

**Annual Report of the**

**DEPARTMENT OF**

**MOLECULAR & INTEGRATIVE**

**PHYSIOLOGY**

**University of Kansas Medical Center**

**Covering the period July 1, 2004 - June 30, 2005**

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## YEAR IN REVIEW 2004-2005

*(Reviewing the fiscal year of July 1, 2004 through June 30, 2005)*

**FUNDING:** Overall, 2004-2005 was another excellent year in which the department continued to excel in education, research and service. Research funding in the department was \$4,501,221 (total costs) in NIH support (source: NIH Website). This is a decline of about 2 million from the previous year. While this decline is large and concerning, a major contributing factor was Mike Soares' move from Physiology to Pathology. With the current level of funding, the department ranks 42<sup>nd</sup> out of 98 medical schools receiving NIH funding. Given that there are 127 medical schools nationally, our rank among all medical school Physiology departments nationally remains in the top third. Also noteworthy is the fact that during the year, our faculty held more NIH grants than any other department at the Medical Center. Also of great significance to me as chair and the department as a whole is the fact that nearly every faculty member's research program was supported by major external funding.

**EDUCATION:** The department's record of excellence in education continued this year. Of particular significance is the fact that Dr. Gustavo Blanco and Dr. John Wood both won the "Outstanding Educator of the Year" Award given by the medical students. For John this award continued his remarkable winning streak and for Gustavo a pattern is taking shape with two wins in a row. We congratulate John and Gustavo on their success, which is shared by the department. Also of interest is the fact that the Medical Neuroscience course won the 'Outstanding Course of the First Year' award. Tom Imig is co-director of Medical Neuroscience with Dianne Durham. Dr. Merrill Tarr continues as Director of Medical Education in the department. A major responsibility over the past year has been work on the new integrated curriculum. Merrill has done an outstanding job in running the Medical Physiology courses and leading the department's contribution to the development of the new curriculum. We are very proud of his leadership in education.

**TENURE TRACK RECRUITMENTS:** Two recruitments efforts were undertaken during the year, one for a vascular/respiratory physiologist and another for a neuroscientist. The neuroscience search was not successful and will be reinitiated during the coming year. The vascular physiology search was successful. Dr. Paige Geiger will be joining the department in July of 2005 as an assistant professor. Paige is currently a postdoctoral fellow at Washington University. She works on cell signaling mechanisms responsible for increased insulin sensitivity following muscle stimulation as well as the exercise-mediated increase in mitochondrial biogenesis in skeletal muscle.

**RESEARCH TRACK APPOINTMENTS:** The past year has also witnessed continued growth in the department's faculty research track as senior staff in individual labs took on more responsibilities and began submitting their own grants as PI. All new appointments were at the assistant professor level. Dr. Marianna Rodova who has been working as a postdoctoral fellow with Dr. Gustavo Blanco, was appointed to the research track. Her research interest is transcriptional and translational regulatory mechanisms of the Na,K-ATPase alpha4 isoform. Dr. Shawn Frost has been working with Dr. Randy Nudo. His research interest is stroke and

plasticity of cortical motor areas. Dr. Elena Zoubina also works with Dr. Nudo and has plans to send in grants to NIH and other external agencies. Her area of interest is enhancement of functional recovery following ischemic cortical injury. We welcome these new members to our department and look forward to working with them in developing grants to external funding agencies.

**GRADUATE PROGRAM AND PHYSIOLOGY SOCIETY:** The graduate students in the department had another active year. The “Physiology Society” leadership included Anne Stowe as President and Marie-Helene Boudrias as Vice President, Heather Hudson as Secretary and Anh-Nguyet Nguyen as Social Event Organizer. The Physiology Society continues to be an effective mechanism for organizing the graduate students and we appreciate its contributions to the department.

At the end of the year, our graduate program had 13 full-time students working on the Ph.D. degree. One new student, Susan Barrett, joined the department this year. Susan had been working with Dr. David Albertini at Tufts and has now moved to Kansas City to complete her doctoral work. However, she will remain enrolled as a student at Tufts. Two students completed their degrees during the year. Numa Dancause received his Ph.D. with Dr. Randy Nudo. His dissertation focused on plasticity of cortical connections following motor cortex lesions in primates. He has accepted a postdoctoral position at the University of Rochester. Kara Wagoner completed a masters degree with Dr. Gustavo Blanco. She plans to pursue a career in nursing.

**FACULTY DEPARTURES, SABBATICALS, ETC:** There were no departures or sabbatical leaves during the year. However, we were all greatly saddened when Alan Godwin, a highly admired and respected young member of our faculty, suffered a brain hemorrhage (burst aneurysm) in early February. After many weeks in the hospital at KUMC, Alan was moved to the Craig Rehabilitation Institute in Denver where he spent several months. He is now living with his parents in Los Alamos, New Mexico. We miss Alan and hope he will be able to return to the department at some time in the future.

Prepared by:

Dr. Paul D. Cheney  
Professor and Chair



**Department of Molecular & Integrative Physiology Faculty  
November 19, 2004**

Pictured above (from top to bottom, left to right): Dr. Joanne Marcario, Dr. Woahaib Hasan, Dr. Paul Cheney, Dr. Leslie Heckert, Dr. Alan Godwin, Dr. Gustavo Blanco, Dr. Norberto Gonzalez, Dr. Erik Plautz, Dr. C. Merrill Tarr, Dr. Peter Smith, Dr. Lane Christenson, Dr. Paul Terranova, Dr. John Stanford, Dr. Raj Kumar, Dr. Mehmet Bilgen, Dr. James Voogt, Dr. Hongyu Zhang, Dr. Michael Wolfe, Dr. Thomas Imig, Dr. Stan Svojanovsky, Dr. Steven LeVine, Dr. Deok-Soo Son

\* Not pictured: Dr. John Wood, Dr. Randolph Nudo, Dr. Shawn Frost, Dr. Elena Zoubina, Dr. Kim Mitchell

## DEPARTMENT ROSTER

July 1, 2004 – June 30, 2005

### a. Faculty

#### Primary Appointment in Physiology

Paul D. Cheney, Ph.D., *Professor and Chairman*

David F. Albertini, Ph.D., *Hall Endowed Professor*

Mehmet Bilgen, Ph.D., *Associate Professor and Director, High Field MRI Research*

V. Gustavo Blanco, M.D., Ph.D., *Assistant Professor*

Lane K. Christenson, Ph.D., *Assistant Professor*

Alan R. Godwin, Ph.D., *Assistant Professor*

Norberto C. Gonzalez, M.D., *Professor*

Leslie L. Heckert, Ph.D., *Associate Professor*

Thomas J. Imig, Ph.D., *Professor*

T. Rajendra Kumar, Ph.D., *Assistant Professor*

Steven M. LeVine, Ph.D., *Professor*

Randolph J. Nudo, Ph.D., *Professor and Director of Research, Center on Aging*

Peter G. Smith, Ph.D., *Professor and Director, Ralph L. Smith Center for Mental Retardation*

John A. Stanford, Ph.D., *Assistant Professor*

C. Merrill Tarr, Ph.D., *Professor*

Joseph S. Tash, Ph.D., *Associate Professor*

Paul F. Terranova, Ph.D., *Professor and Director, Center for Reproductive Sciences*

James L. Voogt, Ph.D., *Professor*

Michael W. Wolfe, Ph.D., *Associate Professor*

John G. Wood, Ph.D., *Associate Professor*

#### Emeritus

Lawrence P. Sullivan, Ph.D., *Professor*

#### Modified Title Research Track Faculty

Shawn Frost, Ph.D., *Research Assistant Professor*

Wohaib Hasan, Ph.D., *Research Assistant Professor*

Joanne Marcario, Ph.D., *Research Assistant Professor*

Kim Mitchell, Ph.D., *Research Assistant Professor*

Erik Plautz, Ph.D., *Research Assistant Professor*

Deok-Soo Son, DVM, Ph.D., *Research Assistant Professor*

Stanislav Svojanovsky, Ph.D., *Research Assistant Professor*

Hongyu Zhang, Ph.D., *Research Assistant Professor*

Elena Zoubina, Ph.D., *Research Assistant Professor*

#### Joint Appointment in Physiology

Ken Audus, Ph.D., *Professor & Chair (Pharmaceutical Chemistry)*

William Brooks, Ph.D., *Director (Hoglund Brain Imaging Center)*

Benyi Li, Ph.D., *Assistant Professor (Urology)*

Warren Nothnick, Ph.D., *Assistant Professor (Ob-Gyn)*

Brian Petroff, DVM, Ph.D., *Assistant Professor (Internal Medicine), Scientific Director (Breast Cancer Prevention Center)*

Janet Pierce, D.S.N., *Associate Professor (School of Nursing)*

**DEPARTMENT ROSTER** (continued)**Joint Appointment in Physiology** (continued)

Jeffrey Radel, Ph.D., *Associate Professor (Occupational Therapy Ed.)*

Namita Sahgal, M.D., *Assistant Professor (Pediatrics)*

Michael Soares, Ph.D., *Director (Institute of Maternal-Fetal Biology), Professor (Pathology & Laboratory Medicine and Obstetrics & Gynecology)*

<b>b. Graduate Students</b>	<b>Prelims</b>	<b>Candidate</b>	<b>Requirements Fulfilled</b>
Susan Barrett*		Ph.D.	
Marie-Helene Boudrias	10/04	Ph.D.	
Al Casillan	1/04	M.D./Ph.D.	
Numa Dancause	4/03	Ph.D.	4/05
Darcy Griffin		Ph.D.	
Brian Hermann	2/03	Ph.D.	
Jennifer Ho-Chen	4/05	Ph.D.	
Heather Hudson		Ph.D.	
Ines Eisner-Janowicz	3/05	Ph.D.	
Ning Lei	1/03	Ph.D.	5/05
Joe McDonald	7/03	M.D./Ph.D.	
Anh Nguyet-Nguyen		M.S.	
Greg Onyszchuk		Ph.D.	
Teresa Orth	5/05	M.D./Ph.D.	
Mariam Riazikermani**		Ph.D.	
Ann Stowe	3/03	Ph.D.	
Kara Wagoner		M.S.	7/04
Gwenaelle Wernli		Ph.D.	
Shalmica Williams	10/01	Ph.D.	7/04

\* Ph.D. Student at Tufts working with Dr. David Albertini

\*\* Ph.D. Student in Department of Hearing & Speech, KUMC working with Dr. Paul Cheney

**c. Postdoctoral Fellows**

Scott Bury  
 Anuradha Chakrabarty  
 Pei-Chun Fang  
 Karla Hutt  
 Tatiana Karpova  
 Ravichandran Kumarasamy  
 ManiMaran Rengasamy  
 Sachin Mathur  
 Barbara Sotolongo  
 Michael Taylor  
 Aparna Zama

**d. Temporary Students**

John Paul Armilio  
 Ryan Beard  
 Julia Berman  
 Joseph Bradley  
 Brent Burroughs  
 Jeremy Chen  
 Melissa Emerson  
 Adam Gregg  
 David Guggenmos  
 Michael Hammer  
 Mithun Hebbar  
 Jill Koehler  
 Dan Kort  
 Berta Crespo Lopez  
 David MacMillan  
 Michael Mumert  
 Sara Oberhelman

## DEPARTMENT ROSTER (continued)

## Temporary Students (continued)

Warner Ping  
Sara Reisman  
Anirban Sensarma  
Andrew White

### e. Research Staff

Dora Agbas – Research Associate  
Julie Allen – Research Associate  
Sott Barbay – Research Associate  
Erica Blumberg – Research Assistant  
Jennifer Brann – Research Assistant  
Jeffrey Brewer – Research Assistant  
Erin Cambron – Research Assistant  
Glaukia Cavalcanti – Research Assistant  
Gaurav Chaturvedi – Research Associate  
Robert Cross – Research Associate  
Ian Edwards – Research Assistant  
Josh Eklund – Research Assistant  
Stan Fernald – Research Assistant  
Elizabeth Fogle – Research Assistant  
Xiaoman Hong – Research Associate  
Kaori Iha-Hornbaker – Research Assistant  
Sarah Karina – Research Assistant  
Darlene Limback – Research Associate  
Sotirios Macheras – Research Assistant  
Jeffrey McDermott – Senior Research Associate  
Judith Pace – Senior Research Associate  
Daren Rice – Research Associate  
Mariana Rodova – Research Associate  
Gladis Sanchez de Blanco – Research Associate  
Peter Simone – Research Assistant  
Siqing Tang – Research Assistant  
Lovella Tejada – Research Assistant  
Brady Timmerberg – Research Assistant  
Patricia Wolfe – Research Assistant  
Stacy Wolfe – Research Assistant  
Ying Zhu – Research Assistant  
Aline Zorian – Research Assistant

### f. Support Staff

Linda Carr – Administrative Officer  
Julie Benson – Accountant I  
Ted Gleason – Electronics Technician II  
Ginny Heavner – Administrative Assistant  
Robin Marks – Administrative Assistant  
*(Reproductive Sciences Center)*

## NOTES CONCERNING GRADUATE STUDENTS

Marie-Hélène Boudrias was first author on a paper entitled “Contrasting properties of motor output from the supplementary motor area and primary motor cortex in rhesus macaques” published in *Cerebral Cortex*. She successfully passed her comprehensive examination entitled: “Supplementary motor area: output properties and role in the control of forelimb in rhesus macaques” on October 19, 2004. Marie Hélène is currently serving as the student representative of the School of Medicine on the International Student Affairs Committee.

Numa Dancause received his Ph.D. degree with honors in May 2005. He accepted a postdoctoral position with Dr. Marc H. Schieber in the School of Medicine at the University of Rochester, which will begin in March 2006. He participated in the 2<sup>nd</sup> Motor Control Summer School at Penn State University that was directed by Dr. Mark Latash. He is first author on three papers that are currently in press, respectively entitled “Extensive cortical rewiring following brain injury,” *J. Neurosci*; “Topographically divergent and convergent connectivity between premotor and primary motor cortex,” *Cereb. Cortex*; “Ipsilateral connections of the ventral premotor cortex in a New World primate.” *J. Comp. Neurol*. Numa also published two first author abstracts and was invited to give six guest lectures in the United States, Canada and Europe. He is co-author on three other refereed papers, two book chapters and six abstracts.

Darcy Griffin received a travel scholarship to attend the 34<sup>th</sup> Annual Meeting of the Society for Neuroscience held in San Diego, California in November, 2004, where she presented a poster entitled “Patterns of activation of primary motor cortex (M1) neurons and their target muscles during a reach-to-grasp task.” Darcy also presented this poster at the KUMC Student Research Forum in April, 2005. Also at the 2005 Student Research Forum, Darcy gave a presentation entitled “Covariation of populations of CM cells and their target muscles during a reach-to-grasp task.” Darcy passed her qualifying exam in March 2005 and was awarded a scholarship in the Training Program for Biomedical Research.

