

**Annual Report of the**

**DEPARTMENT OF**

**MOLECULAR & INTEGRATIVE**

**PHYSIOLOGY**

**University of Kansas Medical Center**

**Covering the period July 1, 2003 - June 30, 2004**

## YEAR IN REVIEW 2003-2004

Overall, 2003-2004 was another outstanding year in which the department continued to excel in education, research and service. Research funding in the department showed a significant upswing from last year with 6.5 million (total costs) in NIH support (source: NIH Website). With this level of funding, the departmental ranking moved up to 27<sup>th</sup> among 96 medical schools receiving NIH funding placing us in the top 25% of all Physiology Departments in the country if all schools are included. Also noteworthy, and in some ways more important, is the fact that during the year, our faculty held more NIH grants than any other department at the Medical Center and nearly every faculty member's research program was supported by major external funding.

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. John also received the Outstanding Small Group Instructor Award. For John these awards further extend his remarkable winning streak. For Gustavo this is a remarkable achievement, given the relatively short time he has been at KUMC. Also in the area of teaching excellence, Dr. Norberto Gonzalez won the Bohan Teaching Award. This is a much deserved award and we congratulate Dr. Gonzalez.

Four new tenure track positions were filled during the year, three of which were connected to the Hall Professorship. We are very pleased that efforts to fill the Hall Professorship were successful. Dr. David Albertini accepted the position and began work at KUMC in June. He is a world authority in reproductive biology, focusing in particular on causes of human infertility, ovarian cancer, and technologies for improving egg and embryo quality. Three new tenure track faculty members were added during the year. Dr. John Stanford was appointed at the assistant professor level. John came from the University of Kentucky where he was a research assistant professor. His research interest is brain aging, particularly as it affects motor function and the brain dopamine system. Due largely to Dr. Albertini's vision for the Hall Professorship and support of the Dean's office, two additional tenure track faculty were added to the department in support of the Hall Program in Molecular Medicine. Dr. Lane Christenson joined the department as an assistant professor. He came from the University of Pennsylvania where he was a research associate. His area of research focuses on understanding the terminal events involved in follicular development. The fourth recruitment was Dr. Raj Kumar, who came from Baylor where he was an assistant professor. His research interest is the regulation of the hypothalamus-pituitary-gonadal axis. We are very excited about the addition of these individuals to our department. They bring substantial new talent and enthusiasm as well as funded NIH grants.

The past year has also witnessed significant 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. New appointments at the Research Assistant professor level included Dr. Erik Plautz, who had worked with Dr. Nudo for ten years, Dr. Wohaib Hasan, who had worked with Dr. Smith for seven years, and Dr. Rupa Ain, who had worked with Dr. Soares for five years.

A number of individuals were also given secondary appointments in the department. Dr. Darren Wallace was appointed as a research assistant professor. His primary appointment is in Internal Medicine at KUMC. Darren is a graduate of our department and we welcome his

continued involvement. Dr. Sangita Biswas was given an adjunct research assistant professor appointment. She worked for a number of years with Dr. LeVine and then took a position at the Mid-American Neuroscience Institute in Lenexa, Kansas. Dr. Jill Jacobson was appointed as an adjunct professor. She is in the Endocrinology/Diabetes Section at Children's Mercy Hospital and has collaborations with members of our reproductive biology group. Finally, Dr. Benyi Li was appointed as an adjunct assistant professor. His primary appointment is in Internal Medicine at KUMC and his area of research interest is prostate cancer. We value these appointments and the contributions our adjunct faculty make to the department.

Although there were no promotions in rank of faculty, Dr Merrill Tarr accepted a major new role in the department as Director of Medical Education, a position previously held by Dr. Dennis Valenzeno. This position also involves serving as director of both the fall and spring Medical Physiology courses. We are pleased that this important departmental responsibility will continue to be in good hands.

The graduate students in the department had another active year. The "Physiology Society" leadership included Brian Herman as President and Ann Stowe, as Vice President, Kara Wagoner as Secretary and Darcy Griffin and Heather Hudson as Social Event Organizers. Officers for the coming year will be Anne Stowe as President, Marie-Helene Boudrias as Vice President, Heather Hudson as Secretary and Anh-Nguyet Nguyen as Social Event Organizer. The Physiology Society has grown into an effective mechanism for organizing the graduate students and we appreciate its contributions to the department.

Our graduate program now has 15 full-time students working on the Ph.D. degree and one student working on a masters degree. One new student, Gwenaelle Wernli, was recruited to the department this year. She will be working with Dr. Peter Smith. Three students completed their degrees during the year. Audrey Blacklock received her Ph.D. with Dr. Peter Smith. She is in the MD/PhD program and will be returning to medical school to complete her clinical years. Ryan Thummel received his Ph.D. with Dr. Alan Godwin. Ryan was instrumental in setting up the Physiology Society. We appreciate not only his research but also his other contributions to the department. He has taken a postdoctoral position at Notre Dame with Dr. David Hyde and will be working on retinal regeneration. Shalmica Williams completed her Ph.D. degree with Dr. Paul Terranova. She has accepted a postdoctoral position at the University of Texas, Southwestern Medical Center in Dallas.

Congratulations to the graduate students and postdoctoral fellows in the department who received awards from the KUMC Biomedical Research Training Program. The award winners this year were: Ning Li, a Ph.D. student with Dr. Leslie Heckert, Joe McDonald, an MD/Ph.D. student working with Dr. John Wood, and Gaurav Chaturvedi, a postdoctoral fellow working with Dr. Paul Terranova.

There were some departures from the department during the year. Dr. Dennis Valenzeno, a member of the department since 1980, took a position as director of the Alaska WWAMI Biomedical Program at the University of Alaska in Anchorage. This is a program sponsored by the University of Washington in Seattle. The program trains medical students for neighboring states that lack medical schools. Dennis will also have an appointment as Assistant Dean at the University of Washington School of Medicine. In his new position, he will direct the education program for medical students at the University of Alaska, Anchorage. Before taking this position, Dennis served for many years as Director of Medical Education and course director for both the fall and spring Medical Physiology Courses. During this period, the courses won "Outstanding Course of the Year Award" a number of times and Dennis deserves a lot of credit

for this. We will miss Dennis and wish him the best in his new position and move to Alaska. Mike Soares, a member of the department since 1984, moved to the Department of Pathology. This move provided some attractive opportunities for Mike's new Center on Fetal-Maternal Biology. We are pleased that he will retain a secondary appointment in the Physiology Department.

Sadly, the department lost several dear and long-standing members during the year. Dr. Gilbert Greenwald, University Distinguished Professor Emeritus, died suddenly August 26<sup>th</sup>. Gil served as Department Chair for 16 years (1977-1993) before retiring in 1996. He continued to be a very active emeritus member of the department until his death. He was a world leader in reproductive biology. Dr. Don Johnson died October 14, 2004, after an extended illness. Don was recruited to KUMC in 1963. His primary appointment was in the Department of Obstetrics and Gynecology, although he was a very active member and contributor to the Physiology department. As an emeritus faculty member, Don remained very active in the teaching and research activities of the department until falling ill in January of 2004. Dr. Fred Samson died on April 15<sup>th</sup>, 2004. Fred spent 21 years at the KU Lawrence campus where he was Professor and Chairman of Biochemistry and Physiology, and later, Chairman of Physiology and Cell Biology. His second career of 29 years was at KUMC where he was Director of the Ralph L. Smith Mental Retardation and Human Development Research Center and Professor in the Physiology Department. Fred was a dedicated neuroscientist who will be remembered for his spirited discussions at seminars and those amazing hand stands. Gil, Don and Fred were all major contributors to the success of the department. They were also great friends and colleagues. We will miss them.

Finally, the department also lost a future member of the department. Dr. Casey Kindig had accepted a position in the department as an assistant professor. He was a vascular biologist investigating questions related to exercise and gas exchange in tissues. Casey died in an automobile accident in San Diego, April 24<sup>th</sup>, before he had a chance to join the department.

Prepared by:

Dr. Paul D. Cheney  
Professor and Chair

## DEPARTMENT ROSTER

July 1, 2003 – June 30, 2004

### a. Faculty

#### Primary Appointment in Physiology

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

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*

Jennifer Hill Karrer, Ph.D., *Assistant Professor*

Walter Imagawa, Ph.D., *Assistant Professor*

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

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

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

Michael J. Soares, Ph.D., *Professor and Director, Institute of Maternal Fetal Biology*

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

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

Merrill Tarr, Ph.D., *Professor*

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

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

Dennis P. Valenzeno, Ph.D., *Professor*

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

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

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

#### Emeritus

Gilbert S. Greenwald, Ph.D., *Distinguished Professor*

Frederick E. Samson, Ph.D., *Professor*

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

#### Modified Title Research Track Faculty

Rupasri Ain, Ph.D., *Research Assistant Professor*

Sangita Biswas, Ph.D., *Research Assistant Professor*

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

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

Brian Petroff, DVM, Ph.D., *Research Assistant Professor and Scientific Director, Breast Cancer Prevention Center*

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*

#### Joint Appointment in Physiology

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

Donald C. Johnson, Ph.D., *Professor Emeritus (Ob-Gyn)*

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

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

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

**DEPARTMENT ROSTER (continued)**

<b>b. Graduate Students</b>	<b>Prelims</b>	<b>Candidate</b>	<b>Requirements Fulfilled</b>
Audrey Blacklock	6/02	Ph.D.	6/04
Marie-Helene Boudrias		Ph.D.	
Al Casillan	1/04	M.D./Ph.D.	
Numa Dancause		Ph.D.	
Darcy Griffin		Ph.D.	
Brian Hermann		Ph.D.	
Jennifer Ho-Chen		Ph.D.	
Heather Hudson		Ph.D.	
Ines Eisner-Janowicz		Ph.D.	
Ning Lei	1/03	Ph.D.	
Joe McDonald	7/03	M.D./Ph.D.	
Anh Nguyet-Nguyen		M.S.	
Greg Onyszchuk		Ph.D.	
Teresa Orth		M.D./Ph.D.	
Mariam Riazikermani		Ph.D.	
Peizhen Song		Ph.D.	
Ann Stowe	3/03	Ph.D.	
Ryan Thummel	11/01	Ph.D.	6/04
Kara Wagoner		M.S.	
Shalmica Williams	10/01	Ph.D.	7/04

