

CURRICULUM VITAE

PERSONAL DATA: SURESH C. TYAGI

Date of Birth: January 1, 1955

Citizenship: USA (Naturalized)

Marital Status: Married 1980 - Reeta

EDUCATION:

1971-1973 B. Sc. Chemistry, University of Meerut, India

1973-1975 M. Sc. Chemistry, University of Meerut, India

1975-1980 Ph.D. Biophysics, University of Alighrah, India

1980-1983 Postgraduate, Bioinorganic chemistry (Metallo-amino acid interaction),
University of Cork, Ireland

POSTDOCTORATE:

1984-1987 Post-doctoral, Pharmacology, SUNY-Stony Brook, DNA-transcription by
metallo-RNA polymerases

1987-1989 Research Associate, Pathology, SUNY-Stony Brook, Extracellular Matrix,
metallo- & Serine-proteases and Antiproteases

ACADEMIC APPOINTMENTS:

1989-1991 Instructor, Biochemistry & Cell Biology, SUNY at Stony Brook, New York

1992-1996 Assistant Professor, Medicine & Biochemistry, University of Missouri, Columbia,
Missouri

1996-2003 Associate Professor, Physiology and Biophysics, University of Mississippi
Medical Center, Jackson, Mississippi

2003-present Professor of Physiology and biophysics, University of Louisville School of
Medicine, Louisville, Kentucky

2003-present Endowed Chair in Biomedical Sciences, University of Louisville School of
Medicine, Louisville, Kentucky

ADMINISTRATIVE APPOINTMENTS:

1992-1996 Director Molecular Cardiology Program, Univ of Missouri-Columbia, MO

2004-2006 Director of Seminar Program in Physiology and Biophysics, University of
Louisville School of Medicine, Louisville, Kentucky

2004-present Vice Chair for Research in Physiology and Biophysics, University of

Louisville School of Medicine, Louisville, Kentucky

GRANT/CONTRACT SUPPORT:

Completed:

Granting Agency: University of Missouri Health Sciences Center

Title: "Regulation of myocardial collagenase"

\$15,000 1/1/92-12/31/93 Principal Investigator

Granting Agency: American Heart Association, Missouri Affiliates, 92-10517

Title: "Regulators of Matrix Metalloproteinases:

\$50,000 7/1/92-10/31/95 Principal Investigator

Granting Agency: National Institute of Health, Heart, Lung and Blood Institute
[RO1 HL-31701]

Title: "Collagen and Hypertrophied Heart"

\$550,000 3/1/92-2/28/94 Co-Investigator

Granting Agency: National Institute of Health, Heart, Lung and Blood Institute
[RO1 HL-46461]

Title: "Role of Myocardial Collagen in Volume Overload Ventricle"

\$140,000 7/1/94-6/30/95 Co-Investigator

Granting Agency: AHA-Missouri Affiliate, 96-GS021 (declined-untransferable)

Title: "Cardiovascular Proteinase Antiproteinase"

\$66,000 7/1/96-6/30/98 Principal Investigator

Granting Agency: National Institute of Health (NIGMS), [GM-48595]

Title: "Regulators of Human Neutrophil Proteases"

\$450,000 5/1/92-6/30/99 Principal Investigator

Granting Agency: University of Mississippi Medical Center, #59914

Title: "Hyperhomocysteinemia and Vascular Hypertrophy"

\$11,250 7/1/97-30/6/98 Principal Investigator

Granting Agency: Hayden Atherosclerosis Speakers Bureau and Research (HASBAR),

Title: "Modulation of Endothelial Function by Provastatin"

\$13,000 3/1/98-6/30/03 Principal Investigator

Granting Agency: Astra Merck, #58741

Title: "Regulation of Endothelial Function by Feledopine"

\$54,000 7/1/97-6/30/99 Principal Investigator

Granting Agency: American Heart Association Mississippi Affiliate,

Title: "Cardiovascular Proteinases Antiproteinases"

\$50,000 7/1/97-6/30/00 Principal Investigator
 Granting Agency: National Institute of Health, Heart Lung and Blood Institute
 [PO1 HL-51971]
 Title: "Cardiovascular Dynamics and Control Mechanisms"
 \$3,500,000 6/30/96-12/31/03 Co-Investigator

Granting Agency: Kidney Care Foundation, #99-46
 Title: "Hyperhomocysteinemia induces target organ injury"
 \$75,000 2/00-1/03 Principal Investigator

Granting Agency: National Institutes of Health, Minority Supplement to HL-74185S
 Title: "ECM remodeling in pressure overload heart failure" Brooke Henderson (Student)
 \$160,000 2/1/05-1/1/07 Principal Investigator

Granting Agency: National Institutes of Health, Minority Supplement to HL-71010S
 Title: "Role of eNOS in aortic remodeling" Mesia Steed (Student)
 \$100,000 1/1/05-08/31/08 Principal Investigator

Granting Agency: American Heart Association Ohio Valley, Postdoctoral Fellowship (Karni S.
 Moshal)
 Title: Activation and mitochondrial translocation of calpain regulates MMP-9 in
 hyperhomocysteinemia.
 \$86,000 7/1/06-6/30/08 Sponsor

Granting Agency: National Institutes of Health, Minority Supplement to HL-74185S
 Title: "Mechanism of Cardiac Hypertrophy in Hypertension" Walter E. Rodriguez (Assistant
 Professor)
 \$225,000 4/1/07-3/31/10 Principal Investigator

Granting Agency: National Institutes of Health, **RO1** HL-71010
 Title: "Mechanism of vascular remodeling in hyperhomocysteinemia"
 \$250,000/y (Direct Cost) 6/01/02-3/30/12 Principal Investigator

Granting Agency: National Institutes of Health, **RO1** HL-88012
 Title: "Implications of endothelial-myocyte uncoupling in cardiac arrhythmia"
 \$250,000/y (Direct Cost) 4/1/07-3/30/012 Principal Investigator

Granting Agency: National Institutes of Health, **RO1** HL080394-06
 Title: "Fibrinogen-induced vasoconstriction during hypertension"
 \$250,000/y (Direct Cost) 3/07/07-02/28/2013 Consultant

Granting Agency: National Institutes of Health, **RO1** NS-51568
 Title: "Mechanism of Cerebral Vascular Remodeling"

\$218,750/y (Direct Cost) 6/1/07-5/30/13 Principal Investigator

Active:

Granting Agency: National Institutes of Health, **RO1 HL-74185-11**

Title: "Reversing diabetic muscle myopathy by exercise and exosomes"

\$250,000/y (Direct Cost) 9/1/03-8/31/20 Principal Investigator

Granting Agency: National Institutes of Health, **RO1 HL108621-05**

Title: "Mitophagic and anti-angiogenic mechanisms of heart failure"

\$250,000/y (Direct Cost) 6/1/11-5/30/16 Principal Investigator

Granting Agency: National Institutes of Health, **RO1 NS-84823-01**

Title: "Mechanisms of Homocysteine-induced Fibrinogen-Amyloid Plaque Formation"

\$450,000/y (Direct Cost) 7/1/13-6/30/18 (MPI-Tyagi & Lominadze)

Funding Agency Name: National Institutes of Health **RO1 DK 104653-01**

Title: Hydrogen sulfide mechanism of renal hypertension

\$450,000/y (Direct Cost) 07/01/2015 to 06/30/2020 (MPI-Tyagi & Sen)

Funding Agency Name: National Institutes of Health **RO1 AR067667-01**

Title: Mitigating mitochondrial epigenetics in bone remodeling by hydrogen sulfide

\$450,000/y (Direct Cost) 09/01/2015 to 08/31/2020 (MPI-Tyagi S&Tyagi

N)

Collaboration (Funded):

Granting Agency: National Institutes of Health, **RO1HL113281**) (PI-Mishra)

Title: "Inflammation, miRNA and autophagy in diabetes"

\$250,000/y (Direct Cost) 5/1/13-4/30/18 Consultant

Granting Agency: National Institutes of Health, **RO1HL116205**) (PI-Mishra)

Title: "Exercise and H₂S mitigate homocysteine-mediated beta₂-adrenergic receptor dysfunction"

\$250,000/y (Direct Cost) 5/1/13-4/30/18 Consultant

Granting Agency: National Institutes of Health, **RO1 HL104103-01** (PI-Sen)

Title: "Homocysteine and angiotensin II in renovascular remodeling"

\$250,000/y (Direct Cost) 6/1/11-5/30/16 Consultant

Granting Agency: National Institutes of Health, **RO1HL107640-01** (PI-Neetu Tyagi)