Brian Hermann was first author on a paper entitled “Silencing of *Fshr* occurs through a conserved, hypersensitive site in the first intron,” published in *Molecular Endocrinology*. He presented a poster entitled “Differential effects of *Usf1* and *Usf2* knockout on *Fshr* and *SF-1* expression, *in vivo*,” at the Society for the Study of Reproduction 37<sup>th</sup> Annual Meeting in Vancouver, British Columbia, Canada in August, 2004 for which he received a KUMC Graduate student travel award. He also presented a poster entitled “Distal regulatory elements are required for *Fshr* expression, *in vivo*,” at the International Conference on Gonadotropins and their Receptors in Athens, Georgia in April 2005. In May 2005 Brian presented a seminar entitled “Transcriptional regulation of the Fsh-receptor,” to the University of Pittsburgh Center for Research in Reproductive Physiology.

Jennifer Ho-Chen was first author on a book chapter entitled, “Hypobaric Hypoxia as a Tool to Study Pregnancy-Dependent Responses at the Maternal-Fetal Interface,” currently in press in *Placenta and Trophoblast: Methods and Protocols*, Volume II. She was also first author on an abstract entitled “Adaptations to Hypobaric Hypoxia” for the Annual Endocrine Society Meeting where she was awarded a FASEB MARC minority travel award.

Heather Hudson presented a seminar entitled “Cortical Motor Control of the Hindlimb in the Rhesus Macaque” in October 2004 as part of the Neuroscience seminar series. She visited Bonner Springs High School and Clark Middle School in February 2005 as a guest speaker on Neuroscience. Heather served as a committee chair for the 2005 Student Research Forum as well as Secretary of the Physiology Society.

Ning Lei was awarded a Biomedical Research Training Grant at KUMC for Fiscal Year 2005. She presented a talk entitled “Sexually dimorphic expression of Dmrt1 occurs in supporting cells but not germ cells during mouse gonadogenesis” at the Biomedical Research Training Program Symposium in May, 2005. She successfully defended her Ph.D. dissertation of “Characterization of Dmrt1 in testis differentiation” on May 13<sup>th</sup>, 2005. She is currently a post-doctoral fellow working with Dr. Michael M. Shen on formation of the body plan in the vertebrate embryo at UMDNJ-Robert Wood Johnson Medical School, New Jersey.

Anh-Nguyet Nguyen was awarded a Graduate Student Travel Scholarship to present a first author poster entitled “Pocystin 1, but Not Polycystin 2 Associates with the Na, K-ATPase and Affects It's Function” at the annual American Society for Nephrology meeting held at St. Louis, Missouri in October, 2004. The same work was presented at the 2005 Student Research Forum, where it won the award for the poster session. She also gave a slide presentation on “Ouabain-Na, K-ATPase-mediated Cell Proliferation: A Novel Pathway for Cyst Formation in Polycystic Kidney Disease” at the 2005 Student Research Forum.

Teresa Orth is a third year M.D./Ph.D. student working with Dr. Norberto Gonzalez. Teresa received a Travel Scholarship from the Office of Graduate Studies to attend the Experimental Biology 2005 Conference in San Diego, California. She presented a poster entitled “Mechanisms by which exercise training prevents hypoxia-induced microvascular inflammation in cremaster venules.” She also made a presentation of the same title at the 2005 KUMC Student Research Forum. Teresa was awarded a Biomedical Research Training Grant in the amount of \$11,000 for the 2006 Fiscal Year. Teresa is first author of two papers published in 2005 in the *Journal of Applied Physiology*, entitled “Exercise training prevents the inflammatory response to hypoxia in cremaster venules” and “Plasma from conscious hypoxic rats stimulates leukocyte-endothelial interactions in normoxic cremaster venules”. In addition, Teresa is President of the M.D./Ph.D. Student Group and serves as Co-President of the Student Recycling Organization.

Mariam Riazi-Kermani has been selected as one of eight recipients of the American Speech-Language-Hearing Foundation Graduate Student Scholarships. She was also awarded a University of Kansas Medical Center School of Allied Health 2005 Dean's Diversity Scholarship. She received a Society on NeuroImmune Pharmacology (SNIP) Young Investigator Travel Award and KUMC Graduate Student Travel Scholarship for her first author poster entitled “Neurological Function in a Primate Model of Drug Abuse and Neuro-AIDS” which was presented at the 11<sup>th</sup> annual SNIP meeting in Clearwater, Florida held April 6-10, 2005. She is also a recipient of a KUMC Graduate Student Travel Scholarship for her first author poster entitled “Analysis of Neurological Function in a Rhesus Macaque Model of Drug Abuse and Neuro-AIDS: Baseline Data from Multimodal Evoked Potentials and Magnetic Resonance Spectroscopy” which was presented at the Society for Neuroscience's 34<sup>th</sup> Annual Meeting in San Diego, California held October 23-27, 2004. Mariam served as president of the KUMC Student Research Forum Photography and Volunteer Committees. Mariam is also a member of the Physiology Society.

Ann Stowe received continued funding of her pe-doctoral Fellowship from the American Heart Association through June, 2005. Ann submitted a first author abstract to the Society for Neuroscience Meeting this November entitled “Vascular Endothelial Growth Factor Associates with Neurons in Functionally Defined Motor Areas Following an Infarct in Primary Motor Cortex.” Ann co-authored a book chapter, *Plasticity after brain lesions*, Selzer, ed., and two other papers currently in press. Ann presented a Physiology Departmental Seminar on November 15, 2004 entitled “Early Events Related to Angiogenesis Following an Infarct in Primary Cortex” and also at the Student Research Forum on April 17, 2005. Ann was also an invited lecturer in the Human Pathobiology course on February 8, 2005. Ann was an invited the Neurostereology Workshop at the Marine Biology Laboratory at the end of March and the Society for Neuroscience’s annual Meeting in San Diego, in November where she was coauthor of 4 abstracts. Ann served as President of the Physiology Society and student senator of the School of Medicine for the 2004-2005 school year.

Gwenaelle Wernli gave a presentation at the student research forum named “Sympathetic Innervation Does Not Regulate ProNGF Variants in the Heart”.

## COURSES TAUGHT

### Major Service Courses

- 801 - *Medical Physiology*. 4 credits. Fall 2004. Taught by Drs. Blanco, Gonzalez, LeVine, Smith, Tarr, Tash, Terranova and Wood. Enrollment 179. Dr. Tarr, Course Director.
- 802 - *Medical Physiology*. 4 credits. Spring 2005. Taught by Drs. Blanco, Godwin, Heckert, Tash, Terranova and Wolfe. Enrollment 179. Dr. Tarr, Course Director.
- 840 - *Medical Neuroscience*. 5 credits. Spring 2005. Physiology section taught by Drs. Cheney, Imig, Nudo and Stanford. Enrollment 26. Dr. Cheney, Course Director. Dr. Imig, Co-course Director.

### Departmental Graduate Courses

- 838 - *Advanced Topics in Physiology*. 3 credits. Fall 2004. Taught by Dr. Nudo. Enrollment 1.
- 846 - *Advanced Neuroscience*. 5 credits. Summer 2005. Taught by Drs. Bilgen, Cheney, Imig, Nudo and Smith. Enrollment 3. Dr. Imig, Course Director.
- 848 - *Molecular Mechanisms of Neurological Disorders*. 2 credits. Fall 2004. Taught by Drs. Nudo and LeVine. Enrollment 6. Dr. LeVine, Course Director.
- 863 - *Physical Therapy – Pathobiology of Human Function II*. 4 credits. Fall 2004. Taught by Dr. Cheney. Enrollment 10.

## DEPARTMENT SEMINARS

*The Departmental Seminar program was directed by Dr. James Voogt. Forty-four speakers made presentations, twenty-seven 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 MRRC, and the Center for Reproductive Sciences made important financial contributions to our program. The Kathleen M. Osborn Lecture Series sponsored Dr. Margaret Wierman from the University of Colorado, Denver.*

9/13/04	Michael Soares, Ph.D. Department of Pathology, KUMC	Prolactin family and pregnancy-dependent adaptations
9/20/04	Norberto Gonzalez, M.D. Molecular & Integrative Physiology KUMC	Environmental hypoxia and microvascular inflammation: possible mechanisms and functional relevance
9/27/04	Thomas Imig, Ph.D. Molecular & Integrative Physiology KUMC	A hyperactivity transmission theory of tinnitus
10/04/04	Robert White, Ph.D. Department of Pediatrics University of Missouri-Kansas City	Treatment Advances in Muscular Dystrophy: Dp260 Gene Therapy
10/11/04	Margaret Wierman, M.D. Section of Endocrinology, Denver Veterans Affairs Medical Center Depts. of Physiology & Biophysics Univ. of Colorado School of Med.	Molecular Mechanisms of Neuroendocrine Reproductive Development
10/18/04	Joseph Tash, Ph.D. Molecular & Integrative Physiology KUMC	Discovery of, and Identification of Novel Targets for Gamendazole <sup>®</sup> , a New Highly Potent Non-Hormonal Non-Steroidal Male Contraceptive Agent
10/25/04	Jill Jacobsen, M.D. Department of Endocrinology Children's Mercy Hospital Kansas City, Missouri	Sex Differences in G-Proteins: Potential Roles in Sexually Dimorphic Diseases
10/28/04	Pascal Barone, Ph.D. Charge de Recherche CNRS Centre de Recherche Cerveau et Cognition Universite Paul Sabatier, France	Multisensory Integration in Primate: Anatomical and Behavioral Approach

11/01/04	Barbara Atkinson Executive Dean KUMC	Plans for the Leadership Structure of the Kansas University Medical Center
11/04/04	Pei-chun Fang, Graduate Student Vanderbilt University	Parietal and frontal lobe systems for motor control in prosimian galagos; areas, nuclei, connections and comparisons with other primates
11/08/04	Teresa Orth, M.D., Ph.D. Student Molecular & Integrative Physiology KUMC	Exercise Training Prevents the Inflammatory Response to Hypoxia in Cremaster Venules
11/15/04	Ann Stowe, Graduate Student Molecular & Integrative Physiology KUMC	Early Events Related to Angiogenesis Following an Infarct in Primary Cortex
11/22/04	Roy Jensen, M.D. Director, Kansas Masonic Cancer Research Institute and Professor of Pathology, KUMC	Building the KU Cancer Center
11/29/04	L. Darryl Quarles, M.D. Summerfield Endowed Professor of Nephrology; Vice Chairman, Department of Internal Medicine; Director, The Kidney Institute & Division of Nephrology, KUMC	A Novel Bone-Kidney Axis Regulating Phosphate Homeostasis
12/06/04	Merrill Tarr, Ph.D. Molecular & Integrative Physiology KUMC	Virtual Experiments for Teaching Physiology and Photobiology
12/13/04	Peter S.N. Rowe, Ph.D. Department of Periodontics University of Texas Health Science Center at San Antonio	The kidney and mineralization of the bone-vascular matrix: tangled pathways of MEPE, PHEX and FGF23
12/14/04	Theresa A. Jones, Ph.D. Psychology Department of Neuroscience Institute University of Texas at Austin	Neural Plasticity, Behavioral Compensation and Motor Rehabilitation after Brain Damage in Rats
1/10/05	Paige Geiger, Ph.D. Section of Applied Physiology Washington University	Enhanced Insulin Sensitivity in Skeletal Muscle After Exercise

1/24/05	Yu-Jui Yvonne Wan, Ph.D. Pharmacology, Toxicology & Therapeutics, KUMC	RXRalpha – the Center of the Metabolism
1/25/05	Christopher Bishop, Ph.D. Dept. of Anatomy & Cell Biology Wayne State University School of Medicine	Serotonin Neuroplasticity in the Dopamine Depleted Basal Ganglia: Implications for the Treatment of Parkinson’s Disease
1/31/05	Alan Godwin, Ph.D. Molecular & Integrative Physiology KUMC	Reverse Genetic Techniques for Functionally Analyzing Regulation in Zebrafish
2/03/05	Zixi Cheng, Ph.D. Kosair Children’s Hospital Department of Pediatrics University of Louisville	The Brain-Heart Connections: Circuitry and Remodeling
2/07/05	Cameron McIntyre, Ph.D. Department of Biomedical Engineering Cleveland Clinic Foundation Lerner Research Institute	Deep Brain Stimulation: Models, Mechanisms, and Future Technology
2/08/05	Mayumi Prins, Ph.D. Division of Neurosurgery UCLA	Traumatic Brain Injury in the Developing Brain: Age and Alternative Metabolic Substrates
2/21/05	Brian Copple, Ph.D. Department of Pharmacology, Toxicology & Therapeutics, KUMC	Role of Early Growth Response Factor- 1 (Egr-1) and Hepatocellular Hypoxia in the Development of Chronic Liver Disease
2/24/05	Qing Lin, M.D., Ph.D. Dept. of Neuroscience & Cell Biology University of Texas Medical Branch at Galveston	Mechanisms of Neurogenic Inflammation-Induced Pain
2/28/05	Mike Griswold, Ph.D. Department of Molecular Biosciences Washington State University	Lessons Learned from Profiling of Spermatogenesis and Testis Development
3/02/05	Rao Adibhatla, Ph.D. Department of Neurosurgery University of Wisconsin	CDP-Choline: Mechanisms and Efficacy in Stroke

3/07/05	Deborah A. O' Brien, Ph.D. Dept. of Cell & Developmental Biol. University of North Carolina School of Medicine	Novel Glycolytic Enzymes are Required for Sperm Motility and Male Fertility
3/08/05	Karen Berkley, Ph.D. Program in Neuroscience Florida State University	Neural Mechanisms of Pelvic Pain
3/10/05	Kathleen Curtis, Ph.D. Department of Psychology & Program in Neuroscience Florida State University	Sex Differences in Body Fluid Regulation
3/14/05	Kyle Orwig, Ph.D. Pittsburgh Development Center Magee-Women's Research Institute University of Pittsburgh	Stem Cells in the Male Germline
3/15/05	Kazuhiko Seki, Ph.D. Dept. of Developmental Physiology National Institute for Physiological Science, Japan	Dynamic Modulation of Sensory Input During Volitional Movement: Behavioral Correlate of Presynaptic Inhibition
3/21/05	Greg A. Gerhardt, Ph.D. Department of Anatomy & Neurology, and Psychiatry University of Kentucky	Intraputmenal Glial Cell Line-Derived Neurotrophic Factor (GDNF) as a Treatment for Parkinson's Disease: Good, Bad or Placebo
3/28/05	Erik A. Lundquist, Ph.D. Department of Molecular Biosciences University of Kansas	Cytoskeletal Signal Transduction and Axon Pathfinding in C. Elegans
4/04/05	Malcolm J. Low, M.D., Ph.D. Vollum Institute Dept. of Behavioral Neuroscience Oregon Health Sciences University	Genetic Approaches to Study Neuro/Neuroendocrine Physiology in the Mouse
4/11/05	John H. Morrison, Ph.D. Department of Neuroscience and Neurobiology of Aging Laboratories Mount Sinai School of Medicine	Life and Death of Neurons in the Aging Cerebral Cortex
4/18/05	Numa Dancause, Graduate Student Physiology, KUMC (Dissertation Defenses)	Pattern of Cortical Connections of the Ventral Premotor Cortex in a New World Monkey: Impact of a Primary Motor Cortex Lesion

