

DEPARTMENT OF MEDICAL PHYSIOLOGY

FACULTY/STAFF ACTIVITIES

1993

Awards and Appointments

The **Department of Medical Physiology** has established the “Elvin Estus Smith Award” in recognition of the many contributions of Dr. Smith to the department and to the Texas A&M University Health Science Center. This award will be presented during the annual Cadaver Ball to the second-year medical student who completed the first-year medical physiology course with the highest grade average. Mr. Stephan Heinz was named as the first recipient of the award; he was given an engraved plaque and a set of reference books entitled *The Ciba Collection of Medical Illustrations* at the Cadaver Ball held April 30, 1993.

Chilian WM (MPHY) has been awarded a Senior International Fellowship from the Fogarty International Center of the National Institutes of Health. He will spend his one-year fellowship (9/1/93-8/31/94) doing research in the laboratory of Dr. Wolfgang Schaper at the Max Planck Institute for Physiological and Clinical Research in Bad Nauheim, Germany.

D’Angelo GD (MPHY) joined the Department of Medical Physiology and the Microcirculation Research Institute in February 1993 after obtaining his Ph.D. from the University of Vermont-Burlington. He will be examining the role of calcium as a regulator of basal vascular tone and the vascular myogenic response.

Engler DA (Department of Cardiology, The University of Texas Houston Medical School), **Majesky MW** (Department of Pathology, Baylor College of Medicine), and **Scott-Burden T** (Department of Cardiology, The University of Texas Houston Medical School) have been appointed as Adjunct Assistant Professors in the Department of Medical Physiology. They will join departmental faculty in research into microvascular responses to growth factors.

Granger HJ (MPHY)

- has been selected as a member of the National Institutes of Health (NIH) Reviewers Reserve (NRR) for the term 07/01/93- 06/30/97. The NRR is a group of experts available to assist chartered scientific review committees of the NIH as reviewers when their expertise is needed and when it cannot be provided by committee members. This honor has been bestowed on Dr. Granger based on his international reputation as a leader in the field of cardiovascular research and his years of service as a reviewer for the Experimental Cardiovascular Sciences Study Section of the NIH.
- has been selected as the Sixth Michael J. Hack Lecturer by the Department of Physiology, The Medical College of Wisconsin. On May 10, Dr. Granger presented “Physiology of Postcapillary Venules” at the Children’s Hospital of Wisconsin Auditorium in Milwaukee.
- has been appointed to a one-year term on the Publications Committee of the Microcirculatory Society; the committee will be working with the editorial board to establish the Society’s new journal *Microcirculation*. He also served as an external reviewer for a National Institutes of Health Program Project Grant application at the University of Missouri-Columbia, June 1993.

Lundberg MS (MPHY) has been selected as one of four recipients of the Graduate Student Award at the 1993 American Physiological Society Conference "Signal Transduction and Gene Regulation" to be held November 17-20, 1993 in San Francisco, California. Ms. Lundberg will receive a certificate and a \$500 cash prize in recognition of the scientific merit of her research "Alterations in a β -Adrenoceptor mRNA Expression During Cyclic Stretch is Cell-Type Specific in Cultured Vascular Smooth Muscle."

Mogford JE (MPHY) was awarded an Evans-Gilruth Foundation scholarship for his proposal "Integrin Mediated Cell Signalling in Vascular Smooth Muscle" during a meeting of the NASA Alumni League in Houston, October 27, 1993.

Peterson TV (MPHY) was awarded a Senior International Fellowship from the Fogarty International Center of the National Institutes of Health. He will spend his nine-month (June-November 1993; July-September 1994) fellowship doing research in the laboratory of Dr. Peter Bie at the University of Copenhagen, Denmark.

Grants and Contracts

Chilian WM (MPHY) received a \$785,277 National Institutes of Health grant entitled "Sex Hormone-induced Modulation of Coronary Smooth Muscle" for the period 12/01/93-11/30/97.

Meininger CJ, and Wu G (MPHY) received a \$41,300 Texas A&M University Interdisciplinary Research Initiatives Program grant entitled "Nitric Oxide Synthesis in Endothelial Cells of the Diabetic BB Rat" for 1993.

Muller JM (MPHY) received a \$72,900 National Institutes of Health award entitled "Mechanisms of Arteriolar Flow-induced Vasodilation" for the period 11/01/93-10/31/96.