Title: "Mechanisms of mitochondrial dysfunction in brain vasculature"

\$250,000/y (Direct Cost) 1/1/12-12/31/17 Consultant

Submitted:

Granting Agency: National Institutes of Health, **RO1** (PI-Neetu Tyagi)

Title: " **Reversing Alcohol-Dependent Vasculocerebral Impairment by H₂S and**

Exercise:"

\$250,000/y (Direct Cost) 1/1/16-12/31/21 Co-I

AWARDS AND HONORS:

- 1975-1977 Junior Research Fellowship, University Grants Commission, India
- 1978-1980 Senior Research Fellowship, University Grants Commission, India
- 1980-1982 Senior Demonstratorship, University of Cork, Ireland
- 1991 American Society of Biochemistry & Molecular Biology, Travel Award for 15th International Congress of Biochemistry, Jerusalem, Israel, August 4-8, 1991.
- 1992 International Union of Biochemistry & Molecular Biology, Travel Award for the 1st conference on the *Biochemistry of Diseases*, Nayoga, Japan, June 1-6, 1992.
- 1995 Finalist for American Heart Association, Boots Cardiovascular Research Prize, Feb 1-4, 1995, Snowbird Conference Center, Salt Lake City, Utah
- 1995 Travel Fellowship Award, June 29-30, 1995, Seventh International Symposium on Basement Membranes, NIH-NIDDKD
- 1997 Travel Award, March 4-9, 1997, II International Symposia on Transplant Pathobiology, Southampton, Bermuda.
- 1998 Science Judge, Power Elementary School, 6-8 grade, 2/5/98; 2/3/00
- 1998 Finalist for the Goldblatt Award in Hypertension at the American Heart Association council on high blood pressure research meeting, 9/14/98-9/18/98, Philadelphia, PA
- 2000 AstraMerck Travel Award to European Society of Cardiology, Annual Meeting, 8/26-8/30, 2000, Amsterdam, Holland.
- 2001 AstraZeneca APOLLO faculty award, New York Waldoff Hilton Hotel, 9/28-30, 2001.
- 2001 Fellowship American Heart Association (FAHA)
- 2001 Medal of merit award, XVII World Congress of International Society for Heart Research, Winnipeg Canada
- 2002 Fellowship American Physiological Society (FAPS), cardiovascular section
- 2002 Nominated for 2004 Cannon Award.

2003 Science Judge for Mississippi Junior Academy of Science projects, Jan 31, 2003, Williams Carey College, Hattiesburg, MS

2007 Judge for High School Science for Jefferson County High Schools, Kentucky, February 19, 2007, Executive Inn Hotel West, Louisville, Kentucky.

MEMBERSHIP IN PROFESSIONAL AND SCIENTIFIC SOCIETIES:

National Societies:

Sigma Xi, National Honor Scientific Research Society
American Heart Association Council on High Blood Pressure Research
AHA Council on Arteriosclerosis, Thrombosis and Vascular Biology
American Society of Biochemistry and Molecular Biology
American Association for the Advancement of Science
The Muscle Society (National Association)
American Physiological Society
Mississippi Academy of Sciences

International Societies:

International Society for Heart Research

UNIVERSITY COMMITTEES:

1992-1993 Graduate Education Committee, University of Missouri-Columbia, MO

1992-1996 School of Medicine Problem Based Learning Block 3 & 6 Curriculum Committee, University of Missouri-Columbia, MO

1994-1996 Student Financial Aid Committee, University of Missouri-Columbia, MO

2005 Immunology and Microbiology Chair's Review Committee

2005-2009 University of Louisville School of Medicine, Research Committee,

2012-2013 School of Medicine LCME task force committee, University of Louisville

2011-present Graduate Admission Committee, Department of Physiology & Biophysics, University of Louisville School of Medicine

2014-present Member & Chair Research Committee, University of Louisville School of Medicine, Louisville, Kentucky

SCIENTIFIC ACTIVITIES:

1992-1994 Student Research Fellowship, American Heart Association, Missouri Affiliate, Ad Hoc Reviewer

1993-1994 Internal Medicine, University of Missouri, Grant Reviewer

1992-1995 American Heart Association, Missouri Affiliate,

1997-1998 AHA-Kansas Affiliate; Ad Hoc Reviewer

1997-2005 American Heart Association, Southeast and Ohio Valley Research Consortium, Peer Review Committee; 4/17/-05-4/18/05

2000 AHA-National, Study Section-declined due to other commitments.

2001 NIH PPG review committee-declined due to other commitments.

2002-2004 AHA-Nation Molecular Signaling I Study Section

2003 NIH Special emphasis panel (RFA HL-03-004, Functional heterogeneity of the peripheral, pulmonary and lymphatic vessels, June 10-11, 2003)

2004 NIH-NHLBI-PPG review committee "Plaque rupture" (1/8/04)

2004 NIH-NCI member of study section Innovative molecular analysis technology (IMAT) July 27-28, 2004

2004 NIH/NIAMS RO3 study section Oct 26-27, 2004

2003-2004 NIH-ECS/VCMB Study Section; NIH reviewer reserve

2004-2006 Member of American Physiological Society Committee on Fellowship

2005 NIH-ESTA study section (June 8-10); NIDDK-SEP (July 13-15); NIH-CICS study section (July 28).

2006 NIH-SEP (PPG: ECM dynamics in heart failure, Feb 6-7); MIM study section (Feb 27-28); Cardiac Dev & Differentiation (March 17); ESTA June 22-23; Oct 18-19 NCI Innovative Molecular Technology, Nov 9-10, NCRR-COBRE Review Group.

2006-2010 NIH-MIM study group regular member

2007-2009 **Chair** AHA-Cardiac Biology/Regulation 2 review committee, Great River Ohio Valley Section of AHA, Philadelphia, PA. April 14-15, 2008; April 22-23, 2009.

2010-08-24 NHLBI Ancillary studies in Clinical Trials Review (ZHL1 CSR-G (O2).

2010-11-05 **Chair:** Special Emphasis Panel (SEP, ZDK1 GRB-9 J2 1, Arteriovenous Fistula) NIDDK2011PAR, November 5, 2010.

2011-01-24 PPG reviews – HLBP 1 Workgroup 010.

2011-01-25 PPG reviews – HLBP 1 Workgroup 010.

2011-02-7/8 VCMB Study section review group member

2011-06-6/7 HM Study section review group member

2008-2012 VA-MERIT Review Group Member, Cardiology Program

2010-present: National Institute on Minority Health and Health Disparities (NIMHD) Loan Repayment Program Applications (LRP)

2011-10-12/13 VCMB Study section review group member

2011-12-02 PPG on Homocysteine Review, Washington D.C.,

2012/08 ZMD1 MLS (L1) 1, March 19, 2012

2012/03/19-20 SEP/HM/AICS/VCMB

2012/06/04-05 **RFA DK-11-015 entitled Diabetes Research Center (P30).**

2012-11-14 PPG on Homocysteine Review, Telo-conference call at 1:30-4 pm.

Special Emphasis Panel (ZRG1VH-B90S) Review of 3 Grant Applications on 01/16/2013

2013/05 ZRG1 VH-D (03) M Member Conflict: Hematology and Vascular Pathobiology, Web conference April 1-2, 2013.

2013/10 BINP (Brain Injury and Neurovascular Pathology) study section meeting, June 24-25, 2013, Washington D.C.

Member of the ZRG1 MOSS C-03 Special Emphasis Panel teleconference review meeting held on July 18, 2013.

The VA Merit Review Panel for Scientific Review Group (SRG) Special Emphasis Panel for Gulf War Research (SPLD) meets via teleconference on July 25th 2013.

11/6-11/7/2013 Reviewer for meeting 2014/01 ZRG1 MOSS-S (10) B - Small Business: Orthopedic and Skeletal Biology.

VA-MERIT Review Group Member, Cardiology Program, December 9, 2013

The VA Merit Review Panel for Scientific Review Group (SRG) Special Emphasis Panel for Gulf War Research (SPLD) meets via teleconference on December 13, 2013.

2014/01 ZRG1 VH-D (90) S Meeting; Web conference 12/12/2013-12/13/2013.

03/15/2014 Review of NIH Director's New Innovator Award (DP2) applications.

February 24-25, 2014, BINP (Brain Injury and Neurovascular Pathology) study section meeting, February 24-25, 2013, Washington D.C.