4/25/05	Peggy Petroff, Ph.D. Anatomy & Cell Biology KUMC	New Members of the B7 Family Molecules: Trophoblast Modulators at the Maternal-Fetal Interface
5/02/05	Eric W. Overstrom, Ph.D. Department of Biology & Biotechnology Worcester Polytechnic Institute	Players and Pretenders in Somatic Cell Nuclear Transfer
5/09/05	Kevin J. Leco, Ph.D. Department of Physiology & Pharmacology and Child Health Research Institute University of Western Ontario	TIMPs are Essential for Normal Function and Developmental Patterning of Murine Lung and Heart
5/13/05	Ning Lei, Graduate Student Physiology, KUMC	Characterization of Dmrtl in Testis Differentiation
5/18/05	Dianna A. Johnson, Ph.D. Department of Ophthalmology University of Tennessee Health Science Center	Promises and Problems of Retinal Synaptic Plasticity: Corrupt Re-wiring in Retinoblastoma
5/23/05	K.M. Jairam Menon, Ph.D. Department of Biological Chemistry University of Michigan	LH Receptor Expression in the Ovary: Regulation by an RNA Binding Protein

## PUBLICATIONS

### a. Manuscripts published

- Ain, R., Dai, G., Dunmore, J., Godwin, A.R. and Soares, M.J. "A prolactin family paralog regulates reproductive adaptations to a physiological stressor." *PNAS* 101:6543-16548, 2004.
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- Karpova, T. et al "Different phenotypes in sf-1 null mice rescued with ftz-f1-yac transgenes of different sizes." The 37<sup>th</sup> Annual meeting of the Society for the Study of Reproduction. August 1-4, 2004 Vancouver, British Canada.
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- Marcario, J.K. and Cheney, P.D. "Behavioral performance in a macaque model of chronic morphine dependence & neuro-AIDS." Society for NeuroImmune Pharmacology. Clearwater, Florida, April 6-10, 2005.
- Mathur, S., Smith, P.G., Svojanovsky, S.R. "A New Web-based application for Annotation and Biological Pathway Analysis of Microarray Data." The Third Annual K-INBRE Student Symposium, University of Kansas. Lawrence, Kansas, January 15-16, 2005.
- Mayweather, M.J., Williams, S.J., Terranova, P.F. and Son, D.S. "Serum amyloid A in mouse ovaries and granulosa cells." Annual K-INBRE Student Symposium, University of Kansas. Lawrence, Kansas, 2005.
- Nguyen, A-Nguyet and Blanco, G. "Polycystin-1, but not Polycystin-2 associates with the Na,K-ATPase and affects its function." American Society of Nephrology, 37<sup>th</sup> Annual Meeting. St. Louis, Missouri, 2004.
- Orth, T.A., Allen, J.A., Wood, J.G. and Gonzalez, N.C. "Mechanisms by which exercise training prevents hypoxia-induced microvascular inflammation in cremaster venules." FASEB J. 19, abstract 402.3, 2005.
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- Riazi-Kermani, M., Marcario, J.K., Al-Hafez, B., Samson, F., Bilgen, M., Brooks, W.M. and Cheney, P.D. "Analysis of neurological function in a rhesus macaque model of drug abuse and neuro-AIDS: data from multimodal evoked potentials (EP) and magnetic resonance spectroscopy (MRS)." Society for NeuroImmune Pharmacology meeting. Clearwater Beach, Florida, April 6-9, 2005.
- Sanchez, G., Timmerberg, B., Tash, J.S. and Blanco, G. "The Na,K-ATPase 4 isoform from humans has distinct enzymatic properties and is important for sperm motility." 11<sup>th</sup> International ATPase conference. September 6-11, 2005 MBL, Woods Hole, Massachusetts, 2005.
- Sandrine, V., Gourbeau, J-M., Xie, Z-J and Blanco, G. "Na,K-ATPase and signal transduction: baculovirus: Sf-9 cell-based analysis." Experimental Biology, 2005.
- Smith, P.G., Krizsan-Agbas, D., Blacklock, A., Ting, A.Y. and Chakrabarty, A. "Estrogen and neuroplasticity in the female reproductive tract." *Autonom. Neurosci.* 119;97, 2005.
- Son, D.S., Roby, K.F. and Terranova, P.F. "Synergism between tumor necrosis factor alpha (TNF) and dexamethasone in regulation of serum amyloid A3 expression in a mouse granulosa tumor cell line." Ovarian Workshop. Vancouver, British Canada, July 29-31, 2004.
- Son, D.S., Roby, K.F. and Terranova, P.F. "Adenosine 3':5'-cyclic monophosphate (cAMP) and tumor necrosis factor  $\alpha$  (TNF) regulation of serum amyloid A3 in mouse granulosa cells: requirements for CCAAT-enhancing binding proteins (C/EBP) and NF- $\kappa$ B." The Gilbert S. Greenwald Symposium on Reproduction, October, 2004.
- Son, D.S., Roby, K.F. and Terranova, P.F. "Interaction of adenosine 3':5'-cyclic monophosphate (cAMP) and tumor necrosis factor  $\alpha$  (TNF) on serum amyloid A3 expression in mouse granulosa cells: Dependence on CCAAT-enhancing binding protein (C/EBP)  $\beta$  form." ENDO 2005, June 2005.
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- Taglauer, E., Svojanovsky, S.R. and Petroff, M.G. "Oxygen-Mediated Gene Regulation in Placental Cytotrophoblast Cells." The Gilbert Greenwald Symposium on Reproduction. Kansas City, Missouri, 2004.
- Tash, J.S., Wolfe, S. et al. "Male reproductive status in rats is unaltered under continuous long term artificial gravity (AG)." *Grav. Space Biol. Bull* 19, 2005.
- Ting, A.Y., Blacklock, A.D. and Smith, P.G. "Estrogen induces remodeling of vaginal sensory and autonomic innervation." *Soc. Neurosci. Abs.*, 2004.

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- Wagoner, K., Sanchez, G., Enders, G. and Blanco, G. "Ontogeny of the Na,K-ATPase  $\alpha$ 4 isoform during rat male germ cell development." *Experimental Biology*, 2005.
- Wolfe, M.W. and Rupasri, A. "Regulation of early growth response protein 1 by pituitary adenylate cyclase activating protein and gonadotropin-releasing hormone." 8<sup>th</sup> Annual meeting of the Nebraska Physiological Society. Omaha, Nebraska, 2005.
- Zoubina, E.V., Barbay, S., Dancause, N., Frost, S.B., Eisner-Janowicz, I., Stowe, AM., Plautz, E.J. and Nudo, R.J. "Beneficial effects of d-amphetamine - supplemented training initiated 20 days after an ischemic infarct in primary motor cortex (M1) in squirrel monkeys." *Soc. for Neurosci. Abstr.*

## RESEARCH SUPPORT

*Grant awards held during FY '04 by department faculty members totaled \$4,501,221 (total costs based on KUMC FY2005 Research Institute Report).*

**D. F. Albertini**: NIH – “Coordination of Oogenesis and Folliculogenesis.” April 1, 2004 through March 31, 2005. Principal Investigator. Direct costs \$150,000.

Eshe Fund – “Determinants of Egg Quality Required for *In Vitro* Embryo Production.” December 1, 2004 through November 30, 2005. Principal Investigator. Direct costs \$10,000.

**M. Bilgen**: Kansas City Area Life Sciences Research Institute - “The Role of Angiogenesis in Recovery from Spinal Cord Injury.” December 1, 2003 through November 30, 2004. Total award \$25,000.

Kansas University Medical Center Research Institute, Inc. – “Equipment for Magnetic Resonance Imaging of Research Animals.” November 2005. Total award \$30,000.

Kansas University Endowment – “MRI Studies in Regeneration.” July 2004. Principal Investigator, Dr. Archie Hedding. Total award \$30,000.

American Heart Association – “Can a drug replace exercise to improve the diabetic heart?” January 1, 2004 through December 31, 2007. Principal Investigator, Dr. Irina V. Smirnova. Total costs \$260,000.

Kansas EPSCoR – “Portable MRI Resource for Basic Research in Biomechanical and Living Systems.” June 15, 2005 through March 31, 2006. Principal Investigator, Dr. Jeff Olafsen. Total costs \$175,000.

**V. G. Blanco**: NIH – “Na,K-ATPase alpha 4 isoform in male germ cell physiology.” July 1, 2003 through June 30, 2008. Direct costs \$223,500, indirect costs \$153,700.

Center of Excellence Award – “The Na,K-ATPase in male germ and prostate cells: function and regulation.” September 1, 2004 through August 31, 2005. Direct costs \$50,000/year.

Lied Endowed Basic Science Pilot Research – “Transcriptional regulation of Na,K-ATPase alpha4 isoform.” January 2005 through February 2006. Total costs \$35,000.

Kansas IDeA Network of Biomedical Research Excellence (K-INBRE) – “Approaches to Study Gonadotrope Biology.” June 1, 2005 through May 31, 2006. Direct costs \$25,000.

**P. D. Cheney:** NIH/NINDS – “Electrical stimulation of cortical motor output.” April 15, 2005 through March 31, 2009. Direct costs \$925,000; total costs \$1,359,752.

NIH/NIDA – “Neuro-AIDS in opiate dependent rhesus macaques.” September 30, 1999 through January 31, 2005. Direct costs \$1,846,342; total costs \$2,727,047.

NIH/NICHHD – “Program for a research center in mental retardation.” P30 Center Grant. Theme Leader for “Neurobiology of MR/DD.” August 1, 2001 through July 31, 2006. Principal Investigator, Steven Warren. Direct costs \$4,683,985; total costs \$6,810,352.

**L. K. Christenson:** NIH/NICHHD – “In Vivo Trapping of Genes Involved in Ovulation.” February 1, 2004 through January 31, 2006. Direct costs \$50,000/year; indirect costs \$23,500/year.

NIH/NICHHD – “Mechanisms of p53 action on primate steroidogenesis” June 30, 2004 through July 1, 2006. Co-Investigator. Principal Investigator, Charlie Chaffin, University of Maryland, Baltimore. Direct costs \$16,190/year; indirect costs \$7,609/year.

**S. B. Frost:** KUMC Research Institute - Spring Bridging Grant – “An Experimental Model of White Matter Infarct.” May 24, 2005 through May 23, 2006. Total costs \$27,898.

**A. R. Godwin:** NIH/NIAMS – “Hoxc13 and Hair Follicle Morphogenesis.” August 1, 2000 through July 31, 2005. Principal Investigator. Direct costs \$188,000; indirect costs \$94,000.

NIH/NICHHD – “Biology at the Maternal-Fetal Interface.” April 1, 2002 through March 31, 2006. Co-Investigator (5% effort). Project Director, Michael Soares. Total costs \$1,108,000.

NIH/NHLBI – “Locus-linked Regulator Motifs of Globin Gene Switching.” June 15, 2001 through May 30, 2005. Co-Investigator (5% effort). Principal Investigator, K. R. Peterson. Total costs \$337,500.

NIH/NIDDK – “Receptor/Ligand Signals for Kidney Vascular Development.” February 1, 2004 through January 31, 2009. Co-Investigator (5% effort). Principal Investigator, D. R. Abrahamson. Total costs \$317,250.

**N. C. Gonzalez:** NIH/HL – “Oxygen Transport During Exercise in Prolonged Hypoxia.” April 1, 1988 through May 31, 2006. Principal Investigator. Direct costs \$150,000; indirect costs \$75,000.

Hall Family Foundation – “Hypoxia and Vascular Programming.” Subproject 3: “Hypoxia and Microvascular Endothelial Cell Function.” September 1, 2003 through August 31, 2006. Co-Principal Investigator with J. G. Wood. Principal Investigator, Michael Soares. Total direct costs \$75,000.

**W. Hasan:** NIH – “NGF and Post-Infarct Cardiac Sympathetic Neuroplasticity.” April 1, 2005 through March 31, 2010. Direct costs \$1,000,000; indirect costs \$1,470,000.

**L. L. Heckert:** NIH/NICHD - “The Center for Reproductive Sciences” April 1, 2001 through March 31, 2006. Principal Investigator, P. Terranova. Principal Investigator of Project 1, L. L. Heckert. Direct costs \$768,982/year; indirect costs \$384,492/year (\$160,255/year direct costs; \$80,128/year indirect costs for Project 1 - “Regulation of SF-1 expression in the gonads”).

NIH/NICHD - “Hormonal and cell-specific regulation of Dmrt1.” August 1, 2002 through July 31, 2007. Direct costs \$202,500; indirect costs \$101,250.

NASA – “Negative Impacts of Altered Gravity on Male Mammalian Reproductive Capacity.” March 1, 2004 through February 28, 2007. J. Tash, Principal Investigator. Direct costs \$223,586.

**T. R. Kumar:** NIH/NICHD – “Responsive Genes in The Mouse Testis.” January 8, 2004 through December 31, 2005. Direct costs \$50,000/year; indirect costs \$23,500/year.

Research Contract with Diagnostic Systems Laboratories, Inc., Webster, Texas – “Validation of hormone assay kits.” January 1 through December 31, 2005. Direct costs \$12,500/year; indirect costs \$4,347/year.

Kansas IDeA Network for Biomedical Research Excellence (K-INBRE) – “Approaches to Study Gonadotrope Biology.” June 1, 2005 through May 31, 2006. Direct costs \$25,000.

NIH/NIDDK - Research Contract with Washington University School of Medicine - St. Louis, Missouri – “Carbohydrates in the Sorting of Lutropin and Follitropin.” June 1, 2005 through May 31, 2006. Principal Investigator, Dr. Irving Boime. Direct costs \$25,000/year.

**S. M. LeVine:** Hunter’s Hope Foundation - “Modifier genes in Krabbe’s Disease.” January 1, 2004 through December 31, 2004. Direct costs \$92,000; indirect costs \$8,000.

National Multiple Sclerosis Society – “Testing an Oral Iron Chelator for Therapeutic Value in EAE.” July 2004 through June 2005. Direct costs \$40,000; indirect costs \$4,000.

EPSCoR/NSF – “Kansas Science and Technology Advanced Research (KSTAR) to develop a Lipidomics Cluster in Kansas.” February 2004 through March 2005. Co-Investigator, along with T. D. Williams. Principal Investigator, X. Wang. Direct costs \$10,000/year (direct; subcontract to S. M. LeVine); indirect costs \$3,750.