Peterson TV received a \$106,169 Southern Arizona Foundation grant entitled "Nitric Oxide and Control of Renal Function in the Primate" for the period 07/01/93-06/30/97.

Zawieja DC (MPHY) received a \$394,414 National Institutes of Health grant entitled "Mechanisms of Spontaneous Lymphatic Contractions" for the period 07/01/93-06/30/97.

Publications

Davis MJ (MPHY) Spontaneous contractions of isolated bat wing venules are inhibited by luminal flow. *Am. J. of Physiol.* 264:H1174-H1186, 1993.

Davis MJ (MPHY) Myogenic response gradient in an arteriolar network. *Am. J. of Physiol.* 264 (*Heart and Circ. Physiol.* 33): H2168-H2179, 1993.

Davis MJ, and **Meininger GA** (MPHY) The myogenic response in microvascular networks. In *Mechanoreception by the Vascular Wall* edited by GM Rubanyi, Futura Publishing, Mt. Kisco, NY, 1993.

DeFily DV and **Chilian WM** (MPHY) Preconditioning protects coronary arteriolar endothelium from ischemia-reperfusion injury. *Am. J. of Physiol.* 265 (*Heart and Circ. Physiol.* 34): H700-H706, 1993.

DeFily DV and **Chilian WM** (MPHY) Models for coronary collateral development. *The Collateral Circulation*, W.S. Schaper and J. Schaper, eds., Kluwer, Amsterdam, 1993.

DeFily DV, **Kuo L**, **Davis MJ**, and **Chilian WM** (MPHY) Segmental distribution and control of coronary vascular resistance. *Recent Advances in Coronary Circulation*, Y. Maruyama, F. Kajiji, J.I.E. Hoffman and J.A.E. Spaan, eds., Springer Verlag, Tokyo, 1993.

Falcone JC, Granger HJ, and Meininger GA (MPHY) Enhanced myogenic reactivity in spontaneously hypertensive rats: relationship to vessel wall mechanics. *Am. J. of Physiol.* 265: H1847-H1855, 1993.

Falcone JC, Kuo L, and Meininger GA (MPHY) Endothelial cell calcium increases during flow-induced dilation in isolated arterioles. *Am. J. of Physiol.* 264:H653-H659, 1993.

Jones CJH, Kuo L, Davis MJ, and Chilian WM (MPHY) Endothelial control of the coronary microcirculation. *Eur. Heart J.* 14 (Suppl. I): 55-59, 1993.

Jones CJH, Kuo L, Davis MJ, and Chilian WM (MPHY). Myogenic and flow-dependent control mechanisms in the coronary microcirculation. *Basic Research in Cardiology* 88:2-10, 1993.

Kuo L, Arko F, Chilian WM, and Davis MJ (MPHY) Coronary venular responses to flow and pressure. *Circ. Res.* 72:607-615, 1993.

Kuo L, Chilian WM, et al. (MPHY) Dietary-induced atherosclerotic lesions have increased levels of acidic FGF mRNA and altered cytoskeletal and extracellular matrix mRNA expression. *J. of Vasc. Res.* 30: 327-332, 1993.

Kuo L, Chilian WM and Davis MJ (MPHY) Myogenic and flow-induced responses in coronary arterioles. *Recent Advances in Coronary Circulation*, Y. Maruyama, F. Kajiya, J.I.E. Hoffman and J.A.E. Spaan, eds., Springer Verlag, Tokyo, 1993.

Meininger GA (MPHY) Impaired arteriolar myogenic reactivity in early experimental diabetes. *Diabetes* 42: 1226-1232, 1993.

Yong Y, Meininger GA, and Linthicum DS (MPHY). Enhancement of histamine-induced vascular leakage by pertussis toxin in SJL/J mice but not BALB/c mice. *J. of Neuroimmunology* 45: 47-52, 1993.

Yuan Y, Chilian WM, Granger HJ, and Zawieja DC (MPHY). Permeability to albumin in isolated coronary venules. *Am. J. of Physiol.* 265 (*Heart and Circ. Physiol.* 34): H543-H552, 1993.

Yuan Y, Granger HJ, Zawieja DC, DeFily DV, and Chilian WM (MPHY) Histamine increases venular permeability via a phospholipase C-NO synthase-guanylate cyclase cascade. *Am. J. of Physiol.* 264: H1734-H1739, 1993.