February 20, 2014, Health Research Council of New Zealand, Research Project review HRC Ref #14/155 "An epigenome-wide study for abdominal aortic aneurysm,

April 4, 2014, Funding scheme PRELUDIUM, micro-RNAs related to cardiac hypertrophy and fibrosis in the molecular mechanisms of the left ventricular response to volume and pressure overload in pregnant women, Ewa Maria Szczerba, Institute of Mother and Child, No. 240355, Panel NZ5, National Science Centre, Krolewska 57, 30-081 Krakow, Poland.

6/5-6/5, 2014/10 HM Adhoc study section meeting, Washington DC.

6/5-6/6, 2014/10 ZRG1-HM-J (O2) M, Teleconference meeting.

6/11-6/12, 2014/08 CARA1, Cardiovascular A, VA reviews, Hampton Inn Washington DC.

6/12-6/13, 2014/08 CARB1, Cardiovascular B, VA reviews, Hampton Inn Washington DC.

6/23-6/24, 2014/10 ZRG1 MOSS-S (10) B, Small Business: Orthopedic and Skeletal Biology, IAR.

6/26-6/27, 2014/10 BINP, Brain Injury and Neurovascular Pathologies Study Section, Fairmont Hotel San Francisco, CA.

10/14-10/15, 2015/1 BINP, Brain Injury and Neurovascular Pathologies Study Section, Embassy Suite, Washington DC.

10/27, 2015/1 CSR - MOSS-S(10)B - Residence Inn Bethesda Downtown, DC

10/29-10/30, 2015/01 MIM, Myocardial Ischemia and Metabolism Study Section, Washington D.C.,

12/12, 2015/01 CARB1, Cardiovascular B, VA reviews, Hampton Inn Washington DC.

2/2/15-2/3/15, 2015/5 BINP, Musculoskeletal Tissue Engineering (MTE) Study Section, Residence-inn Bethesda MD.

2/9/15-2/10/15, 2015/5 BINP, Brain Injury and Neurovascular Pathologies Study Section, Residence-inn Bethesda MD.

03/08/2015 Review of NIH Director's New Innovator Award (DP2) applications.

2015/05 (April 1-2, 2015) CSR IAM meeting ZRG1 VH-D (02) M, **Chair** of the meeting.

6/11/15, 2015/08 CARB1, Cardiovascular B, VA reviews, Crowne Plaza Old Town Alexandria VA.

10/15/15-10/16/15, BINP, Brain Injury and Neurovascular Pathologies Study Section, Wyndham Grand Chicago Riverfront, IL.

November 10, 2015, ZRG1 MOSS C-02 Special Emphasis Panel, Teleconference reviews

12/08/2015-12/09/2015, 2016/01 ZRG1-VH-D (O2) M, Internet Assisted Meeting (IAM).

12/10, 2015 CARB, Cardiovascular B, VA reviews, Corporation for Enterprise Development, 1200 G Street, NW, Washington, DC, 20005.

03/08/2016 Review of NIH Director's New Innovator Award (DP2) applications.

March 21-22, 2016, ZRG1 MOSS-A [02] Skeletal Muscle Biology member conflict Special Emphasis Panel, Internet Reviews.

06/9-10, 2016; BINP, Brain Injury and Neurovascular Pathologies Study Section, Wyndham Grand Chicago Riverfront, IL.

June 15-16, 2016, ZRG1 MOSS-D 10, Double Tree Bethesda, 8120 Wisconsin Ave, Bethesda, MD.

Teleconference July 26, 2016/10 ZRG1 MOSS-C (02) S Skeletal Muscle Physiology

2013-2014: **President: Americal Physiological Society Kentucky Chapter**

Scientific organizing executive committee: International Academy of Cardiology, 12th World Congress on Heart Disease, New trends in research, Diagnosis and Treatment,

Vancouver, B.C., Canada July 16-19, 2005.

Scientific Organizing executive committee: Secretary of the Cardiovascular Forum Promoting Centers of Excellence and Young Investigators, August 15-17, 2013, The Galt House Louisville, KY.

Poster Professor-AHA Scientific Sessions 2013 November 16-20, Dallas, TX.

Associate Editor 2013-2014, Canadian Journal of Physiology and Pharmacology.

Editorial Board Member:

1999- American Journal of Physiology (Heart & Circulatory Physiology)
2000- Clinical & Experimental Hypertension
2003- Molecular & Cellular Biochemistry
2004-2007 Journal of Molecular and Cellular Cardiology
2011- Amino Acids
2011- Journal of Biophysical Chemistry
2011- Indian Journal of Biochemistry and Biophysics

Ad Hoc Reviewer:

1996- Circulation
1996- Hypertension
2005- Circulation Research
2006- Microcirculation

INVITED LECTURES/PRESENTATION:

Title of presentation "*Proximity between initiation & elongation sites during transcription by RNA polymerase*" May17,1987, Univ of Quebec, Montreal, Canada.

Title of presentation "*Role of disulfide exchange in Serine Proteinase Inhibitor (alpha-1 antitrypsin)*" June 20, 1991, University of Texas Health Science Center, Tyler, TX

Title of presentation "*Role of disulfide exchange in Serine Proteinase Inhibitor (alpha-1 antitrypsin)*" October 13, 1991, McMaster University, Hamilton, Canada.

Title of presentation "*Myocardial collagenase, and tissue inhibitors in failing human heart*" November 5, 1993, Midwest Clinical Society Meeting, Chicago

Title of presentation "*Myocardial collagenase, and tissue inhibitors in failing human heart*" November 10, 1993, AHA, National meeting at Atlanta

Title of presentation "*Proteinases and Restenosis: MMP, tissue inhibitor & their activator*" June 9, 1994, Cardiovascular disease: Cellular and molecular mechanism: prevention & treatment, George Washington Univ, Washington D C.

Title of presentation "*Proteinases and Restenosis*" October, 27, 1994, International Conference on Restenosis, Sponsored by International Business Corporation (IBC) New Strategies for Prevention and Treatment, Cambridge, Massachusetts.

Featured Presentation: Title "*Proteinases and Restenosis in Human Coronary Artery: Suppression of Matrix Metalloproteinases (collagenases) During Restenosis*" November 16, 1994, American Heart Association, National meeting at Dallas

Title of presentation "*Transcriptional and Post-translational Regulation of Matrix Metalloproteinases in Human Heart End-Stage Failure Secondary to Ischemic Cardiomyopathy*" selected as a finalist for Boots Cardiovascular Research Prize, Feb 1-4, 1995, Snowbird Conference Center, Salt Lake City, Utah

Title of presentation "*Transcriptional and Post-translational Regulation of Matrix Metalloproteinases in Human Heart End-Stage Failure Secondary to Ischemic Cardiomyopathy*", at Conference on the Molecular, Cellular, and Functional Aspects of cardiac Development sponsored by the AHA, March 23-26, 1995, Fairmont Hotel, New Orleans, Louisiana,

Title of presentation "*Role of matrix metalloproteinase in coronary artery disease*" April 26, 1995, University of Ottawa Heart Institute, Ottawa, Canada

Title of presentation "*Matrix metalloproteinase in cardiovascular remodeling*" May 17, 1995, Parke-Davis, Ann Arbor MI

Title of presentation "*Matrix metalloproteinases in tissue remodeling*" May 18, 1995, University of Michigan, Medical Center, Ann Arbor MI

Title of presentation "*Artrial tissue inhibitor as mitogen to human heart endothelial cells and suppression of matrix metalloproteinase in human coronary arteries: A clue to the mechanism of restenosis*" at the Seventh International Symposium on Basement Membranes, June 29-30, 1995, Natcher Auditorium, Building 45 NIH, Bethesda, MD

Title of presentation "*Reduction-Oxidation (Redox) state regulation of extracellular matrix metalloproteinase in cardiac normal and transformed fibroblast cells*," Nov 13-16, 1995, AHA, Anaheim, CA

Chairperson:Title "*Extracellular matrix in atherosclerosis and restenosis*" October 26-27, 1995, International Conference on Restenosis, Sponsored by IBC, New Strategies for Prevention and treatment, Hyatt Regency, Washington D. C.

Title of presentation "*Extracellular matrix proteinases in cardiovascular remodeling*" February 26, 1996 James O.Davis Symposia in Cardiovascular Science, University of Missouri-

Columbia, MO

Title of presentation "*Transmembrane extracellular matrix metalloproteinase and plasminogen activator are induced by shear-stress in cardiac myocytes*" April 15, 1996, Experimental Biology Annual Meeting, Washington DC

Title of presentation "*Extracellular matrix components in cardiovascular remodeling*" April 26, 1996, University of Missouri-Kansas City, MO

Title of presentation "*Extracellular matrix metalloproteinases in cardiac remodeling*" October 7-8, 1996, IBC conference on Heart Failure, Philadelphia, PA.