**c. Postdoctoral Fellows**

S.M. Khorshed Alam  
 Koji Arai  
 Juan Arroyo  
 Juan Bustamante  
 Anuradha Chakrabarty  
 Carmen Cirstea  
 Shawn Frost  
 Tatiana Karpova  
 Toshihiro Konno  
 Rengasamy R. ManiMaran  
 Shigeki Oboshi  
 Barbara Quaney  
 Fengfeng Wang  
 Lihua Yang  
 Bo Zhang  
 Elena Zoubina

**d. Temporary Students**

Murad Almomani  
 Steffan Anderson  
 John Paul Armilio  
 Brook Barr  
 Christal Carpenter  
 Jamie Cauveren  
 William Chatfield-Taylor  
 Jeremy Chen  
 Claire Crutch  
 Suman Duvvuru  
 Meg Fasulo  
 Ryan Field  
 Vikram Gollakota  
 Matt Jordan  
 Darya Khalili  
 Jill Koehler  
 Sachin Mathur  
 Michael Mumert  
 Sara Oberhelman  
 Miguel Salas  
 Pang Thao  
 My-Linh Trinh

## DEPARTMENT ROSTER (continued)

### e. Research Staff

Dora Agbas – Research Associate  
Julie Allen – Research Associate  
Adam Alt – Research Assistant  
Scott Barbay – Research Associate  
Jennifer Brann – Research Assistant  
Jeffrey Brewer – Research Assistant  
Brent Canham – Research Assistant  
Lindsey Canham – Research Assistant  
Erin Cambron – Research Assistant  
Glaukia Cavalcanti – Research Assistant  
Gaurav Chaturvedi – Research Associate  
Robert Cross – Research Associate  
Ian Edwards – Research Assistant  
Stan Fernald – Research Assistant  
Elizabeth Fogle – Research Assistant  
Kaori Iha-Hornbaker – Research Assistant  
Sarah Karina – Research Assistant  
Darlene Limback – Research Associate  
Sotirios Macheras – Research Assistant  
Thomas Malone – Research Assistant  
Kelsey Needham – Research Assistant  
Tracy Newman – Research Assistant  
Judith Pace – Senior Research Associate  
Jeremy Presley – Research Assistant  
Daren Rice – Research Associate  
Gladis Sanchez de Blanco – Research Associate  
Siqing Tang – Research Assistant  
Lovella Tejada – Research Assistant  
Alison Ting – Research Assistant  
Patricia Wolfe – Research Assistant  
Stacy Wolfe – Research Assistant

### f. Support Staff

Linda Carr – Administrative Officer  
Julie Benson – Accountant I  
Ted Gleason – Electronics Technician II  
Robin Marks – Administrative Assistant  
*(Reproductive Sciences Center)*  
Stacy McClure – Administrative Assistant  
*(Maternal-Fetal Research Center)*  
Felicia Wells – Administrative Specialist

## NOTES CONCERNING GRADUATE STUDENTS

Marie-Hélène Boudrias was awarded a three year scholarship in April 2004 from the Fond de la Recherche en Santé du Québec. She received a Graduate Student Travel Scholarship to present her first author poster entitled “Output properties of supplementary motor area (SMA) in rhesus macaques” at the 33rd Annual Meeting of the Society for Neuroscience in November 2003, held in New Orleans, Louisiana. She also presented a poster at the Biomedical Focus group Symposium in November 2003 at the University of Kansas, Lawrence. She gave two presentations entitled "Output Properties of Supplementary Motor area in Rhesus Macaques" as part of the Neuroscience and Physiology seminars series in January and March 2004. She is co-author on a book chapter entitled “Physiology of the Corticomotoneuronal System” published in *Clinical Neurophysiology of Motor Neuron Diseases*, A. Eisen Editor, Elsevier Science. Marie-Hélène is currently serving as the student representative on the International Student Affairs Committee.

Numa Dancause was co-author of a paper entitled “Post-infarct cortical plasticity and behavioral recovery using concurrent cortical stimulation and rehabilitative training: a feasibility study in primates” published in *Neurological Research*. He published 4 abstracts respectively entitled: “Extensive cortical rewiring after brain injury”, Second Scientific Conference Restauración Neurológica 2004; “Minimal lesion size in the primary motor cortex for the initiation of recovery associated physiological changes in the ventral premotor cortex” for the Federation for European Neuroscience 2004 meeting (supported by Federation for European Neuroscience student travel award and Kansas University Medical Center Graduate Research Travel Scholarships); “Ipsilateral and contralateral connections of the ventral premotor cortex in a New World monkey (*Saimiri sciureus*): termination bands in the primary motor cortex” for the Neural Control of Movement 2004 meeting (supported by Society for Neural Control of Movement student travel award and by Kansas University Medical Center Graduate Research Travel Scholarships); “Reorganization of interhemispheric connections of the premotor ventral cortex following ischemic infarct in the primary motor cortex of the squirrel monkey” for the Society for Neuroscience 2003 meeting (supported by Kansas University Medical Center Graduate Research Travel Scholarships). He was also co-author on 2 submitted book chapters, 2 abstracts for the Society for Neuroscience 2004 meeting and served on the editorial board as an ad-hoc reviewer for *Neuropsychologia*.

Brian Hermann was awarded a Graduate Studies travel scholarship to present a poster entitled “A cell-specific repressor identified by comparative sequence analysis and DNase I hypersensitivity mapping of the Fsh-receptor gene locus” at the 86th Annual Meeting of the Endocrine Society held in New Orleans, Louisiana in June. He also presented a talk by the same name in the Molecular and Cell Biology section of the 2004 Student Research Forum. Brian is also first author of a paper entitled "Silencing of Fshr occurs through a conserved, hypersensitive site in the first intron," that is currently in revision for the journal of *Molecular Endocrinology*. Brian was honored with the KUMC Student Leadership Award presented at Commencement in Lawrence.

Ning Lei presented a seminar entitled “Dmrt1’s transcriptional regulation in testis” in November 2003. She won the Dr. W.S. Sutton Scholarship in genetics research in 2003 as well. Ning was the first author on a paper entitled “Gata4 regulates testis expression of Dmrt1” published in *Molecular and Cellular Biology*. She was awarded first place, at the Student Research Forum, in the Genetic Session, for a slide presentation entitled “Identification of the testis-specific regulatory region of the Dmrt1 gene in vivo.” She received a Graduate Student Travel Scholarship to present her first author poster of the same title at the Endocrine Society’s 86<sup>th</sup> Annual Meeting in New Orleans, Louisiana. Ning recently received a Biomedical Training Grant Award for Fiscal Year 2005.

Teresa Orth is a second year M.D./Ph.D. student of Dr. Norberto C. Gonzalez. Teresa received a \$500 Travel Scholarship from the Office of Graduate Studies to attend the Experimental Biology 2004 Conference in Washington, D.C. She presented two posters entitled “Exercise training prevents the inflammatory response to hypoxia in cremaster venules” and “Plasma from hypoxic rats increases leukocyte-endothelial adherence in normoxic cremaster rat venules.” Teresa was awarded the Caroline tum Suden/Frances A. Hellebrandt Professional Opportunity Award for this work. She made a presentation entitled “Plasma from hypoxic rats increases leukocyte-endothelial adherence in normoxic cremaster rat venules” at the 2004 KUMC Student Research Forum. Teresa received an award for the best presentation in the cardiovascular biology session. Teresa is first author of a paper submitted to the *Journal of Applied Physiology*, entitled “Exercise training prevents the inflammatory response to hypoxia in cremaster venules”. In addition, Teresa is Co-President of the Student Governing Council and serves as Co-Chair of the Student Recycling Committee.

Mariam Riazi was first author on three abstracts: “Analysis of neurological function in a rhesus macaque model of drug abuse neuro-AIDS: *Baseline data from multimodal evoked potentials (EP) and magnetic resonance spectroscopy*” (34<sup>th</sup> Annual Meeting of the Society for Neuroscience), “Optimizing cochlear microphonic recording parameters” (3<sup>rd</sup> Annual Kansas City Area Life Sciences Research Day), and “Optimizing cochlear microphonic recording parameters” (2004 KUMC Student Research Forum). At the 2004 KUMC Student Research Forum, she was awarded first place for her poster presentation entitled “Optimizing cochlear microphonic recording parameters”. Mariam attended the 33<sup>rd</sup> annual meeting of the Society for Neuroscience in New Orleans, Louisiana as well as the 10<sup>th</sup> annual meeting on Neuroimmune Circuits and Infectious Diseases in Santa Fe, New Mexico. She attended Levels 1 and 2 of the KUMC Gene Spring Microarray Data Analysis workshop (Spring 2004) and the Society for Neuroscience Professional Skills workshop (November 2003) in New Orleans, Louisiana. Mariam was president of the SGC Street Fair Student Olympics Committee, a SGC Senate Representative, Graduate Student Council Department of Hearing Representative, School of Allied Health Student Senate Representative, Graduate Student Council Department of Hearing Representative, and a Student Health Outreach Team Student Representative. Mariam was also a member of the Physiology Society, Neuroscience Journal Club, Student Research Forum Volunteer Committee, and International Society.

Ann Stowe received a Predoctoral Fellowship from the American Heart Association began funding in July, 2003. That August, Ann was second author on a book chapter entitled *Neural Bases for rehabilitation after stroke* for the book Synaptic Plasticity, which is currently in press. Ann was also a co-author of a paper entitled *Post-Infarct cortical plasticity and behavioral recovery using concurrent cortical stimulation and rehabilitative training: A feasibility study in primates*, in *Neurological Research*, 25:801-10. Ann attended the Society for Neuroscience annual meeting in New Orleans in November of 2003 where she was co-author on one abstract. She was also co-author on two abstracts presented in April and June at NCM and FENS, respectively, and one abstract presented in December of 2003 at an NIH workshop. Ann served as Vice President of the Physiology Society and became President-elect in May for the 2004-2005 school year.

