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YEAR IN REVIEW  
2008-2009

RESEARCH FUNDING: Despite the very difficult funding environment at NIH, NSF and other agencies, 2008-2009 was another strong year in which the department continued to excel in education, research and service. Research funding in the department was $6,846,663 (total costs) in NIH support. Our department is ranked in the top 25 nationally in research funding among all public University Physiology Departments. Also noteworthy is the fact that again this year, our faculty held more NIH grants than any other department at the Medical Center. Nearly every faculty member’s research program was supported by major external funding.

EDUCATION: Dr. Merrill Tarr, Director of Medical Education for the department, continues to play a major role in running the new integrated modules for which our department has primary responsibility - Cardiopulmonary and Renal-Endocrine. To the credit of all the individual faculty instructors and particularly to Merrill, the Cardiopulmonary and Renal-Endocrine modules were both rated highly by the students. This was also another successful year in terms of teaching awards. At the “Grande Affair” celebration in April, Dr. John Wood and Dr. Gustavo Blanco were again recognized for excellence in teaching. They each won the Student Voice Award for “Outstanding Lecturer” in the first year of the medical curriculum. We congratulate both John and Gustavo on their continuing success. And once again this year our department was the recipient of the “Outstanding Module in the First Year” award which went to Cardio-pulmonary. Dr. Tarr serves as director of this module and he deserves a lot of credit for its success.

YEAR OF THE RESCISSION: With the state budget in the red by one billion dollars, severe cuts had to be made. By the end of the year, our department returned 10% of its state funding. This was a very painful exercise that resulted in permanent elimination of faculty and staff positions that will have a lasting negative impact on the department. We look forward to better times in the future, but next year again looks like more pain.

DEPARTMENTAL SPACE: Departmental space went through a major transformation during the year and will never be the same. With funding to renovate the third floor of Wahl Hall East (WHE) and other floors for the Cancer Center effort, Physiology gave up its long time home including office and laboratory space on the 3rd floor of WHE. Of course, many faculty members had already relocated with opening of the new Kansas Life Science Innovation Center (KLSIC) but this year the remaining faculty members had to move along with the Physiology Department offices. After much deliberation, the Physiology offices moved to the ground floor of WHE in space previously occupied by the Kidney Center. Physiology faculty laboratories are now located in the Smith, Lied, Orr-Major, Hoglund and KLSIC buildings. Our department is now more dispersed than at any time in its history. Also, the Physiology Instrumentation shop had to be relocated. Appropriate space was identified in the basement floor of Smith East and all shop
functions remain available to members of the department. With the retirement of Ted Gleason, Ian Edwards now runs the Physiology shop.

**TENURE TRACK APPOINTMENTS:** We are pleased and excited to have added Dr. Vargheese Chennathukuzhi to the department as a new assistant professor. He joined the department from Wyeth Pharmaceuticals where he was a Senior Research Scientist. Vargheese received his Ph.D. in biochemistry from the Indian Institute of Technology and did a postdoctoral fellowship at the University of Pennsylvania Center for Research on Reproduction and Women’s Health where he studied translational regulation of mRNAs during spermatogenesis. At Wyeth he worked on numerous drug development projects for endocrine disorders and contraceptive development. He brings added strength to the department’s research focus on reproductive biology and contraception.

**RESEARCH TRACK APPOINTMENTS:** There were no appointments to the research track during the year

**ADJUNCT APPOINTMENTS:** Several secondary appointments to the department were made.

**Mahesh Visvanathan,** Ph.D. was appointed as research assistant professor. Mahesh works closely with the Cancer Center and the K-INBRE program to provide bioinformatics expertise. He is also a member of the Electrical Engineering and Computer Science department on the main campus.

**Sumedha Gunewardena,** Ph.D. was appointed as research assistant professor. Sumedha joined KUMC from the Center for Cellular and Biomolecular Research at the University of Toronto. He is a bioinformatics expert and was recruited as part of an expansion of the KUMC Bioinformatics group. In addition to developing his own research program, he will provide service to other faculty members in areas related to analysis of microarray data and application of computational approaches to solving biological problems.

**Cary Savage,** Ph.D. was appointed as associate professor. Cary’s academic appointment is in Psychiatry. He is a staff scientist in the Hoglund Brain Imaging Center and serves as Director of Functional MRI. His research focuses on the roles of prefrontal cortex and limbic system in memory and motivational processes, and how these networks are disrupted in psychiatric and neurologic conditions.

**Anil Kumar,** Ph.D. was appointed as professor. He is currently Professor & Chair of the Department of Pharmacology at UMKC. Dr. Kumar trained with Dr. Bill Narayan and has a large NIH funded research program on neuroAIDS that intersects closely with projects of Dr. Buch and Dr. Cheney.
Shilpa Buch, Ph.D. was appointed as professor in the department. Shilpa was a member of the department for several years before accepting a position at the University of Nebraska Medical Center. She has a very active AIDS research program part of which continues to be housed at KUMC. She will continue to have an active role in the department as an adjunct professor.

Buddhadeb Dawn, M.D., Ph.D., was appointed as professor. Dr. Dawn’s primary appointment is Internal Medicine. He also serves as Director of the Cardiology Division, Vice Chair of Research in the department and Director of the Cardiovascular Institute at KUMC. Dr. Dawn is widely recognized for his research using adult stem cells from the bone marrow as well as the heart to generate new, healthy tissue to repair the damaged heart after a heart attack.

Andrew Symons, M.D., Ph.D. was appointed at the assistant professor level. Andrew’s primary appointment is in the Ophthalmology Department. Dr. Symons is working on mouse models to try to identify genes that make some mouse strains more likely than others to develop retinal blood vessel damage when exposed to high oxygen levels. The mouse model that he uses is very similar to the human disease Retinopathy of Prematurity, which is one of the major causes of severe visual impairment in children.

**FACULTY PROMOTIONS:** There were no promotions during the year.

**FACULTY/STAFF DEPARTURES:**

Dr. Shilpa Buch. Shilpa accepted a position as Professor in the Department of Pharmacology and Experimental Neuroscience at the University of Nebraska. While we were very disappointed to lose Shilpa, Nebraska presented a great opportunity and has an outstanding neuroAIDS research group. Shilpa will continue to maintain a joint appointment in our department and will have active research projects at KUMC.

Ted Gleason retired on Friday, September 5th after nearly 20 years of loyal and dedicated service to the department as a machinist and electronics technician. Unfortunately, plans to recruit a full-time replacement for Ted were scrapped when his position was lost to the rescission.

**FACULTY AWARDS/ACCOMPLISHMENTS:**

Gustavo Blanco received the Margrethe Moller award at the Na-K-ATPase meeting in Aarhus, Denmark.

Randy Nudo was named Outstanding Member of the American Society for Neurorehabilitation.

Shilpa Buch won the Research Investigator Award in the School of Medicine, KUMC.

Navneet Dhillon won the Noffsinger Investigator Award at KUMC.
Sam Enna received the Torald Sollmann Award from ASPET in recognition of his many contributions to the field. Several highly successful symposia associated with the department were held during the year - The Annual Greenwald Symposium (Leslie Heckert), the U54 Contraceptive Program Meeting (Joe Tash) and the Bill Narayan Memorial Symposium (Paul Cheney and Shilpa Buch).

GRADUATE PROGRAM AND PHYSIOLOGY SOCIETY: The graduate students in the department had another active year. The “Physiology Society” leadership included Argenia Doss as President, Elizabeth Dille as Vice President and Rachel Williams as Social Event Coordinator. We are very pleased with the growth of the graduate program in Physiology. In August of 2008, five new students were recruited to the department. Including students who are working at Stowers with faculty members who have their academic appointment in Physiology, we now have 36 doctoral students actively enrolled in the department.

Six students completed their degrees during the year. Darcy Griffin received her Ph.D. in Paul Cheney’s lab. Darcy is now doing a postdoctoral fellowship in the Systems Neuroscience Institute at the University of Pittsburgh. Anh Nguyen received her Ph.D. in Gustavo Blanco’s lab. Anh plans to stay on as a postdoctoral fellow with Gustavo. Anisha Gupta received her Ph.D. with Paige Geiger. Anisha took a postdoctoral position in the Center for Diabetes Research at the Methodist Hospital Research Institute in Houston. Lynda McGinnis completed her Ph.D. with David Albertini. Lynda has taken a postdoctoral fellowship in Bill Kinsey’s lab in the Department of Anatomy & Cell Biology. Rachel Williams finished her Ph.D. with Shilpa Buch. Rachel has taken a postdoctoral fellowship in Steve LeVine’s lab. Alison Ting received her Ph.D. with Brian Petroff. She accepted a postdoctoral fellowship position at the Oregon Health & Science University. Congratulations to all of them and their mentors.

Prepared by:

Dr. Paul D. Cheney
Professor and Chair

**NOT PICTURED:** David F. Albertini, Shilpa Buch, Peter G. Smith, Paul F. Terranova
Department of Molecular & Integrative Physiology Graduate Students 2008-2009


Not Pictured: Crystal Bethel-Brown, Martha Carletti, Guangbo Chen, Jeff Cotitta, Stephanie Fiedler, Brittany Gorres, Darcy Griffin, David Guggenmos, Anisha Gupte, Lynda McGinnis, William Messamore, Anh-Nguyet Nguyen, Kendall Smith, Sarah Smith, Sarah Tague, Wen Tang, George Thomas, Alison Ting, Sara Turk, Gwenaelle Wernli, Rachel Williams, Huan Yang
DEPARTMENT ROSTER
July 1, 2008 – June 30, 2009

a. Faculty

Primary Appointment in Physiology
Paul D. Cheney, Ph.D., Professor & Chairman
David F. Albertini, Ph.D., Hall Endowed Professor
Andrei B. Belousov, Ph.D., Associate Professor
V. Gustavo Blanco, M.D., Ph.D., Associate Professor
Shilpa J. Buch, Ph.D., Associate Professor
Lane K. Christenson, Ph.D., Assistant Professor
Salvatore J. Enna, Ph.D., Professor
Paige C. Geiger, Ph.D., Assistant Professor
Norberto C. Gonzalez, M.D., Professor
Leslie L. Heckert, Ph.D., Professor & Co-Director of the Center for Reproductive Sciences
Thomas J. Imig, Ph.D., Professor
T. Rajendra Kumar, Ph.D., Assistant Professor
Sang-Pil Lee, Ph.D., Assistant Professor
Steven M. LeVine, Ph.D., Professor
Randolph J. Nudo, Ph.D., Professor & Director of The Landon Center on Aging
Peter G. Smith, Ph.D., Professor, Director, Kansas Intellectual and Developmental Disabilities Research Center, Director, Institute for Neurological Disorders
John A. Stanford, Ph.D., Assistant Professor
C. Merrill Tarr, Ph.D., Professor
Joseph S. Tash, Ph.D., Professor & Director, Interdisciplinary Center for Male Contraceptive Research and Drug Development
Paul F. Terranova, Ph.D., Professor, Vice Chancellor for Research, Senior Associate Dean for Research and Graduate Education
Michael W. Wolfe, Ph.D., Associate Professor
John G. Wood, Ph.D., Associate Professor

Emeritus
Lawrence P. Sullivan, Ph.D., Professor
James L. Voogt, Ph.D., Professor

Stowers Affiliates
Peter E. Baumann, Ph.D., Assistant Professor
R. Scott Hawley, Ph.D., Professor
Sue L. Jaspersen, Ph.D., Assistant Professor
Rong Li, Ph.D., Professor
Ho Yi Mak, Ph.D., Professor
Kausik Si, Ph.D., Assistant Professor
Research Track Faculty
Dora K. Agbas, Ph.D., Research Assistant Professor
Gaurav Chaturvedi, Ph.D., Research Assistant Professor
Navneet K. Dhillon, Ph.D., Research Assistant Professor
Shawn B. Frost, Ph.D., Research Assistant Professor
Wohaib Hasan, Ph.D., Research Assistant Professor
Melissa A. Larson, Ph.D., Research Assistant Professor & Director of Transgenic Facility
Erik J. Plautz, Ph.D., Research Assistant Professor
Mihai Popescu, Ph.D., Research Assistant Professor
Susan E. Smittkamp, Ph.D., Research Assistant Professor
Stanislav R. Svojanovsky, Ing., Ph.D., Research Assistant Professor

Joint Appointment in Physiology
Kenneth Audus, Ph.D., Professor (Professor & Dean, School of Pharmacy, KU-Lawrence)
Richard Barohn, Ph.D., Professor (Chair, Neurology)
Sangita Biswas, Ph.D., Research Assistant Professor (Senior Research Scientist MidAmerica Neuroscience Institute)
William Brooks, Ph.D., Professor (Director, Hoglund Brain Imaging Center)
Jeffrey Burns, Ph.D., Assistant Professor (Neurology, Director of Alzheimer and Memory Center & Alzheimer's Disease Clinical Research Program)
Mark Chertoff, Ph.D., Associate Professor (Hearing & Speech)
In-Young Choi, Ph.D., Assistant Professor (Neurology & Hoglund Brain Imaging Center)
Barry Festoff, M.D., Professor (Neurology and Pharmacology, Director of the Neurobiology Research Laboratory at the VA Medical Center, KCMO)
Jill Jacobson, M.D., Professor (Chief, Endocrinology/Diabetes. Children's Mercy Hospital)
Gregory Kopf, Ph.D., Associate Vice Chancellor for Research
Mukta Kumar, Ph.D., Assistant Professor (Pediatrics)
Benyi Li, Ph.D., Assistant Professor (Internal Medicine)
Warren Nothnick, Ph.D., Associate Professor (Ob-Gyn)
Isaac G. Onyango, D.V.M., Ph.D., Research Assistant Professor (Neurology)
Brian Petroff, DVM, Ph.D., Assistant Professor (Internal Medicine & Scientific Director, Breast Cancer Prevention Center)
Janet Pierce, D.S.N., Professor (School of Nursing)
Vidudula Prasad, Ph.D., Research Associate Professor (VA Medical Center)
Jeffrey Radel, Ph.D., Associate Professor (Occupational Therapy Education)
Michael Soares, Ph.D., Professor (Director, Institute of Maternal-Fetal Biology, Professor, Pathology)
Zhiming Suo, Ph.D., Research Assistant Professor (Neurology)
Russell H. Swerdlow, Ph.D., Professor (Neurology)
William Truog, Ph.D., Professor (Children’s Mercy Hospital, University of Missouri-Kansas City School of Medicine)
Darren Wallace, Ph.D., Research Assistant Professor (Internal Medicine)
Steven Warren, Ph.D., Professor (Applied Behavioral Science, KU-Lawrence; Director, Schiefelbech Institute for Life Span Studies)
Carl Weiner, M.D., M.B.A., Professor (Chair, Ob-Gyn)
**b. Graduate Students**