Title of presentation "The role of extracellular matrix metalloproteinases in cardiovascular remodeling, Dec 9, 1996, Meharry Medical College, Nashville, TN.

Title of presentation "*Regulation of Matrix metalloproteinase in Heart Failure*" March 12, 1997, Searle Corp, St. Louis, MO

Title of presentation "*Hyperhomocysteinemia and Cardiovascular Fibrosis*" April 28-29, 1997, IBC conference on Fibrosis, Washington DC

Title of presentation "*Regulation of extracellular matrix metalloproteinases in heart failure*" International Society for Heart Research, July 23-27, 1997, Hotel Vancouver, BC, Canada.

Title of presentation "*Chronic homocysteine elevation as a cause leading to cardiac fibrosis and contractile dysfunction in hypertension*, Feb 26, 1998, Biloxi, Mississippi, Mississippi Academy of Science

Title of presentation "*Hyperhomocysteinemia causes endothelial injury and vascular dysfunction*, Experimental Biology, 98, April 19, 1998, San Francisco, CA

Title of presentation "*Extracellular matrix remodeling and dynamics in cardiovascular function*", Millsaps College, Jackson, MS, November 16, 1998.

Title of presentation "*Extracellular matrix remodeling in cardiovascular system*" UAB-Vascular Biology & Hypertension Symposia, Sandestin, FL, October 8, 1999.

Title of presentation "*Mutation in collagen gene induces cardiomyopathy in transgenic mice*" 73rd Scientific Sessions AHA Annual meeting, New Orleans, Nov 12-15, 2000

Title of presentation "*Hyperhomocysteinemia and hypertension: A molecular, cellular and extracellular mechanism*" University of Tennessee, Memphis, May 16, 2001.

Title of presentation "*Inhibitor shielding of oxidative and proteolytic stresses in the heart*"

University of Arkansas Medical Sciences, Little Rock, AK, August 22, 2001

Title of presentation "*Regression of hypertension by PPAR agonist in a murine model of hyperhomocysteinemia*" 55th Annual Fall Conference and Scientific Sessions of the AHA-Council of high blood pressure, September 22-25, 2001, Chicago, IL

Title of presentation "*Hyperhomocysteinemia and Hypertension: A molecular, cellular and ECM mechanism*, 9/27/01. Emory University, Atlanta, GA.

Title of presentation "*Regulators of cardiac remodeling*" 10/1/01, Tougaloo College, Jackson, Mississippi.

Title of presentation "*Heart in hypertension: Mechanism of matrix deposition and endothelial dysfunction*, 7/15/02, Tulane University, New Orleans, LA.

Title of presentation "*Mechanism of matrix deposition and endothelial dysfunction in Heart failure*, 9/9/02, Louisiana State University Health Science Center, New Orleans, LA.

Title of presentation "*Mechanism of matrix deposition and endothelial dysfunction in Heart failure*, 9/20/02, Boise State University, Boise, Idaho.

Title of presentation "*Mechanism of matrix deposition and endothelial dysfunction in Heart failure*, 10/9/02, LSU School of Veterinary Medicine, Baton Rouge, LA.

Title of presentation "*Mechanism of matrix deposition and endothelial dysfunction in Heart failure*, 10/16/02, State University of New York, at Buffalo, NY.

Title of presentation "*Ciglitazone ameliorates homocysteine-dependent cardiac remodeling in two kidney one clip glodblatt hypertension in mice*, 10/24/02, University of Oklahoma Health Sciences Center, Oklahoma, OK.

Title of presentation "*Mechanism of matrix deposition and endothelial dysfunction: a genomic, proteomic and bioinformatic approach*", 11/15/02, Vascular Biology Center, University of Tennessee Health Sciences Center, Memphis, TN.

Title of presentation "*Mechanism of matrix accumulation and endothelial dysfunction in heart failure in mice*" 12/9/02, Biology, Illinois Institute of Technology, Chicago, IL.

Title of presentation "*Mechanism of matrix accumulation and endothelial dysfunction in heart failure in mice*", 2/17/03, Biomedical Sciences, Florida Atlantic University, Boca Raton, FL

Title of presentation "*Mechanism of extracellular matrix accumulation and endothelial dysfunction in heart failure in mice*" 3/13/03, Molecular and Integrative Physiology,

University of Illinois at Urbana-Champaign, IL

Title of presentation "*Mechanism of matrix accumulation (cardiac fibrosis) and endothelial dysfunction in heart failure in mice*", 4/25/03, University of Louisville, Louisville, KY

Title of presentation "*Mechanism of matrix accumulation (cardiac fibrosis) and endothelial dysfunction in heart failure in mice*", 5/30/03, Louisiana State University-Shreveport, LA

Chaired-symposia: Cardiac Fibrosis: good, bad or dead, EB'04, April 20, 2004, Washington D. C., Convention Center.

Chaired-symposia: Metalloproteinase and Diabetes: EB'04, April 21, 2004, Washington D. C., Convention Center.

Title of presentation "Homocysteine, metabolic syndrome and diabetes mellitus" 2004 Lake Cumberland Biological Transport Meeting June 13-16, 2004.

Title of Presentation "Endothelial myocyte uncoupling in heart failure" ISHR, American Section Annual Meeting, May 12-15, 2005, New Orleans.

Title of Presentation "Physiochemistry of Glomerulosclerosis in Diabetes" Center for Genetics and Molecular Medicine, University of Louisville School of Medicine-A-614, December, 13, 2005.

Title of Presentation "Insulin-2 mutant type 1 diabetes: A novel model of type 1 diabetes" Molecular Endocrinology the Multidisciplinary Endocrine Conference, University of Louisville School of Medicine, Baxter II-038, November, 29, 2006.

Title of Presentation "Mechanism of vascular dysfunction in hyperhomocysteinemia" Merck & Co, Rahway, NJ, March 12, 2007.

Title of Presentation "Genetic causes of type 1 diabetes: mutation in insulin and its transport" Molecular Endocrinology the Multidisciplinary Endocrine Conference, University of Louisville School of Medicine, Baxter II-038, January 30, 2008.

Title of Presentation "Homocysteine to hydrogen sulfide in heart and kidney" Pharmacology & Toxicology, University of Commonwealth of Virginia, School of Medicine, Richmond, VA, February 5, 2008.

Title of Presentation "Homocysteine to hydrogen sulfide: A translational multidisciplinary approach" Department of Biochemistry, West Virginia University School of Medicine, Morgantown, WV, February 21, 2008.

Title of Presentation “Homocysteine to hydrogen sulfide and translational multidisciplinary approach” Department of Physiology, LSU-HSC-New Orleans, LA, May 8, 2008.

Title of Presentation “Endothelial Myocyte Matrix in Cardiac Remodeling: A Multidisciplinary Translational Approach” Department of Physiology & Pharmacology, University of Toledo College of Medicine, Toledo, OH, October 21, 2008.

Title of Presentation “Endothelial Myocyte Matrix in Cardiac Remodeling: H₂S as cardioprotector and Translational Approach” Department of Pediatrics, Ohio State University, Nationwide Children’s Hospital, Columbus, OH, April 6-7, 2009.

Title of Presentation “Endothelial Myocyte Matrix in Cardiac Remodeling: H₂S as cardioprotector and Translational Approach” Department of Physiology & Biophysics, Eastern Tennessee State University, Johnson City, TN, August 31, 2009.

Title of Presentation “Endothelial myocyte matrix in cardiac remodeling: A translational pharmacogenetic approach” Department of Pharmaceutical Sciences, School of Pharmacy, West Virginia University School of Medicine, Morgantown, WV, September 16, 2009.

Title of Presentation “Endothelial myocyte matrix in cardiac remodeling: A translational multidisciplinary approach” Department of Physiological Sciences, School of Medicine, East Virginia Medical School, Norfolk, VA, November 10, 2009.

Chaired-symposia: Matrix metalloproteinases in Mitochondrial, cytoskeletal and nuclear remodeling: EB’10, April 24-28, 2010, Anaheim Convention Center, Los Angeles, CA.