Ryan Thummel was first author on a paper entitled “Differences in Expression Pattern and Function between Zebrafish *hoxc13* Orthologs: Recruitment of Hoxc13b into an Early Embryonic Role,” which was accepted for publication and is currently *in press* for the journal *Developmental Biology*. In addition, Ryan was invited to present a platform talk on this work at Cold Spring Harbor Laboratories in New York at the Evolution of Developmental Diversity Meeting. He received a \$550 Travel Grant from KUMC to attend the meeting at Cold Spring Harbor. Ryan was also first author on a published abstract in *Developmental Biology* 259: 568. entitled “*Hoxc13b* Expression Pattern and Function in Early in Zebrafish Development”. He presented a poster of this work at the 62<sup>nd</sup> Annual Society for Developmental Biology Meeting, held in Boston, Massachusetts, in July, 2003 and at the Midwest Regional Zebrafish Meeting, University of Chicago, Chicago, Illinois, in September, 2003. At the University of Kansas Medical Center Student Research Forum 2004 Ryan gave a talk entitled “Hox Gene Function is Required for Zebrafish Tail Fin Regeneration,” for which he won the “First Place Award Presentation in the Developmental Biology Session.” Finally Ryan defended his Ph.D. dissertation with honors on June 25, 2004 and accepted a post-doctoral fellowship position working with Dr. David R. Hyde on retinal regeneration at The University of Notre Dame.

## COURSES TAUGHT

### Major Service Courses

- 801 - *Medical Physiology*. 4 credits. Summer and Fall 2003. Taught by Drs. Gonzalez, Johnson, LeVine, Pierce, Smith, Tarr, Terranova, Valenzeno, and Wood. Enrollment 170. Dr. Valenzeno, Course Director.
- 802 - *Medical Physiology*. 4 credits. Spring 2004. Taught by Drs. Blanco, Godwin, Imagawa, Heckert, Soares, Tash, Terranova, and Wolfe. Enrollment 177. Dr. Valenzeno, Course Director.
- 840 - *Medical Neuroscience*. 5 credits. Spring 2004. Physiology section taught by Drs. Cheney, Imig and Nudo. Enrollment 173. Dr. Cheney, Course Director. Dr. Imig, Co-course Director.

### Departmental Graduate Courses

- 834 - *Reproductive Physiology*. 3 credits. Fall 2003. Taught by Drs. Heckert, Soares, and Terranova. Enrollment 3. Dr. Wolfe, Course Director.
- 838 - *Advanced Topics in Physiology*. 3 credits. Taught by Dr. Godwin. Enrollment 1. Dr. Godwin, Course Director.
- 844 - *Neurophysiology*. 3 credits. Fall 2003. Organized and taught by Dr. Cheney. Enrollment 4. Dr. Cheney, Course Director.
- 846 - *Advanced Neuroscience*. 5 credits. Summer 2004. Taught by Drs. Bilgen, Cheney, Imig, Nudo and Smith. Enrollment 7. Dr. Smith, Block Coordinator.
- 848 - *Molecular Mechanisms of Neurological Disorders*. Spring 2004. Taught by Dr. Nudo. Enrollment 8. Dr. Nudo, Course Director.
- 894 - *Cell and Developmental Biology*. 4 credits. Spring 2003. Taught by Drs. Blanco, Godwin, Tarr, Tash and Wolfe. Enrollment 8. Dr. Tash, Co-course Director.

## DEPARTMENT SEMINARS

*The Departmental Seminar program was directed by Dr. Thomas Imig. Forty-one speakers made presentations, twenty-three 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. Pamela Mellon from the University of California, San Diego.*

09/08/03	Jeff Lewine, Ph.D. Hoglund Brain Imaging Center and Department of Neurology, KUMC	Imaging, the Brain's Magnetic Personality
09/15/03	Alyson Peel, Ph.D. The Buck Institute for Age Research Novato, California	Neuronal injury in Huntington's and Alzheimer's diseases involves activation of cell stress kinase PKR
09/22/03	Pamela L. Mellon, Ph.D. Department of Neurosciences University of California, San Diego	Molecules, Genes and Rhythms in Mammalian Reproduction
09/24/03	SK Dey, Ph.D., Dorothy Overall Wells, Professor, Department of Pediatrics, Cell, & Developmental Biology, and Pharmacology Vanderbilt University Medical Center Nashville, Tennessee	Molecular Clues to Embryo Implantation
09/29/03	Zhiming Suo, M.D. Laboratory for Alzheimer's Disease and Aging Research Department of Neurology, KUMC	Abeta, Cellular Hyperactivity and Early Alzheimer's Pathogenesis
10/06/03	Jeffrey W. Pollard, Ph.D. Associate Director, Cancer Center Department of Developmental & Molecular Biology Albert Einstein College of Medicine	How does the mother cure a placental infection without aborting the fetus?
10/08/03	Paul Terranova, Ph.D. Molecular & Integrative Physiology and Center for Reproductive Sciences, KUMC	TNF inhibitor of aromatase promoter Activity in granulose cells: fact or fiction
10/13/03	John A. Stanford, Ph.D. Department of Anatomy & Neurobiology University of Kentucky Chandler Medical Center	Nigrostriatal and motor function in preclinical studies of normal aging

10/20/03	Paul T. Martin, Ph.D. Department of Neurosciences School of Medicine University of California, San Diego	New roles for carbohydrates in synapse formation and muscular dystrophy
10/21/03	Ren-He Xu, M.D., Ph.D. WiCell Research Institute University of Wisconsin Medical School	BMP's and early lineage decisions of human embryonic stem cells
10/22/03	Benyi Li, M.D., Ph.D. Department of Urology, KUMC	Androgen Receptor in Prostate Cancer
10/23/03	Gonzalo E. Torres, Ph.D. Department of Cell Biology Duke University Medical Center	Defining new pathways involved in the regulation of the dopamine transporter through protein-protein interactions
10/27/03	William Truog, M.D. Sosland Family Professor of Pediatrics Children's Mercy Hospital Kansas City, Missouri	Inflammatory injury in the rapidly growing lung: effects of oxygen and nitric oxide
11/10/03	James Lee, Ph.D. Departments of Biochemistry & Molecular Biology, and Molecular Neuroscience Mayo Clinic, Scottsdale, Arizona	A causative relationship exists between eosinophils and the development of allergic pulmonary pathologies in the mouse
11/17/03	Brian Hermann, Graduate Student Department of Molecular & Integrative Physiology, KUMC	Transcriptional regulation of the Fsh-receptor gene in Sertoli cells
11/24/03	Ning Lei, Graduate Student Department of Molecular & Integrative Physiology, KUMC	Dmrtl's transcriptional regulation in testis
12/01/03	Pamela Lloyd, Ph.D. Department of Medical Pharmacology & Physiology University of Missouri-Columbia	Angiogenic signal transduction pathways: regulation and organization
12/10/03	Mark Ziolo, Ph.D. Loyola University Medical Center	Nitric oxide modulation of myocardial contractility: the Good, the Bad, and the Ugly

12/15/03	Casey Kindig, Ph.D. Department of Medicine University of California, San Diego	How is O <sub>2</sub> consumption controlled and modulated at the transition to an elevated metabolic demand? Insights from single myocytes
01/05/04	Henry E. Heffner, Ph.D. Department of Psychology University of Toledo	Animal models of tinnitus
01/16/04	Debra Tucci, M.D. Department of Otolaryngology Duke University Medical Center	Effects of conductive hearing loss on central auditory system function
01/26/04	Wohaib Hasan, Ph.D. Department of Molecular & Integrative Physiology, KUMC	Nerve-Target Interactions: Novel functions for Nerve Growth Factor
02/02/04	Nancy E. J. Berman, Ph.D. Department of Anatomy & Cell Biology KUMC	It's a pain to be a girl...or how I became a dental researcher
02/09/04	Kenneth E. McCarson, Ph.D. Pharmacology, Toxicology, & Therapeutics, KUMC	Pain-induced neuronal plasticity: from genes to behavior
02/16/04	Steve Fowler, Ph.D. Pharmacology & Toxicology University of Kansas, Lawrence	Microbehavioral analysis of amphetamine-induced focused stereotypes in rats: Implications for antipsychotic drug development and basal ganglia function
02/23/04	Lane Christenson, Ph.D. Center for Research on Reproduction & Women's Health University of Pennsylvania School of Medicine	Ovulation identification of genes downstream of LH regulated transcription factors
02/23/04	Blanche Capel, Ph.D. Department of Cell Biology Duke University	The Battle of the Sexes: Controlling the Fate of the Mammalian Gonad
03/01/04	T. Chris Gamblin, Ph.D. Molecular Biosciences University of Kansas, Lawrence	Modeling Chemistry Approaches to Biological Problems

03/08/04	Gunda I. Georg, Ph.D. University Distinguished Professor Department of Medicinal Chemistry University of Kansas, Lawrence	Medicinal Chemistry Approaches to Biological Problems
03/15/04	T. Rajendra Kumar, Ph.D. Departments of Pathology and Molecular & Cellular Biology Baylor College of Medicine	Genetic Approaches to Study the Physiology of the Mouse Reproductive Axis
03/22/04	Marie-Hélène Boudrias Department of Molecular & Integrative Physiology, KUMC	Output Properties of Supplementary Motor area in Rhesus Macaques
03/29/04	Kelly E. Lyons, Ph.D. Parkinson's Disease and Movement Disorder Center Department of Neurology, KUMC	Deep Brain Stimulation for Parkinson's Disease
04/05/04	Mehmet Bilgen, Ph.D. Molecular & Integrative Physiology KUMC	Applications of high resolution MRI in biomedical research at KUMC
04/12/04	Beth Levant, Ph.D. Pharmacology, Toxicology, & Therapeutics, KUMC	PUFA's and mental health
04/19/04	April Ronca, Ph.D. Life Sciences Division NASA Ames Research Center	Gravid without gravity: Spaceflight effects on mammalian pregnancy and development
04/26/04	Austin Cooney, Ph.D. Molecular & Cellular Biology Baylor College of Medicine	Reciprocal regulation of Oct4 expression and pluripotency by the orphan receptors LRH-1 and GCNF
05/03/04	Peter L. Strick, Ph.D. Departments of Neurobiology & Psychiatry University of Pittsburgh	'Muscle' and 'Movement' Representation in the Motor Cortex: New Anatomical and Physiological Perspectives
05/10/04	Anatol Feldman, Ph.D. Department of Physiology University of Montreal	Threshold Mechanisms in Movement Production and Control

05/17/04	Kent Thornburg, Ph.D. The Heart Research Center Oregon Health and Science University	Fetal Heart Growth: Implications for Adult Survival
06/02/04	Audrey Blacklock, Graduate Student Department of Molecular & Integrative Physiology, KUMC	Estrogen as a modulator of peripheral sensory innervation
06/25/04	Ryan Thummel, Graduate Student Department of Molecular & Integrative Physiology, KUMC	Genetic Analysis of Hoxc13 Orthologs in Mice and Zebrafish

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- Wagoner, K., Sanchez, G., Enders, G. and Blanco, G. "Functional expression of the  $\alpha$ 4 isoform of the Na,K-ATPase in male germ cells." 44<sup>th</sup> Annual Midwest Regional Developmental Biology Meeting, Kansas City, Missouri, June 5-8, 2004.