<table>
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<tr>
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<th>Prelims</th>
<th>Candidate</th>
<th>Requirements Fulfilled</th>
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<tbody>
<tr>
<td>Valentine Agbor</td>
<td></td>
<td>Ph.D.</td>
<td></td>
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<tr>
<td>Crystal Bethel-Brown</td>
<td></td>
<td>Ph.D.</td>
<td></td>
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<tr>
<td>Aritra Bhattacherjee</td>
<td>12/08</td>
<td>Ph.D.</td>
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<tr>
<td>Martha Carletti</td>
<td></td>
<td>Ph.D.</td>
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<tr>
<td>Jie Chao</td>
<td>5/09</td>
<td>Ph.D.</td>
<td></td>
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<tr>
<td>Guangbo Chen</td>
<td></td>
<td>Ph.D.</td>
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<tr>
<td>Jeff Cotitta</td>
<td></td>
<td>Ph.D.</td>
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<tr>
<td>Elizabeth Dille</td>
<td></td>
<td>Ph.D.</td>
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<tr>
<td>Timothy Donohue</td>
<td>12/07</td>
<td>M.D./Ph.D.</td>
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<tr>
<td>Argenia Doss</td>
<td>11/07</td>
<td>Ph.D.</td>
<td></td>
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<tr>
<td>Stephanie Fiedler</td>
<td></td>
<td>M.S. 12/08</td>
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<tr>
<td>Jitu Wilson George</td>
<td></td>
<td>Ph.D.</td>
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<tr>
<td>Brittany Gorres</td>
<td>8/08</td>
<td>Ph.D.</td>
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<tr>
<td>Darcy Griffin</td>
<td>3/05</td>
<td>Ph.D. 7/08</td>
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<tr>
<td>David Guggenmos</td>
<td></td>
<td>Ph.D.</td>
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<tr>
<td>Anisha Gupte</td>
<td>6/07</td>
<td>Ph.D. 2/09</td>
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<tr>
<td>Heather Hudson</td>
<td>6/07</td>
<td>Ph.D.</td>
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<tr>
<td>Tamara Jimenez</td>
<td></td>
<td>Ph.D.</td>
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<tr>
<td>Lacey Luense</td>
<td></td>
<td>Ph.D.</td>
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<tr>
<td>Emily McDonald</td>
<td>7/08</td>
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<tr>
<td>Lynda McGinnis</td>
<td>1/07</td>
<td>Ph.D. 2/09</td>
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<tr>
<td>William Messamore</td>
<td></td>
<td>M.D./Ph.D.</td>
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<tr>
<td>Jill Morris</td>
<td>11/08</td>
<td>Ph.D.</td>
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<tr>
<td>Anh-Nguyet Nguyen</td>
<td>12/06</td>
<td>Ph.D. 7/08</td>
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<tr>
<td>Won-Mee Park</td>
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<td>Ph.D.</td>
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<tr>
<td>Mariam Riazi-Kermani**</td>
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<tr>
<td>Eva Selfridge</td>
<td></td>
<td>M.D./Ph.D.</td>
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<tr>
<td>Kendall Smith</td>
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<td>M.D./Ph.D.</td>
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<tr>
<td>Sarah Smith</td>
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<td>Ph.D.</td>
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<tr>
<td>Sarah Tague</td>
<td>9/07</td>
<td>Ph.D.</td>
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<tr>
<td>Wen Tang</td>
<td></td>
<td>Ph.D.</td>
<td></td>
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<tr>
<td>George Thomas</td>
<td>1/08</td>
<td>M.D./Ph.D.</td>
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<tr>
<td>Alison Ting</td>
<td>2/06</td>
<td>Ph.D. 3/09</td>
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<tr>
<td>Sara Turk</td>
<td>8/07</td>
<td>Ph.D.</td>
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<tr>
<td>Edward Urban III</td>
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<td>M.D./Ph.D.</td>
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<tr>
<td>Gustaf Van Acker</td>
<td>3/09</td>
<td>M.D./Ph.D.</td>
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<tr>
<td>Gwenaelle Wernli</td>
<td>2/06</td>
<td>Ph.D.</td>
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<tr>
<td>Rachel Williams</td>
<td>11/07</td>
<td>Ph.D. 5/09</td>
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<tr>
<td>Huan Yang</td>
<td></td>
<td>Ph.D.</td>
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**Ph.D. Student in Department of Hearing & Speech, KUMC working with Dr Paul Cheney**
c. Postdoctoral Fellows
   Gokhan Akkoyunlu
   Scott Bury
   John Bromfield
   Anuradha Chakrabarty
   Pei-Chun Fang
   Vijayalaxmi Gupta
   Lesya Holets
   Tatiana Karpova
   Ravichandiran Kumarasamy
   David McNeal
   Anh Nguyet-Nguyen
   Shixin Tao
   Huizhen Wang
   Yongfu Wang

d. Temporary Students
   Ben Abel
   Andrea Anthony
   Robin Aupperle
   Caleb Brower
   Cassandra Buchheit
   Tszping Chan
   Neal Desai
   Aveek Dhar
   Meredith Estep
   Ruben Font
   Ryan Gallagher
   Alexander Harbin
   Kyle Jansson
   Katie Jones
   Natalie Katz
   Dianne Leitner
   Zach McCrillis
   Mariko Nishibe
   Alison Raybould
   Paty Rodriguez
   Laura Rues
   Matthew Sweeney
   Rong Tao
   Evan Thomas
   Chad Touchberry
   Cole Worley
   Kurt Zacharias
e. Research Staff
Istvan Adany – Sr. Research Assoc.
Julie Allen – Research Associate
Janna Belousova – Senior Research Assoc.
Corbett Bennett – Research Assistant
Sirosh Bokhari – Sr. Research Assoc.
Greg Bomhoff – Research Assistant
Shannon Callen – Research Assistant
Ian Edwards – Research Assistant
Stan Fernald – Research Assistant
Ramakrishna Hegde – Sr. Res. Assoc.
Xiaoman Hong – Research Associate
Elza Kharatyan – Research Assistant
Fang Li – Research Assistant
Zhuan Li – Senior Research Assoc.
Zhaohui Liao – Research Assistant
Darlene Limback – Research Associate
Jeff McDermott – Research Associate
Fuwang Peng – Research Associate
Daren Rice – Research Associate
Nestor Rodriguez – Research Assistant
Gladis Sanchez de Blanco – Research Assoc.
Phillip Stevenson – Research Assistant
Lovella Tejada – Research Assistant
Patricia Wolfe – Research Assistant
Honghong Yao – Research Assistant
Hongyu Zhang – Senior Scientist
Xuhui Zhu – Research Assistant

f. Support Staff
Leigh Ann Arbuckle – Senior Coordinator
Linda Carr – Administrative Officer
Jennifer Fajardo – Administrative Assistant
Ted Gleason – Electronic Tech. II
Lynn LeCount – Managing Editor
Cindy Martin – Editorial Coordinator
Barbara Shull – Administrative Assistant
(Interdisciplinary Center for Male Contraceptive Research & Drug Development)
Linda Spears – Administrative Assistant
(Reproductive Sciences Center)
Shari Standiferd – Financial Officer
Notes Concerning Graduate Students

Jie Chao was awarded a Pre-doctoral Fellowship by the American Heart Association, Midwest Affiliate entitled “Mechanisms of microvascular inflammation induced by alveolar hypoxia” from July 2008 to June 2010. He made an oral presentation at KUMC Student Research Forum 2009 in which he won the best oral presentation in the Cardiovascular Session. In April, Jie attended the Experimental Biology Meeting 2009 in New Orleans where he was first author on two posters, entitled “The systemic inflammation of alveolar hypoxia is initiated by a circulating mediator(s) released from alveolar macrophages” and “Renin from activated mast cells mediates the systemic inflammation of alveolar hypoxia”. Jie successfully passed his comprehensive exams in May 2009. Jie was first author of a research paper entitled “The systemic inflammation of alveolar hypoxia is initiated by an alveolar macrophage-borne mediator” published in the American Journal of Respiratory Cell and Molecular Biology and of a review paper entitled “Alveolar hypoxia, alveolar macrophages, and systemic inflammation” published in Respiratory Research.

Argenia Doss was awarded an NIH Ruth L. Kirschstein National Research Service Award in September 2008. In the fall 2008, Argenia presented a poster entitled "Decreased PGP 9.5-immunoreactive Axon Density in the Epidermis of Cycling Diabetic Rats" at the National Society for Neuroscience in Washington, DC. Argenia also presented three oral presentations: (1) for the Department of Physiology entitled "Langerhans Cells: A Possible player in Diabetes-induced Peripheral Neuropathy", (2) for the University of Kansas Medical Center Student Research Forum entitled "Cutaneous Innervation and Langerhans Cells are Reduced by Diabetes in Streptozotocin-treated Diabetic Rats", (3) a paper for the Translational Discovery Forum/Neuroscience Journal Club entitled "Prolonged Gabapentin Analgesia in an Experiment Mouse Model of Fibromyalgia". During this past year, Argenia was elected President of the Physiology Society.

Tamara Jimenez was the first author on an abstract for The 5th Annual Gilbert S. Greenwald Symposium titled “The Na,K-ATPase α4 Isoform Maintains Membrane Potential, Intracellular Ca^{2+} and pH to Sustain Sperm Motility” for which she received the Best Poster Presentation Award. At the 31st Annual Student Research Forum Tamara received 1st Place in the Reproductive Biology Session for her presentation entitled “The Na,K-ATPase α4 Isoform Maintains Membrane Potential, Intracellular Ca^{2+} and pH to Sustain Sperm Motility”

Lacey Luense was co-first author on a paper entitled "Dicer1 is essential for female fertility and normal development of the female reproductive system" published in the journal Endocrinology. She was also a trainee awards finalist for her presentation of an abstract entitled "Characterization of conditional Dicer knock-down in the mouse ovary" at the 41st Annual Meeting of the Society for the Study of Reproduction.
Emily McDonald was first author on a paper with Michael Wolfe published in Endocrinology entitled “Adiponectin Attenuation of Endocrine Function within Human Term Trophoblast Cells.” She presented a talk at the International Federation of Placental Associations meeting in Leibnitz, Austria entitled “Evidence for a Role of Adiponectin in Trophoblast Function” as well as talks at the Student Research Forum and the Frontiers in Reproduction Symposium in Woods Hole, MA by the same title. She is first author on an abstract for the Society for the Study of Reproduction meeting in Pittsburgh, PA entitled “The Metabolic Role of Adiponectin extends to the placenta, and occurs through multiple signaling pathways.” She was awarded an NIH New Investigator Travel Award, a Graduate Studies Travel Award and a Hagen Student Leader Award to give a talk at the IFPA meeting, as well as the DC Johnson Student Scholar Award and Larry Ewing Memorial Travel Grant to present a poster at the SSR meeting.

Lynda McGinnis was first author of an article published in Developmental Biology titled, “Functions of Fyn kinase in the completion of meiosis in mouse oocytes.” She was co-author of 3 additional articles titled (1) “Multiple mechanisms of germ cell loss in the perinatal mouse ovary”, (2) “Fyn kinase is required for normal organization and functional polarity of the mouse oocyte cortex” and (3) “Further optimization of mouse spermatozoa evaporative drying techniques”. Lynda presented research posters at the 2009 Gordon Conference on Fertilization and Egg Activation in Holderness, NH and the 2009 annual meeting of the Society for the Study of Reproduction in Pittsburgh, PA. She also served as co-chair of registration at the SSR meeting. In February 2009, Lynda defended her dissertation titled, “SRC-family tyrosine kinases participate in the regulation of mammalian oocyte maturation and zygotic development” and graduated with honors. She is now a post-doctoral research fellow in the laboratory of Dr William H. Kinsey, Dept. of Anatomy at KUMC.

Will Messamore was awarded a T32 Training Grant in the Kansas Training Program in Neurological and Rehabilitation Sciences, an Institutional Training Program funded by the National Institutes of Health. Will attended the Society for Neuroscience national meeting in Washington DC last November. Will is currently the president of both the MD/PhD Student Council and the Physiology Society.
Jill Morris received a Ruth L. Kirschstein National Research Service Award for her grant application entitled "Relationship between nigrostriatal DA depletion and insulin resistance." She was first author on a paper entitled: "Measures of striatal insulin resistance in a 6-hydroxydopamine model of Parkinson's disease" that was published in Brain Research. She was co-author on a manuscript entitled "Lipoic acid increases heat shock protein expression and inhibits stress kinase activation to improve insulin signaling in skeletal muscle from high fat-fed rats," which was published in the Journal of Applied Physiology. She was first author on two abstracts: "Measures of striatal insulin resistance in a 6-hydroxydopamine model of Parkinson's disease and "High fat diet influences CNS oxidative capacity and decreases striatal dopamine turnover: implications for diabetes and Parkinson's disease" presented at the Society for Neuroscience meeting and the Integrative Biology of Exercise meeting, respectively.

Ed Urban attended Neuroscience 2008 and was second author on a poster/abstract entitled "Characterization of Corticocortical Projections from the Rostral Forelimb Area to the Caudal Forelimb Area in the Rat". He also attended the "Functional Genomics and Bioinformatics Workshop" given by Dr. Fang (head of the Bioinformatics lab in Lawrence) and Dr. Xinkun Wang (Director of the KU Genomics Facility). He received the Dr. W S Sutton Scholarship for research in genetics.

Gustaf Van Acker was first author on an abstract entitled “Timing Between Cortical Activity and EMG Activity During Active Movement,” which he presented at the annual Society for Neuroscience conference in Washington, D.C., as well as at the annual KUMC Student Research Forum. He presented on the “Pathophysiology and Treatment of Parkinsonism,” at the KUMC Neuroscience Journal Club and Translational Discovery Forum in Neurological Disorders. Gustaf received a Biomedical Research Training Program Fellowship award, as well as a University of Kansas Summer Research Fellowship.
COURSES TAUGHT

Medical Curriculum Core Courses

CORE 820 – Gastrointestinal Tract and Nutrition. 4 credits. Summer 2009. Dr. LeVine is the course director.

CORE 830 – Reproduction and Sexuality. 4 credits. Summer 2009. Dr. Albertini


†Departmental Graduate Courses
PHSL 800 – Medical Physiology. Drs. Blanco, Geiger and Smith

PHSL 838 – Fundamentals of Biomedical Imaging. Drs. Lee and Popescu

PHSL 842 – Comprehensive Human Physiology. 5 credits. Dr. Belousov is the director and Dr. Wolfe is the course co-director.

PHSL 846 – Advanced Neuroscience. 5 credits. Summer 2009. 9 students. Dr. Stanford is the course director. Dr. Cheney and Stanford.

PHSL 848 – Molecular Mechanisms of Neurological Disorders. 3 credits. Fall 2008. Dr. Nudo. Dr. LeVine is the course director, mentor for student presentations and lecturer.

IGPBS Courses
IGPBS 893 – Module 3: Molecular Biology. Fall 2008. Dr. Heckert


IGPBS 895 – Module 5: Molecular and Physiological Basis of Disease. 3 credits. Spring 2009. Drs. Albertini, Blanco, Christenson, Geiger, Gonzalez, Kumar, Stanford and Wolfe. Dr. Albertini is the course director.

† Only Physiology instructors for these courses are listed.
DEPARTMENT SEMINARS

The Departmental Seminar program was directed by Dr. Steven LeVine. Fifty speakers made presentations, sixteen of which were from outside the university. In addition to support from the department, the Office of the Dean of the School of Medicine, the KIDDRC, Landon Center of Aging and the Center for Reproductive Sciences made important financial contributions to our program. The Kathleen M. Osborn Lecture Series sponsored John H. Nilson from Washington State University. The Fred Samson Jr. Memorial Lectureship sponsored Dr. George Perry from the University of Texas, San Antonio.