Title of Presentation “Mitochondrial Metalloproteinase in Cardiac Remodeling” EB’10, April 25, 2010, Anaheim Convention Center, Los Angeles, CA

Title of Presentation “Mechanism of Mouse Coronary Vasospasm: Homocysteine, the Good, the Bad, and the Ugly” Visiting Professor at the University of Kentucky Gill Heart Institute and Cardiovascular Research Center’s cardiovascular Seminar Series, October 1, 2010, Lexington, KY

Title of Presentation “Juxtacrine Endothelial Myocyte Matrix in Cardiac Remodeling: A Translational Approach & H₂S as Cardio-protector” Keystone Symposia “Extracellular matrix in cardiovascular disease, Granlibakken Resort, Tahoe City, CA, Jan 23-28, 2011.

Title of Presentation “Juxtacrine Endothelial Myocyte Matrix in Cardiac Remodeling: A Translational Approach & H₂S as Cardio-protector” Penn state University, Heart & Vascular Institute, Department of Physiology, Hershey, PA, Feb 21, 2012.

Title of Presentation “Homocysteine to hydrogen sulfide in cardio-protection” Second International conference on H₂S, Septemeber 19-22, Atlanta, Georgia, 2012.

Title of presentation "Homocysteine to hydrogen sulfide in vitro, ex vivo and vivo" Department of Cell Biology & Anatomy, Augusta State University and Georgia Health Sciences University, April 16 2013, Augusta GA.

Chaired-symposia: Micro-RNA and Cardiac Remodeling, the Cardiovascular Forum Promoting Centers of Excellence and Young Investigators, August 15-17, 2013, The Galt House Louisville, KY, August 16, 2013.

Title of presentation "Mechanism of Remodeling in Heart Failure, the Cardiovascular Forum Promoting Centers of Excellence and Young Investigators, August 15-17, 2013, The Galt House Louisville, KY, August 16, 2013.

Title of presentation "Mitochondrial division/mitophagy inhibitor (Mdivi) ameliorates pressure overload induced heart failure", PL01: plenary Session, 19th World Congress on Heart Disease, International Academy of Cardiology, Annual Scientific Sessions 2014, Boston MA, July 25-28, 2014.

Title of presentation "Mechanism of Cardiovascular Remodeling" Department of Medicine/Endocrinology, University of Oklahoma, Oklahoma City, Health Sciences University, October 3, 2014, Oklahoma, OK.

Title of presentation "Exercise and exosomes in cardiovascular health and diseases" Annual Meeting of the International Academy of Cardiovascular Sciences: North American Section, Omaha, Nebraska, September 10-12, 2015,

Title of presentation "Mechanism of Cardiovascular Remodeling" Department of Medicine/Endocrinology, University of Oklahoma, Oklahoma City, Health Sciences University, October 3, 2014, Oklahoma, OK

Title of presentation "Mitigating Mitochondrial Mitophagy in Muscle Myopathy by Hydrogen sulfide" Symposia on Diet, Sulfur Amino Acids, and Healthspan, Orentreich Foundation for the Advancement of Science, Inc. Tarrytown House Estate & Conference Center, Tarrytown, NY, September 20-22, 2015.

International presentation:

Invited presentation, August, 1991, at the International Union of Biochemistry and Molecular Biology (IUBMB) held at Jerusalem, Israel, entitled "*Regulation of neutrophil elastase activity by elastin derived peptide*"

Invited presentation, June, 1992, at the first symposium on "*Biochemistry of Diseases*" held at Nagoya, Japan, entitled "*Proximity between elastase and elastin* "

Invited presentation, September, 1994, at the International Union of Biochemistry and Molecular Biology (IUBMB) held at New Delhi, India, entitled "*Post-transcriptional and*

translational modification of myocardial collagenase leads to ventricular dilatation in cardiomyopathic hamsters"

Invited presentation, Dec 5, 1994, at the Medizinische Fakultät der Friedrich-Schiller-Universität, Jena, Germany entitled "*MMP and its inhibitor in cardiovascular remodeling*"

Invited presentation "*Molecular Mechanisms of Cardiovascular Remodeling after Injury*" Third Annual Intensive Review of Internal Medicine, December 14-18, 1994, Cardiology and Symposium December 12-13, 1994, Bhaskara Palace Hotel, Hyderabad, India.

Title of presentation August 8, 1995: "*Role of Matrix Metalloproteinase in Cardiovascular Remodeling*" University of Ottawa Health Sciences Center, Ottawa, Canada.

Title of presentation "*Proteinases in Angiotensin II induced Angiogenesis*" October 18-20, 1996, Manitoba Cardiovascular Forum on Ang II Receptor Blockade, Winnipeg, Canada,

Title of presentation "*Hyperhomocysteinemia and Cardiovascular Hypertrophy*" 4-9 March, 1997, International Symposia on Transplant Pathobiology, Southampton, Bermuda.

Title of presentation "Pravastatin Sodium Inhibits the Mitogenic Response of Human Heart Endothelial cells by human Atherectomy Restenotic Tissue Extract" 4th International Symposium April 23-25, 1997, on Multiple risk factors in cardiovascular disease: Strategies and prevention of coronary heart disease, cardiac failure and stroke, Washington DC Hilton and Tower.

Title of presentation "Regulation of Cardiac Function by MMPs" Heart Failure Update '98, European Society of Cardiology, Glasgow, UK, June 25-27, 1998,

Title of presentation "Role of the tissue inhibitor of metalloproteinase-4 in heart failure" Pathophysiology of stunning, hibernation and preconditioning of the heart; at Taorminia, Sicily, Italy, Oct 15-17, 1998.

Title of presentation "Metalloproteinase in heart failure" GSVM Medical College, Kanpur, India, 8/21/00.

Title of presentation "Homeostasis of extracellular matrix in heart failure" Annual Meeting of European Society of Cardiology, 8/26-8/30, 2000; Amsterdam, Holland.

Title of presentation "Hyperhomocysteinemia targets organ injury" XI International Vascular Biology Meeting, Geneva, Switzerland, 9/6-9/10, 2000.

Title of presentation "Mechanism of Chronic Heart Failure: A role of matrix

metalloproteinase", XVII World Congress of ISHR Winnipeg, Canada, July 5-12, 2001

Title of presentation "Cardiac inhibitor of metalloproteinase inhibits oxidative and proteolytic stress post chronic heart failure" XVIII World Congress ISHR, August 7-10 2004, August 8, Brisbane, Australia.

Title of Presentation "Homocysteine, diabetes and endothelial dysfunction" All India Institute of Medical Sciences, New Delhi, August 13, 2004, India.

Title of Presentation "Mechanism of endothelial-myocyte uncoupling in heart failure: role of matrix" Joint International Conference of ISHR-Indian Section & International Academy of Cardiovascular Sciences, Ahmedabad, Dec 31-Jan 2, 2005, India.

Title of Presentation "Homocysteinemic diabetic cardiomyopathy" 2nd International Conference on Recent Advances in Biomedical and Therapeutic Sciences (ICRABTS), Jan 6-8, 2005, Bundelkhand University, Jhansi, India.

Title of Presentation "Mechanism of vascular remodeling in hyperhomocysteinemia" 4th World Congress of Cellular and Molecular Biology, October 7-12, 2005, Poitiers, France.

Title of Presentation "Renal mechanism of remodeling in type diabetes" Joint Annual meeting ISHR and International academy of cardiovascular Sciences (Indian Section), Jan 12-14, 2006, Madras Medical Mission, Madras, India.

Title of Presentation "Mechanism of cardiac remodeling in type 2 diabetes" International conference on Free Radicals and Antioxidants in Health disease and Radiation & Annual Conference of Society for free radical Research, India, Jan 16-18, 2006, Kolkata.

Title of Presentation "Congenic expression of TIMP ameliorates salt-induced hypertension", International conference on Inflammation and Hypertension, University of Ibadan, Nigeria, September 11-13, 2006.

Title of Presentation "Collagen Mutation Ameliorates LVH in CHF", Global Conference on Heart Health & Disease, Winnipeg, Canada, Oct 12-16, 2006.

Title of Presentation "Homocystein (Hcy) and endothelial dysfunction" All India Institute of Medical Sciences, Division of Nephrology, New Delhi, February 8, 2007, India.

Title of Presentation "Mitochondrial mechanism of oxidative stress in hyperhomocysteinemia" 6th World Congress on hyperhomocysteinemia, Saarbruecken/Germany June 5-9, 2007, Plenay Session Speaker.

Title of Presentation "Endothelial-myocyte dynamics in the failing heart: role of the ECM" XIX

World congress of the ISHR, Bologna, Italy, June 21-25, 2007.

Title of Presentation “MMPs in heart failure: the good, the bad and the ugly” University of Delhi, The Patel Chest Institute, New Delhi, India, November 26, 2007.