## RESEARCH SUPPORT

*Grant awards held during FY '04 by department faculty members totaled \$6,985,790 (total costs based on KUMC FY2004 Research Institute Report).*

**M. Bilgen**: Kansas City Area Life Sciences Institute Research – “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.” 2004. Total award \$35,000.

American Heart Association – “Can a drug replace exercise to improve the diabetic heart?” January 1, 2004 – December 31, 2007. Total award \$260,000; \$65,000/year.

**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 – “Role of the testes-specific alpha isoform of the Na,K-ATPase in germ cell function.” September 1, 2001 through August 31, 2004. Direct costs: \$50,000/year.

**P. D. Cheney**: NIH/NINDS – “Functional studies of brain infection with neurovirulent SIV in rhesus macaques.” March 1, 1999 through February 28, 2004. Direct costs: \$737,538; total costs: \$1,088,949.

NIH-NINDS – “Corticospinal control of forelimb movement.” September 15, 1999 - Aug. 31, 2004. Direct costs: \$737,345; total costs: \$1,100,480.

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

NIH-NICHD – “Program for a research center in mental retardation.” P30 Center Grant. Theme Leader for “Neurobiology of MR/DD”, Dr. Steven Warren (P.I.). August 1, 2001 - July 31, 2006. Direct costs: \$4,683,985; total costs: \$6,810,352.

NIH-NICHD – “Training in the neural basis of motor dysfunction and rehabilitation.” Postdoctoral training grant. Member of the training faculty. Dr. Randolph Nudo (P.I.). July 1, 2000 – June 30, 2005. Direct costs: \$634,804; total costs: \$685,588.

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

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

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

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

Hall Family Foundation – “Isolation of a Novel Gene from a Mouse Model of Ectodermal Dysplasia.” Co-principal Investigator. Co-principal Investigator, R. A. White. September 1, 2002 to August 31, 2003. Direct costs \$50,000; indirect costs \$1,000.

**N. C. Gonzalez:** NIH HL – “Oxygen Transport During Exercise in Prolonged Hypoxia.” Principal Investigator. April 1, 1988 through May 31, 2005. Direct costs \$150,000 indirect costs: \$75,000.

Hall Family Foundation – “Hypoxia and Vascular Programming.” PI: Michael Soares September 1, 2003 through August 31, 2005. Subproject 3: “Hypoxia and Microvascular Endothelial Cell Function.” co PIs: N. C. Gonzalez and John Wood. \$150,000 total direct costs.

**W. Hasan:** KU Medical Center Training Program in Biomedical Research - “The Role of Nerve Growth Factor in Autonomic Cardiac Dysfunction.” July 1, 2002 through June 30, 2003. Total award \$16,000.

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

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

NASA – Joseph Tash, Co-I. “Long-term simulated microgravity inhibits spermatogenesis in adult male rats.” July 1, 2001 through June 30, 2003. Direct costs \$144,904; indirect costs \$65,950.

KU Medical Center Research Institute - “Transcriptional regulation of the FSH receptor.” May 25, 2004 through May 24, 2005. Direct costs \$25,000.

NASA - Joseph Tash P.I. “Negative Impacts of Altered Gravity on Male Mammalian Reproductive Capacity.” March 1, 2004 through February 28, 2007. Direct costs \$223,586.

**S. M. LeVine:** Hunter's Hope Foundation - "Modifier genes in Krabbe's Disease." January 1, 2003 through December 31, 2003. \$92,000 direct costs; \$8,000 indirect costs.

National Multiple Sclerosis Society – "Protective mechanisms in CNS Demyelinating Diseases" April 1, 2001 through March 31, 2004. \$95,500 direct costs; \$9,500 indirect costs.

K-BRIN & KUMC Research Institute – "Human ApoE ε4 in CNS Demyelinating Diseases." February 2, 2003 through December 31, 2003. \$17,500 direct costs.

Midwest Regional Center of Excellence in Biodefense - "Development of therapeutic catalytic antibodies for anthrax" Washington University School of Medicine. \$6,558 direct costs (subcontract to S. LeVine); \$3,082 indirect costs. Putnam W – PI; LeVine SM (subcontract)

**J. Marcario:** NIDA – "Neuro-AIDS in Opiate Dependent Rhesus Macaques." Co-Investigator. Principal Investigator: Paul Cheney. September 1, 2003 – August 31, 2004. Direct costs: \$1,846,342; total costs: \$2,727,047.

**R. J. Nudo:** NIH/NICHHD – "Training in Neural Bases of Motor Dysfunction and Rehabilitation." Program Director. Direct costs \$200,779; Indirect costs \$14,815; Total costs \$215,594.

Northstar Neuroscience, Inc. – "Subthreshold stimulation of motor cortex to enhance stroke recovery." January 1, 2004. E.J. Plautz, Co-Investigator. Total costs \$100,000 (one-time endowment).

American Heart Association Bugher Award – "Neural bases for effects of amphetamine on motor recovery after stroke." January 1, 2001 through December 31, 2004. Randolph J. Nudo, PI. \$90,000 direct costs; \$10,000 indirect costs.

NIH/NICHHD – "Reorganization of Motor Cortex Following Brain Injury." May 1, 2002 through April 30, 2007. Direct costs \$340,860; indirect costs \$166,134; total costs \$506,994.

Endowment award from Northstar Neuroscience – "Plasticity in Motor Cortex After Stroke." \$50,000 direct costs.

**E. Plautz:** Northstar Neuroscience, Inc. – "Subthreshold stimulation of motor cortex to enhance stroke recovery." January 1, 2004. EJ Plautz, Co-Investigator; RJ Nudo, PI. Total costs \$100,000 (one-time endowment).

Vertis Neuroscience, Inc. – "Safety and efficacy of electrically-enhanced neuroplasticity (cortical stimulation) for motor recovery after stroke." January 1, 2003 through September 30, 2003. EJ Plautz, Co-Investigator; RJ Nudo, PI. Direct costs \$110,000; indirect costs \$55,000.

**P. G. Smith:** NIH – “Sympathetic Nerve Remodeling in the Adult Uterus.” December 1, 1999 through November 30, 2005. No cost extension.

NIH – “Neurotrophins, Hormones and Postpartum Incontinence.” P.G. Smith, PI April 1, 2000 through March 31, 2005. \$154,000 annual direct costs; \$72,380 annual indirect costs.

KUMC Research Institute Lied Endowed Basic Science Research Grant – “Effect of Topical Morphine Analgesia on Cutaneous Wound Healing.” P.G. Smith, Co-Investigator, Ken McCarron, PI. April 1, 2004 through August 31, 2005. Total Direct costs \$35,000.

NIH/NICHHD – Kansas Mental Retardation Research Center - P30 Center grant. July 1, 2001 through June 30, 2006. P.G. Smith, Co-Director, Steven Warren PI. \$434,426 annual direct costs; \$204,180 annual indirect costs (KUMC site only).

NIH - Kansas Biomedical Research Infrastructure Network. P.G. Smith, Core Director KUMC Site, J. Hunt, PI. April 1, 2002 through August 31, 2004. \$110,000 annual direct costs; \$51,700 annual indirect costs.

**M. J. Soares:** NIH - “Biology at the Maternal-Fetal Interface” May 1, 2002 through April 30, 2007. \$583,391 direct costs/year.

NIH - “Trophoblast Differentiation.” May 1, 2002 through April 30, 2007. \$202,500 direct costs/year.

NIH - “Trophoblast Differentiation-Supplement for Dr. Juan Jose Bustamante.” May 1, 2002 through April 30, 2007. \$46,000 direct costs/year.

Hall Family Foundation - “Hypoxia and Vascular Programming” September 15, 2003 through September 14, 2005. \$150,000 total direct costs.

NIH - “Fetal Regulation of the Placenta” April 1, 2002 through March 31, 2007. Principal Investigator, Namita Sahgal, Mentor, Michael J. Soares. \$120,000 direct costs/year.

NIH - “Trophoblast Invasion.” National Research Service Award Predoctoral Fellowship. June 2003 through May 2007. Jennifer Ho-Chen, Principal Investigator, Michael J. Soares, Mentor. \$28,000 direct costs/year.

**D.-S. Son:** NIH – “Ovarian Tumor Necrosis Factor.” January 1, 2004 through December 31, 2004. \$164,890 direct costs; \$82,445 indirect costs. (Paul Terranova, Principal Investigator).

**L. A. Stanford:** NIH - “GDNF and motor related striatal activity in aged rats.” August 1, 2003 through May 15, 2004. Direct costs \$50,000; Indirect costs \$23,513; Total project costs \$73,513.

**J. S. Tash:** NIH - Center for Reproductive Sciences. April 1, 2001 through March 31, 2006.  
P.I.: Paul Terranova. Annual direct costs: \$750,000; annual indirect costs \$375,000. 15% effort.

NIH – “Synthesis and Testing of Male Contraceptive Agents.” March 1, 2001 through February 28, 2004. P.I.: Gunda Georg. Amount of total subcontract to Joseph S. Tash: \$627,166; annual indirect costs \$313,583. 35% effort.

CONRAD – “Synthesis of novel flavonoid agent as a potential male contraceptive.” January 1, 2004 through December 31, 2004. Direct costs \$35,000.

NASA – “Long-term stimulated microgravity inhibits spermatogenesis in adult male rats.” January 1, 2001 through December 31, 2004. Direct costs \$144,904; indirect costs \$65,950.

**P.F. Terranova:** NIH/NICHD - Center for Reproductive Sciences – Principal Investigator.  
April 1, 2003 through March 31, 2004. Direct costs \$827,317; indirect costs \$294,078.

NIH/NCI – “Ovarian Tumor Necrosis Factor.” January 1, 2003 through December 31, 2004.  
Direct costs \$164,890; indirect costs \$82,445.