7/01/08 Anh-Nguyet Nguyen  
Graduate Student  
Molecular & Integrative Physiology  
KUMC  
Role of the Na,K-ATPase in Polycystic Kidney Disease

7/11/08 Darcy M. Griffin  
Graduate Student  
Molecular & Integrative Physiology  
KUMC  
Primate Motor Cortex: Individual and Ensemble Neuron-Muscle Output Relationships

9/08/08 Joan S. Hunt, Ph.D.  
University Distinguished Professor  
Anatomy & Cell Biology  
KUMC  
Reflections on Successful Strategies for Grant Proposals

9/12/08 Vargheese M. Chennathukuzhi, Ph.D.  
Senior Research Assistant II  
WYETH  
Collegeville, PA  
Developing Potential Targets and Biomarkers for Rational Drug Discovery
9/15/08 Philip R. Kennedy, M.D., Ph.D.
CEO & Chief Scientist
Neural Signals, Inc.
Duluth, GA

The Application of Motor Control
Principles to the Development of a Speech Prosthesis

9/18/08 Bjarke Ebert, Ph.D.
Senior Principal Scientist
Lundbeck Pharmaceuticals
Copenhagen, Denmark

Gobosadol in Sleep, Stress and Depression

9/22/08 P. Prabhakara Reddi, Ph.D.
Assistant Professor
Department of Pathology
University of Virginia
Charlottesville, VA

Role of an Insulator in Testis-Specific Gene Transcription

9/29/08 Susan M. Lunte, Ph.D.
Ralph N. Adams Distinguished Professor
Department of Chemistry & Pharmaceutical Chemistry
University of Kansas, Lawrence

Applications of Lab-on-a-Chip Technologies to Neuroscience: In vivo Monitoring and Single Cell Analysis

10/6/08 Dora Agbas, Ph.D.
Research Assistant Professor
Molecular & Integrative Physiology
KUMC

Estrogen Modulated Uterine Innervation as a Model of Axon Degeneration

10/13/08 John H. Nilson, Ph.D.
Edward R. Meyer Distinguished Professor
Director, School of Molecular Biosciences
Washington State University
Pullman, WA

Exposing the Secret Life of B-Catenin in the HPG Axis

10/27/08 David H. Abbott, Ph.D.
Professor
Department of Obstetrics & Gynecology and Wisconsin National Primate Research Center
University of Wisconsin, Madison

Developmental Origins of Polycystic Ovary Syndrome: Lessons from the Rhesus Monkey
<table>
<thead>
<tr>
<th>Date</th>
<th>Speaker</th>
<th>Title</th>
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<tbody>
<tr>
<td>11/3/08</td>
<td>Cary R. Savage, Ph.D.</td>
<td>fMRI Studies of the Neural Basis of Overeating and Obesity</td>
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<tr>
<td></td>
<td>Director, Functional MRI</td>
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<td>Hoglund Brain Imaging Center</td>
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<td>Associate Professor</td>
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<td>Department of Psychiatry and</td>
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<td>Microbiology &amp; Immunology</td>
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<td>University of Rochester Medical Center</td>
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<td>11/10/08</td>
<td>Xinmai Yang, Ph.D.</td>
<td>Photoacoustic Imaging and its Application to Animal Brain</td>
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<td>Assistant Professor</td>
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<td>University of Kansas, Lawrence</td>
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<td>11/17/08</td>
<td>Peter Baumann, Ph.D.</td>
<td>Chromosome Dynamics - Insights from Yeasts, Lizards and Man</td>
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<td>Assistant Investigator</td>
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<td>Stowers Institute for Medical Research</td>
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<td>Kansas City, MO</td>
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<td>11/24/08</td>
<td>Mark E. Chertoff, Ph.D.</td>
<td>Developing Clinical Tools to Assess the Underlying Pathophysiology Leading to Hearing Loss</td>
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<td>Associate Professor</td>
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<td>Hearing and Speech</td>
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<td>12/1/08</td>
<td>Jared J. Grantham, M.D.</td>
<td>Home-Grown Translational Medicine: From the Kitchen Floor, to the Bench, to the Bedside</td>
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<td>Harry Statland Professor of Nephrology</td>
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<td></td>
<td>Associate Dean for Medical Graduate Studies</td>
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<td>12/8/08</td>
<td>Sue J aspersen, Ph.D.</td>
<td>Ins and Outs of Three Dimensional Nuclear Organization: The SUN Proteins</td>
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<td>Assistant Investigator</td>
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<td>Stowers Institute for Medical Research</td>
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<td>Kansas City, MO</td>
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</table>
12/15/08 Katherine F. Roby, Ph.D.  
Research Associate Professor  
Anatomy & Cell Biology  
KUMC  

Ovarian Cancer and Preclinical Development of Nanotax

1/5/09 Charles W. Van Way, III, M.D.  
Professor of Surgery  
Sosland/Missouri Endowed Chair of Trauma Research  
Director of Shock/Trauma Research Center  
University of Missouri, Kansas City

Pharmacologic Treatment of Hemorrhagic Shock

1/12/09 David C. Poole, Ph.D., D.Sc.  
Professor  
Departments of Kinesiology, Anatomy & Physiology  
Kansas State University  
Manhattan, KS

Myths and the Microcirculation: Inconvenient Truths

1/26/09 Robert A. White, Ph.D.  
Director, Genetics Research Laboratory  
Children’s Mercy Hospital  
Associate Professor, Pediatrics  
University of Missouri, Kansas City

The Search for a Novel Gene for Hereditary Spherocytosis using the Nan (Neonatal Anemia) Mouse Model

2/2/09 Darren P. Wallace, Ph.D.  
Research Assistant Professor  
Kidney Institute  
KUMC

Cell Proliferation in Polycystic Kidney Disease: Regulation by B-Raf and Integrin-Linked Kinase

2/5/09 Lynda K. McGinnis  
Graduate Student  
Molecular & Integrative Physiology  
KUMC

Src-Family Tyrosine Kinases Participate in the Regulation of Mammalian Oocyte Maturation and Zygotic Development

2/16/09 R. C. Andrew Symons, M.D., Ph.D.  
Assistant Professor  
Department of Ophthalmology  
KUMC

The Genetics of the Response of the Retinal Vasculature to Hyperoxia
<table>
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<tr>
<th>Date</th>
<th>Name and Title</th>
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<tbody>
<tr>
<td>2/23/09</td>
<td>Glen K. Andrews, Ph.D. Professor</td>
<td>Regulation and Function of Zip4, the Acrodermatitis Entropathica Gene</td>
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<td>Department of Biochemistry &amp; Molecular Biology KUMC</td>
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<td>2/27/09</td>
<td>Anisha Gupte Graduate Student</td>
<td>Heat Shock Proteins: Novel Therapeutic Targets Against Insulin Resistance and Type 2 Diabetes</td>
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<td>Molecular &amp; Integrative Physiology KUMC</td>
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<td>3/2/09</td>
<td>Rick T. Dobrowsky, Ph.D. Professor</td>
<td>Altered Neuregulin Signaling Contributes to Diabetic Peripheral Neuropathy</td>
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<td></td>
<td>Department of Pharmacology &amp; Toxicology</td>
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<td>University of Kansas, Lawrence</td>
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<td>3/5/09</td>
<td>Alison Y. Ting Graduate Student</td>
<td>Novel Strategies in Cancer Prevention and Fertility Preservation with Tamoxifen</td>
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<td>Molecular &amp; Integrative Physiology KUMC</td>
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<td>3/9/09</td>
<td>Alexei Y. Bagrov, M.D., Ph.D. Head of the Hypertension Unit Laboratory of Cardiovascular Science National Institute on Aging Baltimore, MD</td>
<td>Endogenous Cardiotonic Steroids and Pathogenesis of Hypertension</td>
</tr>
<tr>
<td>3/16/09</td>
<td>Wohaib Hasan, Ph.D. Research Assistant Professor Molecular &amp; Integrative Physiology KUMC</td>
<td>Cardiac Autonomic Neuroplasticity in Congestive Heart Failure</td>
</tr>
<tr>
<td>3/23/09</td>
<td>Doug Wright, Ph.D. Associate Professor Anatomy &amp; Cell Biology KUMC</td>
<td>An Anatomist's View of Peripheral Nerve Disease</td>
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<tr>
<td>3/30/09</td>
<td>Kenneth R. Peterson, Ph.D. Professor &amp; Vice-Chairman Biochemistry &amp; Molecular Biology KUMC</td>
<td>Transactivation and Repression of Fetal Hemoglobin Expression: A Bimodal Approach to Treat Sickle Cell Disease</td>
</tr>
</tbody>
</table>
Alberto Pereda, Ph.D.  
Professor  
Dominick P. Purpura Department of Neuroscience  
Albert Einstein College of Medicine  
Bronx, NY

Plasticity of Electrical Synapses

Argenia Doss  
Graduate Student  
Molecular & Integrative Physiology KUMC

Langerhans Cells: A Possible Player in Diabetes-Induced Peripheral Neuropathy

Tim Donohue  
Graduate Student  
Molecular & Integrative Physiology KUMC

Disruption of Prejunctional Inhibition in the Autonomic Nervous System: Contribution to Parasympathetic Withdrawal in Heart Failure

Sarah Tague  
Graduate Student  
Molecular & Integrative Physiology KUMC

Sometimes It Hurts to be a Woman. Nociceptor Modulation by Vitamin D and Estrogen.

Emily McDonald  
Graduate Student  
Molecular & Integrative Physiology KUMC

Adiponectin Regulation of Trophoblast Endocrine Function

Ira M. Herman, Ph.D.  
Professor, Physiology  
Director, Center for Innovations in Wound Healing Research  
Tufts University  
Medford, MA

Pericyte-Endothelial Interactions and Microvascular Remodeling: A Role in Pathological Angiogenesis?

Sara Turk  
Graduate Student  
Molecular & Integrative Physiology KUMC

Role of Src Tyrosine Kinase in GnRH Induction of the LH Beta-Subunit Promoter

Aritra Bhattacherjee  
Graduate Student  
Molecular & Integrative Physiology KUMC

Estrogen-Induced Nerve Plasticity in the Female Reproductive Tract
5/4/09  Brittany Gorres  
Graduate Student  
Molecular & Integrative Physiology  
KUMC  

Jill Morris  
Graduate Student  
Molecular & Integrative Physiology  
KUMC

The Combined Effect of a High Fat Diet and Estrogen Loss on Insulin Resistance

Preclinical Studies of a Link between Parkinson's Disease and Type 2 Diabetes

5/11/09  Susan E. Smittkamp, Ph.D.  
Research Assistant Professor  
Molecular & Integrative Physiology  
KUMC  

Preclinical Studies of ALS

5/18/09  Kenneth A. Bradley, Ph.D.  
Assistant Professor, Department of Microbiology, Immunology & Molecular Genetics  
Director, Molecular Screening & Shared Research  
University of California, Los Angeles  

Host-Pathogen Interactions in Anthrax

5/21/09  Rachel Williams  
Graduate Student  
Molecular & Integrative Physiology  
KUMC  

HIV-encephalitis: Mechanisms for CXCL10 Induction in Astrocytes

6/1/09  George Perry, Ph.D.  
Dean of the College of Sciences  
Professor of Biology  
University of Texas, San Antonio  

Mitochondria at the Center of Oxidative Stress in Alzheimer Disease
**PUBLICATIONS**

**a. Manuscripts Published**


b. Manuscripts in Press


c. Abstracts


Choi, I-Y, Burns, M., Lee, S-P. “Cerebral antioxidant level as a measure of ongoing oxidative stress in aging and Alzheimer” Hot Topics symposium at the 11th International Conference on Alzheimer’s Disease (ICAD), Chicago, IL, July 26-31, 3589 (2008)


Donohue, T. and Smith, P.G. (2009) “Parasympathetic Withdrawal in Heart Failure Involves Reduced Vagal Prejunctional Inhibition of Sympathetic Nerves.” Experimental Biology


Lynch, S., Lee, S-P., Choi, I-Y. “Glutathione levels in the brains of Secondary Progressive MS patients are reduced by Magnetic Resonance Spectroscopy measures” Americas Committee for Treatment and Research in Multiple Sclerosis (ACTRIMS), May 30 Atlanta, Georgia (2009).


Tague, S.E. and Smith, P.G. (2009) “Nociceptor axon sprouting in hypovitaminosis D.” Fourteenth Workshop on Vitamin D, Brugge, Belgium


RESEARCH SUPPORT


**P.D. Cheney:** NIH-NINDS – “Electrical Stimulation of Cortical Motor Output.”


NIH-NIDA – “Morphine and the Neuropathogenesis of SIV in Macaques.” (Co-I, 10% effort; PI: S. Buch) September 30, 2007 – August 31, 2012. Direct costs: $2,484,734; total costs $3,279,173


NIH-NICHD – “Kansas University Training Program in Neurological and Rehabilitation Sciences.” Member of the Internal Advisory Committee and mentor: Randolph Nudo (PI). May 1, 2009 - April 30, 2014. Direct costs $1,203,745; Total costs $1,275,710.


Rockhurst University – “Rockhurst University Presidential Grant.” Summer 2008. Annie Lee, Ph.D., Associate Professor of Chemistry; Host lab: S. LeVine. Direct costs $4,000.


**M. Popescu:** NIH – “Advanced Source Reconstruction Techniques for Fetal Magnetocardiography.” Principal Investigator: M. Popescu. Direct costs $275,000; Total costs $411,563.

Kansas Center for Autism Research and Training (KCART) – “Brain/Behavior Profiles to Distinguish Individual Differences in Asperger Syndrome.” Principal Investigator: W. Dunn; Co-Investigator: M. Popescu. Direct costs: $40,000.

NIH – “The Effects of Docosahexaenoic Acid (DHA) on Fetal Cardiac Outcomes.” Principal Investigator: K. Gustafson; Co-Investigator: M. Popescu. Direct costs $275,000; Total costs $411,563.


NIH – Kansas IDeA Network for Biomedical Research Excellence (K-INBRE). September 4, 2004 – June 30, 2009. Principal Investigator: J. Hunt; Associate Director, Program Coordinator and Director of Bioinformatics at KUMC: P.G. Smith. Annual direct costs $2,512,765; Annual indirect costs $747,897. Annual direct costs $145,000; Annual indirect costs $66,700 (KUMC core only).


**J.S. Tash:** NIH – U54 Interdisciplinary Center for Male Contraceptive Research and Drug Development. March 1, 2009 – February 28, 2010. Direct costs $558,694; Indirect costs $682,158.


NASA – “Long Term Space Flight Impacts on Male Reproductive Health.” In pre-award (total will be $150,000 prior to NOA).
**J.G. Wood**: NIH – “Oxygen transport during exercise in prolonged hypoxia.” Principal Investigator: N.C. Gonzalez; Co-Investigator: J.G. Wood (25% effort). Annual direct costs $225,000; Indirect costs $100,000

NIH – “Genetic modifiers of anthrax lethal toxin induced pathophysiology.” Principal Investigator: K. Bradley (UCLA); Co-Investigator: S. LeVine and J.G. Wood (20% effort). Annual direct costs to KUMC $100,000; Indirect costs $47,000


NIH – “Training Program in Environmental Toxicology.” Principal Investigator: C. Klaassen; Co-Investigator: J.G. Wood (5% effort)
Innervation to reproductive tissues is modulated by estrogen induced changes in the target tissue. Cyclical change in estrogen levels cause cyclical pruning and regeneration of sympathetic axons innervating uterine smooth muscle while sensory populations remain unaffected. Our research shows that estrogen induces target derived factors, which lead to sympathetic axon degeneration in vivo and in different in vitro culture systems. We have shown that in estrogen treated myometrial smooth muscle BDNF and neurotrimin expression increases. Both of these factors have negative effect on sympathetic outgrowth. On the other hand while BDNF adversely affects sensory nerve populations, neurotrimin is an inductive factor for these fibers. Therefore we postulated that these 2 factors can lead to selective pruning of the innervating sympathetic fibers while sensory ones are not sensitive to estrogen in this tissue. With my research I try to tease out which molecular mechanisms are initiated by factors leading to nerve degeneration. I focus on cytoskeletal and mitochondrial changes occurring in sympathetic neurites upon neurite selective treatment using Campenot and microfluidic compartmental culture systems.