Title of Presentation “Nitrosinylation, remodeling and endothelial-myocyte uncoupling in iNOS-/- and CBS-/+ double knockout mice” invited speaker in the 34th National Conference of Association of Clinical Biochemists of India, December 17-20, 2007, India Habitat Centre, Lodhi Road, New Delhi, India

Chairing Plenary Session on New Therapeutic Targets in Cardiovascular Medicine” 7/27/08 Fairmont Royal York, Toronto, Ontario, Canada. International Academy of Cardiology, 14th World Congress on Heart Disease, Annual Scientific Sessions, 2008.

Symposia-organizer and chair of symposia: Homocysteine and vascular disease: 25th Congress for the European Society for Microcirculation, August 26 – 29, 2008, Budapest, Hungary.

Title of Presentation “Endothelial-myocyte matrix in cardiac remodeling” invited speaker in the Diamond Jubilee 60th Indian Pharmaceutical Congress, December 12-14, 2008, Netaji Subhas Institute of Technology, Dwarka, New Delhi, India

Title of Presentation “Endothelial-myocyte matrix in cardiac remodeling” invited speaker in the International Society for Heart Research (Indian Section) annual meeting at Surat, December 14-16, 2008, India.

Title of Presentation “Endothelial-myocyte matrix in cardiac remodeling” invited speaker in the 3rd International symposia on recent advances in cardiovascular sciences, December 17, 2008, Delhi Pharmaceutical Sciences & Research University, Vasant Vihar, New Delhi, India

Title of Presentation “Role of homocysteine in cerebral vascular remodeling and Alzheimer’s disease” National Brain Research Centre, Manesar, Gurgaon, December 22, 2008, India

Title of Presentation “Role of homocysteine in diabetic cardiomyopathy” Delhi Pharmaceutical Sciences & Research University, Vasant Vihar, New Delhi, India, March 16, 2009.

Title of Presentation “Endothelial myocyte matrix in cardiac remodeling” International SFRR Satellite Symposium 2009; University of Aligarh, India, March 17-18, 2009.

Title of Presentation “Endothelial myocyte matrix in cardiac remodeling” International conference on advances in free radical research: natural products, antioxidants and

radioprotectors & 8th Annual meeting of the Society for free radical research- India, Department of Biochemistry, C.S.M. Medical College, Lucknow, & Era's Lucknow Medical College, Lucknow, India, March 19-21, 2009.

Title of Presentation "Dys-regulation of angiogenesis from hypertrophy during heart failure, Sudden cardiac death - Cardiovascular Therapy. 18-20, June 2009, Copenhagen. Denmark.

Title of Presentation "Hydrogen sulfide in endothelial myocyte matrix remodeling in heart failure, "First International conference on hydrogen sulfide biology, Fudan University, Shanghai, China, June 26-29, 2009.

Chair Symposia: Homocysteine versus hydrogen sulfide: 11th INTERNATIONAL CONGRESS ON AMINO ACIDS, PEPTIDES AND PROTEINS; Vienna, August 3rd to 7th, 2009; Congress Venue: Schottenbastei 10-16 (Juridicum); A-1010 Wien, Vienna, Austria.

Title of presentation: Homocysteine to hydrogen sulfide: 11th INTERNATIONAL CONGRESS ON AMINO ACIDS, PEPTIDES AND PROTEINS; Vienna, August 3rd to 7th, 2009; Congress Venue: Schottenbastei 10-16 (Juridicum); A-1010 Wien, Vienna, Austria.

Title of presentation: Tetrahydrocurcumin (THC) Mitigates Mitophagic/Oxidative Stress & Ischemic Injury in Hyperhomocysteinemia, 7th Annual Global Conference on Neuroprotection and Neuroregulation, Radisson Blu Arlandia Hotel, Stockholm, Sweden, Feb 28-March 3, 2010.

Title of presentation: H₂S ameliorates oxidative and proteolytic stresses and protects the endothelial myocyte function in hyperhomocysteinemic mice, Indo-US Workshop Translating Molecular Cardiology into Clinical Practice, August 6-8, 2010, Rajiv Gandhi Centre for Biotechnology, Thiruvananthapuram, India.

Symposia-organizer and chair of symposia: "Small arteries and Veins: Structure, Function and role of homocysteine" 9th World Congress for Microcirculation, Paris, 26-28 September, 2010.

Speaker: Title of presentation: "Mechanism of Mouse Coronary Vasospasm: Homocysteine, the Good, the Bad, and the Ugly" at the 9th World Congress for Microcirculation, Paris, 26/09/2010.

Poster session moderator: Vascular tone control, at the 9th World Congress for Microcirculation, Paris, 27/09/2010.

Title of presentation: Endothelial myocyte matrix in cardiac remodeling: H₂S a caroprotective agent" International Symposium on New Approaches in Cardiovascular Disorders

From Genes and Molecules to Clinical Applications, May 4-8, 2011, Ankara, Turkey.

Title of presentation: "MMP-9 and cerebralvascular remodeling" Joint Meeting of European Society of Microcirculation (ESM) and Society of Microcirculation and Vascular Biology (GfMVB), October 13-16, 2011, Munich, Germany.

Symposia chair: Plenary Session 4: B-vitamins and age-associated diseases: Neurology Advances and controversies in B-vitamins and choline, Leipzig, Germany, March 5-8, 2012.

Title of presentation: "Homocysteine mediated decrease in bone blood flow and remodeling: role of folic acid" Advances and controversies in B-vitamins and choline, Leipzig, Germany, March 5-8, 2012.

Title of Presentation "Endothelial Myocyte Matrix in Cardiac Remodeling: A Translational Approach & H₂S as Cardio-protector" Conference & Advanced Research Workshop: Sudden Cardiac Death & Cardiprotection, September 6-9 Timisoara, Romania, 2012.

Title of presentation: Mitochondrial division/mitophagy inhibitor (Mdivi) ameliorates pressure overload induced heart failure: Second Annual Conference of the Indian Academy of Biomedical Sciences (IABS) & International Symposium on Animal Models of Human Diseases, Jan 29, 2013, Department of Biochemistry, King George's Medical University, Lucknow, India

Title of presentation: Mitochondrial division/mitophagy inhibitor (Mdivi) ameliorates pressure overload induced heart failure: Society for Free Radical Research International Conference on Advances in Free Radicals, Redox Signaling and Translational Antioxidant Research & XII annual meeting of the Society for Free Radical Research-India, Jan 30-Feb 1, 2013, Lucknow, India

Symposia Chair: "Epigenetics in Disease" Society for Free Radical Research International Conference on Advances in Free Radicals, Redox Signaling and Translational Antioxidant Research & XII annual meeting of the Society for Free Radical Research-India, Jan 30-Feb 1, 2013, Lucknow, India

Title of presentation: Role of TIMP-2 in Heart Failure: International Symposium on Recent Advances in Biochemistry, Jan 30, 2013, Organized by the Department of Biochemistry, Era's Lucknow Medical College & Hospital, Lucknow, India.

Title of presentation: Homocysteine to hydrogen sulfide: in vitro, ex vivo and in vivo, Symposium on Hydrogen sulfide in the vascular system: diverse roles and mechanisms, International Union of Physiological Sciences, 21-26 July, 2013, Birmingham, England.

Title of presentation: Homocysteine to hydrogen sulfide: in vitro, ex vivo and in vivo, 2nd European Conference on the Biology of Hydrogen Sulfide, September 8-11, 2013, University of Exeter, Exeter, England.

Symposia Chair: Session-9: Chemical Characterization of gaseous cross-talk, 2nd European Conference on the Biology of Hydrogen Sulfide, September 8-11, 2013, University of Exeter, Exeter, England.

Title of presentation: Mitochondrial division/mitophagy inhibitor (Mdivi-1) protects ventricle from severe heart failure, focus session on Ischemia and Reperfusion, the 10th International Congress on Coronary Artery Disease (ICCAD 2013), Florence, Italy, October 13-16, 2013.

Title of presentation: Why give folic acid during pregnancy beside to prevent neuro-tube defect? Do we need to protect pregnancy from high homocysteine? 40th National conference of association of clinical biochemists of India, NASC Complex, PUSA, New Delhi, December 3-6, 2-13.

Title of presentation "H₂S mitigated heart failure, Annual meeting of International Academy of Cardiovascular Sciences (IACS), North American Section, September 4-6, 2014, The Delta Hotel and Convention Center, September 4-6, 2014.

Title of presentation "H₂S mitigates heart failure, Annual Meeting of IACS, European Section, Balatonyorok (Lake Balaton), Hungary, October 8-11, 2014.