Zawieja DC, and Granger HJ (MPHY) et al. Distribution, propagation, and coordination of contractile activity in lymphatics. *Am. J. of Physiol.* 264:H1283-H1291, 1993.

Ziche M, Zawieja DC, Granger HJ, and Hester RK (MPHY). Calcium entry mobilization and extrusion in postcapillary venular endothelium exposed to bradykinin. *Am. J. of Physiol.* 265 (*Heart and Circ. Physiol.* 34): H569-H580, 1993.

Presentations

Chilian WM (MPHY)

- Inhibition of nitric oxide synthesis attenuates coronary metabolic vasodilation. Presented at the 66th Scientific Sessions of the American Heart Association, Atlanta, Georgia, November 1993.
- Inhibition of nitric oxide synthesis attenuates coronary metabolic vasodilation. Presented at the 66th Scientific Sessions of the American Heart Association, Atlanta, Georgia, November 1993.

- Coronary vascular microdomains: an evolving concept. Presented at the University of Missouri, Columbia, Missouri, November 1993.
- Integrated control of coronary vascular microdomains. Presented at the Department of Physiology, University of Düsseldorf, Germany, December 1993.

Czisny LE, Zawieja DC, and Granger HJ (MPHY) Tube formation by coronary venular endothelial cells seeded on Matrigel is mediated by an FGF receptor/phospholipase C/protein kinase signaling cascade. Presented at Experimental Biology 93, New Orleans, Louisiana, March 1993.

Davis MJ (MPHY)

- Mechanisms of flow-induced dilation of arterioles. Presented to the Department of Physiology, University of Missouri-Columbia, March 1993.
- Interactions between mechanisms regulating microvascular smooth muscle tone. Presented at the 32nd International Congress of Physiological Sciences, Glasgow, Scotland, August 1993.
- Responses of hamster cheek pouch arterioles to pulsatile pressure in vitro. Poster presented at the 32nd International Congress of Physiological Sciences, Glasgow, Scotland, August 1993.
- Endothelial cell signaling and endothelial-derived relaxing factor. Presented at the British Society for Cardiovascular Research symposium "The Biology of the Microcirculation," Cardiff, Wales, August 1993.
- Mechanisms of endothelium dependent dilation of coronary microvessels. Presented at the Department of Physiology, Medical College of Wisconsin, Milwaukee, Wisconsin, October 1993.

Davis MJ and Davidson JA (MPHY)

- Responses of hamster cheek pouch arterioles to pulsatile pressure in vitro. Presented at the Microcirculatory Society, New Orleans, Louisiana, March 1993.
- Unloaded shortening velocity of vascular smooth muscle in myogenically active arterioles. Presented at the Experimental Biology 93, New Orleans, Louisiana, March 1993.

DeFily DV (MPHY) Adenosine modulates α_2 -adrenergic constriction of coronary arterioles. Presented at the 66th Scientific Sessions of the American Heart Association, Atlanta, Georgia, November 1993.

DeFily DV, Patterson JL, and Chilian WM (MPHY). Endogenous adenosine production does not antagonize coronary arteriolar α_1 -adrenergic vasoconstriction. Presented at Experimental Biology 93, New Orleans, Louisiana, March 1993.

Falcone JC (MPHY)

- Microvascular regulation of blood flow. Seminar presented to the Department of Physiology, East Tennessee State University, February 1993.
- Digital imaging and calcium. Presented at the University of North Texas Health Science Center, Fort Worth, August 1993.
- Microvessels, blood flow and hypertension. Presented to the Department of Physiology, University of Kentucky, Lexington, Kentucky, September 1993.

Falcone JC, Kuo L, Zawieja DC, and Meininger GA (MPHY) Endothelial cell heterogeneity and calcium as measured in intact isolated arterioles. Presented at the Microcirculatory Society, New Orleans, Louisiana, March 1993.

Granger HJ (MPHY)

- Tyrosine kinase inhibitors block bFGF-induced DNA synthesis, tyrosine phosphorylation, and nuclear translocation of bFGF in venular endothelial cells. Presented at Experimental Biology 93, New Orleans, Louisiana, March 1993.
- Physiology of postcapillary venules. The Sixth Michael J. Hack Memorial Lecture presented at the Medical College of Wisconsin, Milwaukee, May 1993
- Physiology of postcapillary venules. Seminar presented at the University of Missouri-Columbia, June 1993.
- Coronary angiogenesis: signaling of bFGF-induced proliferation and tube formation in cultured coronary venular endothelial cells. Seminar and poster presented at the 32nd International Congress of Physiological Sciences, Glasgow, Scotland, August 1993.
- Angiogenesis - why and how. Presented at the British Society for Cardiovascular Research symposium "The Biology of the Microcirculation", Cardiff, Wales, August 1993.
- Coronary angiogenesis and its control. Presented at the Department of Physiology, Tulane University Medical School, December 1993.