Meetings Attended:
- October 26-28, 2008 – 2nd International Axon Degeneration Workshop
  Marine Biological Laboratory, Woods Hole, MA

Committees:
- Member, Society of Neuroscience Kansas City Chapter
- Judge, KUMC Student Research Forum

Seminars Presented:
- October 6, 2008 – “Estrogen-modulated uterine innervation as a model of axon degeneration.” Department of Molecular and Integrative Physiology, KUMC
David F. Albertini, Ph.D., Hall Endowed Professor

The causes of infertility and cancer remain a focus for the laboratory especially as they pertain to Women’s Health. Collaborations with Dr. Sam Kim (Ob/Gyn) and Dr. Brian Petroff (Medicine) are ongoing and explore the impact of chemotherapy, radiation, and endocrine disruptors on the function of the mammalian ovary. Projects underway include (1) the role of stem cells in the generation of germ line and somatic lineages in the ovary, (2) optimizing methodologies for the cryopreservation of oocytes and ovarian tissue, (3) establishing mechanisms that define oocyte and embryo quality as they pertain to assisted reproductive technologies and (4) defining modifications in cell cycle regulation that occur during the transition from meiosis to mitosis in the developing embryo.

Meeting Attended:
- August 10, 2008 – Gordon Conference on Reproductive Tract Biology
- March 21, 2009 – Annual Meeting of Society for Gynecological Investigation, Glasgow, Scotland
- April 20, 2009 – 15th World Congress on In Vitro Gerilization and 5th World Congress on In Vitro Maturation, Geneva, Switzerland
- June 27, 2009 – European Union Oncofertility Consortium Meeting, Amsterdam

Committees:
- Departmental Coordinator, 2009-2010 Physiology Seminar Series
- KUMC Member, Executive Faculty Council
- National Ad hoc, NIH, CMIR Study Section
- Study Section Chair, TEDCO Stem Cell Program, Maryland State (February 8-9, 2009)

Editorials and Grant Reviews:
- Editorial Board, Journal of Assisted Reproduction and Genetics
- Editorial Board, Fertility and Sterility
- Ad hoc Reviewer, Science
- Ad hoc Reviewer, PNAS
- Ad hoc Reviewer, Nature
- Ad hoc Reviewer, Development
- Ad hoc Reviewer, Biology of Reproduction
- Ad hoc Reviewer, Reproduction
- Ad hoc Reviewer, Tissue Engineering
- Ad hoc Reviewer, Developmental Biology
- Ad hoc Reviewer, Molecular Endocrinology
- Ad hoc Reviewer, Physiological Genomics
Dr. Albertini (continued)

Editorials and Grant Reviews (continued)
Ad hoc Reviewer, Cell
Ad hoc Reviewer, Cell Stem Cell
Ad hoc Reviewer, Molecular Reproduction and Development
Ad hoc Reviewer, Stem Cell
Ad hoc Reviewer, Fertility and Sterility
Grant Reviewer, NIH
Grant Reviewer, CMIR
Grant Reviewer, ARRA
Grant Reviewer, State of Maryland Stem Cell Research Program
Grant Reviewer, Worcester Polytechnic Institute Advisory Panel on Biological Sciences
Grant Reviewer, Wellcome Trust, UK

Seminars Presented:
August 10, 2008 - “Ovarian stem cell research.” Gordon Conference on Reproductive Tract Biology
January 23, 2009 - “Good, bad and ugly cysts: role of primary cilia in polycystic ovary disease.” Kidney Institute, KUMC
March 20, 2009 - “The role of oocyte maturation in fertility preservation programs.” Invited symposium speaker (Fertility Preservation), annual meeting of Society for Gynecological Investigation, Glasgow, Scotland
April 20, 2009 - “Recent Advances in human oocyte in vitro maturation.” Invited symposium speaker, 15th World Congress on In Vitro Fertilization and 5th World Congress on In Vitro Maturation, Geneva, Switzerland
June 2, 2009 - “From oogenesis to embryogenesis.” Course lecture, Frontiers in Reproduction, Marine Biology Laboratory, Woods Hole, MA
June 3, 2009 - “Somatic cell oocyte communication during oocyte maturation.” Course lecture, Frontiers in Reproduction, Marine Biology Laboratory, Woods Hole, MA
June 27, 2009 - “DNA damage in oocytes after chemotherapy.” European Union Oncofertility Consortium meeting, Amsterdam

Academic Honors:
Lecturer and Lab Instructor, Frontiers in Reproduction Course, Marine Biological Laboratory, Woods Hole, MA
Dr. Albertini (continued)

Teaching Activities
   IGPBS 1st Year curriculum
      2 - 2 hour lectures, Unit 2 on Development
   IGPBS Module 5 Coordinator
      Reproduction Block, first year medical students (lecture and discussion group)

Trainees:
   Lynda McGinnis - Graduate Student (finished 02/09)
   Paty Rodriguez - Graduate Student
   Gokhan Akkoyunlu, Ph.D. - Post Doctoral Fellow
   John Bromfield, Ph.D. - Post Doctoral Fellow
   Katie Jones - Summer Student
Andrei B. Belousov, Ph.D., Associate Professor

My interests include (1) cellular and molecular mechanisms for the regulation of electrical synapses (gap junctions) during development and neuronal injuries and (2) the role of gap junctions in neuronal death/survival during injuries.

Meetings Attended:
July 12-16, 2008 – 6th Forum of the Federation of European Neuroscience Societies (FENS) meeting, Geneva, Switzerland
November 15-19, 2008 – Society for Neuroscience meeting, Washington D.C.

Committees:
Member, KUMC Information Resources Committee
Executive member, Greater Kansas City Chapter of the SFN

Editorial and Grant Reviews:
Editorial Board Member, The Open Neuroscience Journal (ON), Bentham Science Publishers
Ad hoc Reviewer, Journal of Neurophysiology
Ad hoc Reviewer, Anatomy
Grant Reviewer, Neurological Foundation of New Zealand

Academic Honors:
KUMC faculty travel award to attend FENS meeting, July 12-16, 2008, Geneva, Switzerland
Invited to give two seminar presentations at the conference Hippocampus and Memory: Norm and Pathology, Puschino, Russia, July 2009

Teaching Activities:
PTRS 863 – Pathobiology of Human Function
1 hour lecture
Syllabus for the “Comprehensive Human Physiology” course has been developed. The course was approved by the KUMC Graduate Council on March 4th, 2009. This course will be offered to students in fall of 2009.

Trainees:
Won-Mee Park – Graduate Student
Youngfu Wang, Ph.D. – Post Doctoral Fellow
V. Gustavo Blanco, M.D., Ph.D., Associate Professor

Our laboratory studies the role of ion-transport proteins of the plasma membrane in cell function. Research is focused on the Na, K-ATPase, a plasma membrane enzyme system that uses the energy from ATP to establish and maintain the high internal K⁺ and low internal Na⁺ concentrations characteristic of most animal cells. The transporter comprises a group of isozymes, each characterized by unique enzymatic properties and a cell-dependent and developmentally regulated pattern of expression. We are interested in the function of alpha4, a particular isoform of the catalytic subunit of the Na,K-ATPase that is selectively expressed in spermatozoa. We have found that this isoform, both in rats and humans has functional properties that are different from all other Na,K-ATPases. Alpha4 is expressed in the mid-piece of the sperm flagellum, and is important for the motility of the cells. A variety of molecular and cellular biology methods are used to study the regulation, activity and mechanisms of action of alpha4, as well as the role of this Na,K-ATPase in the physiology of the male gametes. These studies will help understand the importance of ion transport in male germ cell fertility and contraception.

In addition, we are studying the role of the Na,K-ATPase in autosomal dominant polycystic kidney disease (ADPKD). We have found that, in renal cells from patients with ADPKD, the Na,K-ATPase exhibits an abnormally increased sensitivity to ouabain, a hormone released by the adrenal glands. We are currently investigating how ouabain affects cyst formation and progression in the disease.

Meetings Attended:
   August 2008 – 12th International ATPase Conference, Aarhus, Denmark.
   April 2009 – Student Research Forum, KUMC

Committees:
   Departmental
   Member, Ph.D.Thesis Committee for Jie Chao
   Member, Ph.D.Thesis Committee for Brittany Gorres
   Member, Ph.D.Thesis Committee for Anisha Gupte
   Member, Ph.D.Thesis Committee for Lynda McGinnis

   KUMC
   Member, Ph.D.Thesis Committee for Yi Miao (Dept. Pharmacology)
   Member, Institutional Animal Care and Use Committee (IACUC)
   Member, Committee to oversee the Biotechnology Support Facility at KUMC
   Member, Committee to organize the Greenwald Symposium in Reproduction
   Member, Medical Students Wescoe Academic Society
   Member, Admissions Committee for MD/PhD Program
   Coordinator, DC Johnson Seminar Series
Dr. Blanco (continued)

Editorials and Grant Reviews:
Editorial Board Member, American Journal of Physiology:
   Endocrinology and Metabolism
Reviewer, Journal American Society of Nephrology
Reviewer, American Journal of Physiology
Reviewer, Biology of Reproduction
Reviewer, National Agency for Scientific Promotion and Technology, Argentina
Ad hoc Reviewer, NIH

Seminars Presented:
November 2008 – “Cardenolides inhibition of the sperm Na,K-ATPase α4 isoform as contraceptive agents.” U54 External Advisory Board Meeting, KUMC

Academic Honors:
The Margrethe Moller Award from the work entitled: “Na,K-ATPase alpha4 isoform over-expression causes increased motility in spermatozoa.” Presented at the P-ATPase Meeting organized by the University of Aarhus, Denmark, 2008.
Student Voice Award for Excellence in Teaching in Medical Physiology, 2008.

Teaching Activities:
PHSL 800 – Medical Physiology
   9 hours lecture
   2 hours Interactive clinical cases in renal physiology
   2 hours Laboratory sessions on respiratory physiology
   2 hours Review of renal physiology for Board preparation
Advanced Medical Spanish 912
   1 hour Lecture
IGPBS 895 – Module 5: Molecular and Physiological Basis of Disease
   4 hours Lecture
Biology of Reproduction for Graduate Students
   2 hours Lecture
   2 hours Paper Discussions
Renal Physiology for Medical Students. University of Anchorage, Alaska
   4 hours Lecture
Epithelial Transport Course for Graduate Students. University of Anchorage, Alaska
   2 hours Lecture
Dr. Blanco (continued)

Trainees:
  Tamara Jimenez Alarcon - Graduate Student
  Anh-Nguyet Nguyen, Ph.D. - Post Doctoral Fellow
  Alexander Harbin - Summer Student
  Kyle Jansson - Summer Student
Gaurav Chaturvedi, Ph.D., Research Assistant Professor

My research focuses on studying 1) signaling pathways that regulate lineage specific differentiation of human embryonic stem cells especially towards kidney phenotype; 2) Origin of Cancer stem cells with human ES cells as a model to transform into cancer stem cell phenotype and 3) identification and characterization of circulating cancer stem cells that lead to recurrence of hepatocellular carcinoma in liver transplant patients.

Seminars Presented:
  September 16, 2008 – “Are we there yet? Stem cells; Promises and Beyond.” Department of Biophysics, Panjab University, Chandigarh, India
  September 24, 2008 – “Basics of Human Embryonic Stem Cells.” School of Pharmacy, Rajiv Gandhi Engineering University, Bhopal, India
Paul D. Cheney, Ph.D., Professor & Chair

Neurophysiological techniques are used to investigate the functional contribution of neurons in the cerebral cortex and brainstem to the control of voluntary movement. The spike (action potential) activity of single neurons is recorded in awake monkeys trained to perform various movement tasks. Computerized analysis techniques are used to reveal the functional contribution of a neuron to movement. In another project, SIV infection in monkeys is used as model of neuro-AIDS. This model is used to investigate interactions between SIV infection and drugs of abuse using neurobehavioral, neurophysiological, and neuroanatomical methods.

Meetings Attended:
- August 18-19, 2008 – A planning meeting of the Midwest Neuroscience Consortium in Omaha, Nebraska

Committees:
- Departmental
  - Advisor, Darcy Griffin Ph.D. Dissertation Committee
  - Advisor, Heather Hudson Ph.D. Dissertation Committee
  - Advisor, Mariam Riazi-Kermani Ph.D. Dissertation Committee
  - Advisor, Gustaf Van Acker Ph.D. Dissertation Committee
  - Member, Crystal Bethel Ph.D. Dissertation Committee
  - Member, Jill Morris Ph.D. Dissertation Committee
  - Coordinator, Fred Samson Annual Memorial Lecture
- School of Medicine
  - Member, Dean’s Leadership Committee
  - Member, Bill Narayan Memorial Symposium Planning Committee
  - Master of Ceremonies for the Bill Narayan Memorial Symposium, October 23-25, 2008
  - Member, Planning committee for Osborn Professorship investiture
  - Member, Basic Science Chairs IGPBS curriculum revision committee
  - Member, Executive Committee of the SOM Faculty Council
  - Member, SOM Faculty Council
  - Member, Internal Advisory Committee, Neuroscience Rehabilitation Training Grant, Dr. Nudo, PI.
- KUMC
  - Member, Meredith Estep Ph.D. Dissertation Committee
  - Member, Meredith Poore, Ph.D. Dissertation Committee
  - Interviewed numerous candidates for various positions
  - Member, Institute for Neurological Disorders Executive Committee
  - Member, Institute for Neurological Disorders Advisory Committee
Dr. Cheney (continued)

Committees (continued):
KUMC (continued)

  Member, Institute for Neurological Disorders Dedication Ceremony Planning Committee
  Co-director, Neuromuscular and Movement Disorders Division of the Institute for Neurological Disorders
  Member, Professional Development and Faculty Affairs (PDFA) Planning Committee

KUMC/KU-Lawrence

  Member, Chancellor's Rewards and Recognition Task Force
  Co-Director, cross campus Ph.D. program in neuroscience
  Member, KU Bioengineering Advisory Committee
  Member, Neuroscience Strategic Planning Committee
  Member, Neuroscience Ph.D. Program Executive Committee
  Member, KIDDRC Internal Scientific Advisory Committee
  KIDDRC Theme leader, Neurobiology of Mental Retardation and Developmental Disabilities

Editorials and Grant Reviews:

  Ad hoc Reviewer, J. Neurophysiology
  Ad hoc Reviewer, J. Neuroscience
  Ad hoc Reviewer, J. Physiology
  Ad hoc Reviewer, Cerebral Cortex
  Ad hoc Reviewer, J. Comp. Neurology
  Member, NIH IFCN Study section, Dec. 10-11, Asynchronous Electronic Discussion
  Member, NIH IFCN-C Study Section (Sensory Neurophysiology), April 13, 2009
  Israeli Science Foundation