Title of presentation "H₂S mitigates heart failure, Annual Meeting of International Academy of Cardiovascular Sciences (IACS), Indian Section, Amity University, New Delhi, March 10-11, 2015.

Title of presentation "Exercise and nutrition in cardiovascular and vasculocerebral impairment" INDO-GLOBAL HEALTHCARE SUMMIT & EXPO 2015, INDO-GLOBAL PHARMA and MEDICAL EXPO & SUMMIT 2015, Scientific Sessions, Marigold Hotel and Green Park Hotel, Hyderabad, India, July 23-28, 2015.

Speaker and Symposia Chair: Advances in cardiovascular biology and cardiovascular genomics: Title of Presentation "Role of H₂S in cardiovascular remodeling" October 9, 2nd European Section Meeting of the International Academy of Cardiovascular Sciences, October 8-10, 2015, Hotel Crowne Plaza, Sponsored by The University of Belgrade, Belgrade, Serbia.

Title of presentation "Exercise and nutrition in myocardial matrix metabolism, remodeling, regeneration, epigenetics, microcirculation and muscle, 8th International Conference International Academy of Cardiovascular Sciences – India Section, Madhubhan Resort, Anand, Gujarat, India, Feb 5-6, 2016.

RESEARCH IN THE NEWS:

The fact that we found diseased hearts to have greater proteinase activity than normal hearts was reported to the general public in Columbia, Missouri, through the *Missourian* newspaper and the media on March 29, 1994.

On June 6, 2000, Minority student research reported by Channel 12 News, 10 pm report on ECM in heart failure, Jackson, Mississippi.

On October 12, 2007, Homocysteine: a hidden risk factor for heart attacks: by Channel 3 News, 5:30 pm report, Louisville, Kentucky.

Patent disclosures:

D04050 Specific Inhibitor of Heart Failure, Univ of Louisville Health Sciences Center

TEACHING ACTIVITIES:

1992-1996 Contributed to the design of problem based learning (PBL) cases related to the cardiovascular and renal pathobiochemistry/physiology and pharmacology for block I, II, III and IV for the first and second year medical students. Total 12 hours/week for 8 weeks/block. University of Missouri-Columbia, Missouri

1992-1996 Undergraduate teaching, six hours per semester lecture on: "Proteinase/Antiproteinase in Extracellular Matrix Remodeling, Turnover, tissue growth, development and disease"

1992-1996 Tutor first and second year medical students in problem based learning curriculum on case dealing with Pathophysiology, Biochemistry and Pharmacology of Reno-Cardiovascular system. Univ of Missouri-Columbia, MO

1997-2003 Graduate level course on physiology of extracellular matrix, Univ of Mississippi Medical Center, Jackson, MS

1998-2003 Physiology outreach graduate research program, Univ of Mississippi Medical Center, Jackson, MS.

2003-Present PHY 625 Methods in Physiology, Univ of Louisville School of Medicine

2004-Present PHY 609 Advance Physiology, Univ of Louisville School of Medicine

2005-Present PHY 611 Advance Human Physiology, Univ of Louisville School of Medicine

INDIVIDUALS TRAINED:

Undergraduates:

Kizzi Hill (Minority high school student research apprentice program)

Wilbert Fortson (Univ of Missouri Haward Hughes Summer Fellow)
 Jeffery Banks (Univ of Missouri Haward Hughes Summer Fellow)
 Darius Pikes (Minority high school student summer '94 research apprentice program)
 Felishia Sessions (Minority high school summer '95 research apprentice program)
 Darius Pikes (Univ of Missouri Haward Hughes Summer '95 Fellow)
 Alton Marcello (Univ of Missouri Haward Hughes Summer '95 Fellow)
 Shannah Cassatt (American Heart Association-MO, Summer '95 Fellow)
 Kristin Gross (University of Missouri, Work Study Student, 95-96)
 Mike Angelo (University of Mississippi Medical Center, 97-summer student); based on his
 work during summer, Mike wrote and submitted the paper for: Westing House Institute
 Scholarship for graduate School
 Lena Palmer University of Mississippi Medical Center, 98-summer student
 Marshall Selvidge, University of Mississippi Medical Center, 98-99
 Gretl Zimmermann, Physiology Outreach graduate student
 Matthew Greig, UMMC Summer 2000 fellow
 Matthew Hunt, UMMC Summer 2000 fellow
 Ruegeaner Longino, Minority Summer Teacher, UMMC 2000
 Jared Taylor, Minority Summer High School Student UMMC 2000
 Harpreet Sood, UMMC Summer 2000 fellow
 Urseline Hawkins, Summer student 2001
 Teresa Camp, Summer 2001
 Sergey Dzugan, Spring 2002
 Elijah Kindred, University of Louisville Summer (2004) Cardiovascular Research Program for
 Minority Students.
 LaQuita Moning, Summer student 2004, School of Medicine, Univ of Louisville.
 Clacy K. Camel, University of Louisville Summer (2005) Cardiovascular Research Program
 for Minority Students.
 William Gillipsie, Summer 2006-2009, Differential Expression of GABA receptor.
 Malcolm S. Bevel, Summer 2008
 Jonathan Vacek, Summer 2008
 Branden Lamar Bell, Summer 2009
 Olubusayo Awe, Summer 2010
 Camille Brunson, Summer 2011
 Armaghan Fazal, Summer 2012
 Doris Appiah, Summer 2012
 Ilza H. Medina Ortiz, B.S., Summer 2013/14
 Khaleel Wilson, Tuft University, Summer 2015
 Rubins Petit Homme, Summer 2016

M. S. Students:

1992-1994 Mary Anderson, M. S., Biochemistry, thesis title: "Role of antioxidant in protection of proteinase inhibitor", Univ of Missouri-Columbia, MO

2003-2004 Valerie Moss, B. S., M. S. Degree in physiology and Biophysics, University of

Louisville Health Sciences Center: Thesis title: Signals from out side of the cell to inside of the cell in human heart failure

- 2003-2004 Anuj M. Patel, B. S., Renal mechanism in diabetes
- 2005-2006 Ganesh Kartha, B. S., M. S.- Mechanism of mitochondrial oxidative damage in diabetes
- 2007-2008 Mike Hughes, B. S., TAC induced cardiac hypertrophy.
- 2007-2008 Thomas Vacek, B. S., Cardiac $G\alpha_s$ and $G\alpha_i$ in hyperhomocysteinemia
- 2008-2010 Poulami Basu, M.S (Biology), Blood flow interplays with elastin/collagen and MMP/TIMP ratios to maintain healthy vascular structure and function in Sprague-Dawley rats,
- 2008-2009 Lauren A. Pence, M. S. Vascular Remodeling in Pressure Overload
- 2008-2010 Riyad Gargoum, M.S. NMDA-receptor in renovascular remodeling in hyperhomocysteinemia.
- 2016-2017 Rohit Nair, M.S. TFAM in heart disease

Ph.D., Students:

- 2003-2008 Mesia Steed, B. S., NIH supplements Fellowship, Vascular remodeling and nitric oxide; Post Doc at Wake-Forest University
- 2006-2009 Dorothea Rosenberger, M.D., Homocysteine induced arrhythmogenesis: role of connexins and activation of NMDA-R1 receptor; Assistant Professor Anesthesiology, University of Louisville.
- 2003-2007 Brooke Henderson, B. S., NIH supplement fellowship, "Mechanism of cardiac remodeling in pressure overload hypertrophy"
- 2009-2010 Madhavi Kandal, M.D., Role of homocysteine in bone remodeling and osteoporosis. Leave for Clinical Residency at Verginia Common Wealth University, Richmond, VA.
- 2008-2010 Shrekanth Givvmani, M. D., Angiogenic mechanism of compensatory hypertrophy to decompensatory heart failure.
- 2008-2011 Charu Munjal, M.S., Role of MMP-9 in Mesenteric vascular remodeling in hyperhomocysteinemia.