NIH/NCI – “Targeting Endogenous Antibodies to Ovarian Cancer.” April 1, 2003 through March 31, 2004. Direct costs \$50,000; indirect costs \$25,000.

Andrew P. Mellon Foundation - Center for Reproductive Sciences. April 1, 2003 through March 31, 2004. Direct costs \$50,000.

NIH/NCRR - Kansas Biomedical Research Infrastructure Network. July 1, 2003 through July 21, 2004. Direct costs \$3,312,567.

NIH/NCRR - Biostatistics/Informatics Shared Resource. January 1, 2004 through December 31, 2004. Direct costs \$197,638.

NIH/NIEHS - Minority Predoctoral Fellowship Program for Shalmica Williams. October 1, 2003 through September 30, 2004. Direct costs \$21,673.

**D. P. Valenzano:** FIPSE of the U.S. Department of Education - The Digital Photobiology Compendium. October 1, 2000 through December 31, 2004. No cost extension.

American Society for Photobiology Award: “The Digital Photobiology Compendium: Transition to a Self-Sustaining Model.” August 1, 2003 through July 31, 2005. Direct costs \$6,000.

**J. L. Voogt**: Mellon Foundation – “Brain Regulation of the preovulatory LH Surge.” Principal Investigator. March 1, 2003 through December 31, 2004. Total costs awarded for this year was \$70,000.

Bridging grant: Research Institute (KUMC) “Prolactin regulation of GnRH.” October 1, 2002 through April 30, 2004. Total award was \$25,000.

**M. W. Wolfe**: NIH/NICHD – “Cytokine regulation of trophoblast function.” Direct costs \$50,000; indirect costs \$25,000. June 6, 2001 through May 31, 2003.

Kansas University Medical Center Research Institute, Inc. – “Nab regulation of Egr function.” Principal Investigator. Total costs \$35,000. February 1, 2002 through January 31, 2003.

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

**J. G. Wood**: NIH – “Vascular endothelial function during hypoxia.” February 1, 2000 through January 31, 2004. Principal Investigator. Annual direct costs \$170,000; indirect costs, \$85,000.

NIH HL – “Oxygen Transport During Exercise in Prolonged Hypoxia.” Principal Investigator, Norberto Gonzalez. July 1, 2001 through June 30, 2005. Direct costs \$175,000; indirect costs, \$75,000.

**H. Zhang**: NIH/NINDS – “Functional studies of brain infection with neurovirulent SIV in rhesus macaques.” Principal Investigator, Paul Cheney. March 1, 2002 through February 28, 2003. Direct costs: \$179,879; indirect costs: \$85,940.

## ACTIVITIES OF STAFF

**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

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:

Mery Wijata, Graduate Student, Department of Computer Engineering, KU-Lawrence

Mariam Riazi, Graduate Student, KUMC, Independent Summer study

Amanda Roeder, Undergraduate Student, Kansas State University, Wichita

**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 of most animal cells that uses the energy from the hydrolysis of ATP to transport cytoplasmic Na<sup>+</sup> in exchange for extracellular K<sup>+</sup>. This ion transporter comprises a group of isozymes that result from the association of different molecular forms of the catalytic  $\alpha$  ( $\alpha 1$ ,  $\alpha 2$ ,  $\alpha 3$  and  $\alpha 4$ ) and glycosylated  $\beta$  ( $\beta 1$ ,  $\beta 2$  and  $\beta 3$ ) subunits that constitute the enzyme. The various Na,K-ATPase isozymes are characterized by unique enzymatic properties and a cell dependent and developmentally regulated pattern of expression. We are using a variety of molecular and cellular biology methods to study the function and regulation of the different Na,K-ATPases both in the native tissues or after expression in cells in culture. These studies are important to understand the physiological role of the Na,K-ATPase isozymes, as well as the mechanisms that control water and ion balance in different tissues during normal and pathological conditions, such as polycystic kidney disease.*

Meetings Attended:

- November 12<sup>th</sup>-17<sup>th</sup>, 2003 – Attended the 36<sup>th</sup> Annual Meeting of the American Society of Nephrology, San Diego, California.
- April 17<sup>th</sup>-21<sup>st</sup>, 2004 – Attended the Annual Meeting of the American Physiological Society, Washington D.C.
- June 5<sup>th</sup>-8<sup>th</sup>, 2004 – Attended the 44<sup>th</sup> Annual Midwest Regional Developmental Biology Meeting, Kansas City, Missouri.

Committees:

Departmental

- Member, Physiology Seminar Series committee.
- Member, Search committee for cardiovascular position.
- Member, thesis committee for Alfred Casillan.
- Member, thesis committee for Jennifer Ho-Chen

University

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

Editorial and Grant Reviews:

- Ad hoc reviewer, The National Science Foundation.
- Ad hoc reviewer, The National Agency for Scientific Promotion and Technology, Argentina, South America

Seminars presented:

- December, 2003 - Presented a seminar entitled “The Na,K-ATPase and its isozymes, what we have learned from expression in insect cells” to the Department of Pharmacology, Medical College of Ohio, Toledo, Ohio.
- January, 2004 - Presented a seminar entitled “Structure function studies of the Na,K-ATPase using the baculovirus expression system” to the Department of Anatomy, University of Kansas, Lawrence, Kansas.
- April, 2004 - Presented a seminar entitled “The alpha4 isoform of the Na,K-ATPase” to the Kidney Institute, University of Kansas, Lawrence, Kansas.

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

Teaching Activities:

PHSL 802 - Medical Physiology  
18 hours lecture – Renal Physiology  
IGPBS Module 4  
4 lectures  
Renal Physiology  
2 Review Sessions  
8 Conference Sessions

Trainees:

Anh-Nguyet Nguyen – Graduate Student  
Kara Wagoner - Graduate Student  
Meg Fasulo - Summer Student  
Christal Carpenter – Summer Student  
Miguel Salas – Summer Student

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

*Summary of Research: Modern 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 discharge 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. The mechanisms by which SIV/HIV enters the brain and injures neurons is investigated using neurobehavioral, neurophysiological, and neuroanatomical methods.*

Meetings attended:

- October 13-15, 2003 – Attended NIH Study Section, IFCN #5, Washington, D.C.
- November 7-12, 2003 - Attended the 32<sup>nd</sup> Annual Meeting of the Society for Neuroscience in New Orleans, Louisiana. Was co-author on a poster presentation.
- Feb 16-18, 2003 – Attended NIH Study Section, IFCN #5, Washington, D.C.
- March 2004 - Attended the “Society for Neuroimmune Pharmacology” meeting, Santa Fe, New Mexico.
- June 7-9, 2003 – Attended NIH Study Section, IFCN #5, Washington, D.C.

Committees:

Departmental

- Member, Numa Dumcause Comprehensive exam committee
- Member, Ann Stowe comprehensive exam committee
- Member, Don Warn Dissertation Committee
- Member, Michael Taylor Dissertation Committee

University

- Member, School of Medicine, Dean’s Leadership Committee
- Member, School of Medicine, Space Committee
- Member, Research Building Planning Committee
- Member, Search Committee for Director of the Center on Aging
- Co-Director, 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, Chancellors Life Sciences Research Council
- Member, KU Life Sciences Executive Council
- Co-chair, Bi-campus Neuroscience Center Planning Committee

National

- Member, Society for Neuroscience Committee for the Development of Women's Careers in Neuroscience
- Member, NIH Neuroscience Study Section (Sensory Motor Integration)

**Dr. Cheney (continued)**

Editorial and Grant Reviews:

Associate Editor, Neuroscience Letters  
Ad hoc reviewer, Journal of Neurophysiology  
Ad hoc reviewer, Journal of Neuroscience  
Member, NIH Integrative, Cognitive and Functional Neuroscience Study Section  
#5

Teaching activities:

PHSL 846 - Advanced Neuroscience  
10 hours lecture  
IGPBS Module 5  
6 lectures  
PHSL 844 – Neurophysiology (organized and taught entire course)  
33 lecture hours  
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

**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.*

Meetings Attended:

- July 30 – August 3, 2003 - attended the Society for Developmental Biology 62nd Annual Meeting at Marriott Copley Place, Boston, Massachusetts.
- November 1, 2003 - attended the 1<sup>st</sup> Kansas IDEA Biomedical Focus Group Symposium at the University of Kansas, Lawrence, Kansas.
- November 15, 2003 – attended the MO-KAN Conference at the University of Kansas Medical Center.
- March 31- April 4, 2004 - attended the Evolution of Developmental Diversity meeting at Cold Spring Harbor Laboratory, Cold Spring Harbor, New York.
- June 5-8, 2004 - attended (and was on the organizing committee for) the 44<sup>th</sup> Annual Midwest Developmental Biology Meeting and The Singer Symposium at the Stowers Institute for Medical Research, Kansas City, Missouri.

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
- Member, Graduate Committee for Susanna Harju, Biochemistry Ph.D. candidate
- Member, Graduate Committee for Daniel Kirilly, Anatomy Ph.D. candidate
- Member, Graduate Committee for Shuyi Chen, Anatomy Ph.D. candidate

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

**Dr. Godwin** (*continued*)

Seminars Presented:

November 15, 2003 – Presented a seminar entitled "An unexpected role of a Hox gene in early cleavage stage zebrafish embryos" at the MO-KAN Conference at the University of Kansas Medical Center.

December 4, 2003 – Presented a seminar entitled "One fish, two fish; green fish, red fish: new experiments with zebrafish" to the Department of Anatomy and Cell Biology at the University of Kansas Medical Center.

March 16, 2004 – Presented a seminar entitled "One fish, two fish, red fish, green fish: Adventures in *Hox* gene function and reverse genetics in zebrafish" to the Department of Pharmacology, Toxicology, and Therapeutics 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 838 - Advanced Topics

20 hours small group

PHSL 894 –IGPBS Module 4

10 hours lecture

1 hour journal club

Trainees:

Ryan Thummel - Graduate Student

Peizhen Song - Graduate Student

William Chatfield-Taylor - Summer Student (High School)

Nelson Stauffer - Summer Student (High School)

**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 has included the study of the effects of hypoxia, induced by a reduction on the levels of inspired oxygen, on each of the major steps of the oxygen transport system in resting and exercising animals. A major current research effort 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:

April 17-21, 2004 – Attended Experimental Biology 2004 held in Washington DC.  
Co-authored three abstracts.