Seminars Presented:

  August 18-19, 2008 – “Behavioral and Neurophysiological Assessment of Neurological Impairments in SIV Infected Macaques” for the Midwest Neuroscience Consortium meeting
  April 1, 2009 – “Corticospinal Control of Movement in Primates.” KU Lawrence Neuroscience Series

Academic Honors:

  Winner of the 2008 “Jayhawk” Lifetime Achievement in Mentoring Award presented at the Annual Faculty Retreat on September 19, 2008
Dr. Cheney (continued)

Teaching Activities:
   PHSL 846 – Advanced Neuroscience  
   6 hours lecture  
   CORE 840 – Brain and Behavior  
   small group lectures/labs/conferences, 2 hours lecture.  
   I served as a back up for the small groups in this course. There are  
   10, 2-3 hour small group meetings.  
   Physical Therapy - Pathobiology of Human Function II  
   2 hours lecture  

Trainees:  
   Darcy Griffin - Graduate Student (Graduated 07/08)  
   Heather Hudson - Graduate Student  
   Mariam Riazi-Kermani - Graduate Student  
   Will Messamore – MD/PhD Student  
   Gustaf Van Acker – MD/PhD Student
**Lane K. Christenson, Ph.D.,** Assistant Professor

Fertility control is a major health concern for premenopausal women. Research in my laboratory focuses on understanding the rapid terminal events involved in follicular development and luteal tissue formation. Currently, we are elucidating the mechanisms that microRNAs use to post-transcriptionally regulate gene expression within the ovary. Several LH-induced microRNAs have been identified and we are utilizing a variety of techniques, microarray and computational analyses, 2D-gel electrophoresis coupled to tandem MSMS to identify novel target genes downstream of LH regulated microRNAs. Furthermore, chromatin immunoprecipitation, ChIP-on-chip as well as standard promoter based approaches are being used to decipher how these non-coding RNAs are regulated by LH. Lastly, we are using mouse models (i.e., Dicer floxed mice) and in vivo and in vitro locked nucleic acid oligonucleotide knockdown methods to determine cause and effect for specific microRNAs. An offshoot of this research is our recent observation that deletion of Dicer (i.e., microRNA-mediated post transcriptional gene regulation) has pronounced effects on uterine development and function as well as female infertility. My laboratory has also entered the assisted reproductive technologies (ART) research arena, addressing the issue of embryo quality. We have completed a proteomic (tandem mass spectrometry) analysis of conditioned medium from preimplantation embryos. The proteins identified are now being studied for their predictive value as well as their functional role in embryo development. This area of research has the potential to not only improve ART procedures but also the health of children conceived through ART.

Meetings Attended:
- July 7-9, 2008 – American Society of Animal Scientists 2008 Annual Meeting – Symposium on Role of microRNA in Cellular Function, Indianapolis, IN
- September 3-5, 2008 – XIX Annual Meeting of the Chilean Society of Reproduction and Development, Chillan, Chile
- January 18, 2009 – Kansas IDeA Network for Biomedical Research Excellence annual symposium, Manhattan, KS
- April 7, 2009 – QIAGEN symposium – QIAGEN Capabilities in miRNA in Methylation Research, Chicago, IL

Committees:
- Departmental
  - Advisor, Martha Carletti Ph.D. Dissertation Committee
  - Advisor, Stephanie Fiedler M.S. Thesis Committee
  - Advisor, Jon B. Fitzgerald Ph.D. Dissertation Committee
  - Advisor, Lacey Luense Ph.D. Dissertation Committee
  - Member, Emily McDonald Ph.D. Dissertation Committee
Dr. Christenson (continued)

Committees (continued):
Departmental (continued)
   Member, Lynda McGinnis Ph.D. Dissertation Committee
   Member, Alison Ting Ph.D. Dissertation Committee
   Member, Sara Turk Ph.D. Dissertation Committee
   Member, Huan Yang Ph.D. Dissertations Committee
KUMC
   Member, Yue Cui Ph.D. Dissertation Committee (Pharmacology, Toxicology and Therapeutics)
   Member, Subhash Naik Ph.D. Dissertation Committee (Biochemistry and Molecular Biology)
   Member, IACUC Animal Transition Committee
   Member, Institutional Oversight of Human Embryonic Stem Cell Committee (ESCRO) at the University of Kansas
   Member, Advisory Committee for the Microarray Facility
   Member, Mass Spectrometry Oversight Committee
National
   Chairman, Bylaws Committee, Society for the Study of Reproduction
   Member, Nominating Committee, Society for the Study of Reproduction

Editorial and Journal Reviews
   Editorial Board Member, Reproduction
   Ad hoc Reviewer, Journal for Assisted Reproductive Technologies
   Ad hoc Reviewer, Molecular Endocrinology
   Ad hoc Reviewer, Biology of Reproduction
   Ad hoc Reviewer, Human Reproduction
   Ad hoc Reviewer, Endocrinology
   Ad hoc Reviewer, NIH-ARRA Grants, June 2009

Seminars Presented:
   July 7-9, 2008 – “MicroRNAs in the ovary and female reproductive tract.”
      American Society of Animal Scientists 2008 Annual Meeting – Symposium on Role of microRNA in Cellular Function, Indianapolis, IN
   November 13, 2008 – “Critical Roles for MicroRNA in Female Reproductive Tissues.” Department of Anatomy and Cell Biology, KUMC
      Kansas IDeA Network for Biomedical Research Excellence annual Symposium, Manhattan, KS
Dr. Christenson (continued)

Seminars Presented (continued):
April 7, 2009 – “Role of miRNA in Ovarian Granulosa Cell Function (Practical considerations to Quantitative RT-PCR).” QIAGEN symposium – QIAGEN capabilities in miRNA and methylation research, Chicago, IL
April 27, 2009 – “MicroRNA are Critical for Female Fertility and Reproductive Tract Development.” Department of Biology, New Mexico Highlands University, Las Vegas, NM
April 29, 2009 – “Critical Roles for MicroRNA in Female Reproductive Tissues.” Department of Animal Science, Kansas State University

Other Academic Honors:
Invitation to present seminar at the 17th Ovarian Workshop, Milwaukee, WI, July 29-31, 2010
Appointed Adjunct Professor in Department of Animal Science at University of Nebraska-Lincoln

Teaching Activities
IGPBS Module 5 – Endocrinology
6 hours of lecture
Co-Director of Molecular and Integrative Physiology Graduate Studies

Trainees:
Martha Carletti – Graduate Student
Stephanie Fiedler – Graduate Student
Jon B. Fitzgerald – Graduate Student
Lacey Luense – Graduate Student
Allison Boehm – Summer Student
Navneet K. Dhillon, Ph.D., Research Assistant Professor

My research interests are focused on understanding the interplay of macrophages, cytokines and chemokines in lung infections associated with HIV-infection and developing antisense therapeutic strategies using nanomedicine, in SHIV-macaque or murine models of the disease. We are also using the nanoparticle technology to enhance mucosal immunity against S/HIV infection. Additionally, I am also interested in the interactions between HIV and intravenous drug use (IVDU) that might result in the escalation of pulmonary arterial hypertension (PAH). The extent and type of contribution that each makes to the pathogenesis of PAH is not clearly understood and is under investigation.

Meetings Attended:
   May 15-20, 2009 – ATS International Conference, San Diego, CA

Seminars Presented:
   Department of Pharmacology & Experimental Neuroscience,
   University of Nebraska Medical Center, Omaha, NE
   April 8, 2009 – “Identifying Therapeutic Targets in HIV-associated Lung Disease: Progress at the Pulmonary Vascular Bed.”
   Interdisciplinary Medical Research Conference at Internal Medicine Grand Rounds, University of Kansas Medical Center

Trainees:
   Andrea Anthony - Pulmonary Fellow
The overall objectives of my research program are to define the pharmacological and biochemical properties of neurotransmitter receptors, in particular those for GABA. Currently, emphasis is placed on characterizing the regulation of GABA_6 receptor expression and function in human brain autopsy material and laboratory animal. Collaborative studies on cancer cells lines are also ongoing in an attempt to define the transporters responsible for the cellular accumulation and extrusion of chemotherapeutic agents.

Meetings Attended:
- August 14-18, 2008 – Nebraska INBRE Meeting, Grand Island, Nebraska
- November 9-11, 2008 - PhRMA Foundation Meeting, Washington, D.C.
- November 14-18, 2008 – NC-IUPHAR Meeting, Paris, France
- December 6-8, 2008 – American College of Neuropsychopharmacology, Phoenix, Arizona
- March 7-9, 2009 – Elsevier Executive Editors Meeting, Amsterdam, The Netherlands
- March 13-15, 2009 – IUPHAR Executive Committee Meeting, Cairo, Egypt
- April 17-21, 2009 – Experimental Biology Meeting, New Orleans, Louisiana
- April 23-26, 2009 – NC-IUPHAR Meeting, Paris, France

Committees:
- Co-Chair, Internal Advisory Committee Kansas University Training Program in Neurological and Rehabilitation Sciences
- Member, CTSA Grant Writing Committee
- Member, Research and Training Committee
- Member, Pew Scholars Selection Committee
- Member, Kansas University Training Task Force
- Member, Promotion and Tenure Committee
- Associate Dean, Research and Graduate Training
- Member, Nicholas Stucky Ph.D. Dissertation Committee (Pharmacology, Toxicology & Therapeutics)
- Member, Andrew Ralya Ph.D. Dissertation Committee (Pharmacology, Toxicology & Therapeutics)

National and International
- Member, Scientific Advisory Council, National Alliance for Autism Research
- Member, Nebraska-BRIN External Advisory Committee
- Member, PhRMA Foundation Pharmacology Advisory Panel
- Member, GABA_6 Nomenclature Database Committee, International Union of Basic and Clinical Pharmacology
Dr. Enna (continued)

Editorial and Grant Reviews:
Editor-in-Chief, Biochemical Pharmacology
Executive Editor-in-Chief, Pharmacology & Therapeutics
Editor-in-Chief, Pharmacology International
Co-Editor, xPharm
Co-Editor, Current Protocols in Pharmacology
Guest Editor, Biological and Pharmaceutical Bulletin
Section Head (Neuropharmacology and Psychopharmacology), Faculty of 1000 Biology Literature Search Service
Editorial Advisory Board, Brain Research
Editorial Advisory Board, Life Sciences
Editorial Advisory Board, CNS Neuroscience and Therapeutics
Editorial Advisory Board, Current Opinion in Pharmacology
Reviewer, PhRMA Foundation
Grant Consultant, Prestwick Pharmaceuticals, Inc.
Grant Consultant, Nereus Pharmaceuticals, Inc.
Grant Consultant, H. Lundbeck A/S
Grant Consultant, Leydig, Voit & Mayer, LTD.

Seminars Presented:
April 21, 2009 – “Mentors, Methods and Manuscripts.” Sollmann Award Lecture, Experimental Biology Meeting, New Orleans, Louisiana
June 1, 2009 – “Behavioral Assay Systems.” University of Nebraska Medical Center, Omaha, Nebraska.

Academic Honors:
Secretary-General of the International Union of Basic and Clinical Pharmacology
Invited to Present a Symposium Lecture at the 2009 Experimental Biology Meeting in Washington, D.C.
Appointed Associate Dean for Research and Graduate Training, University of Kansas Medical School
Dr. Enna (continued)

Teaching Activities:
Psychiatry Residents Lectures: Neurochemistry, Neurotransmitters, and Psychiatric Illness
4 hours
Integrative and Organ Systems Pharmacology Course (University of Nebraska)
1 hour
Medical School, Small Group Leader, Respiratory Physiology
4 hours
Graduate School, Advanced Neurosciences
6 hours
Faculty Advisor
Orr Society: Emily Blakenship, Brandon Carlson, Jennifer Liebenthal, and A.J. Strickland,
Shawn B. Frost, Ph.D., Research Assistant Professor

Our laboratory studies neural plasticity in response to neurological injury and behavioral experience. Currently we are developing a nonhuman primate model to examine the neuroanatomical, neurophysiological and behavioral effects of focal infarcts in the internal capsule; a common site for clinical strokes in the cerebral white matter. This model of white matter infarct will be extremely valuable in future studies examining the underlying mechanisms of recovery after subcortical ischemic stroke and can be used in the development of therapeutic interventions in stroke treatment.

Meetings Attended:
  September 25-26, 2008 – Dr. Miriam and Sheldon G. Adelson Medical Research Foundation Advisory meeting on Neural Repair and Rehabilitation, Las Vegas, NV

Editorials and Grant Reviews:
  Ad hoc Reviewer, Behavioural Brain Research
  Ad hoc Reviewer, Journal of Neuroscience Methods

Teaching Activities
  CORE 840 – Brain and Behavior
    24 hours
  Graduate Neuroscience, July 2009
    4 hours

Trainees:
  David Guggenmos – Graduate Student, Dr. Nudo primary advisor
  Edward Urban, III – Graduate Student, Dr. Nudo primary advisor
  Pei-Chun Fang, Ph.D. – Post Doctoral Fellow, Dr. Nudo primary advisor
Type 2 diabetes (T2D) is one of the leading causes of mortality and morbidity in the world. T2D is characterized by insulin resistance and is typically correlated with obesity and aging. In our lab, we study the molecular mechanisms underlying age-related and high fat diet-induced insulin resistance. We hypothesize that oxidative stress is responsible for inhibiting insulin signaling and for the impairment of glucose homeostasis. Stress kinases such as JNK and IKK-\(\bullet\) are activated by oxidative stress and have recently been implicated in inhibiting insulin signal transduction. Thus, we are examining the targeted inhibition of stress kinases to improve insulin sensitivity. We are also exploring therapeutic interventions such as heat therapy, exercise and anti-oxidant treatment in high fat-fed rats.

Meetings Attended:
May 28-30, 2009 - Attended the 2009 American College of Sports Medicine Annual Meeting, Seattle, WA

Committees:
Departmental
Advisor, Ph.D. Thesis committee for Anisha Gupte
Advisor, Thesis committee for Brittany Gorres
Advisor, Thesis committee for Jill Morris
Member, Thesis committee for Gwenaelle Wernli
Member, Thesis committee for Argenia Doss
Member, Graduate Student Affairs Committee

KUMC
Member, Thesis committee for Amanda Obaidat
Chair-elect, Elections Committee, SOM

National
Member, American Physiological Society Conference Committee

Editorials and Grant Reviews
Ad hoc Reviewer, American Journal of Physiology Endocrinology and Metabolism
Ad hoc Reviewer, American Journal of Physiology - Regulatory, Integrative and Comparative Physiology
Ad hoc Reviewer, Free Radical Biology and Medicine
Ad hoc Reviewer, Journal of Cellular Physiology
Ad hoc Reviewer, Journal of Lipid Research
Ad hoc Reviewer, Molecular and Cellular Endocrinology
Ad hoc Reviewer, PLOS One
Dr. Geiger (continued)

Seminars Presented:
October 23, 2008 - “Heat shock proteins and the pathogenesis of insulin resistance” University of Missouri Kansas City School of Pharmacy, Division of Pharmacology and Toxicology

Teaching Activities:
PHSL 800 - Medical Physiology
  3 hours lecture
  4 hours conference
IGPBS 895 - Module 5
  4 hours lecture
PHSL 863 - Physical Therapy: Pathology of Human Function I
  3 hours lecture

Trainees:
Brittany Gorres - IGPBS Student
Anisha Gupte - Ph.D. Student
Jill Morris - IGPBS Student
Chad Touchberry - Ph.D. Student (KU-Lawrence)
Norberto C. Gonzalez, M.D., Professor

My research centers on the mechanisms of adaptation to acute and chronic hypoxia in intact animals. This includes the study of the effects of hypoxia, induced by a reduction on the levels of inspired oxygen, on each of the linked conductances of the oxygen transport system in resting and exercising animals, and the effects of exercise training on the strategies of acclimatization to hypoxia and their impact on the oxygen transport system. Another important research line is the study of the underlying mechanisms of the microvascular inflammatory response to systemic hypoxia, which may have functional relevance to acute altitude diseases such as acute mountain sickness, high altitude pulmonary edema and high altitude cerebral edema. Recent work in my laboratory has led to the novel observation that the ubiquitous inflammatory response to alveolar hypoxia is not triggered by the reduction of the local tissue $PO_2$, but rather by a mediator released by alveolar macrophages and transported by the circulation. Current research efforts are directed to identify this substance and to determine the physiological relevance of this response.