- 2011-2014 Nithya Narayanan, Epigenetic regulation of hyperhomocysteinemia and vascular remodeling
- 2013-2015 Lee Winchester, Role of M1 versus M2 macrophages in skeletal muscle myopathy during hyperhomocysteinemia and exercise, Assistant Professor, Western Kentucky University, Owensboro, KY
- 2012-2016 Anastasia Familtseva, Mechanism of Toll-like receptor in mesentery microvascular remodeling hyperhomocysteinemia-induced hypertension. Post doc at University of Arizona
- 2014-2016 Ilya Chernyavskiy, Role of PON1-3 in homocysteine induced arterial stiffness and atherosclerosis
Patent lawyer
- 2015-present George H. Kunkal, Mechanisms of cardiomyocytes resitiation
2016-present Nick Theilen, Exercise in Skeletal Muscle Remodeling

Medical students & fellow:

- 1993 Larry Meyer, second year medical student, worked on "Proteinases and restenosis: Matrix metalloproteinase, tissue inhibitor and activators"
- 1994 Steve Haas, second year medical student, worked on "Differential gene analysis in dilated cardiomyopathic and infarcted human heart, and compared with normal tissue"
- 1995 Srinivasa R. Alla, M. D., resident internal medicine, worked on "tetracycline inhibition of fibroblast collagenase"
- 1995 V. S. Bheemanathini, M. D., resident internal medicine/cardiology, worked on "Role of matrix proteinases in cardiac remodeling"
- 1995 S. Mandi, M. D., resident cardiology, worked on "Matrix metalloproteinases in dilated cardiomyopathy"
- 1996 Brian Clonts, second year medical student, worked on "Oxidant-induced vascular structural and functional alterations"
- 1998-1999 Ervine Fishmann, Nephrology Fellow, Univ of Mississippi Medical Center, "Homocysteine, Vascular and Kidney ECM remodeling in obese and elderly"
- 1998 P. Patel, Nephrology, Univer of Mississippi Med Center, "Cold sensitive DNA damage"
- 1999 Amanda Miller, Hyperhomocysteinemia and organ damage

- 2000 Michael Cox, Mechanisms of heart failure
- 2001 Matthew Hunt, Apoptosis in human heart end-stage failure
- 2002 Sergey Dzugan, Metalloproteinase in heart failure
- 2005 Amy Shah, Aortic aneurismal remodeling in hyperhomocysteinemia
- 2006 Justin Newsome, MMP in genetic model of type 1 diabetes
- 2007 Eugene Carneal, MMP-9 and connexin-43 in diabetic Akita mouse hearts
- 2008 Zackary Bears, Role of Tempol in Mitigation of Diabetes in Akita mice.

Graduate Students and Their Committees:

- 1993-1994 Geraldine Glover, B. S. (Gus T. Ridgell Minority National Fellow) "Induction of matrix metalloproteinase by serum in human heart endothelial cells", Lab rotation.
- 1992-1994 Aurita Antao, M. S., studied "Regulation of myocardial matrix metalloproteinases, Lab rotation
- 1995-1996 Kendall Lewis, B. S., (Gus T. Ridgell Minority National Fellow) "Anti-angiogenic Factor(s) in the Heart" Lab rotation
- 1996 Brain Phillips, B. S., lab rotation, "TUG-zymographic analysis of matrix metalloproteinases" Lab rotation
- 1997-2001 Lane M. Smiley, B. S., "Hypertensive Heart Disease", Univ of Mississippi Medical Center, MS
- 2001 Derrick Chandler, B. S., "Reversal of Cardiovascular Remodeling by inhibitor of metalloproteinase, lab rotation
- 2003 Thomas D. Ryan, Ph. D., student from University of Alabama at Birmingham "Extracellular matrix remodeling during the progression of volume overload-induced heart failure in rats" Out side adviser.
- 2003 Corey Reynolds, B. S., Ph. D., advisory committee, University of Louisville Health Sciences Center
- 2005-2008 Cynthia J. Miller (Ph. D. advisory committee)
- 2006-2009 Gladys Ngoh (Ph. D. advisory committee)

2008- Qianwen Wang (Ph. D. advisory committee)

2008- Laura A. Wheat (Ph. D. advisory committee)

2008- Lewis Watson (Ph.D. advisory committee)

2009-2012 Pradyut K. Paul, (Ph.D. advisory committee, Anatomy and Neurosciences)

2010-2012 Jason Hellmann (Ph. D. advisory committee)

2010-2011 Joseph Abayev, (M.S.) Acrelin in mitochondrial dysfunction

2010- Chirag Soni (Ph. D. advisory committee)

2012 Denise M. Coley, Degree: MS; Presentation Title: Modulation of renovascular matrix in hyperhomocysteinemia: role of hydrogen sulfide, Defense Date: 11/27/12

2012 Joelle Robinson, Role of exercise in hypertension, MS, defence on December 4, 2012

2012 Camille Brunson

2012 Jessica Harris

2012 Noel Dias

2014- Michael J. Book

Post-doctoral fellow:

1993-1996 Suresh Kumar Gopalkurup, Ph. D., M.D., "Regulation of cardiovascular proteinases", resident Univ of Virginia

1996-1998 Vibhas Mujumdar, Ph. D., "Cardiovascular Remodeling", Bio-Tech Firm, Richmond VA

1997-1998 Karima Taouil, Ph. D., "Matrix Proteinases in Heart Failure", Fellow in INSERC, Paris, France

1998-1999 Mauricio Bernstein, M. D., "Role of metoprolol in heart failure", Physician-Cardiologist, Univ of San Pao, Brasil

1998-1999 Chandra M. Tummalapalli, Ph. D., "Extracellular matrix degradation induces apoptosis in cardiovascular muscle" College Lecturer, Memphis, TN

2002-2004 Suresh Shastry, Ph. D., "Role of homocysteine in microvessel endothelial cell remodeling", Fellow Southwestern Medical Center, Dallas, TX

- 2004-2006: Alexander Ovechkin, M. D., Ph. D., Metalloproteinases in CHF in eNOS -/- nNOS-/- and iNOS -/- mice; assistant professor, neurosurgery, U Of L
- 2004-2008 Karni S. Moshal, Ph. D., Homocysteine in cardiac arrhythmias (AHA-PDF); Scientist, Disease Biophysics Program; Bioengineer Division; Harvard University, Cambridge, MA.
- 2007-2008 Munish Kumar, Ph. D., Homocysteine induces blood brain barrier permeability. Assistrant Professor, Himachal University, India
- 2008-2009 Soumi Kundu, Ph.D., Homocysteine in hearing loss, Research Associate, University of Sweden
- 2010-2011 Aygul B. Dankowski, Ph.D., Research Associate, Department of Cardiology, University of Louisville.
- 2007-2010 Walter Rodriguez, Role of remodeling in diabetes, Assistant Professor, University of Louisville
- 2007-2011 Natia Qipshidze, M. D., Research Associate, Biochemistry, University of Louisville
- 2005-2011 Utpal Sen, Ph. D., Mechanism of cell transformation to myofibroblasts in renal diseases; Assistant Professor, University of Louisville.
- 2004-2012 Neetu Tyagi, Ph. D., Role of mouse embryonic stem cell in cerebrovascular regeneration; Assistant Professor, University of Louisville
- 2008-2013 Paras K. Mishra, Ph.D. Beta-2 adenergic receptor mechanism in hyperhomocysteinemia and diabetes, Assistant Professor, University of Nebraska-Omaha.
- 2012-2013 Seema Bhargava, Ph.D., Visiting Scientist, from Delhi University, India
- 2010-2015 Shrekanth Givvmani, M. D., Ph.D., Research Assistant Professor, SUNY Up State Medical Center, Department of Surgery.
- 3013-present Sudhakar Veeranki, DVM, Ph.D., Research Assistant Professor
- 2013-present Pankaj Chaturvedi, Ph.D., Post Doctoral Fellow
- 2015-present Nevena Jeremic, Ph.D., Post Doctoral Fellow

BIBLIOGRAPHY:

PEER REVIEWED PUBLICATIONS:

1. **Tyagi SC** & Khan AA. Studies on the interaction of chromium (III) with anthranilic acid: A kinetic study, *Ind J Chem*, 16A:657-660, 1978.
2. **Tyagi SC** & Khan AA. Studies on the composition and kinetics of the complex formed by the interaction of hexaquo chromium (III) with salicylic acid, *J Inorg Nucl Chem*, 40: 1899-1901, 1978.
3. **Tyagi SC** & Khan AA. Studies on the kinetics and mechanism of the interaction of hexaquo chromium (III) with phthalic acid, *J Chem Soc Dalton Trans*, 420-422, 1978.
4. **Tyagi SC** & Khan AA (1979) Studies on the composition and kinetics of the complex formed by the interaction of chromium (III) with p-hydroxy benzoic acid, *Inorg Chem*, 18:1515-1517, 1979.
5. **Tyagi SC** & Khan AA. Studies on the kinetics and mechanism of complex formed by the interaction of chromium (III) with acetate ions, *J Inorg Nucl Chem*, 41:1447-1450, 1979.
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