Committees:

Departmental

Member, Promotions and Tenure Committee

Chair, Vascular Biologist Search Committee, Department of Physiology

KUMC

Chair, Medical Microbiology systematic course review,

National

NHLBI Working Group on Long Term Oxygen Treatment in COPD May 10 and 11, 2004, Bethesda, Maryland.

Editorial and Grant Reviews:

Ad hoc reviewer, Journal of Applied Physiology

Ad hoc reviewer, Respiratory Physiology and Neurobiology

Ad hoc reviewer, Experimental Biology and Medicine

Ad hoc member, Respiratory Integrative Biology and Translational Physiology, National Institutes of Health, 2004

Teaching activities:

PHSL 801 - Medical Physiology

11 lectures, Respiratory Physiology

1 Review Session - Respiratory Physiology

10 Conference Sessions

4 Student Laboratory Sessions

IGPBS - Respiratory Physiology

4 lectures

Trainees:

Teresa Orth - MD/PhD. Student

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

*Summary of Research: My research is primarily directed at understanding how peripheral nerves interact with their targets and other nerve populations. My studies indicate that the Nerve Growth Factor (NGF) protein is synthesized by a variety of cell types in development and maturity. After an ischemic episode in the rat heart there is increased NGF synthesis by a variety of cell types in the peri-infarct area. Sympathetic nerves are also attracted to the peri-infarct region and are closely spatially associated with the NGF-expressing cells. In culture, sympathetic nerve outgrowth towards peri-infarct tissue can be reversed by anti-NGF antibodies. These studies indicate that NGF may be responsible for sympathetic hyperinnervation and ultimately contribute to fatal cardiac arrhythmias. Understanding nerve-target interactions after myocardial ischemia is a prime focus of my studies. With increasing time after infarct, cardiac sympathetic control is progressively altered leading to progressive cardiac damage and death. The increased sympathetic drive may occur because parasympathetic nerves, that normally inhibit sympathetic nerves, no longer are in close association with the sympathetic nerves. I have previously shown that parasympathetic nerves synthesize NGF and this may underlie sympathetic-parasympathetic axo-axonal synapses. Whether alterations in availability of NGF from parasympathetic neurons is responsible for uncoupling of these nerves is also an important ongoing research question.*

Meetings Attended:

November 8-12, 2003 - Society for Neuroscience, New Orleans, Louisiana.

Seminars Presented:

May 2, 2003 – Presented a seminar entitled “Estrogen regulates Nerve Growth Factor expression within sympathetic neurons” BRTP Symposium, University of Kansas Medical Center.

**Leslie 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. Through the characterization of these genes, we hope to identify key regulatory proteins important for gonadal development and Sertoli cell-specification. Recently, we have developed mouse models that express SF-1 only from a YAC transgene. Using this technology, we will explore the physiological relevance of SF-1's functional domains. Transgenic mice are used to help confirm regulatory regions in vivo and to generate mouse models for Sertoli cell function.*

Meetings Attended:

- April 17-20, 2004 – Attended the 29th Annual Meeting of the American Society of Andrology, Baltimore, Maryland
- April 17, 2004 - NIH SCCPRR Male Focus Group, Baltimore Maryland

Committees:

Departmental

- Member, Ph.D. Thesis committee for Shalmica Williams
- 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 Huimin Jiang, Biochemistry, 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, Baltimore Maryland, April 17, 2004
- Member, planning committee for 2004 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 for Endocrinology  
Ad hoc reviewer for Biology of Reproduction  
Ad hoc reviewer for Developmental Biology  
Member NIH/NICHD SCCPRR Review Panel, November 17-18, 2003  
Member F06 Fellowship Study Section, July 12, 2004

Seminars Presented:

January 14, 2004 – Presented a seminar entitled “Incomplete rescue of SF-1-null mice reveals gender differences in transcriptional control of the *Ftz-f1* locus” Department of Cell Biology and Physiology, University of Pittsburg, Pittsburg, Pennsylvania.  
February 2, 2004 – Presented a seminar entitled “Regulatory regions of the *Ftz-F1* locus revealed by YAC transgenesis” Northwestern University, Evanston, Illinois.

Teaching Activities:

Module 3 of IGPBS  
5 lectures  
1 paper discussion  
PHSL 834-Reproductive Physiology  
2 one hour lectures  
1 paper discussion  
PHSL 802- Medical Physiology  
3 one hour lecture  
2 two hour conferences

Trainees:

Ning Lei - Graduate Student  
Brian Hermann - Graduate student  
Rengasamy R. ManiMaran, Ph.D. – Post-doctoral Fellow  
Tatiana Karpova - Ph.D, Post-doctoral Fellow  
Pang Thao - High School Student

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

*Summary of Research: Tinnitus, the perception of phantom noise, presumably reflects aberrant spontaneous activity (SA, neuronal discharge in the absence of sound stimulation) in the central auditory system, although relatively little is known about normal and aberrant patterns of SA. Current research in this lab has two objectives, 1) to characterize the effect of tinnitus-producing unilateral noise damage on SA in the rat's auditory system, and 2) to assess the contribution of ascending projections from the dorsal cochlear nucleus and descending projections from the cerebral cortex to the control of SA in the inferior colliculus. 2) This is done using both the [14C]-2-deoxyglucose (2DG) method to provide information on synaptic activity, and electrophysiological recordings to provide information on neuronal discharge rate. A more detailed understanding of both normal and aberrant patterns of SA and mechanisms that control SA are important in understanding the pathophysiology of tinnitus and may give clues regarding new approaches to control tinnitus in patients.*

Meetings Attended:

November 8-12, 2003 – Attended the Society for Neuroscience, New Orleans, Louisiana.  
February 21-24, 2004 – Attended the Association for Research in Otolaryngology,  
Daytona Beach, Florida.

Committees:

Departmental

Chair, Graduate Student Affairs  
Chair, Promotion and Tenure Committee  
Member, Teaching Committee

KUMC

Member, Academic Committee  
Member, Admissions Subcommittee  
Member, Year 1-2 Committee  
Member, Graduate Council Committee  
Member, IGPBS Advisory Board  
Member, Admissions Committee  
Member, Neuroscience Graduate Program Advisory Committee

Editorial and Grant Reviews:

Ad hoc reviewer, Editorial Board, Journal of Neurophysiology  
Ad hoc reviewer, Cerebral Cortex  
Ad hoc reviewer, Nature Neuroscience  
Ad hoc reviewer, Journal of Neuroscience

Teaching activities:

PHSL/ANAT 840 - Medical Neuroscience (Co-director)  
6.5 hours lecture  
17.5 hours lab instruction  
PHSL 846 - Advanced Neuroscience  
8 hours lecture

**Steven 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:

May 20, 2004 – Attended the Hunter’s Hope 6th Annual Scientific and Medical Symposium for Krabbe’s Disease and Other Leukodystrophies, “Modifier Genes in Krabbe’s Disease” in Buffalo, New York.

Committees:

Departmental

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

KUMC

Member, Faculty Council  
Member, Institutional Animal Care and Use Committee  
Member, Statistics Advisory Committee for the MRRC  
Member, Anatomy Chair Review Committee

Editorial and Grant Reviews:

Ad hoc reviewer, *Annals of Neurology*  
Ad hoc reviewer, *Journal of Neurochemistry*  
Ad hoc reviewer, *Journal of Neuroscience Research*  
Ad hoc Grant Reviewer, K-BRIN

Seminars Presented:

October 20, 2003 – Presented a seminar entitled “Stress Response Proteins in an Animal Model of Multiple Sclerosis” for the COBRE Workshop on Stress Proteins and Chaperones, in Medicine and Biology at the University of Kansas, Lawrence.  
December 5, 2003 – Presented a seminar entitled “Demyelinating Diseases: Pathogenic Mechanisms and Therapeutic Interventions” for the Math Department at the University of Kansas, Lawrence.

Academic Honors:

Co-Guest Editor - *Annals of the New York Academy of Sciences* “Redox-active Metals in Neurological Disorders.”  
Editorial Member of the International Board for the journal *Cellular and Molecular Biology*

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

Teaching Activities:

PHSL 800 - Medical Physiology

3 hours lecture

21 hours conference

Trainees:

Sangita Biswas – Post-doctoral Fellow

Anuradha Chakrabarty – Post-doctoral Fellow

Sara Oberhelman – Summer Student

John Paul Armilio – 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:

March 24-28, 2004 – Attended the Society for NeuroImmune Pharmacology, Santa Fe, New Mexico

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.

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 electrophysiological, neuroanatomical and behavioral techniques. Currently I am studying the capacity for functional plasticity in primary motor cortex of adult primates. Recent experiments have demonstrated that the functional organization of cerebral cortex is alterable throughout life. Plastic changes in cortical "maps" may reflect basic adaptive processes underlying functional recovery from brain injury, learning and memory. By tracking changes that occur in the motor cortex as a result of stroke, we hope to provide a simple model of neurophysiological processes operating in recovery of motor function. We are also investigating the use of physio- and pharmacotherapy and the neural bases for the effects of these interventions post-stroke. Thus, this research program has great significance for the development of future rehabilitation approaches that are based on the underlying principles of brain plasticity. Techniques used in our laboratory include intracortical microstimulation mapping, multi-unit and single-unit recordings, behavioral training, ischemic lesion techniques, neuroanatomical tract tracing, Golgi impregnation and analysis of dendritic arborization, immunocytochemistry, electron microscopic analysis of synapse numbers, microarray analysis of gene expression. These studies have led to the development of a translational research program that is now moving interventions for stroke recovery from the bench to the clinic. An industry-sponsored clinical trial is now ongoing.*

Meetings Attended:

July 7-9, 2003 – Attended the Symposium entitled “Brain plasticity and learning based therapy” in Turin, Italy.

July 23-29, 2003 – Attended the 26<sup>th</sup> Annual Meeting of the Japan Neuroscience Society in Nagoya, Japan.

September 10-14, 2003 – Attended the Annual meeting of the American Academy of Cerebral Palsy and Developmental Medicine.

October 17-19, 2003 – Attended the Conference entitled, “Neuroscience of Recovery of Function and Rehabilitation”, Brain Research Centre at the University of British Columbia in Vancouver, Canada.