Jones CJH, Kuo L, Davis MJ, and Chilian WM (MPHY) The role of nitric oxide in coronary microvascular dilatation by adenosine. Presented at Experimental Biology 93, New Orleans, Louisiana, March 1993.

Li QX, Meininger GA, and Zawieja DC (MPHY)

- Morphometric analysis of microvascular networks using digital imaging microscopy. Presented at the 11th Annual Houston Conference on Biomedical Engineering Research, Houston, Texas, February 1993.
- Analysis of microvascular networks in three dimensions using digital imaging microscopy. Presented at the Microcirculatory Society, New Orleans, Louisiana, March 1993.

Meininger CJ (MPHY)

- Molecular mechanisms of angiogenesis. Seminar presented to Department of Anatomy, University of Iowa, January 1993.
- The role of mast cells in angiogenesis. Seminar presented at Oakland University, Rochester, Michigan, January 1993
- Blood vessels. A "Science Enrichment Day" program presented at Southwood Valley Elementary School, College Station, January 1993.

Meininger GA, et al. (MPHY)

- 3D distribution of protein kinase C in smooth muscle cells: effect of activation. Presented at the 37th Annual Meeting of the Biophysical Society, Washington, DC, February 1993
- G protein involvement in arteriolar myogenic reactivity. Presented at the Microcirculatory Society, New Orleans, Louisiana, March 1993.

- Protein kinase C: distribution and translocation in smooth muscle. Presented to the Department of Pathology and Medicine at the University of Texas Health Science Center at San Antonio, April 1993.
- Relationship between microtubular integrity and protein kinase C activity in vascular smooth muscle cells. Presented at the 32nd International Congress of Physiological Sciences, Glasgow, Scotland, August 1993.
- Mechanisms of the myogenic response. Presented at the British Society for Cardiovascular Research symposium "The Biology of the Microcirculation", Cardiff, Wales, August 1993.
- Activation and translocation of protein kinase C in smooth muscle. Presented to the Department of Physiology, University of Arizona, Tucson, September 1993
- Unique mechanisms regulating arteriolar tone. Presented to the Microcirculation Group, Department of Physiology, University of Arizona, Tucson, September 1993.
- Mechanisms of intrinsic vascular smooth muscle tone. Presented at the Workshop on Vascular Biology in Hypertension, San Francisco, California, September 1993.
- Intrinsic control of tone in microvessels. Presented at the first meeting of the Coronary Club, Tohoku University, Sendai, Japan, October 1993.
- Graduate Programs and Research in the Life Sciences. Presented to students at Texas A&M University's College of Science, October 1993
- The Importance of Biomedical Research in Medicine. Presented to the Texas A&M University Pre-Med Society, November 1993

Muller JM (MPHY)

- Coronary microvascular responses to pressure and flow. Presented at a meeting of the Biomedical Engineering Society, Memphis, Tennessee, October 1993.
- Pathophysiological alterations of coronary microvascular responses in atherosclerosis. Presented at a meeting of the Biomedical Engineering Society, Memphis, Tennessee, October 1993.

Muller JM et al. (MPHY) Inhibition of nitric oxide synthase suppresses enhanced bradykinin-induced relaxation in coronary resistance arteries of trained pigs. Presented at the Microcirculatory Society, New Orleans, Louisiana, March 1993.

Odom TW, and Chilian WM (MPHY) Congestive heart failure in the commercial chicken: implications of pulmonary vascular growth. Presented at Experimental Biology 93, New Orleans, Louisiana, March 1993.

Peterson TV (MPHY)

- Renal effects of nitric oxide synthase inhibition in conscious monkeys. Presented at Experimental Biology 93, New Orleans, Louisiana, March 1993.
- Effect of peptides from the ANF prohormone NH₂-terminus on sodium excretion in conscious monkeys. Presented at Experimental Biology 93, New Orleans, Louisiana, March 1993.
- Renal responses to volume expansion during nitric oxide inhibition in conscious monkeys. Presented at the 12th International Congress of Nephrology, Jerusalem, Israel, June 1993.