Meetings Attended:
- August 3-8, 2008 – International Society of Oxygen Transport to Tissue (ISOTT) Sapporo, Japan
- March 10-15, 2009 - International Hypoxia Symposium 2009, Lake Louise, Alberta, Canada

Committees:
- Departmental Member, Promotion and Tenure Committee

Editorials and Grant Reviews
- Reviewer, The Journal of Applied Physiology
- Reviewer, American Journal of Respiratory Cellular and Molecular Biology
- Reviewer, Free Radical Biology and Medicine

Seminars Presented:
- August 6, 2008 – “Alveolar Hypoxia-Induced Systemic Inflammation: What Low $PO_2$ Does and Does Not Do.” ISOTT meeting, Sapporo Japan.
- March 14, 2009 – “The systemic inflammation of hypoxia is initiated by a mediator released from alveolar macrophages.” International Hypoxia Symposium 2009; Lake Louise, Alberta, Canada
- April 18-22, 2009 – “Renin from activated mast cells mediates the systemic inflammation of alveolar hypoxia.” Poster presentation, Experimental Biology 09, New Orleans, LA
Dr. Gonzalez (continued)

Teaching Activities:
  - CORE 820 – Respiratory Physiology, Cardiopulmonary Module
    7 lectures
  - IGPBS 895 – Module 5, Respiratory Physiology
    6 lectures

Trainees:
  - Jie Chao – Graduate Student
  - Paula Donham – Frontiers in Physiology Fellow, American Physiological Society, Summer 2009
Leslie L. Heckert, Ph.D., Marion M. Osborn Professor, Co-Director of the Center of Reproductive Sciences

Our research focuses on understanding transcriptional and cell-signaling processes important for gonadal function and development. Currently, our research emphasis is in the following areas: 1) evaluation of regulatory processes controlling cell-specific expression of Fshr, a gene encoding the FSH receptor (FSHR) and expressed only in somatic cells of the gonads, 2) determination of direct functional targets of DMRT1, an evolutionarily conserved gene that controls testis differentiation, and 3) identification of small molecule inhibitors of DMRT1 as potential contraceptive agents. The laboratory uses molecular approaches, comparative genomics, and transgenic mouse models to explore events regulating gene expression and function and high-throughput screening to find molecules of block DMRT1 binding to DNA. We anticipate such characterizations will enhance our overall understanding of processes controlling cellular differentiation and specification in the gonads and specify new compounds for development as male contraceptive agents.

Meetings Attended:
April 1-4, 2009 – XX North America Testis Workshop, Philadelphia, PA
April 4-7, 2009 – American Society of Andrology 34th Meeting, Philadelphia, PA
June 10-13, 2009 – 91st Annual Meeting of the Endocrine Society, Washington D.C.

Committees:
Departmental
Member, Graduate Student Advisory Committee
Member, Departmental P&T Committee
Member, Ph.D. Dissertation Committee for Emily McDonald
Member, M.S. Thesis Committee for Stephanie Fiedler
Member, Ph.D. Dissertation Committee for Sarah Tague
Member, Ph.D. Dissertation Committee for Jeff Cotitta
Member, Ph.D. Dissertation Committee for Elizabeth Dille
Member, Ph.D. Dissertation Committee for Valentine Agbor

KUMC
Member, Ph.D. Dissertation Committee for Aaron Gottschalk (Biochemistry and Molecular Biology)
Member, Postdoctoral Advisory Committee
Leader (Theme 4) and Member, Scientific Review Committee for Kansas Intellectual and Developmental Disabilities Research Center
Member, IGPBS Curriculum and Oversight Committee
Chair, Greenwald Symposium Scientific Organizing Committee
Dr. Heckert (continued)

Committees (continued):
KUMC (continued)
Co-Chair, Transgenic Advisory Committee
Director, IGPBS Module 3
Co-Director, Center for Reproductive Sciences
National
Member, Nominations Committee, Society for the Study of Reproduction
Member, Reproduction, Andrology, and Gynecology Subcommittee. Eunice Kennedy Shriver National Institute of Child Health & Human Development
Chair, Program Committee for the 43rd Annual Meeting of the Society for the Study of Reproduction, July 30-August 2, 2010, Milwaukee, WI
Course Director, Frontiers in Reproduction, The Marine Biological Laboratory, Woods Hole, MA

Editorials and Grant Reviews:
Editorial Board Member, Journal of Andrology
Editorial Board Member, Biology of Reproduction
Ad hoc Reviewer, Endocrinology
Ad hoc Reviewer, Biology of Reproduction
Ad hoc Reviewer, Developmental Biology
Ad hoc Reviewer, Molecular Endocrinology
Ad hoc Reviewer, Reproduction
Ad hoc Reviewer, Molecular & Cellular Biology
Ad hoc Reviewer, Systems Biology in Reproduction

Seminars Presented:
September 9, 2009 – “Steroidogenic factor 1 and fate of the Leydig cell,” University of Texas Southwestern Medical Center.
May 13, 2009 – “Long range transcriptional control and regulation of the FSH receptor,” Frontiers in Reproduction, Marine Biological Laboratory, Woods Hole, MA

Other Academic Honors:
Invited Speaker. 2010 Gordon Conference on Reproductive Tract Biology.
August 15-19, 2010 Proctor Academy, Andover, NH
Dr. Heckert (continued)

Teaching Activities:
- BCHM 922 – Advanced Molecular Genetics
  6 hours lecture
- IGPBS 893 – Molecular Biology
  6 hours lecture
- April 30-May 16, 2009 – Frontiers in Reproduction course at Marine Biological Laboratory, Woods Hole, MA
  2 x 3 hours lecture (“Overview of the HPG axis” and “Signaling to the nucleus”)
  Laboratory on transcriptional regulation – six days

Trainees:
- Valentine Agbor – Graduate Student
- Elizabeth Dille – Graduate Student
- Jitu George – Graduate Student
- Tatiana Karpova, Ph.D. – Post Doctoral Fellow
- Kumarasamy Ravichandiran, Ph.D. – Post Doctoral Fellow
- Shixin Tao, Ph.D. – Post Doctoral Fellow
- Alison Raybould – Summer Student
- Zach McCrillis – Student
- Evan Thomas – Student
- Kurt Zacharias – Student
Aberrant spontaneous activity in the auditory system is commonly believed to be a cause of tinnitus. Current research projects utilize behavioral methods and single unit and metabolic measures of spontaneous activity to test the hypothesis that regeneration of hair cells in a rat model can reduce or eliminate neural and behavioral correlates of tinnitus.

Committees:
Departmental
   Chair, Graduate Student Affairs
   Chair, P and T Committee
KUMC
   Member, Academic Committee (SOM), Admissions subcommittee
   Member, Year 1-2 Committee
   Member, Graduate Council
   Member, IGPBS Advisory board, admissions committee

Editorials and Grant Reviews:
   Ad hoc Reviewer, Journal of Comparative Neurology
   Ad hoc Reviewer, Journal of Neuroscience
   Ad hoc Reviewer, Cerebral Cortex
   Ad hoc Reviewer, Journal of Physiology

Teaching Activities:
   CORE 840 – Brain and Behavior, 2nd year med students,
      6 lectures
      5 labs
      4 small group sessions
**T. Rajendra Kumar, Ph.D.,** Assistant Professor

Our laboratory studies development and regulation of the reproductive axis using both gain-of-function (transgenic) and loss-of-function (gene knockout) approaches. These unique genetic models mimic many of the human diseases and thus enable us to experimentally track them both in time and space. Specific projects include unraveling signaling pathways in the hypothalamic medical preoptic area that contributes to male sexual behavior, understanding human pituitary null cell adenoma, mechanisms of secretion of pituitary gonadotropins, and delineating mechanisms of gonadotropin regulation of testis and ovarian development and function, with a special emphasis on how male germline stem cell niche is regulated. These studies are clinically relevant and have significant impact in understanding the physiology and pathology of the mammalian reproductive axis including abnormal reproductive tract development, infertility, and cancer of the pituitary and gonads.

Committees:
- **Departmental**
  - Member, Graduate Student Advisory Committee
  - Member, Kathleen Osborn SSR Travel Award Committee
- **KUMC**
  - Member, Greenwald Symposium Organizing Committee
  - Member, Transgenic and Gene Targeting Facility Oversight Committee
  - Member, IGPBS International Graduate Students’ Selection Committee
  - Member, Biomedical Research Training Program Fellowships Selection Committee
  - Member, NIH Postdoctoral Training Program Committee
  - Member, DC Johnson Scholar Travel Award Committee
  - Member, New Faculty Recruits’ Evaluation Committee, IMFB & Dept. Pathology & Laboratory Medicine
  - Member, KUMC Bioinformatics Advisory Committee
  - Member, KUMC Resident and Fellow Research Forum: Panel of Judges, Session II, May 2008
  - Co-Chair, Center for Reproductive Sciences Journal Club
  - Member, Interim Executive Board, Institute for Regenerative Biology and Medicine, KUMC
  - Program Leader, Developmental Biology Group, Institute for Regenerative Biology and Medicine, KUMC
  - Member, Kansas Intellectual and Developmental Disabilities Research Center User Advisory Committee for Core C, Research Design and Analysis
Dr. Kumar (continued)

Committees (continued):

National


Member, Publication Committee, Journal of Andrology, American Society of Andrology

Editorials and Grant Reviews:

Editorial Board Member, Biology of Reproduction
Editorial Board Member, Endocrinology
Editorial Board Member, Journal of Assisted Reproduction and Genetics
Manuscript Reviewer, American Journal of Pathology
Manuscript Reviewer, American Journal of Physiology: Endocrinology & Metabolism
Manuscript Reviewer, Archives of Biochemistry and Biophysics
Manuscript Reviewer, Asia Journal of Endocrinology
Manuscript Reviewer, Biology of Reproduction
Manuscript Reviewer, Clinical Endocrinology
Manuscript Reviewer, Endocrine
Manuscript Reviewer, Endocrine-Related Cancer
Manuscript Reviewer, Endocrinology
Manuscript Reviewer, Experimental Gerontology
Manuscript Reviewer, Expert Opinion on Therapeutic Patents
Manuscript Reviewer, FEBS Letters
Manuscript Reviewer, Fertility and Sterility
Manuscript Reviewer, Genomics
Manuscript Reviewer, Journal of Andrology
Manuscript Reviewer, Journal of Biotechnology
Manuscript Reviewer, Journal of Cell Biology
Manuscript Reviewer, Journal of Cell Science
Manuscript Reviewer, Journal of Clinical Endocrinology & Metabolism
Manuscript Reviewer, Clinical Investigation
Manuscript Reviewer, Journal of Endocrinology
Manuscript Reviewer, Journal of Physiology
Manuscript Reviewer, Microscopy Research & Technique
Manuscript Reviewer, Molecular and Cellular Endocrinology
Manuscript Reviewer, Molecular Endocrinology
Manuscript Reviewer, Molecular Reproduction and Development
Manuscript Reviewer, Oncogene
Manuscript Reviewer, Peptides
Manuscript Reviewer, PNAS (USA)
Manuscript Reviewer, Physiology & Behavior
Manuscript Reviewer, Reproduction
Manuscript Reviewer, Reproductive Biology and Endocrinology
Dr. Kumar (continued)

Editorials and Grant Reviews (continued)
- Manuscript Reviewer, RNA
- Manuscript Reviewer, The FASEB Journal
- Manuscript Reviewer, Trends in Endocrinology and Metabolism
- Independent Reviewer, Lalor Foundation Postdoctoral Fellowship
  Application of Dr. Chang, UT Health Sciences Center, San Antonio, TX, 2009.
- Ad-hoc Review Member, Development-1 (DEV1) Study Section Panel, National Institutes of Health, 06/2009
- Mail-in-Reviewer, Development-2 (DEV2) Study Section Panel, National Institutes of Health, 06/2009

Seminars Presented:
- October 2008 - "Genetic analysis of somatic-germ cell interactions in the mouse testis." 5th Annual Greenwald Symposium

Academic Honors:
- Invited Speaker, Center for Organogenesis, University of Michigan Medical Center, Ann Arbor, MI, September 18, 2008
- Invited Speaker, Department of Biochemistry and Molecular Biology, North Carolina State University, Raleigh, NC, September 25, 2008
- Invited Speaker, Department of Veterinary Biosciences, University of Illinois, Urbana, IL, April 29, 2009
- Invited Speaker, Department of Obstetrics and Gynecology, University of Texas Medical Branch, Galveston, TX, June 17, 2009
- Invited Speaker, Gordon Research Conference on Reproductive Tract Biology, Andover, NH, August 15, 2010

Teaching Activities:
- BCHM 922 – Advanced Molecular Gene
  4 hours lecture
- IGPBS 894 – Module 4: Cell and Developmental Biology
  6 hours lecture
- PATH 805 – Seminar in Pathology
  4 hours lecture
- IGPBS 895 – Module 5: Molecular and Physiological Basis of Disease
  4 hours lecture

Trainees:
- Huizhien Wang, Ph.D. – Post Doctoral Fellow
- Aveek Dhar – Summer Student
Melissa A. Larson, Ph.D., Research Assistant Professor, Director of KUMC Transgenic and Gene-Targeting Institutional Facility

The TGIF is a fee-for-service facility supporting the research efforts of investigators at KUMC and the surrounding research community. In this capacity, we are providing the services of generation of transgenic and chimeric mice, targeting of embryonic stem cells, genotyping, sperm and embryo cryopreservation, rederivation by embryo transfer and in vitro fertilization. We also provide consultation, demonstration and training on construct generation, embryo handling and mouse surgeries and will be adding the service of intracytoplasmic sperm injection. We welcome the opportunity to research new projects, and we are developing new techniques and services to offer to investigators. My lab is also investigating the in vivo function of a novel recombinase for use in genetic engineering.

Meetings Attended:
   October 30-31, 2008 – Tetraploid Embryo Complementation Assay Workshop, Toronto Canada

Teaching Activities:
   October 7, 2008 – Demonstration and consultation on generation of transgenic and chimeric mice for Ying, Li, Washington State University
Sang-Pil Lee, Ph.D., Assistant Professor

My current research interests include the characterization and understanding of biological processes in the brain in vivo at the cellular and molecular level using novel non-invasive magnetic resonance techniques, for example, in vivo measurements of iron contents, Aβ plaques and axonal transport using contrast agents in transgenic animal models of Alzheimer’s disease. My research goal is early diagnosis and identification of changes in functional and physiological aspects of neurodegenerative diseases during the disease progression.