November 9-13, 2003 – Attended the Society for Neuroscience Annual Meetings in New Orleans, Louisiana.

December 10-13, 2003 – Attended the Symposium entitled, “Functional plasticity and cortical reorganization in the Visual and Motor Systems in Humans at the University of Bologna in Bologna, Italy.

February 5-6, 2004 – Attended the International Stroke Conference in San Diego, California.

February 7-8, 2004 – Attended the Neurological Institute Retreat in Montreal, Canada.

February 24-27, 2004 – Attended the Second Edition of a conference entitled “Restauración Neurológica 2004” International Center for Neurological Restoration (CIREN) in Havana, Cuba.

April 2-4, 2004 – Attended the Princeton Conference on Cerebrovascular Disease in Baltimore, Maryland.

**Dr. Nudo** (continued)

May 6-8, 2004 – Attended the Annual meeting of the Neuro-Developmental Treatment Association

June 11, 2004 – Attended the Nineteenth Annual Justus F. Lehmann Symposium at the University of Washington in Seattle, Washington.

Committees

Departmental

Member, Seminar Committee

Member, Search Committee for Cardiovascular Physiologist

Member, P&T Committee

KUMC

Member, Medical School Space Committee

Member, Biomedical Research Building Advisory Committee

Chair, LAR Advisory Committee

Chair, Search Committee, Assoc. Dir. Res., Center on Aging

Member, Search Committee, KU-Lawrence Gerontology Center Director

National

Member, Canadian Stroke Network

Member, American Congress of Rehabilitation Medicine Research Advisory Council

Member, Maryland Pepper Center External Advisory Committee

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, Proceedings of the National Academy of Science

Ad-hoc reviewer, Stroke

Ad-hoc reviewer, Behavioural Brain Research

Ad-hoc reviewer, Brain

Ad-hoc reviewer, Journal of Neurophysiology

Ad-hoc reviewer, Journal of Comparative Neurology

Seminars Presented

July 9, 2003 - Invited speaker at the Brain plasticity and learning based therapy meeting.

Presented a seminar entitled “*Learning-dependent plasticity in motor cortex:*

*What animal models teach us about remodeling the injured brain.*” Turin, Italy.

July 24, 2003 – Invited speaker at the 26<sup>th</sup> Annual Meeting of the Japan Neuroscience Society, for a Symposium entitled “Premotor Cortex and Rehabilitation.”

Presented a seminar entitled “*Functional and structural plasticity in premotor cortex after cortical ischemia.*” Nagoya, Japan.

**Dr. Nudo** (continued)

Seminars Presented (continued):

July 26, 2003 – Invited speaker for a public lecture at the International Conference Center. Presented a seminar entitled “*Repairing the damaged brain in the 21<sup>st</sup> century.*” Kyoto, Japan.

July 27, 2003 - Presented a seminar entitled “*Neuroplasticity as a basis for recovery after stroke*” at Kyoto University, Kyoto, Japan.

September 13, 2003 – Invited speaker at the Annual Meeting of the American Academy of Cerebral Palsy and Developmental Medicine, for a Symposium entitled “Brain reorganization in children with motor disorders.” Presented a seminar entitled “*Neuroplasticity as a basis for recovery after brain injury, Brain plasticity and recovery: toward a new science of neurorehabilitation.*”

October 18, 2003 - Keynote Speaker for a Conference entitled, “*Neuroscience of Recovery of Function and Rehabilitation*” at the Brain Research Centre, University of British Columbia, Vancouver, Canada.

December 7, 2003 – Keynote Speaker for the American Stroke Association Annual Holiday Ball. Presented a seminar entitled “*Brain repair in the 21<sup>st</sup> century.*” Kansas City, Missouri.

December 12, 2003 – Invited Speaker at a Symposium entitled The Functional plasticity and cortical reorganization in the Visula and Motor Systems in Humans. Presented a seminar entitled “*Application of neuroplasticity principles to poststroke motor recovery.*” University of Bologna, Bologna, Italy.

January 30, 2004 – Invited Speaker at the Division of Kinesiology. Presented a seminar entitled “*Neuroplasticity as a basis for recovery after stroke.*” University of Michigan, Ann Arbor, Michigan.

January 30, 2004 – Invited Speaker at the Department of Physical Medicine and Rehabilitation. Presented a seminar entitled “*Neuroplasticity as a basis for recovery after stroke*” at the University of Michigan, Ann Arbor, Michigan.

February 7, 2004 – Presented a seminar entitled “*Neuroplasticity as a basis for recovery after stroke*” as an Invited Speaker at the Montreal Neurological Institute Retreat, Montreal, Canada.

February 25, 2004 – Invited Speaker at the Second Edition of a conference entitled “*Restauración Neurológica 2004*”. Presented a seminar entitled “*Rewiring of motor cortex after stroke*” at the International Center for Neurological Restoration (CIREN), Havana, Cuba.

May 7, 2004 – Invited Speaker at the Annual Meeting of the Neuro-Developmental Treatment Association. Presented a seminar entitled “*Neuroplasticity as a basis for recovery after stroke.*”

**Dr. Nudo** (continued)

Seminars Presented (continued):

Keynote Speaker at the 19<sup>th</sup> Annual Justus F. Lehmann Symposium. Presented a seminar entitled “*Neuroplasticity as a Basis for Stroke Rehabilitation and Preclinical Models of Cortical Stimulation for Stroke Recovery.*” University of Washington, Seattle, Washington.

June 11, 2004 – Presented a seminar entitled “Neural bases for cortical stimulation in stroke recovery” as an Invited Speaker at the Northstar Neuroscience, Inc., Seattle, Washington.

June 11, 2004 – Presented a seminar entitled “Preclinical models of cortical stimulation for stroke recovery” as an Invited Speaker at the Department of Neurosurgery, University of Washington, Seattle, Washington.

Academic Honors:

2004 Invited Speaker, Burke Medical Research Institute, White Plains, New York.

2004 *Cortical Stimulation for recovery after stroke*, Invited Speaker, Mini-Course, Academy of Physical Medicine and Rehabilitation Annual Meeting, Phoenix, Arizona.

2004 Invited Speaker, Glaxo Smith-Kline meeting, North Mymms, England.

2004 *Repairing the brain after stroke*, Invited Speaker, Oregon Health Sciences University, Portland, Oregon.

2005 *Recovery after Stroke*, Invited Speaker, Hamburg, Germany.

2006 Invited Speaker, Conference entitled *Habits and Learning across the Lifespan: Theory, Measures, and Research Methods*, American Occupational Therapy Foundation, Asilomar, California.

Teaching Activities:

AMED 900 - Ambulatory Medicine/Geriatrics Clerkship

8 lecture hours

PRVM 869 – Grantwriting

3 lecture hours

PHSL 846 - Advanced Neuroscience

4 lecture hours

PHSL 848 - Molecular Mechanisms of Neurological Disease

2 lecture hours

NEUS 840 - Medical Neuroscience

6 lecture hours

PHTH 863 - Pathobiology of Human Function II

2 lecture hours

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

Trainees:

Numa Dancause - Graduate Student

Ann Stowe - Graduate Student

Ines Eisner-Janowicz – Graduate Student

Elena Zoubina – Post-Doctoral Fellow

Shawn Frost – Post-doctoral Fellow

Barbara Quaney – Post-doctoral Fellow

Carmen Cirstea – Post-doctoral Fellow (co-mentor with Bill Brooks)

Brook Barr – Summer Student

Michael Mumert – Summer Student

Robert Ryan Field – Summer Student

**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:

November, 2003 - Attended the Society for Neuroscience Annual Meeting, New Orleans, Louisiana.

Editorial and Grant Reviews:

Ad hoc reviewer, Neurorehabilitation and Neural Repair  
Ad hoc reviewer, Exercise and Sport Sciences Reviews

Academic Honors:

2004 External examiner, M.Sc. thesis defense committee, University of Lethbridge, Alberta, Canada.

Trainees:

Numa Dancause - Graduate student  
Ines Janowicz - Graduate student  
Ann Stowe - Graduate student  
Shawn Frost - Post-doctoral Fellow  
Elena Zoubina - Post-doctoral Fellow  
Ryan Field - Summer medical student

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

*Summary of Research: My research investigates nerves that 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.*

Meetings Attended:

- October 26-28, 2003 - Attended IDeA Biomedical Infrastructure Networks Program Annual Principal Investigators Meeting, Bethesda Maryland.
- November 1, 2003 - Attended 1<sup>st</sup> IDeA Biomedical Focus Group Symposium at KU Lawrence and made 2 presentations.
- November 9-13 2003 - Attended the Society for Neuroscience meeting and Tulane Hospital in New Orleans Louisiana and presented 5 posters.
- January 17, 2004 - Attended the K-BRIN Student Symposium at Kansas State University, Manhattan, Kansas.
- April 15-16, 2004 – Attended a workshop entitled Organ Innervation: Development, Disease and Repair, sponsored by the National Institute of Diabetes and Digestive and Kidney Diseases in Bethesda, Maryland and presented a poster.

Committees:

Departmental

- Chair of Student Advisory Committee for Audrey Blacklock
- 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 Rohan Ghandi
- Member of Student Advisory Committee for Mary Lee Dequeant
- Member, Physiology Promotions and Tenure Committee
- Member, Teaching Review Committee
- Member, Hall Professor Recruitment Committee
- Chair, Neuroscience Faculty Recruitment Committee

KUMC

- Director, R.L. Smith Mental Retardation Research Center
- Director, KBRIN Bioinformatics Core
- Director, Microarray Core
- Member, Research Advisory Group
- Member, MRRC Internal Scientific Advisory Committee
- Member, Confocal Microscopy Advisory Board
- Member, Kansas Biomedical Research Infrastructure Network Advisory Board

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

Committees (continued)

KUMC

Member, Bicampus Neuroscience Institute Advisory Committee

Member, Biomedical Research Building Advisory Committee

Editorial and Grant Reviews:

Ad hoc reviewer, Endocrinology

Ad hoc reviewer, European Journal of Neuroscience

Ad hoc reviewer, Circulation

Ad hoc reviewer, American Journal of Respiratory Cell and Molecular Biology

Ad hoc reviewer, Journal of Comparative Neurology

Seminars:

October 9, 2003 – Presented a seminar entitled “Genomics expression analysis at the University of Kansas Medical Center.” Department of Pharmacology, Toxicology and Experimental Therapeutics.