Midwest Regional Center of Excellence in Biodefense – “Pathogenic Mechanisms of Anthrax Toxins.” March, 2004 through February, 2005. Principal Investigator. Washington University School of Medicine. Direct costs \$40,000; indirect costs \$18,800.

Genervon Pharmaceuticals, Ltd. – “Testing -- for Therapeutic Value in Experimental Autoimmune Encephalomyelitis.” November 2004 through December 2004. Principal Investigator. Direct costs \$6,000; indirect costs \$2,800.

**J. Marcario**: NIDA – “Neuro-AIDS in Opiate Dependent Rhesus Macaques.” Co-Investigator. Principal Investigator, P. D. Cheney. September 1, 2004 through August 31, 2005. Direct costs \$353,727; total costs \$176,864.

**R. J. Nudo**: NIH/NINDS – “Neural Bases of Motor Dysfunction and Rehabilitation.” May 1, 2002 through April 30, 2007. Direct costs \$351,086; indirect costs \$171,118.

GlaxoSmithKline Research & Development, Ltd. – “Effects of Post-Infarct Anti0MAG Treatment on Behavioral Recovery and Neural Reorganization in Squirrel Monkeys.” January 1, 2005 through December 31, 2005. Direct costs \$154,554; indirect costs \$72,640.

**E. Plautz**: GlaxoSmithKline Research & Development, Ltd. - “Effects of Post-Infarct Anti-MAG Treatment on Behavioral Recovery and Neural Reorganization in Squirrel Monkeys.” January 1, 2005 through December 31, 2005. Co-Investigator. Principal Investigator, R.J. Nudo. Direct costs \$150,156; indirect costs \$71,000.

**P. G. Smith**: NIH – “NGF and Post-Infarct Cardiac Sympathetic Neuroplasticity.” April 1, 2005 through March 31, 2010. Direct costs \$200,000; indirect costs \$94,000.

NIH – “Neurotrophins, Hormones and Postparous Incontinence.” Principal Investigator. April 1, 2000 through March 31, 2005. Principal Investigator. Direct costs \$154,000; indirect costs \$72,380.

KUMC Research Institute Program Project Development Grant – “Estrogen and neural pathways in female pain syndromes.” April 1, 2005 through March 31, 2006. Principal Investigator. Total direct costs \$25,000.

NIH/NICHHD – Kansas Mental Retardation Research Center - P30 Center grant. Co-Director. July 1, 2001 through June 30, 2006. Principal Investigator, Steven Warren. Direct costs \$430,858; indirect costs \$196,040 (KUMC site only).

NIH – Kansas IDeA Network for Biomedical Research Excellence (K-INBRE). September 1, 2004 through June 30, 2009. P.G. Smith, Director of Bioinformatics for the State of Kansas, Principal Investigator, Joan Hunt. Direct costs for this core (KUMC only) \$515,000; indirect costs \$242,050.

**D.-S. Son**: K-INBRE – “Ovarian KC chemokine.” January 1 through June 30, 2005.  
Direct costs \$35,000.

NIH – “Src tyrosine kinase and ovarian function.” April 1, 2001 through March 31, 2006.  
Principal Investigator, P.F. Terranova. Direct costs \$153,377; indirect costs \$65,952.

**J. A. Stanford**: NIH/NIA – “Age-related changes in rats’ orolingual motor function.” August 1, 2004 through July 31, 2009. Direct costs \$90,000; indirect costs \$42,300.

Lied Endowed Basic Science Pilot Research Grant – “Movement-related striatal activity in aged rats.” February 1, 2005 through January 31, 2006. Total direct costs \$32,637 (no indirects).

**S. R. Svojanovsky**: Kansas City Area Life Sciences Institute Research – “Gene Expression in Type 1 and 2 Diabetes.” January 1 through December 31, 2005. Co-Investigator. Principal Investigator, Dr. Karen Kover, Children’s Mercy Hospitals and Clinics, Kansas City, Missouri. Total costs \$24,673.

**J. S. Tash**: NIH - Center for Reproductive Sciences. April 1, 2004 through March 31, 2005. Co-Investigator, along with Joan Hunt, L. Heckert and S. K. Dey. Principal Investigator, Paul Terranova. Direct costs \$874,508; indirect costs \$312,000.

NIH – “Synthesis and Testing of Male Contraceptive Agents.” March 1, 2001 through February 28, 2004. Principal Investigator, Gunda Georg. Amount of total subcontract to J. S. Tash: \$870,000. Direct costs \$95,392; indirect costs \$44,834.

NASA – “Negative Impacts of Altered Gravity Models on Male Mammalian Reproductive Capacity.” March 1, 2004 to February, 2007. Principal Investigator. Co-Investigators: L. Heckert, J. Wood, A. Ronka and C. Wade. Direct costs \$147,272; indirect costs \$69,219.

NIH – “Synthesis and Testing of Non-Steroidal and Non-Hormonal Male Contraceptive Agents.” June 1, 2005 through May 31, 2010. Principal Investigator (on subcontract) along with G. Georg. Direct costs \$412,610; indirect costs \$182,552.

**P. F. Terranova**: NIH/NICHD - Center for Reproductive Sciences. April 1, 2004 through March 31, 2005. Principal Investigator. Direct costs \$874,508; indirect costs \$312,000.

Mellon Foundation Twinning Grant Role – “Role of Src Tyrosine Kinase in Fertilization.” January 1, 2002 through February 31, 2005. Total costs \$300,000.

NIH/NCRR - Kansas Idea Network of Biomedical Research Excellence. July 1, 2004 through July 21, 2005. Co-Investigator. Total costs \$3,312,567.

NIH/NCI - Biostatistics/Informatics Shared Resource. January 1, 2004 through December 31, 2004. Co-Investigator. Total costs \$197,638.

NIH/DHHS – “Temperomandibular joint syndrome in females.” March 31, 2005 through February 28, 2006. Co-Investigator. Total costs \$150,000.

**M. W. Wolfe**: NIH/NICHD – “Trophoblast Differentiation.” July 1, 1986 through April 30, 2007. Principal Investigator, Michael Soares. Direct costs \$202,500; indirect costs \$101,250.

NIH/NICHD – “Trophoblast Differentiation: Human Embryonic Stem Cell Supplement.” May 1, 2003 through April 30, 2005. Principal Investigator, Michael Soares. Direct costs \$75,000; indirect costs \$32,250.

NIH/NIDDK – “Regulation and function of Egr in gonadotropes.” March 1, 2004 through February 29, 2008. Principal Investigator. Direct costs \$198,000; indirect costs \$93,060.

## ACTIVITIES OF STAFF

**David F. Albertini, Ph.D.**, Hall Endowed Professor

*Summary of Research: Our laboratory employs genetic, molecular and imaging strategies to study basic aspects of the process of reproduction that bear on human disease and its clinical management by stem cell therapy. The overall emphasis is on Women's Health in relation to causes of human infertility, ovarian cancer, and the deployment of Assisted Reproductive Technologies (ARTS) for improving egg and embryo quality in human and animal models.*

### Meetings Attended:

- July 24-27, 2005 – Attended the Society for the Study of Reproduction Meeting, Quebec City, Canada.
- September 24-26, 2004 – Attended the Serono Symposium on “From Oocyte to Embryo: A Pathway to Life” in Stresa, Italy.
- November 18-20, 2004 – Attended the Technobios Symposium on “Assisted Conception and Reproductive Biology: Two Perspectives, One Vision” in Bologna, Italy.

### Committees:

#### KUMC

- Member, Cancer Research Faculty Search Committee
- Member, Faculty Council

#### National

- Member, American Cancer Society
- Member, NICHD-CMIR (Cellular, Molecular, Integrative, Reproductive)

### Editorial and Grant Reviews:

- Ad hoc reviewer, Science
- Ad hoc reviewer, PNAS
- Ad hoc reviewer, Biol. Reprod.
- Ad hoc reviewer, Molecular Endocrinology
- Ad hoc reviewer, Endocrinology
- Ad hoc reviewer, Developmental Biology
- Ad hoc reviewer, Development, Fertility and Sterility
- Ad hoc reviewer, Reproduction
- Ad hoc reviewer, Human Reproduction

### Seminars Presented:

- September 24-26, 2004 – Presented a seminar entitled “Are we getting closer to predicting the developmental potential of human oocyte?” Serono Symposium on “From Oocyte to Embryo: A Pathway to Life.” Stresa, Italy.
- November 18-20, 2004 – Presented a seminar entitled “Objective definitions of oocyte maturity” and “Tracking oogenesis in vivo: imaging cellular dynamics in the follicle.” Technobios Symposium on “Assisted Conception and Reproductive Biology: Two Perspectives, One Vision.” Bologna, Italy.

**Dr. Albertini** (*continued*)

Seminars Presented (continued)

- July 24-27, 2005 – Presented a seminar entitled “Mining for neo-oogenesis in the mammalian ovary: past, present, future.” Annual Society for the Study of Reproduction Meeting. Quebec, Canada.
- November 14, 2005 – Presented a seminar entitled “Interfacing ARTs with the future of medicine.” Pittsburgh State University, Pittsburgh, Kansas.
- May 5, 2005 – Presented a seminar entitled “Centrosomes and cell polarity during the egg to embryo transition in mammals.” Department of Molecular Biosciences, University of Kansas, Lawrence, Kansas.
- September 27, 2005 – Presented a seminar entitled “Factors influencing oocyte quality.” Department of Obstetrics and Gynecology, University of Lisbon, Lisbon, Portugal.
- September 26, 2005 – Presented a seminar entitled “The politics and science behind the stem cell research controversy.” Institute of Molecular Medicine, University of Lisbon, Lisbon, Portugal.

Academic Honors:

- Invested with Hall Professorship by the Kansas University Endowment Association, from the Hall Family Foundation of Kansas City, Missouri

Teaching Activities:

- Frontiers in Reproduction
  - 6 hours lecture
  - 16 hours lab

Trainees:

- Susan Barrett - Graduate student
- Paty Rodrigues - Graduate student from Portugal
- Karla Hutt - Postdoctoral Fellow
- Elena Ibanez – Postdoctoral Fellow

**Mehmet Bilgen, Ph.D.**, Associate Professor (Director High Field MRI Research)

*Summary of Research: The focus of my research is on the applications of in vivo Magnetic Resonance Imaging modalities in research with small animals to obtain anatomical, functional, structural and metabolic information from pathological tissues of experimental animal models representing human diseases or injuries.*

Committees:

Departmental

Member, Biophysics Steering Committee, KU-Lawrence

Member, Graduate Committee for Ph.D. candidate Erika Benavides, UMKC

Member, Graduate Committee for Ph.D. candidate Rajprasad Loganathan, KUMC

Meetings Attended:

May 7-13, 2005 – Attended the ISMRM 13<sup>th</sup> Scientific Meeting and Exhibition, Miami, Florida

Editorial and Grant Reviews:

Ad hoc reviewer, Journal of Ultrasound in Medicine and Biology, Computer Methods and Programs in Biomedicine, IEEE UFFC and Experimental Neurology

Ad hoc reviewer, Michigan Technology Tri-Corridor Fund

Ad hoc reviewer, New York State Spinal Cord Injury Research Program

Teaching activities:

PHSL 846 - Advanced Neuroscience

2 hours lecture on Brain Imaging

Medical Physics in Radiology (Residents training)

4 hours lecture on Magnetic Resonance Imaging

Trainees:

Baraa Al-Hafez - M.D.

Mariam Riazikermani - Graduate Student, Independent Summer study

Amanda Roeder - Undergraduate Student, Kansas State University, Wichita

Young-Yue He - M.D.

Advisor to Ph.D. candidate Mohammed D. Alenezy - Physics Dept., KU-Lawrence

Advisor to Ph.D. candidate Elena Popel, Electrical Eng. Dept. - KU-Lawrence

**V. Gustavo Blanco, M.D., Ph.D.**, Assistant Professor

*Summary of Research: 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<sup>+</sup> and low internal Na<sup>+</sup> concentrations characteristic by unique enzymatic properties and a cell-dependent and developmentally regulated pattern of expression. We are particularly interested in the function of alpha4, an isoform of the Na,K-ATPase selectively expressed in spermatozoa. We have found that this isoform, both from rats and humans has functional properties 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 of expression of alpha4 during gametogenesis, as well as to understand 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. We have found that, in diseased tissue and cells, the Na,K-ATPase exhibits an abnormally increased sensitivity to ouabain, a hormone released by the adrenal glands. We are currently investigating how ouabain may affect cyst formation and progression in the disease.*

Meetings Attended:

October 29 - November 1, 2004 – Attended the 37<sup>th</sup> Annual Meeting of the American Society of Nephrology, St. Louis, Missouri.

April 2-6, 2005 – Attended the 2005 Experimental Biology Meeting, San Diego, California.

Committees:

Departmental

Member, Search committee for cardiovascular position.

Member, Thesis Committee for Teresa Orth

Member, Thesis Committee for Alfred Casillan.

Member, Thesis Committee for Jennifer Ho-Chen

KUMC

Member, Thesis Committee for Erica Johnsrud (Anatomy and Cell Biology)

Member, Advisory Board for the Biotechnology and Life Sciences Program of Olathe North High School

Consultant for establishing a laboratory for the 21<sup>st</sup> Century Biotechnology Program at Olathe North High School

Editorial and Grant Reviews:

Ad hoc reviewer, The National Science Foundation

Seminars Presented:

December 15, 2004 - Presented a seminar entitled “The Na,K-ATPase alpha4 isoform and its importance in sperm function.” Center of Excellence, KUMC.

**Dr. Blanco** (*continued*)

Seminars Presented (*continued*)

March 18, 2005 - Presented a seminar entitled “Abnormal ouabain affinity of the Na,K-ATPase in PKD, a novel mechanism for cystic cell proliferation?” The Larry Sullivan Seminar Series, Kidney Institute, University of Kansas in Lawrence, Kansas.

April 27, 2005 – Presented a seminar entitled “The testis-specific isoform of the Na,K-ATPase.” Donald C. Johnson Seminar Series in Reproductive Biology, KUMC

Academic Honors

Student’s Voice Award for Excellence in Teaching in Medical Physiology  
Center of Excellence Award in Medical Research, University of Kansas, Office of Cultural Enhancement and Diversity  
Faculty Scholar Award from the Kansas IDeA Network of Biomedical Research Excellence

Teaching Activities:

PHSL 802 - Medical Physiology  
9 hours lecture  
8 hours Problem sessions of clinically relevant cases in renal physiology  
16 hours conferences  
2 hours Review of renal physiology for Board preparation  
4 hours Summer Prematriculation Program

Trainees:

Anh-Nguyet Nguyen – Ph.D. Student  
Kara Wagoner – M.S. Student

**Paul D. Cheney, Ph.D.**, Professor and Chairman

*Summary of Research: 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:

- October 23-27, 2004 – Attended the 33<sup>rd</sup> Annual Meeting of the Society for Neuroscience in San Diego, California
- December 2-5, 2004 - Attended the Association of Chairs of Departments of Physiology Meeting, Maui, Hawaii
- April 6-10, 2005 – Attended the “Society for Neuroimmune Pharmacology” Meeting, Clearwater Beach, Florida. Co-author on two poster presentations.