- Neurohumoral control of sodium excretion in the nonhuman primate. Presented to the Department of Pediatrics at the Karolinska Institute, Stockholm, Sweden, July 1993.
- Nitric oxide and renal effects of volume expansion in the conscious nonhuman primate. Presented at the 32nd International Congress of Physiological Sciences, Glasgow, Scotland, August 1993.
- Neurohumoral control of sodium excretion in the nonhuman primate. Presented at the Free University of Berlin, September 1993.
- Neurohormonal control of sodium excretion in the nonhuman primate. Presented to the Department of Physiology, University of Birmingham School of Medicine, Birmingham, England, October 1993.
- Neurohumoral control of sodium excretion in the nonhuman primate. Presented to the Renal Institute and Department of Nephrology, University of Wales College of Medicine, Cardiff, Wales, October 1993.
- Neurohumoral control of sodium excretion in the nonhuman primate. Presented at the Physiological Institute, University of Heidelberg, Germany, November 1993
- Neurohumoral control of sodium excretion in the nonhuman primate. Presented at the Department of Medical Physiology, University of Copenhagen, Denmark, November 1993.

Sharma NR, and Davis MJ (MPHY) Effect of substance P on pig coronary artery endothelial cells. Presented at Experimental Biology 93, New Orleans, Louisiana, March 1993.

Song J, and Davis MJ (MPHY) Bradykinin-induced $[Ca^{2+}]_i$ response and ion channels in coronary venular endothelial cells. Presented at the 37th Annual Meeting of the Biophysical Society, Washington, DC, February 1993

Song J, Sharma NR, and Davis MJ (MPHY) KCl-induced increases in endothelial cell cytosolic calcium in the absence of voltage-gated calcium channels. Presented at Experimental Biology 93, New Orleans, Louisiana, March 1993.

Wu G, and Meininger CJ (MPHY) L-arginine synthesis from L-citrulline in endothelial cells. Presented at Experimental Biology 93, New Orleans, Louisiana, March 1993.

Yong T, Linthicum DS, and Meininger GA (MPHY) Enhancement of histamine induced vascular leakage by pertussis toxin in SJL/J mice but not BALB/c mice. Presented at Experimental Biology 93, New Orleans, Louisiana, March 1993.

Yuan Y (MPHY)

- Histamine increases venular permeability through a phospholipase C-nitric oxide synthase-guanylate cyclase signaling cascade. Presented at the 3rd Sino-American Conference on Burns and Trauma, Guangzhou, China, August 1993.
- Recent advances of microcirculatory research on isolated microvessels. Presented at the Firsts Military Medical University, Guangzhou, China, August 1993
- Physical and chemical modulation of microvascular exchange. Presented at the Changhai Hospital, Shanghai, China, August 1993.

Yuan Y, Granger HJ, Zawieja DC, Mier RA, and Chilian WM (MPHY) Histamine increases coronary venular permeability by phospholipase C-dependent synthesis of nitric oxide. Presented at Experimental Biology 93, New Orleans, Louisiana, March 1993.

Zawieja DC (MPHY)

- Inhibition of the active lymph pump in rat mesenteric lymphatics by H_2O_2 . Presented at the 32nd International Congress of Physiological Sciences, Glasgow, Scotland, August 1993.
- Microvascular lymphatics. Presented at the British Society for Cardiovascular Research symposium "The Biology of the Microcirculation," Cardiff, Wales, August 1993.

Zawieja DC, Greiner ST et al. (MPHY) Effects of N^G -monomethyl-L-arginine on the contractile activity of rat mesenteric lymphatics. Presented at the Microcirculatory Society, New Orleans, Louisiana, March 1993.

Ziche M, Granger HJ et al. (MPHY) Nitric oxide promotes DNA synthesis and proliferation of endothelial cells isolated from postcapillary venules. Presented at Experimental Biology 93, New Orleans, Louisiana, March 1993.

Professional Activities

Chilian WM (MPHY) provided consultation to the members of the SCOR in Ischemic Heart Disease at the University of Iowa, February 1993.

Granger HJ (MPHY) participated as Chairman of the Cardiovascular Section in a long-range planning meeting of the American Physiological Society, Atlanta, Georgia, November 1993

Zawieja DC (MPHY) attended the 14th International Congress on Lymphology and the North American Society for Lymphology meetings in Washington, DC, September 23-25 1993.