Meetings Attended:
July 26-31, 2008 – International Conference on Alzheimer’s Disease (ICAD), Chicago, IL
April 18-24, 2009 – International Society of Magnetic Resonance in Medicine (ISMRM), Honolulu, HI
June 5-9, 2009 – American Diabetes Association, New Orleans, LA

Committees:
Member, Natalia Loskutova Ph.D. Dissertation Committee (Physical Therapy)

Editorials and Grant Reviews:
Ad hoc Reviewer, Magnetic Resonance in Medicine
Ad hoc Reviewer, NMR in Biomedicine
Ad hoc Reviewer, Journal of Neuroscience Research

Seminars Presented:
November 7-10, 2008 – “Chemical shift imaging of GABA in the human brain in vivo using multiple quantum filtering techniques” Invited speaker of workshop on “MR Spectroscopy and Neurotransmitter Function in Neuropsychiatric Disorders: Focus on Glutamate and GABA” Québec City, Canada
March 24, 2009 – “Probing neural activity, connectivity, and integrity using manganese-enhanced MRI,” Neuroscience Graduate Program Seminar, University of Kansas

Teaching Activities:
PATH 863 – Pathology of Human Function
2 hours lecture
PHSL 838/SPLH 764 – Seminar in Cognitive Neuroimaging
9 hours lecture

Trainees:
Robin Aupperle – Graduate Student
Meredith Estep – Graduate Student
Laura Martin, Ph.D. – Post Doctoral Fellow
**Steven M. LeVine, Ph.D., Professor**

Our research is directed at advancing the understanding of the pathogenic mechanism in multiple sclerosis, which is a neurological disease that causes sensory, motor and/or cognitive decline. We also study novel interventions for this disease. Our research incorporates a team approach that includes clinical samples, flow cytometry, immunology, and animal models. Additional studies address mechanisms of toxin-induced vessel injury.

**Committees:**
- Departmental Coordinator, 2008-2009 Physiology Seminar Series
- Member, P and T Committee

**Editorial and Grant Reviews:**
- Ad hoc Reviewer, Brain Research
- Ad hoc Reviewer, Free Radicals in Biology and Medicine
- Ad hoc Reviewer, Journal of Neuroscience Research
- Ad hoc Reviewer, Multiple Sclerosis
- Ad hoc Reviewer, NeuroImage

**Seminars Presented:**
- May 22, 2009 – “Oxidative Stress and MS: Studies of EAE and Humans.” Translational Discovery Forum on Multiple Sclerosis. The Institute for Neurological Disorders, KUMC.

**Academic Honors:**
- June 2009 – Visiting professor at UCLA for two weeks

**Teaching Activities:**
- CORE 820 – Gastrointestinal Tract and Nutrition
  - 3 hours lecture to first year medical students
- CORE 840 – Brain and Behavior
  - 7 hours Neuropathology labs for second year medical students
- PHSL 848 – Molecular Mechanisms of Neurological Disorders
  - Course Director, Mentor for student presentations, Lecturer

**Trainees:**
- Rachel Williams, Ph.D. – Post Doctoral Fellow
- Cassandra Buchheit – Student, Rockhurst University
- Ryan Gallagher – Student, Kansas State University
- Laura Rues – Student, Rockhurst University
- Matthew Sweeney – Student, Rockhurst University
**Randolph J. Nudo, Ph.D.,** Professor & Director of the Landon Center on Aging

Our laboratory is studying the brain's capacity for self-repair after damage. We utilize a non-human primate model of stroke recovery to determine the neurophysiologic, neuroanatomic, and biochemical bases for recovery. By tracking changes in the structure and function of motor areas of the cerebral cortex as a result of a focal vascular infarct, we are beginning to describe the cascade of events that give rise to the reorganized brain. We are also studying novel forms of treatment in chronic stroke to enhance and accelerate the recovery process. These treatment interventions include both physiotherapy, pharmacotherapy, or device-based approaches, either alone or in combination. It is our goal to translate directly the information we gain through brain plasticity research into effective clinical applications.

Meetings Attended:
- September 25, 2008 – 6th World Stroke Congress, Vienna, Austria
- November 14, 2008 – Society for Neuroscience Annual Meeting, Washington DC
- November 20, 2008 – American Association of Physical Medicine and Rehabilitation annual meeting, San Diego, CA
- March 2009 – Restauración Neuroológica 2009, International Center for Neurological Restoration (CIREN), Havana, Cuba
- May 3, 2009 – Symposium on Neuroplasticity and Neurorehabilitation, Danish Society of Neuroscience, Jutland, Denmark

Committees:
- **Departmental**
  - Member, Promotion and Tenure Committee
- **KUMC**
  - Member, K30 grant Internal Advisory Board
  - Member, General Clinical Research Center Advisory Committee
  - Member, General Clinical Research Center Executive Committee
  - Chair, Laboratory Animal Resources Advisory Committee
- **National**
  - Member, Board of Directors, American Society of Neurorehabilitation
- **International**
  - Member, International Organizing Committee, Neurological Restoration Conference 2009, Havana, Cuba
Dr. Nudo (continued)

Editorial and Grant Reviews:
Deputy Editor, Brain Stimulation
Editorial Board, Restorative Neurology and Neuroscience
Editorial Board, Neurorehabilitation and Neural Repair
Editorial Board, Neuroscience and Biobehavioral Reviews
Ad hoc Reviewer, Journal of Neurophysiology
Ad hoc Reviewer, Stroke
Ad hoc Reviewer, Journal of Cerebral Blood Flow and Metabolism
Ad hoc Reviewer, Cerebral Cortex
Ad hoc Reviewer, Journal of Neuroscience
Ad hoc Reviewer, Brain
Ad hoc Reviewer, Neuroscience
Ad hoc Reviewer, Journal of Comparative Neurology
Ad hoc Reviewer, Proceedings of the National Academy of Science
Ad hoc Reviewer, Neuropharmacology
Ad hoc Reviewer, Experimental Brain Research
Ad hoc Reviewer, Fondazione Italiana Sclerosi Multipla (Italian Multiple Sclerosis Foundation)
Ad hoc Reviewer, University of Missouri Research Board
Ad hoc Reviewer, NIH-NICHD Special Emphasis Panel: Electrical Stimulation for Hemiplegic Shoulder Pain Review Committee, August 2008

Seminars Presented:
July 31, 2008 – “Brain mechanisms of recovery after stroke,” RIKEN Brain Science Institute Summer Program, Tokyo, Japan
August 2, 2008 – “Brain mechanisms of recovery after stroke,” Tamagawa University, Machida City, Japan
August 6, 2008 – “Brain mechanisms of recovery after stroke: the coming age of brain repair,” Morinomiya Hospital, Osaka, Japan
September 11, 2008 – “Roadblocks and detours in recovery after stroke,” Gerontology Colloquium, University of Kansas, Lawrence, Kansas
September 25, 2008 – “Brain Plasticity – Synaptic reorganization after stroke,” 6th World Stroke Congress, Vienna, Austria
October 13, 2008 – “Brain mechanisms of recovery after stroke,” Hope Center and Department of Neurology Research Seminar, Washington University, St. Louis, Missouri
November 4, 2008 – “Rewiring the brain after stroke,” American Heart Association Board Meeting, Overland Park, Kansas
Seminars Presented (continued):

November 15, 2008 – Sensorimotor Integration in Sensory Prostheses Workshop, Society for Neuroscience Annual Meeting, Washington, DC

November 20, 2008 – Course entitled: Central Nervous System Stimulation: Future Therapies in Stroke Rehabilitation, American Association of Physical Medicine and Rehabilitation annual meeting, San Diego, California

February 23, 2009 – “Brain mechanisms of recovery after stroke,” Neurobiology of Aging Seminar Series, University of California, San Diego

February 26, 2009 – “Neuroprosthetics and brain damage,” Swiss Federal Institute of Technology Workshop, Lausanne, Switzerland


April 17, 2009 – “Neuroplasticity and the Coming Age of Brain Repair”, Keynote Speaker, Graduate Research Day, Department of Psychology, Florida State University, Tallahassee, Florida

May 3, 2009 – “Neuroplasticity and neurorehabilitation,” Symposium on Neuroplasticity and Neurorehabilitation, Danish Society of Neuroscience, Jutland, Denmark


Academic Honors:

Invited Speaker, Future prospects for brain prosthetics, Neurology/Neurosurgery Grand Rounds, Kansas University Medical Center, Kansas City, Kansas, August 21, 2009

Invited Speaker, Neurology Grand Rounds, University of Texas at Houston, September 11, 2009


Invited Speaker, Rewiring the Brain after Stroke, Behavioral and Brain Sciences Colloquium Series, University of Texas at Dallas, November 6, 2009
**Dr. Nudo** (continued)

Academic Honors (continued):

- Keynote Speaker, Motor Speech Disorders Conference, Savannah, Georgia, March 5, 2010
- Invited Speaker, Neuroscience Seminar Series, Medical College of Georgia, Augusta, Georgia, April 14, 2010

Teaching Activities:

- NEUS 840 – Medical Neuroscience
  - 6 lecture hours
- PHSL 848 – Molecular Mechanisms in Neurological Disorders
  - 1 hour lecture
- Faculty Research Series
  - 1 hour lecture
- PHTH 863 – Pathobiology of Human Function II
  - 1 hour lecture
- Introduction to Clinical Research
  - 1 hour lecture

Trainees:

- David Guggenmos – Graduate Student
- Mariko Nishibe – Graduate Student
- Edward Urban III – Graduate Student
- Scott Bury, Ph.D. – Post Doctoral Fellow
- Pei-Chun Fang, Ph.D. – Post Doctoral Fellow
- David McNeal, Ph.D. – Post Doctoral Fellow
Erik J. Plautz, Ph.D., Research Assistant Professor

Our laboratory studies neural plasticity (the capacity of the brain to undergo physiological and anatomical changes) in response to behavioral experience and neurological injury. We utilize a non-human primate model of ischemic stroke to examine changes in motor areas of the cerebral cortex following injury and during recovery. Several projects are focused on identifying and describing the widespread cascade of events that occur in the days, weeks, and months after injury. Other projects involve evaluation of novel techniques or methods for improving functional recovery from chronic disability, including physiotherapy, pharmacotherapy, and device-assisted electrotherapy.

Committees:
   Faculty Judge, KUMC Post-doc Research Forum (April 2009)

Editorials and Grant Reviews:
   Ad hoc Reviewer, Stroke

Trainees:
   David Guggenmos – Graduate Student, Dr. Nudo primary advisor
   Mariko Nishibe – Graduate Student (PT)
   Edward Urban – MD/PhD Student, Dr. Nudo primary advisor
   Scott Bury, Ph.D. – Post Doctoral Fellow, Dr. Nudo primary advisor
   Pei-Chun Fang, Ph.D. – Post Doctoral Fellow, Dr. Nudo primary advisor
   David McNeal, Ph.D. – Post Doctoral Fellow, Dr. Nudo primary advisor
Mihai Popescu, Ph.D., Research Assistant Professor

One of my research interests is the development and evaluation of new approaches to the biomagnetic inverse problem. The goal of this research is to improve the MEG source estimation accuracy, such as to achieve better characterization of the underlying brain generators in specific experimental settings. Current experimental MEG projects focus on the correlation between the evoked brain activity and behavioral profiles in children with Asperger syndrome, and on the effects of language interventions on the evoked brain responses in children with primary language disorder.

A second area of research is focusing on multi-channel biomagnetic recordings of the fetal heart activity. Fetal magnetocardiographic (fMCG) measurements are performed in our laboratory with a dedicated biomagnetometer system that enables screening of the fetal heart electrophysiology from early gestational ages. We seek to develop new computational approaches to the analysis of fMCG signals, using 3D reconstructed ultrasound images of the fetal-maternal anatomy to derive realistic volume conductor models, and to improve the estimators of fetal myocardial currents from the multi-channel fMCG recordings. The clinical validation of this methodology is conducted on fetuses with abnormal increase in ventricular wall thickness (cardiac hypertrophy). Our goal is to develop fMCG into a reliable technique for monitoring fetal heart electrophysiology and for early identification and diagnosis of congenital heart anomalies.

Committees:
KUMC/KU-Lawrence
   Member, Doctoral Committee for Rong Tao (BioE, KU)
   Member, M.S. Committee for Tsz Pin Chan’s (EECS, KU)

Editorials and Grant Reviews:
   Ad hoc Reviewer, IEEE Transactions on Neural Systems & Rehabilitation Engineering
   Ad hoc Reviewer, Computer Methods and Programs in Biomedicine

Seminars Presented:
   May 1, 2009 – “Assessment of the sensory memory using MEG recordings”, Department of Speech-Language-Hearing.

Teaching Activities:
   PHSL838/SPLH 764 – Fundamentals of Biomedical Imaging
      2 – 3 hour lectures

Trainees:
   Rong Tao – Ph.D. Student (Bioengineering Graduate Program, KU)
   Tszping Chan – Graduate Student (EECS Dept, KU), S. Blunt primary advisor
Nerves regulate function and structure of peripheral cells. In turn, target cells provide molecular signals that govern the quantity and type of innervation they receive. Our research is concerned with this interplay between nerve and target in a variety of systems including the cardiovascular system, skin, and reproductive tract. We study the factors that make a tissue attractive or repulsive to autonomic and sensory nerves, and regulate neuronal growth and survival. We also study how some nerves alter target properties, such as rates of wound healing and growth of blood vessels. We are interested in how hormones can affect these relationships. A particular focus is the molecular mechanisms by which estrogen influences patterns of innervation, and consequences of hormonally induced changes in innervation on cardiovascular and reproductive tract functions. This research has direct implications for recovery from cardiac injury, and with regard to changes neural function that occur with changing hormonal status in women.