Committees:

Departmental

- Member, Numa Dancause Comprehensive Exam /Dissertation Committee
- Member, Ann Stowe Comprehensive Exam /Dissertation Committee
- Member, Marie-Helene Boudrias Comprehensive Exam /Dissertation Committee
- Member, Heather Hudson Comprehensive Exam/Dissertation Committee
- Member, Darcy Griffin, Dissertation Committee
- Member, Greg Onyszchuk, Comprehensive Exam/Dissertation Committee
- Member, Meredith Estep, Comprehensive Exam/Dissertation Committee
- Chair, Fred Samson Memorial Lectureship Committee

University

- Member, School of Medicine, Dean’s Leadership Committee
- Member, School of Medicine, LCME Accreditation Planning Committee – research infrastructure
- Coordinator, Basic Science Chair/Center Directors group
- Member, Research Building Planning Committee
- Co-Director, Bi-campus Neuroscience Ph.D. Program
- Member, Neuroscience Ph.D. Program Executive Committee
- Member, Kansas MRRC Internal Scientific Advisory Committee
- Theme leader, Neurobiology of Mental Retardation and Developmental Disabilities Theme within the Kansas MRDDRC
- Member, Bi-campus Life Sciences Research Council
- Member, Biomedical Engineering Search Comm

National

- Member, Society for Neuroscience Committee for the Development of Women's Careers in Neuroscience

**Dr. Cheney** (*continued*)

Editorial and Grant Reviews:

- Ad hoc reviewer, Journal of Neurophysiology
- Ad hoc reviewer, Journal of Neuroscience
- Ad hoc reviewer, Experimental Brain Research
- Ad hoc reviewer, European Journal of Neuroscience

Seminars Presented

- November 18, 2004 – Presented a seminar entitled “From Neurons to Movements” to the Chancellor’s Club Research Award Seminar, for KUMC Faculty Research Day

Academic Honors

- Winner of the 2004 Chancellor’s Club Research Award, University of Kansas

Teaching activities:

- PHSL 846 - Advanced Neuroscience
  - 10 hours lecture
- IGPBS Module 5
  - 6 hour lectures
- PHSL 840 - Medical Neuroscience
  - 7 lab/conferences
  - 18 contact (lecture) hours
- Physical Therapy - Pathobiology of Human Function II
  - 2 hours lecture
- Research presentation for new IGPBS students

Trainees:

- Marie-Helene Boudrias – Graduate Student
- Mariam Riazikermani – Graduate Student
- Darcy Griffin – Graduate Student
- Heather Hudson – Graduate Student
- Warner Ping – Summer Medical Student

**Lane K. Christenson, Ph.D.**, Assistant Professor

*Summary of Research: My research is focused on understanding the process of ovulation. Present studies are centered on understanding the molecular mechanisms via which several key transcription factors downstream of the LH surge, CCAAT/enhancer-binding protein and progesterone receptor, regulate this process. These studies are identifying genes that could be used to control fertility. Post-transcriptional gene regulation during the periovulatory period is also being studied using a novel approach (i.e., ribonomics) to identify novel genes for contraceptive development. Lastly, embryonic stem cells (human and murine) are being used to derive oocytes and ovarian somatic cells in vitro. Study of these cells will provide a unique opportunity to dissect the molecular mechanisms of ovarian cell development, differentiation and function.*

Meetings Attended:

- July 29-31, 2004 – Invited to presentation at XVth Ovarian Workshop – The Ovary: Signaling Mechanisms Regulating Development and Dysfunction, “Ovulation: Identifying Targets Downstream of Critical Transcription Factors” in Vancouver, British Columbia, Canada.
- August 1-4, 2004 – Attended the 37<sup>th</sup> Annual Meeting of the Society for Study of Reproduction held in Vancouver, British Columbia, Canada.
- August 8-13, 2004 – Attended the Workshop on Current Protocols in Stem Cell Biology at The Jackson Laboratory, Bar Harbor, Maine.
- May 18-20, 2005 – Attended the Canadian Institutes of Health Research – Endocrine Committee Study Section, Ottawa, Ontario, Canada.
- June 23-26, 2005 – Attended the 3<sup>rd</sup> Annual Meeting for the International Society of Stem Cell Research in San Francisco, California.

Committees:

- National  
Member, Awards Committee, Society for Study of Reproduction

Editorial and Grand Reviews:

- Ad hoc reviewer, Molecular Endocrinology
- Ad hoc reviewer, Biology of Reproduction
- Ad hoc reviewer, Human Reproduction
- Ad hoc reviewer, BMC Biotechnology
- Ad hoc reviewer, Reproduction
- Ad hoc reviewer, USDA-NRI-Animal Reproduction Program
- CIHR Endocrine Committee, Ottawa, Ontario, May 18-20, 2005

**Shawn B. Frost, Ph.D.**, Research Assistant Professor

*Summary of Research: 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 non-human primate 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:

October 23-27, 2004 – Attended the Society for Neuroscience Annual Meeting in San Diego, California.

Editorial and Grant Reviews:

Ad-hoc reviewer for the scientific journal *Brain*

Trainees:

Michael Mumert – Summer Medical Student

Numa Dancause – Graduate Student

Ines Eisner-Janowicz – Graduate Student

Ann Stowe – Graduate Student

**Alan R. Godwin, Ph.D.**, Assistant Professor

*Summary of Research: Hox genes are evolutionarily conserved transcription factors that are important in determining changes along the major anterior-posterior axis in animals as diverse as nematodes, fruit flies, and man. Little is understood about how these genes carry out this process, especially which genes are regulated by these transcription factors. We are carrying out a detailed examination of one of these genes to determine the genes it regulates, the amino acid residues important for cofactor interaction and changes of the use of these genes in mice and zebrafish. In addition, we are examining the roles of these genes in tissue regeneration in zebrafish.*

Committees:

Departmental

Member, Graduate Student Advisory Committee

Chair, Departmental Website Committee

Member, Graduate Committee, Brian Hermann

Member, Graduate Committee, Ning Lei

KUMC

Member, Transgenic Facility Steering Committee

Member, Biotechnology Support Facility Steering Committee

Member, LAR Advisory Committee

Member, School of Medicine Research Committee

Editorial and Grant Reviews:

Ad hoc reviewer, Developmental Biology

Member of 2003-2005 Editorial Board, Developmental Dynamics

Ad hoc reviewer, Genesis

Ad hoc reviewer, Journal of Investigative Dermatology

Ad hoc member, International and Cooperative Projects 1 Study Section, Biology of Development and Aging Integrated Review Group

Ad hoc member, National Institute of Arthritis and Musculoskeletal and Skin Diseases Special Emphasis Panel

Seminars Presented:

January 31, 2005 – Presented a seminar entitled “Reverse Genetic Techniques for Functionally Analyzing Regeneration in Zebrafish” to the Department of Molecular & Integrative Physiology, at the University of Kansas Medical Center.

Teaching Activities:

ANAT 868 - Advanced Developmental Biology

2 hours lecture

PHSL 802- Medical Physiology

3 hours lecture

16 hours conference

PHSL 894 –IGPBS Module 4

10 hours lecture

1 hour journal club

**Norberto Gonzalez, M.D.**, Professor

*Summary of Research: 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.*

Meetings Attended:

February 22-27, 2005 – Attended the International Hypoxia Symposium in Lake Louise, Alberta, Canada.

April 2-6, 2005 – Attended the 2005 Experimental Biology Meeting in Washington DC. Co-authored three abstracts.

Committees:

Departmental

Member, Promotions and Tenure Committee

Chair, Vascular Biologist Search Committee

Editorial and Grant Reviews:

Ad hoc reviewer, Journal of Applied Physiology

Ad hoc reviewer, Respiratory Physiology and Neurobiology

Seminars Presented:

February 22-27, 2005 - Presented a seminar entitled: “Plasma from hypoxic rats elicits inflammation in normoxic cremaster venules” at the International Hypoxia Symposium in Lake Louise, Alberta, Canada

Teaching activities:

PHSL 801 - Medical Physiology

11 lectures, Respiratory Physiology

1 Review Session - Respiratory Physiology

10 Conference Sessions

4 Student Laboratory Sessions

IGPBS

4 lectures, Respiratory Physiology

Trainees:

Teresa Orth - MD/PhD. Student

**Wohaib Hasan, Ph.D.**, Research Assistant Professor

*Summary of Research: My research attempts to understand how peripheral nerves interact with their targets and other nerve populations. Specifically, after coronary artery ligation in the rat heart. Nerve Growth Factor (NGF) synthesis by inflammatory cells apparently induces the ingrowth of hyperinnervating sympathetic nerves, and therefore contributes to the generation of potentially fatal arrhythmias. With increasing time after infarction, increased sympathetic drive may also occur because parasympathetic nerves, that normally inhibit sympathetics, no longer are in close association with these nerves. Uncoupling of these nerve populations may occur because of lack of trophic support. Understanding nerve-target interactions after myocardial infarction is therefore a prime focus of my studies.*

Meetings Attended:

October 23-27, 2004 – Attended the Society for Neuroscience Meeting in San Diego, California

Seminars Presented:

January, 2004 – Presented a seminar entitled “Nerve-Target Interactions: Novel Functions for Nerve Growth Factor” for the Physiology Seminar Series, KUMC

Editorial and Grant Reviews:

Ad hoc reviewer, Cell and Tissue Research

Teaching Activities:

PHSL 801 – Blood Pressure Laboratory  
2 hours lecture

**Leslie L. Heckert, Ph.D.**, Associate Professor

*Summary of Research: Our research focuses on understanding the transcriptional and cell-signaling processes important for gonadal function and development. We are currently studying the genes that encode the FSH receptor (FSHR), a protein expressed only in somatic cells of the gonads, steroidogenic factor 1 (SF-1), an orphan nuclear receptor required for gonad and adrenal formation, and DMRT1, an evolutionarily conserved gene that regulates testis differentiation. Molecular approaches, comparative genomics, and transgenic mouse models are employed to explore events regulating gene expression and function. Through characterization of these genes, we hope to enhance our understanding of the processes controlling gonadal development and Sertoli cell-specification.*

**Meetings Attended:**

- August 31-September 4, 2004 – Attended the 12<sup>th</sup> International Congress of Endocrinology in Lisbon, Portugal.
- March 30-April 2, 2005 – XVIII North American Testis Workshop in Seattle, Washington
- March 31, 2005 - NIH SCCPRR Male Focus Group, Seattle, Washington
- April 13-17, 2005 – International Conference on Gonadotropins & Receptors, Athens, Georgia
- April 18-19, 2005 – NIH Annual SCCPRR Meeting, Chicago, Illinois

**Committees:**

Departmental

- Member, Ph.D. Thesis committee for Ryan Thummel
- Advisor, Ph.D. Thesis committee for Ning Lei
- Advisor, Ph.D. Thesis committee for Brian Hermann
- Member, Graduate Student Advisory Committee
- Member, Seminar Committee

KUMC

- Member, Ph.D. Thesis committee for Paul Freeburg, Anatomy and Cell Biology, Graduate Student
- Member, Ph.D. Thesis Committee for Ramsey McIntire, Anatomy and Cell Biology, Graduate Student
- Member, Ph.D. Thesis Committee for Adnan Abu-Yousif, Pharmacology, Toxicology, and Therapeutics
- Chair, Transgenic Advisory Committee
- Member, Graduate Student Travel Committee
- Member, Anatomy Chair Review Committee

National

- Co-leader, NIH SCCPRR Male Focus Group Annual Meeting in Baltimore, Maryland, April 17, 2005
- Member, planning committee for 2004 and 2005 Annual meeting for the Society for the Study of Reproduction

**Dr. Heckert** (*continued*)

Editorial and Grant Reviews:

Member, Editorial Board for Molecular Endocrinology  
Member, Editorial Board for Journal of Andrology  
Ad hoc reviewer, Endocrinology  
Ad hoc reviewer, Developmental Biology  
Member, F06 Fellowship Study Section

Seminars Presented:

August 20, 2004 – Presented a seminar entitled “Transcriptional regulation of the Fsh receptor; insights from comparative genomics” at the CIIT Centers for Health Research in Research Triangle Park, North Carolina  
August 31-September 4, 2004 – Presented a seminar entitled “Transcriptional regulation of the FSH receptor in testes” at the 12<sup>th</sup> International Congress of Endocrinology in Lisbon, Portugal  
March 30-April 2, 2005 – Presented a seminar entitled “SF-1 Rescue Mice” XVIII North American Testis Workshop in Seattle, Washington  
April 13-17, 2005 – Presented a seminar entitled “Regulation of gonadotropin receptor gene expression” International Conference on Gonadotropins & Receptors  
May 24, 2005 – Presented a seminar entitled “Pathways to gene regulation” for the Frontiers in Reproduction, Marine Biological Laboratory, Woods Hole, Massachusetts  
May 25, 2005 – Presented a seminar entitled “Transcriptional regulation of the FSH receptor,” for the Frontiers in Reproduction course, Marine Biological Laboratory, Woods Hole, Massachusetts

Academic Honors:

2005 - Visiting Faculty, Frontiers in Reproduction Course, Marine Biological Laboratory, Woods Hole, Massachusetts

Teaching Activities:

IGPBS Module 3  
5 lecture hours  
1 paper discussion  
PHSL 802 – Medical Physiology  
3 lecture hours  
8 conference hours

Trainees:

Ning Lei – Graduate Student  
Brian Hermann – Graduate Student  
ManiMaran Rengasamy – Postdoctoral Fellow  
Tatiana Karpova – Postdoctoral Fellow  
Ravichandiran Kumarasamy – Postdoctoral Fellow  
Barbara Sotolongo – Postdoctoral Fellow  
Berta Crespo Lopez – Visiting Graduate Student

**Thomas J. Imig, Ph.D.**, Professor

*Summary of Research: Aberrant spontaneous activity in the auditory system is commonly believed to be a cause of tinnitus. Current research projects utilize behavioral methods in combination with 2-deoxyglucose and single unit measures of spontaneous activity to test the hypothesis that the tonotopic profile of aberrant SA is a neural correlate of tinnitus, and to identify mechanisms of control of SA in the central auditory system using the rat as an experimental model.*

Meetings Attended:

February 20-24, 2005 - Attended the Association for Research in Otolaryngology in New Orleans, Louisiana

Committees:

Departmental

Chair, Graduate Student Affairs

Chair, Promotion and Tenure Committee

KUMC

Member, Academic Committee

Member, Admissions Subcommittee

Member, Year 1-2 Committee

Member, Graduate Council Committee

Member, IGPBS Advisory Board

Member, Neuroscience Graduate Program Advisory Committee

Editorial and Grant Reviews:

Grant reviewer, RGC (Hong Kong)

Seminars Presented:

September 27, 2004 – Presented a seminar entitled “Development of an animal model for the study of tinnitus: Effect of noise exposure on spontaneous activity in the auditory system of intact and decorticate rats” for the Physiology Department, KUMC.

