moshal, Suresh C. Tyagi. Department of Physiology and Biophysics, Homocysteine and Oxidative Mechanisms of Vascular Remodeling. *FASEB J.* 21:897.25, 2007.

Neetu Tyagi, Mesia Steed, William Gillespie, Dorothea S. Rosenberger, David Lominadze, Utpal Sen, Karni S. Moshal, Brooke C. Henderson, and Suresh C. Tyagi. Differential Expression of the GABA_A receptor subunits in the Kidney and Cardiovascular system. *FASEB J.* 21:594.8, 2007.

Dorothea Susanne Rosenberger, Neetu Tyagi, Walter E Rodriguez, Mesia Steed, Karni S Moshal, and Suresh S Tyagi . Homocystine leads to left ventricular wall motion abnormalities, arrhythmia and death in telemetric monitored freely moving mice. *FASEB J.* 21:909.12, 2007.

Mesia M. Steed, Neetu Tyagi, Walter Rodriguez, Suresh C. Tyagi. Department of Physiology and Biophysics Mechanisms of Vascular Remodeling in eNOS Knockout Mice. *FASEB J.* 20:A711-A712, 2006.

Alexander Ovechkin, Neetu Tyagi, Andrew M. Roberts, Mesia Steed, Karni Moshal, and Suresh C. Tyagi. Arterial hypertension and aortic remodeling in hyperhomocysteinemic mice are prevented by 3-Deazaadenosine
FASEB J. 20:A306, 2006.

Karni S Moshal, Neetu Tyagi, Utpal Sen, Mahavir Singh, Alexander V Ovechkin, Mesia B Steed, Brooke Henderson, and Suresh C Tyagi. Homocysteine-Induced Activation of Calpain is Required for MMP-9 Regulation and Occurs via an ERK/MAP Kinase Signaling Pathway
FASEB J. 20:A1289, 2006.

Ganesh Krishna Kartha, Karni S. Moshal, Neetu Tyagi, Walter E. Rodriguez, Mesia B. Steed, Brooke C. Henderson, Deep Aggarwal, Irving G. Joshua, and Suresh C. Tyagi. Mitochondrial Damage and Protein Modification in the Diabetic Kidney Mouse Model. *FASEB J.* 20:A337, 2006.

Neetu Tyagi, Alexander V Ovechkin, Karni S Moshal, David Lominadze, Mesia Steed, and Suresh C Tyagi. Mitochondrial Mechanism of Microvascular Endothelial Cell Apoptosis Induced by Homocysteine
FASEB J. 20:A1461, 2006.

PART II. TEACHING PORTFOLIO

Teaching Experience

2012	Instructor, Professional Skills Course: How to Present a Scientific Poster, American Physiological Society
2012-Present	Tutor, Winston Salem State University, Department of Life Sciences: Biochemistry, Cell Biology, Genetics
Fall 2011	Tutor, Winston Salem State University, Department of Life Sciences: Biochemistry, Genetics

2011	Instructor, PHT 6403-Applied Human Physiology: Respiratory Physiology, Winston Salem State University-School of Physical Therapy
2011	Adjunct Faculty, Winston Salem State University, Department of Life Science
2010	Instructor, Professional Skills Course: Presentation Skills, American Physiological Society
2010-11	Instructor, Grad 713-Bioethics, Professionalism, and Responsible Conduct of Research, Wake Forest University-Graduate School
2010	Instructor, PHT 5401-Applied Human Physiology: Respiratory Physiology, Winston Salem State University-School of Physical Therapy
2009	Instructor, Professional Skills Course: Presentation Skills, American Physiological Society

Teaching assessments available on request

Student Training and Mentorship Experience

Train and mentor summer research high school, undergraduate and medical students in small animal surgical techniques, protein analysis, and development of research proposal and specific aims.

2004	Elijah Smith: Visiting Undergraduate Trainee, Tennessee State University, Nashville, TN
2005, 2006	Clacy K. Camel: Undergraduate Trainee, University of Louisville
2005-2007	Deep Aggarwal: High School Trainee, DuPont Manual High School, Louisville,
2007	Gene Trayhill: Medical Student Trainee, University of Louisville
2009	Sarah Jackson: Visiting Undergraduate Trainee, Trinity University, San Antonio, Texas Wake Forest University, Hypertension and Vascular Research Center, Excellence in Cardiovascular Sciences Summer Research
2011	Ryan Moore: Visiting Undergraduate Trainee, Oakwood University, Huntsville, AL Wake Forest University, Hypertension and Vascular Research Center, Excellence in Cardiovascular Sciences Summer Research
2011	Darrica Byrd: Visiting Undergraduate Trainee, Johnson C. Smith, Charlotte, NC

Wake Forest University, Hypertension and Vascular Research
Center, Excellence Cardiovascular Sciences Summer Research

Additional Mentoring Activity

2011 Guest Journal club facilitator, Post-baccalaureate Research
Education Program (PREP), Wake Forest University

K-12 Science Outreach

2011 Career Panel Speaker: High School Students/Teachers Workshop, Experimental
Biology Conference
2011 APS exhibitor, Science Teacher for the USA Science and Engineering Festival
2010 APS PhUn Week Presenter, Success Institute, Winston-Salem, NC
2009 Invited Speaker, Big Brothers Big Sisters, Winston-Salem, NC
2008 APS PhUn Week Presenter, Success Institute, Winston-Salem, NC
2007 Invited Speaker: Western Middle School, sponsored by Girl Scouts
2007 Invited Speaker: Youth of the Future Celebration, Norris Chapel Baptist Church,
Henderson, KY
2007 Invited Speaker: Ladies of Zeal, Brown School, Louisville, KY
2006 APS Science Teaching Forum, Denver, CO
2006 APS Explorations in Biomedical Science Retreat, Warrenton, VA
2006 Presenter, Annual Biomedical Research Conference for Minority Students
(ABRCMS)
2006 APS PhUn Week Presenter, Our Lady of Perpetual Help School, Clarksville, IN
2006 APS PhUn Week Presenter, Meyzeek Middle School, Louisville, KY
2006 UofL Presidential Outreach across Western Kentucky (with President Dr. James
R. Ramsey):
2005 Presenter and partner with Shawnee High, Central High School, Western Middle
School, Newburg Middle, Meyzeek Middle, Brown School, Carter Elementary:
Louisville, KY
2005 Invited Speaker: Black Achievers, Science and Medicine Cluster, Louisville, KY
2005 Invited Speaker: Planned Parenthood, Louisville, KY

Humanitarian Service

March of Dimes: 2011, 2012 March for Babies, Winston Salem Branch Logistics
Committee
March of Dimes: Storks Nest Speakers Bureau
American Cancer Society: Relay for Life
American Heart Association: Heart Spectrum Committee Member, Speakers Bureau
Young Ladies Like Us: Jefferson County Public Schools and the City of Louisville Office
for Women
Kentucky Cancer Program: KAAAC member & cancer screening site volunteer
Girls Scouts of America
Black Achievers