Meetings Attended:
August 6-8, 2008 – Biennial Institutional Development Award (IDeA) Program Symposium, Washington D.C.
November 16-18, 2008 – Society for Neuroscience, Washington D.C.
January 17-18, 2009 – Kansas IDeA Network for Biomedical Research Excellence Student Symposium, Kansas State University, Manhattan, KS
February 22-27, 2009 – Neurobiology of Pain and Analgesia, Santa Fe, New Mexico
May 13-14, 2009 – Developmental Disabilities Research Center Directors Meeting, Chicago, IL
June 17-19, 2009 – Merrill Advanced Studies Center, Valley Falls, KS

Committees:
Departmental
Member, Physiology Promotions and Tenure Committee
Chair, Student Advisory Committee for Aritra Bhattacharjee
Chair, Student Advisory Committee for Gwenaelle Wernli Clarke
Chair, Student Advisory Committee for Tim Donohue
Chair, Student Advisory Committee for Argenia Doss
Chair, Student Advisory Committee for Eva Selfridge
Dr. Smith (continued)

Committees (continued)
Departmental (continued)
Chair, Student Advisory Committee for Sarah Tague
Member, Student Advisory Committee for Ed Urban III
KUMC
Member, Student Advisory Committee for Kevin Farmer (Physical Therapy)
Member, Student Advisory Committee for Chanel Li (Pharmacology and Toxicology, KU-L)
Director, Institute for Neurological Disorders
Director, Kansas Intellectual and Developmental Disabilities Research Center
Associate Director and Program Coordinator, Kansas IDeA Network for Biomedical Research Excellence (K-INBRE)
Director, K-INBRE Bioinformatics Core at KUMC
Director, KUMC Microarray Facility
Member, Confocal Microscopy Advisory Board
Member, Mass Spectroscopy Advisory Board
Member, Kansas INBRE Advisory Board
Member, CTSA Planning Committee
Member, LAR Advisory Committee
Chair, KUMC Research Institute Research Committee
Member, Search Committee for the Director, Life Span Institute at KU
Chair, Bioinformatics Search Committee
Chair, Computer Scientist Search Committee
Member, KU/KUMC Joint Task Force on Infrastructure

Editorials and Grant Reviews
Ad hoc Reviewer, Journal of Comparative Neurology
Ad hoc Reviewer, Current Eye Research
Ad hoc Reviewer, Experimental Neurology
Ad hoc Reviewer, Archives of Oral Biology
NIH Neural Differentiation, Plasticity and Regeneration Study Section
NIH Center for Scientific Review: Challenge Grants
KUMC Research Institute
Kansas INBRE
Seminars Presented

- September 5, 2008 – “Translational Discovery Forum on Female Pain Syndromes”, KUMC Institute for Neurological Disorders
- September 8, 2008 – “Reflections on successful strategies for grant proposals: Writing skills”. KUMC Department of Molecular and Integrative Physiology.
- October 22, 2008 – “Strange bedfellows: Estrogen, angiotensin, and peripheral pain pathways” Department of Pharmacology and Toxicology, University of Kansas, Lawrence
- April 1, 2009 – “Estrogen, Angiotensin and hyperinnervation in fibromyalgia”. Neuromuscular Research Group, Department of Neurology, KUMC.
- April 17, 2009 – “Translational Discovery Forum on Fibromyalgia”, KUMC Institute for Neurological Disorders

Teaching Activities:
- PHSL 800 – Medical Physiology
  - 3 hours lecture
  - 4 hours conference

Trainees:
- Aritra Bhattacherjee - Graduate Student
- Gwenaelle Wernli Clarke - Doctoral Candidate
- Argenia Doss - Doctoral Candidate
- Sarah Tague - Doctoral Candidate
- Timothy Donohue - MD/PhD Doctoral Candidate
- Eva Selfridge - MD/PhD Doctoral Candidate
- Natalie Katz - MD/PhD Student Rotation
The primary focus of my research is evaluation of neuromuscular deficits in preclinical animal models of ALS. In particular, we are interested in orolingual motor deficits, an area that has been largely untouched in preclinical ALS research. We use clinically-analogous operant behavioral techniques to evaluate orolingual motor function and standard behavioral techniques to evaluate motor deficits in the fore- and hindlimbs. In addition, although it is believed that the effects in muscle occur secondary to motor neuron degeneration in ALS, some of the earliest signs of disease are found in the muscle. Therefore, muscles are evaluated for changes in neuromuscular junction integrity, mitochondrial function, and heat shock protein induction, as well as other metabolic measures, such as glucose transport.

Seminars Presented:
May 11, 2009 – “Preclinical Studies of ALS.” Department of Molecular & Integrative Physiology, KUMC
John A. Stanford, Ph.D., Assistant Professor

My research is focused on analyzing motor function in animal models of normal aging and age-related diseases such as amyotrophic lateral sclerosis (ALS) and Parkinson’s disease (PD). Using the SOD1-G93A mouse model, we were the first to characterize bulbar deficits in a preclinical model of ALS. We have extended these studies to the rat SOD1-G93A model and to a model involving viral vector delivery of TDP-43 to the hypoglossal nucleus. We are also studying muscle metabolism in models of ALS and insulin resistance in the brain and periphery in rodent models of PD. In addition we are involved in studies examining clinically-analogous measures of motor function in preclinical models of prescription drug use and abuse in the elderly (e.g., benzodiazepines).

Meetings Attended:
November 3-8, 2008 – 19th International Symposium on ALS/MND, Birmingham, U.K.
November 15-19, 2008 – Annual Meeting of the Society for Neuroscience, Washington D.C.

Committees:
Departmental
Member, Graduate Student Affairs Committee
KUMC
Member, Rodent Behavior Advisory Committee
Member, KUMC IACUC
Member, KIDDRC Core B Advisory Committee

Editorials and Grant Reviews
Reviewer, Psychopharmacology
Reviewer, Journal of Neuroscience Methods
Reviewer, Physiology & Behavior, Neuroscience
Reviewer, Brain Research
Ad hoc Reviewer, NIH Communication Disorders Review Group (CDRC), June 2009.

Seminars Presented:
October 16, 2008 – “Translatable Measures of Motor Function in Preclinical Models of Parkinson’s Disease and ALS.” Department of Anatomy and Cell Biology, KUMC
February 10, 2009 – Translatable Measures of Motor Function in Preclinical Models of Aging, Parkinson’s Disease and ALS.” Department of Pharmacology, Toxicology & Neuroscience, LSU Health Sciences Center-Shreveport, Shreveport, LA
Dr. Stanford (continued)

Teaching Activities:
- IGPBS – Module 5
  - 4 lectures (8 hours total)
- CORE 840 – Brain and Behavior
  - 25 total hours small group teaching
- PHSL 846 – Advanced Neuroscience
  - Course Director
  - 6 hours classroom teaching

Independent Study
- Directed readings regarding neural control of oromotor function with Angela Dietsch, graduate student in Speech, Language, & Hearing, KU-Lawrence

Trainees:
- Jill Morris – Graduate Student
- Dianne Leitner – Medical Student
- Cole Worley – Medical Student
- Neal Desai – Summer Student
Stanislav R. Svojanovs'ky, Ing., Ph.D., Research Assistant Professor

My research is focused on biomedical applications (microarray, SNP data analysis, and biomarkers), genomics profiling for different diseases and disorders (diabetes, chronic lung disease, brain injuries), development of gene ontology, annotation and pathways for microarray research and how related genes encode functionally related proteins.
In addition, I am interested in computational models (neural networks) that could be utilized in solving bioinformatics problems including quantitative structure-activity relationships (QSAR), computer assisted drug design (CADD), high throughput screening (HTS) and genome mapping.

Meetings Attended:
September 29-October 3, 2008 – Affymetrix University Expression Data Analysis Course, Santa Clara, CA
October 23-24, 2008 – Statistical Methods for In Vitro Assays in Drug Discovery, University of Kansas, Lawrence, KS
January 7, 2009 – Functional Genomics and Data Analysis Workshop, University of Kansas, Lawrence, KS
January 17-18, 2009 – K-INBRE Symposium, Manhattan, KS
May 23, 2009 – GRA Bioinformatics Summit, University of Kansas, Lawrence, KS

Seminars Presented:
March 9, 2009 – “Neural Network Applications in Bioinformatics Research,” Department of Electrical Engineering and Computer Science, University of Kansas, Lawrence, KS

Academic Honors
April 15, 2009 – recipient of the JCCC “Lieberman Teaching Excellence Award”

Teaching Activities:
EECS 833 – Neural Networks and Fuzzy Logic (KU-Lawrence)
4 hours lecture
4 hours review
C. Merrill Tarr, Ph.D., Professor

My present research interest is the development and evaluation of interactive, teaching modalities that can be used to enhance the educational experience of students.

Committees:
  - Director, Cardiopulmonary Module in Year 1 Medical Curriculum
  - Director, Renal-Endocrine Module in Year 1 Medical Curriculum
  - Member, Phase 1 Committee

Academic Honors:
  - Student Voice Award: Cardiopulmonary Module voted “The Outstanding First Year Module”

Teaching Activities
  - Cardiopulmonary Module Year 1 Medical
    - 7 hours lecture
    - 4 hours of small group teaching
Joseph S. Tash, Ph.D., Professor, Director of the Interdisciplinary Center for Male Contraceptive Research and Drug Development

My interests and involvement in research in reproductive biology and signal transduction began during my undergraduate years and have continued to the present time. I have felt for a long time that effective solutions to the problem of human overpopulation must include new male contraceptive approaches. Towards this end, a long term research goal is to understand the mechanisms underlying spermatogenesis, and the development and expression of sperm motility and fertility. This knowledge can be used to identify targets in sperm or the testis that could be used for development of male contraceptive agents. A second major research interest, concerns whether male reproduction is affected by space flight.

Meetings Attended:
- April 2008 – American Society for Gravitational & Space Biology Meeting, Washington D.C.
- October 2008 – U54/U01 Steering Committee Meeting, KUMC
- February 2009 – Frontiers in Reproductive Biology & Regulation of Fertility, Santa Fe, NM
- Participated in Quarterly MCP meetings with the University of Minnesota and the Moffitt Cancer Center

Committees:
- KUMC
  - Member, School of Medicine Dean’s Leadership Committee
  - Member, School of Medicine Basic Chairs/Center Directors Committee
  - Associate Director, Imaging Core Laboratory, Center for Reproductive Sciences.
  - Member, KUMC Biotech Facility Oversight Committee

National
- Member of Board of Governors, American Society for Gravitational and Space Biology

Editorials and Grant Reviews
- Reviewer, Biology of Reproduction
- Reviewer, Journal of Andrology

Seminars Presented:
- October 2008 – “Progress of the Non-hormonal Male Contraceptive Agent, H2-Gamendazole, on the Drug Development Pipeline.” DC Johnson Seminar Series, KUMC
Dr. Tash (continued)

Other Academic Honors:
Nominated for the Chancellor's Research Award, 2009

Trainees:
Ben Abel - Ph.D. Student
Jeffrey Cottita - IGPBS Student
Vijayalaxmi Gupta, Ph.D. - Post Doctoral Fellow
Lesya Holets, Ph.D. - Post Doctoral Fellow
Michael W. Wolfe, Ph.D., Associate Professor

Pituitary expression of luteinizing hormone and placental expression of chorionic gonadotropin are essential to mammalian reproduction. Research in my laboratory is directed towards understanding the cellular and molecular mechanisms involved in regulating pituitary and placenta function as well as tissue-specific and hormonal regulation of the genes encoding the α and β-subunits of these hormones. This involves studying the mechanisms regulating cell differentiation, elucidation of transcription factors regulating basal expression, and identifying the signal transduction pathways involved in gonadotropin-releasing hormone, retinoid, growth factor, cytokine and adipokine regulation of gene expression.

Meetings Attended:
October 2008 – 5th Annual Gilbert S. Greenwald Symposium on Reproduction, Kansas City, MO

Committees:
Departmental
Chair, Dissertation Committee for Emily MacDonald, Ph.D Candidate
Chair, Dissertation Committee for Sara Turk, Ph.D. Candidate
Chair, Comprehensive Exam for Stephanie Fiedler
Member, Dissertation Committee for Martha Carletti, Ph.D. candidate
Member, Dissertation Committee for Brittany Gorres, Ph.D. candidate
Member, Dissertation Committee for Tamara Jimenez, Ph.D. candidate
Member, Dissertation Committee for Lacey Luense, Ph.D. candidate
Member, Dissertation Committee for Anh-Nguyet Nguyen, Ph.D. candidate
Member, Dissertation Committee for Edward Urban, M.D./Ph.D. candidate

KUMC
Member, Dissertation Committee for Lindsey Canham, Ph.D candidate (Dept. of Pathology)
Member, Dissertation Committee for Damayanti Chakraborty, Ph.D. candidate (Dept. of Pathology)

National
Member, By-Law Committee; Society for the Study of Reproduction
Dr. Wolfe (continued)

Editorials and Grant Reviews
Ad hoc Reviewer, Biology of Reproduction
Ad hoc Reviewer, Endocrinology
Ad hoc Reviewer, Journal of Cellular and Molecular Medicine
Editorial Board Member, Journal of Endocrinology

Seminars Presented:
October 9, 2008 – “Pituitary adenylate cyclase activating protein (PACAP) regulates expression, intracellular localization and function of early growth response protein 1 (Egr1) in gonadotropes.” 5th Annual Gilbert S. Greenwald Symposium on Reproduction, Kansas City, MO

Teaching Activities:
IGPBS 894: Module 4: Cell and Development Biology/Cell Signaling
3 hours lecture
3 hours journal club
IGPBS 895: Module 5: Molecular and Physiological Basis of Disease
3 hours lecture
2 hours journal club
Pre-clinical phase: year 1, Renal-Endocrine Module
7 hours lecture (team taught within a 17 hour block)
2 hours review session
4 hours small group conferences
Pre-clinical phase: year 1, Reproductive and Sexuality Medicine Module
3 hours lecture
PHSL 842 – Comprehensive Human Physiology
Course co-director
Development and planning of the course

Trainees:
Emily McDonald – Graduate Student
Sara Turk – Graduate Student
John G. Wood, Ph.D., Associate Professor

Systemic hypoxia occurs at altitude and in a variety of cardiopulmonary diseases. Our major goal is to examine mechanisms responsible for the microvascular inflammatory response during acute hypoxia as well as to identify mechanisms responsible for microvascular acclimatization to chronic hypoxia in collaboration with Dr. Gonzalez. I am also working with faculty and residents in the Department of Surgery to study mechanisms involved in microvascular injury in hemorrhagic shock and mesenteric ischemia/reperfusion.

Meetings Attended:
October 13-16, 2008 – American College of Surgeons meeting, San Francisco, CA
April 19-22, 2009 – Experimental Biology meeting, New Orleans, LA

Committees:
Departmental
Member, Jie Chao Thesis Committee
Member, Timothy Donohue Thesis Committee
Member, Anh Nguyen Thesis Committee
Member, George Thomas Thesis Committee
Member, Gwenaelle Wernli Thesis Committee

KUMC
Member, Katy Allen Thesis Committee, Pharmacology, Toxicology and Therapeutics
Member, Chieko Saito Thesis Committee, Pharmacology, Toxicology and Therapeutics
Chair, Department of Surgery Research Committee
Member, Department of Surgery Education Committee
Member, Prematriculation Planning Committee

Editorials and Grant Reviews:
Ad hoc Reviewer, Microcirculation
Ad hoc Reviewer, American Journal of Physiology
Ad hoc Reviewer, Journal of Applied Physiology
Reviewer, American Heart Association Vascular Wall Biology study section

Seminars Presented:
May 29, 2008 – “Microvascular responses to acute and chronic hypoxia,” University of South Carolina School of Medicine
Dr. Wood (continued)

Academic Honors:
- William T. Kemper Teaching Fellowship for Teaching Excellence
- Ruth Bohan Teaching Professorship Award
- Student Voice Award for Outstanding First Year Teaching
- Student Voice Award for Outstanding Second Year Teaching

Teaching Activities:
- First year medical curriculum
  - 14 hours lecture
  - 1 hour review
  - 4 hours conference
- Second year medical curriculum
  - 2 hours lecture
- First Prep Board Review
  - 2 hours lecture
- Pre-matriculation Program, 20 students
  - 21 hours lecture
  - 15 hours problem sessions
  - 1 hour lab
  - 2 hours review
- Vascular Surgery Program, Department of Surgery
  - 2 hours lecture

Trainees:
- Al Cassillan, M.D., Ph.D. – Resident, Department of Surgery
- James Howard, M.D. – Resident, Department of Surgery
- Scott Mullen, M.D. – Resident, Department of Surgery
- Kingsley Okwonkwo, M.D. – Resident, Department of Pediatrics
- Ruben Font – Medical Student
- Caleb Brower – Summer Medical Student