Teaching Activities:

PHSL/ANAT 840 – Medical Neuroscience (Co-director)

6.5 hours lecture

17.5 hours lab instruction

PHSL 846 – Advanced Neuroscience (Director)

**T. Rajendra Kumar, Ph.D.**, Assistant Professor

*Summary of Research: Over the past several years, research in the Kumar lab has been directed towards elucidating the signaling mechanisms in the mouse hypothalamus-pituitary-gonadal axis using both gain-of-function (transgenic) and loss-of-function (gene knockout) approaches. These studies are clinically relevant and will have significant impact in understanding the physiology and pathology of the mammalian reproductive axis.*

Meetings Attended:

- March 30-April 2, 2005 – Attended the XVIII North American Testis Workshop, American Society of Andrology in Seattle, Washington.
- April 13-17, 2005 – Attended the International Conference on Gonadotropins and Receptors, University of Georgia in Athens, Georgia.
- June 3-4, 2005 – Attended the International Congress on Gonadal and non-gonadal actions of hCG/LH, Institute of Biomedicine in Turku, Finland.

Committees:

- Departmental
  - Member, Graduate Student Advisory Committee
- National
  - Chair, Session on Gonadotropins & Receptors in Cancer, International Conference on Gonadotropins and Receptors, Athens, Georgia
  - Member, Education Committee, Society for the Study of Reproduction, USA

Editorial and Grant Reviews:

- Ad hoc reviewer, Molecular Endocrinology
- Ad hoc reviewer, Endocrinology
- Ad hoc reviewer, Journal of Clinical Endocrinology & Metabolism
- Ad hoc reviewer, Biology of Reproduction
- Ad hoc reviewer, Journal of Andrology
- Ad hoc reviewer, Journal of Endocrinology (UK)
- Ad hoc reviewer, Endocrine
- Ad hoc reviewer, Molecular Reproduction and Development
- Ad hoc reviewer, Journal of Physiology
- Ad hoc reviewer, American Journal of Pathology
- Ad hoc reviewer, Oncogene (Nature Publishing group, UK)
- Ad hoc reviewer, Journal of Cell Science (UK)
- Ad hoc reviewer, Experimental Gerontology (The Netherlands)
- Ad hoc reviewer, Molecular and Cellular Endocrinology (The Netherlands)
- Ad hoc reviewer, Trends in Endocrinology and Metabolism (The Netherlands)
- Ad hoc reviewer, Clinical Endocrinology (UK)
- Ad hoc reviewer, Asia Journal of Endocrinology (China)
- External Referee for doctoral thesis of Barreiro, ML, 2004, Physiology Section, Faculty of Medicine, University of Cordoba, Spain
- Ad hoc reviewer, 2004 Endocrine Fellows Foundation, Los Angeles, California.

**Dr. Kumar** (*continued*)

Seminars Presented:

- April 13-17, 2005 – Presented a seminar entitled “Mouse models for gonadotropin ligands: A 15-year saga” at the International Conference on Gonadotropins and Receptors for the University of Georgia in Athens, Georgia.
- May 24, 2005 – Presented a seminar entitled “Mouse models to study testicular somatic and germ cell biology” for the Department of Molecular Biosciences, Center for Reproductive Biology for Washington State University in Pullman, Washington.
- May 25, 2005 – Presented a seminar entitled “Somatic and germ cell interactions in the mouse testis” at the Center for Research in Reproduction and Contraception at the University of Washington in Seattle, Washington.
- June 3-4, 2005 – Presented a seminar entitled “Functional analysis of LH $\beta$ -knockout mice” at the International Congress on Gonadal and non-gonadal actions of hCG/LH, Institute of Biomedicine in Turku, Finland.
- March 24, 2005 – Presented a seminar entitled “Genetic approaches to study somatic and germ cell biology in the testis” for the Department of Anatomy and Cell Biology, KUMC.
- April 21, 2005 – Presented a seminar entitled “Modeling human reproductive disorders in the mouse” at KUMC.

Academic Honors:

- Faculty International Travel Award, May 5, 2005; Awarded by The Research Institute, KUMC, to attend the International Symposium on gonadal and non-gonadal actions of LH/hCG in Turku, Finland
- Reviewer for Patent, for journal in London
- Invited Speaker, International Congress of Andrology and Male Infertility in Bangalore, India, September, 2005
- Selected by Department of Biotechnology, Government of India to train the visiting faculty, Dr. K.V.R. Reddy, Deputy Director. Institute for Research in Reproduction, Bombay, India, October 2005 – March 2006

Trainees:

- Aparna Zama – Post-doctoral Fellow

**Steven M. LeVine, Ph.D.**, Professor

*Summary of Research: Multiple sclerosis and globoid cell leukodystrophy (Krabbe disease) are diseases of myelin that result in loss of motor and sensory functions. We are examining the role of stress response proteins and free radicals in the pathogenesis of these diseases. Additional work is aimed at identifying modifier genes that affect the course of these conditions. Finally, we are interested in examining a range of different therapeutic interventions.*

Meetings Attended:

- August 14-19, 2004 – Attended the American Society for Neurochemistry, 35<sup>th</sup> Annual Meeting in New York, New York.
- September 9, 2004 – Attended the Annual Meeting of the Midwest Regional Center of Excellence for Biodefense and Emerging Infectious Diseases Research in St. Louis, Missouri.
- October 23-24, 2004 – Attended the Society for Neuroscience, 34<sup>th</sup> Annual Meeting in San Diego, California
- March 13-15, 2005 - Attended the Regional Centers for Biodefense and Emerging Infectious Diseases Research, 2<sup>nd</sup> Annual Meeting in Galveston, Texas

Committees:

Departmental

- Member, Graduate Student Advisory Committee
- Member, Neuroscience Faculty Search Committee

KUMC

- Member, Faculty Council
- Member, Institutional Animal Care and Use Committee
- Member, LCME – Medical Student Committee (Student Services)
- Member, Statistics Advisory Committee for the MRRC
- Member, Anatomy Chair Review Committee

Editorial and Grant Reviews:

- Ad hoc reviewer, Molecular Therapy
- Ad hoc reviewer, Journal of Neuroinflammation
- Ad hoc reviewer, Glia
- Ad hoc reviewer, Annals of Neurology

Seminars Presented:

- November 18, 2004 – Presented a seminar entitled “Protective Responses and Pathogenic Mechanisms in an Animal Model of Multiple Sclerosis” for the National MS Society, Mid-America Chapter at the Marriott Hotel, in Overland Park, Kansas
- December 9, 2004 – Presented a seminar entitled “Experimental Interventions for Globoid Cell Leukodystrophy” for the LSU Gene Therapy Seminar Series, in New Orleans, Louisiana
- March 28, 2005 – Presented a seminar entitled “Redox-Active Iron in Neurological Disorders” for the Apotex Research Inc. division in Toronto, Canada

**Dr. LeVine** (*continued*)

Teaching Activities:

PHSL 800 - Medical Physiology

3 hours lecture

22 hours conference

8 hours laboratory

PHSL 848 - Molecular Mechanisms in Neurological Disorders

90 minutes lecture

Mentor for 6 student presentations

Trainees:

John Paul Armilio – Summer Student

Anuradha Chakrabarty – Postdoctoral Fellow

Kim Mitchell – Postdoctoral Fellow

Sara Oberhelman – Summer Student

**Joanne Marcario, Ph.D.**, Research Assistant Professor

*Summary of Research: It is well known that human immunodeficiency virus (HIV) can infect the central nervous system (CNS) and lead to HIV-1-associated motor/cognitive disorder and AIDS dementia complex (ADC), but the causes of these deficits are poorly understood. The general objective of our work has been to characterize the functional consequences of HIV-1 infection of the CNS through the use of monkeys infected with neurovirulent SIV<sub>mac</sub> as model of neuro-AIDS. Our studies are multidisciplinary in nature, seeking to correlate a number of factors involved in SIV neuropathogenesis: 1) performance on cognitive and motor behavioral tasks; 2) physiologically measured variables such as sensory and motor evoked potentials; 3) virological and immunological parameters such as plasma virus load and CD4+ counts; and 4) neuroanatomical (stereological) analyses, to determine whether neuron loss in the CNS is a major factor in behavioral and physiological changes.*

Meetings Attended:

April 6-10, 2005 – Attended the Society for NeuroImmune Pharmacology in Clearwater, Florida

Committees:

National

Member, Travel Awards Committee for the Society for NeuroImmune Pharmacology (SNIP)

Also participated in the judging for best poster and oral presentations by graduate students, postdoctoral fellows and young investigators. During the meeting, Dr. Marcario was made Chair of this committee for the next 3 years.

Trainees:

Mariam Riazi-Kermani - Graduate Student

**Randolph J. Nudo, Ph.D.**, Professor (Director of Research, Center on Aging)

*Summary of Research: My research focuses on neural mechanisms of repair after brain injury, using modern neurophysiological, neuroanatomical and behavioral techniques. We have demonstrated that the functional and structural organization of the cerebral cortex is alterable throughout life, and is especially plastic after injury. This research has great significance for the development of future therapeutic approaches to promote recovery after stroke. We are now initiating a translational research program that is moving interventions for stroke recovery from the bench to the clinic.*

Meetings Attended:

- August 27, 2004 – Attended the Neural Engineering and Rehabilitation Day at Case Western Reserve University in Cleveland, Ohio.
- October 6-9, 2004 – Attended the Academy of Physical Medicine and Rehabilitation Annual Meeting in Phoenix, Arizona.
- October 23-27, 2004 – Attended the Society for Neuroscience Annual Meeting in San Diego, California.
- February 2-4, 2005 – Attended the International Stroke Conference in New Orleans, Louisiana.
- March 6-10, 2005 – Attended the NeuroDevelopmental Therapy Association Annual Meeting in Orlando, Florida.
- May 23-24, 2005 – Attended a meeting entitled “Recovery after Stroke” in Hamburg, Germany.

Committees

Departmental

- Chair, Neuroscience position search committee
- Member, Promotion and Tenure Committee

KUMC

- Member, Selection Committee for nominations to Ellison Medical Foundation
- Member, Committee to formulate neuroscience proposal to KEGA
- Member, Neurosciences Planning Advisory Group (hospital neuroscience initiative)
- Member, Exploratory Center for Human Embryonic Stem Cell Research Internal Advisory Committee
- Member, LCME Self-Study Group, Academic Environment Committee
- Member, KU Gerontology Center Search Committee
- Chair, Laboratory Animal Resources Advisory Committee

National

- Member, External Advisory Board, Program Project Application from Henry Ford Hospital, Detroit, Michigan entitled “Center for Stroke Research”
- Member, Faculty of 1000 Medicine, Neurorehabilitation and Trauma Section
- Member, Advisory Board for Acquired Brain Injury Research Center, Medical Rehabilitation Research Infrastructure grant application (R24), University of Pittsburgh, Pittsburgh, Pennsylvania

**Dr. Nudo** (continued)

Committees (continued)

- Member, Steering Committee, NIH grant application entitled “Research Partnerships for Improving Functional Outcomes”, Rehabilitation Institute of Chicago, Chicago, Illinois
- Member, External Advisory Group, NIH P20 grant entitled “New Directions for Stroke Neurorehabilitation”, University of Southern California, Los Angeles, California
- Member, External Advisory Board, Maryland Pepper Center, University of Maryland, Baltimore, Maryland
- Member, Canadian Stroke Network
- Collaborator, “Regenerative Medicine Team Grant” application, Canadian Institute for Health Research (CIHR), University of Toronto, Toronto, Canada

Editorial and Grant Reviews:

- Member, Editorial Board, Neurorehabilitation and Neural Repair
- Member, Editorial Board, Neuroscience and Biobehavioral Reviews
- Ad hoc reviewer, Journal of Neuroscience
- Ad hoc reviewer, Brain
- Ad hoc reviewer, Learning & Memory
- Ad hoc reviewer, Journal of Neurophysiology
- Ad hoc reviewer, Journal of Comparative Neurology
- Ad hoc reviewer, Journal of Cerebral Blood Flow & Metabolism
- Ad hoc reviewer, Cerebral Cortex
- Ad hoc reviewer, Human Brain Mapping

Seminars Presented

- August 27, 2004 - Invited Speaker, *Functional Plasticity after stroke*, Neural Engineering and Rehabilitation Day at Case Western Reserve University in Cleveland, Ohio.
- September 7, 2004 - Invited Speaker at Burke Medical Research Institute, White Plains, New York.
- October 7, 2004 - Invited Speaker, *Cortical Stimulation for recovery after stroke*, Mini-Course, Academy of Physical Medicine and Rehabilitation Annual Meeting in Phoenix, Arizona.
- October 10, 2004 - Invited Speaker, Glaxo Smith-Kline meeting in North Mymms, England.
- January 15, 2005 - Invited Speaker, *Neuroplasticity as a Basis for Recovery of Function after Brain Damage* for the Department of Psychology at the University of Kansas in Lawrence, Kansas.
- January 18, 2005 - Invited Speaker, *Repairing the brain after stroke* at the Oregon Health Sciences University in Portland, Oregon.
- January 21, 2005 - Invited Speaker, *Brain Plasticity after Stroke: Insights from Animal Models*, Neurology/Neurosurgery Grand Rounds at the University of Kansas Medical Center in Kansas City, Kansas.
- January 28, 2005 - Invited Speaker, *Neuroplasticity as a basis for recovery after stroke*, Department of Neurology Translational Medicine Grand Rounds at the University of Southern California in Los Angeles, California.

**Dr. Nudo** (continued)

Seminars Presented (continued)

- February 3, 2005 – Invited Speaker, *Cortical electrical stimulation to promote recovery after stroke*, 2005 International Stroke Conference in New Orleans, Louisiana.
- February 4, 2005 - Invited Speaker, *Neuroplasticity as a Basis for Recovery of Function after Brain Damage*. Psychiatry Grand Rounds, KUMC
- February 19, 2005 - Keynote Speaker, *Neuroplasticity as a Basis for Recovery of Function after Brain Damage*, Hong Kong Polytechnic University at the Department of Rehabilitation Sciences in Hong Kong, China.
- March 7, 2005 – Invited Speaker, *Neuroplasticity as a basis for recovery after stroke*, NeuroDevelopmental Therapy Association Annual Meeting in Orlando, Florida.
- March 28, 2005 - Invited Speaker, *Neuroplasticity as a basis for recovery after stroke*, NINDS Grand Rounds in Bethesda, Maryland.
- April 22, 2005 - Invited Speaker, *Brain Plasticity after Stroke: Insights from Animal Models*, Neurology/Neurosurgery Grand Rounds, KUMC.
- April 28, 2005 - Invited Speaker, *Neuroplasticity as a basis for recovery after stroke*, Neuroscience graduate seminar at the University of Cincinnati in Cincinnati, Ohio.
- May 11, 2005 – *Primate models of stroke and recovery*, AGY Therapeutics in San Francisco, California.
- May 23, 2005 - Invited Speaker, *Anatomic plasticity in premotor cortex after stroke*, Meeting entitled "Recovery after Stroke" in Hamburg, Germany.
- June 30, 2005 - Invited Speaker, *Plasticity in motor cortex*, Summer Institute on Cognitive Neuroscience at the University of California-Davis in Davis, California.

Academic Honors:

- 2005 Invited Speaker, *Neuroplasticity*, Regional professional meeting of the National Stroke Association in Phoenix, Arizona.
- 2005 Invited Speaker, *Neuroplasticity*, Regional professional meeting of the National Stroke Association in Orlando, Florida.
- 2005 Invited Speaker, *Learning-dependent plasticity in motor cortex: What animal models teach us about remodeling the injured brain*, Program in Neural Science at Indiana University in Bloomington, Indiana.
- 2005 Invited Speaker and symposium co-chair, *Stimulation and Motor System Plasticity in Primates*, American Society of Neurorehabilitation/American Congress of Rehabilitation Medicine joint annual meeting in Chicago, Illinois.
- 2005 Invited Speaker, *Brain Plasticity, a Solution and a Problem*, Workshop entitled "A Window to the Future of Neurorehabilitation," XVII Technical Workshop of the Institute Guttmann in Barcelona, Spain.

Teaching Activities:

- AMED 900 - Ambulatory Medicine/Geriatrics Clerkship  
8 lecture hours
- PRVM 869 – Grantwriting  
3 lecture hours

**Dr. Nudo** (*continued*)

Teaching activities (continued)

PHSL 846 - Advanced Neuroscience

4 lecture hours

PHSL 848 - Molecular Mechanisms of Neurological Disease

1 lecture hours

NEUS 840 - Medical Neuroscience

6 lecture hours

PHSL 838 – Advanced Topics

6 conference hours

Trainees:

Scott Bury – Postdoctoral Fellow

Carmen Cirstea – Postdoctoral Fellow

Numa Dancause – Graduate Student

Ines Eisner-Janowicz – Graduate Student

Pei-chun Fang – Postdoctoral Fellow

Shawn Frost – Postdoctoral Fellow

David Guggenmos- Summer Research Assistant/Student

Michael Hammer – KU Graduate Student (Advanced Topics)

Anirban Sensarma – Summer Medical Student

Ann Stowe – Graduate Student

Michael Taylor – Postdoctoral Fellow

Elena Zoubina – Postdoctoral Fellow

**Erik J. Plautz, Ph.D.**, Research Assistant Professor

*Summary of Research: 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.*

Meetings Attended:

October, 2004 – Attended the Society for Neuroscience Annual Meeting in San Diego, California

February, 2005 – Attended the International Stroke Conference (American Heart Association/American Stroke Association) in New Orleans, Louisiana

Committees:

KUMC

Faculty Judge for KUMC Student Research Forum – April 2005

Academic Honors:

Invited speaker, Minisymposium on Neuro-Rehabilitation Engineering at the International Conference of the IEEE Engineering in Medicine and Biology Society in Shanghai, China, September, 2005.

Faculty Travel Award to attend IEEE-EMBS meeting in Shanghai, China.

Trainees:

Numa Dancause – Graduate Student

Ines Janowicz – Graduate Student

Ann Stowe – Graduate Student

Michael Taylor – Postdoctoral Fellow

Scott Bury – Postdoctoral Fellow

**Peter G. Smith, Ph.D.**, Professor (Director, MRRC)

*Summary of Research: 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, eye, 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 in neural function that occur with changing hormonal status in women.*

Meetings Attended:

- October 23-26, 2004 – Attended the Society for Neuroscience Meeting in San Diego, California
- April 10-11, 2005 – Attended the Mental Retardation and Developmental Disabilities Director's Meeting in Houston, Texas

Committees:

Departmental

- Member, Teaching Review Committee
- Member, Cardiovascular Faculty Search Committee
- Member of Student Advisory Committee for Joe McDonald
- Member of Student Advisory Committee for Ann Stowe
- Member of Student Advisory Committee for Al Casillian
- Member of Student Advisory Committee for Numa Dancause
- Member of Student Advisory Committee for Ines Eisner-Janowicz
- Member of Student Advisory Committee for Rohan Ghandi
- Member of Student Advisory Committee for Mary Lee Dequeant
- Member of Student Advisory Committee for Melinda Arnett
- Member of Student Advisory Committee for Megan Johnson
- Member, Physiology Promotion and Tenure Committee

KUMC

- Director, R.L. Smith Mental Retardation Research Center
- Director, K-INBRE Bioinformatics Network
- Director, Microarray Facility
- Member, Dean's Leadership Group
- Member, MRRC Internal Scientific Advisory Committee
- Member, Confocal Microscopy Advisory Board
- Member, Kansas INBRE Advisory Board
- Member, Neuroscience Institute Planning Committee
- Member, Biomedical Research Building Advisory Committee
- Member, School of Medicine Promotion and Tenure Committee

**Dr. Smith** *(continued)*

Editorial and Grant Reviews

Ad hoc reviewer, American Journal of Physiology  
Ad hoc reviewer, Biology of Reproduction  
Ad hoc reviewer, Journal of the Society for Gynecologic Investigation  
Ad hoc reviewer, Cell and Tissue Research  
Ad hoc reviewer, Circulation  
Ad hoc reviewer, Endocrinology  
Ad hoc reviewer, Journal of Histochemistry and Cytochemistry  
Ad hoc reviewer, Journal of Urology  
Ad hoc reviewer, Reproduction  
Ad hoc reviewer, Reproduction, Fertility, and Development  
Ad hoc reviewer, The Grant Workshop, Columbia, Maryland  
Ad hoc reviewer, Pennsylvania Department of Health

Seminars Presented:

November 17, 2004 – Presented a seminar to the Department of Physiology and Pharmacology for the Oregon Health Sciences University, in Portland, Oregon entitled “Two Faces of Estrogen: Axon Degeneration And Outgrowth In The Peripheral Nervous System.”  
January 11, 2005 – Presented a seminar at the KUMC Female Pain Syndromes Mini-Symposium, entitled “Regulation of peripheral nociceptor innervation density by estrogen.”  
February 2, 2005 – Presented a seminar to the Department of Pharmacology, UMKC, entitled “Two Faces Of Estrogen: Axon Degeneration and Outgrowth In the Peripheral Nervous System.”  
February 3, 2005 – Presented a seminar entitled “What’s Hot”, K-INBRE Bioinformatics, at Kansas State University in Manhattan, Kansas.  
February 18, 2005 – Presented a seminar entitled “The Kansas Bioinformatics Network: Evolution of an IDEa” at Children’s Mercy Hospital in Kansas City, Missouri.

Teaching Activities:

PHSL 800 – Medical Physiology  
7 hours lecture  
12 laboratory sessions  
20 hours conference  
PHSL 846 – Advanced Neuroscience  
4 lecture hours  
Block Coordinator, Cardiovascular component of year 1 medical curriculum

Trainees:

Anuradha Chakrabarty – Postdoctoral Fellow  
Gwenaëlle Wernli - Graduate Student

**Deok-Soo Son, Ph.D.**, Research Assistant Professor

*Summary of Research: My research focuses on tumor necrosis factor alpha (TNF) and interleukin (IL)-1 signaling cascades in the ovary. TNF and IL-1, inflammatory related cytokines, have significant inhibitory effects on steroidogenesis and folliculogenesis. Recently I found that TNF specifically induced serum amyloid A3 (SAA3) in granulosa cells through nuclear factor- $\kappa$ B signaling. Furthermore, IL-1 induced abundantly and specifically keratinocyte chemoattractant (KC), a CXC chemokine. Current research has been performed to determine the functional roles of SAA3 and KC chemokine in granulosa cells.*

**Meetings Attended:**

- October, 2004 – Attended the Gilbert S. Greenwald Symposium on Reproduction, Kauffman Foundation Conference, Kansas City, Missouri.
- November, 2004 – Attended the Faculty Research Day, KUMC.
- January, 2005 - Attended the Annual K-INBRE Student Symposium (3<sup>rd</sup>) at the University of Kansas, Lawrence, Kansas
- June, 2005 – Attended the ENDO Conference in San Diego, California.

**Seminars Presented:**

- November 15, 2003 – Presented a seminar entitled “Novel acute phase proteins in granulosa cells: serum amyloid a family” at the MO-KAN Conference in Kansas City, Kansas.

**John A. Stanford, Ph.D.**, Assistant Professor

*Summary of Research: My research is focused on analyzing basal ganglia function in relation to motor function in preclinical models of normal aging and Parkinson's disease. In these conditions, changes in the functional dynamics of the nigrostriatal DA system may disrupt the normal processing of motor-related information throughout the basal ganglia. Motor function is measured using spontaneous behavior and following operant conditioning. Neural function is measured using electrophysiology under freely-moving conditions.*

Meetings Attended:

October 23-27, 2004 – Attended the Society for Neuroscience Annual Meeting in San Diego, California.

Committees:

Departmental

Member, Neuroscience Faculty Search Committee

KUMC

Member, Rodent Behavior Advisory Committee

Seminars Presented:

December, 2004 – Presented a seminar entitled “Multiple Single Unit Recording of Locomotor-Related Striatal Neurons: Effects of Age and GDNF” at the Neuroscience Seminar Series, KUMC.

March, 2005 – Presented a seminar entitled “Preclinical Motor Function in Aging and Parkinsonism.” Center on Aging Series, KUMC.

Academic Honors:

2005 KUMC Research Institute Thomas G. Noffsinger, Ph.D. Investigator Award.

Teaching Activities:

NEUS 840 – Medical Neuroscience  
14 lecture hours

Trainees:

Scott Reisman – Rotation Student

**Stanislav Svojanovsky, Ph.D.**, Research Assistant Professor

*Summary of Research: The Bioinformatics Core provides bioinformatics applications in functional genomics, proteomics and structural biology and neural network to all Kansas IDeA Network of Biomedical Research Excellence (K-INBRE) participants. New microarray equipment, data management and evaluation software allow us to investigate numerous genes at once and determine the degree of their expression in a particular cell type. We use this powerful technology to examine which genes are turned on and off in treated versus healthy tissues from various species and to establish the biological relevance of the expressed genes and the biological pathway between different classes of genes.*

Meetings Attended:

- July 14-15, 2004 – Attended the Bioinformatics Workshop for K-INBRE and EPSCoR at the University of Kansas in Lawrence, Kansas.
- July 19-20, 2004 – Attended the NCBI Workshop on Biomedical Data at the Stowers Institute in Kansas City, Missouri.
- October 1, 2004 – Attended the The Gilbert S. Greenwald Symposium on Reproduction in Kansas City, Missouri.
- January 15-16, 2005 – Attended the Third Annual K-INBRE Student Symposium at the University of Kansas in Lawrence, Kansas.
- May 5-6, 2005 – Attended the IDeA Networks of Biomedical Research Excellence (INBRE), Regional Meeting in Kansas City, Kansas.
- June 13-15, 2005 – Attended the “Beyond Genome 2005 – The Future of Medicine,” in San Francisco, California.

Committees:

Local

- Member, Kansas City Area Life Science Institute (KCALSI), Development Grand Peer Review Committee

Seminars Presented:

- October 14, 2004 – Presented a seminar entitled “Bioinformatics Applications of the Neural Network” for the Department of Electrical Engineering and Computer Science at the University of Kansas in Lawrence, Kansas.
- December 8, 2004 – Presented a seminar entitled “GeneSpring Analysis of the Microarray Data” for K-INBRE and the MRRC, KUMC.
- May 12, 2005 – Presented a seminar entitled “Predicting Antitumor Activities with Neural Network” at the Johnson County Community College in Overland Park, Kansas.
- June 14, 2005 – Presented a seminar entitled “Artificial Neural Network in High Throughput Screening”, Beyond Genome – The Future of Medicine Conference in San Francisco, California.

**Dr. Svojanovsky** (*continued*)

Teaching Activities:

EECS 833 (KU-Lawrence) Neural Networks and Fuzzy Logic

GeneSpring v.6.5 – Introductory level 1

4 hours workshop

GeneSpring v.6.5 – level 2

4 hours workshop

GeneSpring v.6.5 – level 3

4 hours workshop

GeneSpring v.6.5 – level 4

4 hours workshop

GeneSpring v.7.0 – level 1

4 hours workshop

GeneSpring v.6.1 – level 2

4 hours workshop

GeneSpring v.6.1 – level 3

4 hours workshop

GeneSpring v.6.1 – level 4

4 hours workshop

GeneSpring v.7.1 – level 1

4 hours workshop

GeneSpring v.7.1 – level 2

4 hours workshop

GeneSpring v.7.1 – level 3

4 hours workshop

GeneSpring v.7.1 – level 4

4 hours workshop

Trainees:

Suman Duvvuru - Undergraduate Student (UMKC)

Vikram Gollakota - Graduate Student (UMKC)

Jeremy Chen - Graduate Student (KU-Lawrence)

Mithun Hebbar - Graduate Student (KU-Lawrence)

**C. Merrill Tarr, Ph.D.**, Professor

*Summary of Research: My present research interest is the development and evaluation of interactive, computer-based teaching modalities that can be used to enhance the educational experience of students.*

Committees:

Departmental

Course Director, Medical Physiology 801 and 802

Course Director, Module 5 of IGPBS

Departmental Teaching Committee

KUMC

Member, Conflict of Interest in Research

Member, Faculty Council

Member, EVC's task force to rewrite faculty handbook

Member, Education Council

Member, Faculty Year 1-2 Oversight Committee

Member, Medical School Curriculum Revision

Editorial and Grant Reviews:

Experimental Editor, The Digital Photobiology Compendium

Teaching Activities:

PHSL 801 – Medical Physiology

12 lectures (1 hour each)

15 conferences (2 hours each)

6 laboratory sessions (2 hours each)

PHSL 892 – Module 4 of IGPBS course

4 lectures (1 hour each)

PHSL 892 – Module 5 of IGPBS course

6 lectures (1 hour each)

Prematriculation Health careers Pathways Program

3 lectures (1 hour each)

1 review session (1 hour)

Cardiology – 2 lecture (1 hour each)

**Joseph S. Tash, Ph.D.**, Associate Professor

*Summary of Research: Our research is to understand the mechanism involved with regulation of sperm movement and the factors that influence sperm production and maturation leading to the ability to fertilize. Research funded by NASA is focused on the effect of space flight on signal transduction in the sperm during sperm activation and fertilization. This has led to a more detailed investigation on the impact of long term space flight on male fertility.*

Meetings Attended:

- September 29-October 2, 2004 – Attended the NIH conference “The Future of Male Contraception” in Seattle, Washington.
- May 2-6, 2004 – Attended the Annual Meeting of the Aerospace Medical Association in Anchorage, Alaska.
- November 9-12, 2004 – Attended the Annual Meeting of the American Society for Gravitational and Space Biology in New York, New York.
- April 4, 2005 – Attended the Kansas City Area Life Sciences Institute Research Day in Overland Park, Kansas.

Committees:

KUMC

- Member, Biotech Facility Oversight Committee
- Member, KUMC Institutional Animal Care and Use Committee (IACUC)
- Chairman, Department of Anatomy & Cell Biology

National

- Member, NASA Developmental Biology Study Section

Editorial and Grant Reviews:

- Ad hoc reviewer, Biology of Reproduction
- Ad hoc reviewer, Biological Bulletin of the Marine Biological Laboratory (Woods Hole)

Seminars presented:

- September 29-October 2, 2004 – Presented a seminar entitled “Identification of Promising Molecular Targets for Male Contraceptive Development Using Biotinylated Analogues of the New Reversible Non-Hormonal Anti-Spermatogenic Agent, Gamendazole<sup>TM</sup>” at “The Future of Male Contraception,” NIH Conference, in Seattle, Washington.
- November 9-12, 2004 – Presented a seminar entitled “Magnetic Resonance Imaging (MRI) Study of Anatomical Features Underlying Sterility in Hindlimb Unloaded (HLS) Male Rats” at the peer-reviewed Annual Meeting of the American Society for Gravitational and Space Biology in New York, New York.

Academic Honors:

- 2005-Numerous T.V. and radio interviews and press articles world-wide were generated from the press-release concerning the NIH funding of the second male contraception project.
- Invited monograph in preparation: Georg, G.I. and Tash, J.S. (2005) Non-hormonal male contraceptives. In *Drugs of the Future*.

**Dr. Tash** (*continued*)

Teaching activities:

PHYS 802 – Medical Physiology  
7 hours lecture  
16 hours conference sessions  
PHYS – Reproductive Biology  
2 hours lecture

Trainees:

Ryan Beard – Summer student  
Brent Burroughs – Summer student  
Melissa Emerson – Summer student  
Adam Gregg – Summer Student  
David MacMillan – Summer student  
Andrew White – Summer student

**Paul F. Terranova, Ph.D.**, Professor (Director of Center for Reproductive Sciences)

*Summary of Research: We are determining the molecular mechanism by which tumor necrosis factor alpha inhibits estradiol secretion in mouse granulose cells. This approach targets NF-kB and cAMP response element binding protein. A second project determines the role of Src tyrosine kinase in ovarian follicular development. Lastly, we are developing new ovulation blocking drugs, which are agonists of the aryl hydrocarbon receptor.*

Meetings Attended:

- July 21-23, 2004 – Attended the NIEHS Center Review Panel in Research Triangle Park, North Carolina.
- July 29-31, 2004 – Attended the 15<sup>th</sup> Ovarian Workshop, Vancouver, British Columbia, Canada.
- August 1-4, 2004 – Attended the Annual Meeting of the Society for the Study of Reproduction, Vancouver, British Columbia, Canada.
- October 1-2, 2004 – Attended the Greenwald Symposium in Kansas City, Missouri.
- October 17-19, 2004 – Attended the National BRIN meeting in Washington D.C.
- November 21-23, 2004; January 31-February 2, 2005; March 20-22, 2005; May 10-12, 2005 – Attended the National Academy of Sciences, Health Effects of Dioxin in Washington D.C.
- February 7-8, 2005 – Attended the Ovarian Focus Group, NICHD, Baylor College of Medicine, Houston, Texas.
- April 18-19, 2005 – Attended the Specialized Cooperative Centers Program in Reproduction Research, NICHD Meeting in Chicago, Illinois.
- May 5-6, 2004 – Attended the KINBRE Symposium, Kansas City, Missouri.
- May 19-21, 2005 – Attended the NICHD Directors Meeting, Bethesda, Maryland.

Committees:

University

- Member, School of Medicine Space Committee, Chair 9/00-present
- Member, MRRC Internal Advisory Committee
- Member, Theme Leader, Cellular and Molecular Biology of Early Development, MRRC
- Member, Kansas Cancer Institute Internal Advisory Committee
- Member, Deans Advisory Council, School of Medicine
- Member, Transgenic and Genetic Technologies Advisory Committee, KUMC
- Member, Research Advisory Team, School of Medicine
- Member, Director, Center for Reproductive Sciences
- Member, Associate Director, Kansas Idea Network of Biomedical Research Excellence
- Member, Director, Biomedical Research Training Program, KUMC
- Member, GCRC Advisory Group
- Chair, Search Committee, Obstetrics and Gynecology, KUMC
- Member, External Advisory Board, Biostatistics Core, Kansas Cancer Institute
- Member, KUMC Research Institute Advisory Board, Board of Director
- Member, LCME
- Member, Academic Health Care Planning Committee (KU Hospital/SOM KUMC)

**Dr. Terranova** (*continued*)

Committees (*continued*)

Member, Search Committee, Research Professor in Orthopedics, 2004-2005  
Member, Ph.D. dissertation committee for Ning Lei, Physiology  
Member, Ph.D. dissertation committee for Brian Hermann, Physiology  
Member, Ph.D. dissertation committee for John Werhoa, Pharmacology  
Member, Ph.D. dissertation committee for Mindy Shelby, Pharmacology  
Member, Ph.D. dissertation committee for Kristian Fried, Pharmacology

National

Member, Editorial Board, Endocrine  
Member, Editorial Board, Journal of Pharmacology and Experimental Therapeutics  
Member, NIEHS Center Review Panel  
Chair, Ovarian Focus Group, NICHD, U54 Specialized Centers Program in  
Reproduction Research  
Member, Bayer Corporation, Consultant on Reproduction

Editorial and Grant Reviews:

Ad hoc reviewer, Journal of Clinical Endocrinology and Metabolism  
Ad hoc reviewer, Cancer Detection and Prevention  
Ad hoc reviewer, Reproductive Toxicology  
Ad hoc reviewer, Endocrinology  
Ad hoc reviewer, Toxicology  
NIEHS Site Visit, MD Anderson at Smithville, Texas, May 17-19, 2005 (Chairman)  
NICHD, grant review via teleconference, October 14, 2004; March 11, 2005

Seminars Presented:

September 1, 2004 – Presented a seminar entitled “Tumor Necrosis Factor Regulation of Ovarian Function” for the Department of Pediatric Endocrinology, Children’s Mercy Hospital in Kansas City, Missouri.  
March 16, 2005 – Presented a seminar entitled “Src Tyrosine Kinase and Ovarian Function” for the Department of Obstetrics & Gynecology at Meharry Medical College in Nashville, Tennessee.  
January 5, 2005 – Presented a seminar entitled “Tumor Necrosis Factor Regulates Serum Amyloid A3 in Granulosa Cells” for the D.C. Johnson Seminar Series at KUMC.

Teaching Activities:

PHYS 800/801 – Medical Physiology  
10 conferences – 2 hours each  
PHYS 800/801 – Medical Physiology (Endocrine)  
3 conferences – 1 hour each  
Endocrine Toxicology – given to Pharmacology Graduate Students  
2 – 2 hour lectures  
Reproductive Endocrinology – given to IGPBS Students  
4 – 2 hour lectures

**Dr. Terranova** *(continued)*

Trainees:

John Werhoa – Graduate Student (Pharmacology)  
Mindy Shelby – Graduate Student (Pharmacology)  
Kristian Fried – Graduate Student (Pharmacology)  
Gaurav Chaturvedi – Postdoctoral Fellow  
Lorna Brudie – Postdoctoral Fellow, D.O.  
Dan Kort – Medical Student, AOA Research Fellowship  
Joseph Bradley – Medical Student

**James L. Voogt, Ph.D.**, Professor

*Summary of Research: As of December 31, 2004, I terminated research in my own laboratory. I continue to pursue manuscript preparation. I also participated in a grant proposal as a co-investigator with Michael Soares (R-21). He has been told that this grant will be funded December 1, 2005. I have a 10% commitment to this research.*

Meetings Attended:

June 4-7, 2005 – Attended the Annual Meeting of the Endocrine Society in San Diego, California

October 3-4, 2004 – Attended the Gilbert S. Greenwald Symposium on Reproduction in Kansas City, Missouri

October, 2004 - Attended the Open Forum for the newly announced NIH Roadmap in Bethesda, Maryland

Committees:

Departmental

Chair, Seminar committee for Fiscal Year 2005

Mentor, John Stanford, new assistant professor in Physiology

KUMC

Chair, Organizing Committee for the first annual Gilbert S. Greenwald Symposium on Reproduction

Chair, Research Advisory Council

Member, Research Advisory Group-School of Medicine

Member, Research Advisory Team-School of Medicine

Member, Laboratory Animal Resources Advisory Committee-School of Medicine

Member, IACUC-School of Medicine

Member, Transgenic Advisory Committee-School of Medicine

Local

Member, KCALSI-Neurosciences Hot Team

Member, KCALSI-Academic Research Group

National

Member, NIH ICER Study Section

Editorial and Grant Reviews:

Ad hoc reviewer, Journal of Neuroendocrinology

Ad hoc reviewer, Journal of Molecular Endocrinology

Ad hoc reviewer, Experimental Biology and Medicine

Ad hoc reviewer, Molecular and Cellular Endocrinology

Ad hoc reviewer, Endocrinology

Ad hoc reviewer, NIH Integrative and Clinical Endocrinology and Reproduction Study Section

Ad hoc reviewer, NSF ad hoc reviews

**Michael W. Wolfe, Ph.D.**, Associate Professor

*Summary of Research: 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  $\alpha$  and  $\beta$ -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 and cytokine regulation of gene expression.*

Meetings Attended:

- August 1-4, 2004 – Attended the 37<sup>th</sup> Annual meeting of the Society for the Study of Reproduction in Vancouver, British Columbia, Canada.
- October 1-2, 2004 – Attended the Gilbert S. Greenwald Symposium on Reproduction, in Kansas City, Missouri
- May 20, 2005 – Attended the 8<sup>th</sup> Annual meeting of the Nebraska Physiological Society, in Omaha, Nebraska

Committees:

Departmental

Coordinator for the Endocrinology block of the Medical Physiology course  
Member, Committee organizing the Gilbert S. Greenwald Symposium on Reproduction

Member, Dissertation Committee for Shalmica Williams, Ph.D. candidate

Member, Dissertation Committee for Ryan Thummel, Ph.D. candidate

Member, Dissertation Committee for Brian Hermann, Ph.D. candidate

Member, Dissertation Committee for Ning Lei, Ph.D. candidate

Member, Dissertation Committee for Audrey Blacklock, M.D./Ph.D. candidate

Member, Dissertation Committee for Jennifer Ho-Chen, Ph.D. candidate

Member, Dissertation Committee for Kara Wagoner, M.S. candidate

Member, Dissertation Committee for Jennifer Ho-Chen, Ph.D. candidate

KUMC

Member, Dissertation Committee for Barry Pruett (Anatomy), Ph.D. candidate

Editorial and Grant Reviews:

Ad hoc reviewer, Journal of Biological Chemistry

Ad hoc reviewer, Biology of Reproduction

Ad hoc reviewer, Molecular Endocrinology

Ad hoc reviewer, Endocrinology

Editorial board for the Journal of Endocrinology

Ad hoc reviewer of abstracts submitted for the 2005 Annual Meeting of the Society for the Study of Reproduction

Reviewed grants for Kansas City Area Life Sciences Institute, Inc.

**Dr. Wolfe** *(continued)*

Teaching Activities:

PHSL 802 – Medical Physiology

6 hours lecture

18 hours conferences

IGPBS Module 4 – Cell & Developmental Biology

6 hours lecture

Trainees:

Lindsey Canham – IGPBS Rotation

Melinda Pence – IGPBS Rotation

**John G. Wood, Ph.D.**, Associate Professor

*Summary of Research: Systemic hypoxia occurs at high altitude and in a variety of cardiopulmonary diseases. Few studies have examined its effects on the microcirculation despite considerable clinical evidence suggestive of microvascular inflammation during hypoxia (i.e., high altitude cerebral edema). In fact, it is generally accepted that microvascular injury occurs during elevated tissue oxygen levels (during reperfusion of organs after prolonged ischemia) rather than during low tissue oxygen levels during ischemia. Currently, our major goal is to examine mechanisms responsible for microvascular injury during acute systemic hypoxia as well as the mechanisms involved in adaptation to chronic hypoxia. These studies are in collaboration with Dr. Norberto Gonzalez. Intravital microscopy is used to examine the microcirculation of various organs in vivo, including the gastrointestinal tract, skeletal muscle, and brain. Microvascular function is assessed by measuring: 1) adhesive interactions of circulating leukocytes with venular endothelium, 2) vascular permeability to proteins, 3) generation of reactive oxidant species, and 4) nitric oxide levels. Dr. Gonzalez and I are starting a new project in collaboration with Dr. Mike Soares to examine whether fetal hypoxia promotes cardiovascular disease in adults by augmenting microvascular inflammation.*

#### Committees

##### Departmental

Member, Fred Samson Annual Lectureship Committee

Member, CV Faculty Search Committee

##### KUMC

Member, Student Success Committee for Curriculum Revision

Member, Delp Academic Society

#### Editorial and Grant Reviews:

Ad hoc reviewer, Journal of Cardiovascular Research

Ad hoc reviewer, Pharmacology and Toxicology

Ad hoc reviewer, Microvascular Research

Ad hoc reviewer, British Journal of Pharmacology

#### Seminars Presented:

Presented a seminar entitled “Hypoxia and microvascular inflammation” to the Department of Surgery, KUMC.

#### Academic Honors:

Student’s Voice Award for Excellence in Teaching in Medical Physiology

#### Teaching Activities:

PHSL 801 - Medical Physiology

16 hours lecture

8 hours lab

24 hours conference

4 hours pre-exam review

First Preparation Board Review of Cardiovascular Physiology

3 hours

**Dr. Wood** (*continued*)

Teaching Activities (*continued*)

Summer Prematriculation Program

9 hrs conference

2 hrs lab

Trainees:

Al Casillan - M.D./Ph.D. Student

Joe McDonald - M.D./Ph.D. Student