November 1, 2003 - Bioinformatics in the Kansas Biomedical Research Infrastructure Network (K-BRIN). University of Kansas, Lawrence.

Teaching activities:

PHSL 801 - Medical Physiology

6 hours lecture

8 hours laboratory sessions

20 hours conference

PHSL 846 - Advanced Neuroscience

4 lecture hours

Block Coordinator - Cardiovascular component of year one medical curriculum

Trainees:

Dora Krizsan-Agbas - Ph.D., Post-doctoral Fellow

Audrey Blacklock - M.D./PhD student

Jamie Cauveren - Medical Student

Greg Onyschuck - IGPBS rotation

Megan Johnson - IGPBS rotation

Gwenaelle Wernli - IGPBS rotation

**Michael J. Soares, Ph.D.**, Professor

*Summary of Research: Our laboratory is interested in molecular mechanisms and signaling events involved in the establishment and maintenance of pregnancy; including investigations on the prolactin gene family, intrauterine inflammatory and immune cells, uterine vasculature, and signaling pathways controlling the growth and differentiation of decidual and trophoblast cells.*

Meetings Attended:

August 2003 – Attended the NIDA Sponsored Workshop on Placental Proteins, Drug Transport, and Fetal and Perinatal Development, Bethesda, Maryland.

April 17-21<sup>st</sup>, 2004 – Attended the Annual FASEB meeting, American Physiological Society sponsored symposium entitled: "The Maternal-Fetal Dialogue", Washington, D.C.

June 2004 – Attended the Annual Meeting of the American Society Reproductive Immunology, St. Louis, Missouri.

Committees:

Departmental

Promotion and Tenure Committee

KUMC, Search Committee for the recruitment of the Hall Family  
Endowed Professorship

KUMC

Member, KUMC Research Advisory Committee

Member, Transgenic Advisory Committee

National

Organizer of an American Physiological Society sponsored symposium entitled:  
"The Maternal-Fetal Dialogue", Washington, D.C.

Member, Strategic Planning Committee for the Society for the  
Study of Reproduction

Editorial and Grant Reviews:

Senior Editor, Journal of Endocrinology

Ad hoc reviewer, Endocrinology

Ad hoc reviewer, Developmental Biology

Ad hoc reviewer, Molecular and Cellular Biology

Ad hoc reviewer, Molecular Endocrinology

Ad hoc reviewer, Developmental Dynamics

Ad hoc reviewer, Placenta

Consultant, Perinatal Research Center, Department of Pediatrics, University of Colorado  
Health Sciences Center, Aurora, CO, on a research project entitled:

*"Fetoplacental amino acid metabolism in IUGR pregnancies."*

Member, External Advisory Board for the Center for Environmental Exposure and  
Health, Medical College of Georgia/Georgia Tech University

**Dr. Soares** (*continued*)

Seminars Presented:

- August 2003 – Presented a seminar entitled “Maternal-fetal interface, trophoblast invasion, and pregnancy-specific cytokines,” *NIDA Sponsored Workshop on Placental Proteins, Drug Transport, and Fetal and Perinatal Development*”, Bethesda, Maryland.
- December 2003 – Presented a seminar entitled “Maternal-fetal interface and pregnancy-specific cytokines”, Reproductive Biology Program, University of Missouri, Columbia.
- April 2004 – Presented a seminar entitled “Prolactin family expansion and the maternal-fetal interface”, *American Physiological Society Symposium on the Maternal-Fetal Dialogue*, Washington D.C.
- April 2004 – Presented a seminar entitled “Prolactin family expansion and the maternal-fetal interface”, *Gabriel Bialy Lecture in Reproductive Biology*, Southern Illinois University School of Medicine.
- June 2004 – Presented a seminar entitled “Invasive trophoblast cells: what we can learn from rodents?” *Presidential Symposium*, American Society Reproductive Immunology, St. Louis, Missouri.

Teaching activities:

- PHSL 802 - Medical Physiology
  - 6- 2 hour conferences
- PHSL 834 - Reproductive Physiology
  - 7 hour lectures

Trainees:

- Jennifer Ho-Chen – Graduate Student
- Dr. Rupasri Ain – Postdoctoral Fellow
- Dr. Shigeki Oboshi – Postdoctoral Fellow
- Dr. Juan J. Bustamante – Postdoctoral Fellow
- Dr. S.M. Khorshed Alam – Postdoctoral Fellow
- Dr. Toshihiro Konno – Postdoctoral Fellow
- Dr. Juan A. Arroyo – Postdoctoral Fellow
- My-Linh Trinh – Summer Student
- Darya Khalili – Summer Student

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

*Summary of Research: My research focuses on tumor necrosis factor alpha (TNF)-signaling cascades in the ovary. TNF, an inflammatory related cytokine, has significant inhibitory effects on steroidogenesis and folliculogenesis. TNF increased granulosa cell proliferation, depending on c-Jun and its TNF receptor type-1. TNF specifically induced serum amyloid A3 (SAA3) in granulosa cells through nuclear factor-B signaling. Current research has been performed to determine the functional role of SAA3 in granulosa cells.*

**Meetings Attended:**

July, 2003 – Attended the 36<sup>th</sup> Annual Meeting, Society for the Study of Reproduction, Cincinnati, Ohio.

November, 2003 – Attended the 1<sup>st</sup> Kansas Idea Biomedical Focus Group Symposium, Lawrence, Kansas.

November, 2003 – Attended the MO-KAN Conference, Kansas City, Kansas.

June, 2004 – Attended the ENDO Conference, New Orleans, Louisiana.

**Seminars Presented:**

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

**Trainees:**

Shalmica Williams - Graduate Student

Benjamin Weaver - Lab rotation

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

*Summary of Research: The primary focus of my research is the analysis of basal ganglia function in relation to altered motor function (i.e., locomotion, gait, forelimb function, orolingual function) in animal models of normal aging and Parkinson's disease (PD). The behavioral methods that I incorporate range from analysis of locomotor activity to measuring fine forelimb motor control in trained animals. Functional changes in the nigrostriatal pathway are measured using multiple single-unit electrophysiology and intracerebral microdialysis. I am also involved in studies examining the ability of glial cell line-derived neurotrophic factor (GDNF) to restore function in the aged and DA-depleted basal ganglia circuitry.*

Meetings Attended:

November 8-12, 2003 Attended the 29<sup>th</sup> Annual Meeting of the Society for Neuroscience, New Orleans, Louisiana.

Editorial and Grant Reviews:

Ad hoc reviewer, Neurobiology of Aging  
Ad hoc reviewer, Brain Research

Seminars Presented:

October 13, 2003 – Presented a seminar entitled “Nigrostriatal and Motor Function in Preclinical Studies of Normal Aging.” Department of Molecular and Integrative Physiology, University of Kansas Medical Center, Kansas City, Kansas.

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

*Summary of Research: The Bioinformatics Core provides bioinformatics consulting and applications in functional genomics, proteomics and structural biology to all BRIN/INBRE participants. New microarray technologies and data 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 organisms and to establish the biological relevance of the genes and the biological pathway between different classes of genes.*

Meetings Attended:

- August 19-23, 2003 - Attended GeneSpring v. 6 Level I-IV training, St. Louis, Missouri. Certificate obtained
- October 4, 2003 – Attended the “Statistics for Non-Statistician – Categorical Data Analysis and Survival Analysis” Workshop at UMKC, Kansas City, Kansas.
- November 1, 2003 – Attended the 1<sup>st</sup> Kansas IDeA Biomedical Focus Group University of Kansas, Lawrence, Kansas.
- April 21, 2004 – Attended the Nebraska EPSCoR State Conference on Bioinformatics and Biomedical Computing, Omaha, Nebraska.
- June 21-24, 2004 – Attended the “Beyond Genome: Bioinformatics and Genome Research, Proteomics,” San Francisco, California.

Committees:

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

Seminars Presented:

- October 12, 2003 – Presented a seminar “Meet the Research Design and Analysis Core”, MRRRC, KUMC, Kansas City, Kansas.
- April 21, 2004 – Presented a seminar “Predicting Antitumor Activities with Neural Network”, EPSCoR State Conference on Bioinformatics and Biomedical Computing, Omaha, Nebraska.
- June 23, 2004 – Presented a seminar entitled ‘Neural Networks in Anticancer Drug Development’, Beyond Genome Conference in San Francisco, CA, 2004.

Teaching Activities:

- BIOL 701/EECS 700 (KU-Lawrence) Introduction to Bioinformatics
- EECS 833 (KU-Lawrence) Neural Networks and Fuzzy Logic
- GeneSpring v.6 – Introductory level 1
  - 4 hours workshop
- GeneSpring v.6 – level 2
  - 4 hours workshop
- GeneSpring v.6 – level 3
  - 4 hours workshop
- GeneSpring v.6 – level 4
  - 4 hours workshop

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

Teaching Activities (*continued*)

GeneSpring v.6.1 – Introductory level 1

4 hours workshop

GeneSpring v.6.1 – level 2

4 hours workshop

GeneSpring v.6.1 – level 3 + 4

4 hours workshop

Trainees:

Sachin Mathur, Graduate Student (UMKC)

Vikram Gollakota, Graduate Student (UMKC)

Jeremy Chen, Graduate Student (KU-Lawrence)

Mithun Hebbar, Graduate Student (KU-Lawrence)

**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.*

Meetings Attended:

April 17-21, 2004 – Attended a meeting entitled “Experimental Biology” at the 2004 Annual Meeting of the American Physiology Society, Washington, D.C.

Committees:

Departmental

Course Director, Module 5 of IGPBS

Member, 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

Chairperson for Medical School Year 1 calendar planning; academic year 2004-05

Editorial and Grant Reviews:

Experimental Editor, The Digital Photobiology Compendium

Teaching Activities:

PHSL 801 – Medical Physiology

8 lectures (1 hour each)

12 conferences (2 hours each)

4 laboratory sessions (2 hours each)

2 Question and Answer sessions (1 hour each)

PHSL 892 – Module 5 of IGPBS course

6 lectures (1 hour each)

PHSL 894 – Module 4 of IGPBS course

4 lectures (1 hour each)

Prematriculation Health careers Pathways Program

14 lectures (1 hour each)

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 lead to a more detailed investigation on the impact of long term space flight on male fertility.*

Meetings Attended:

- March 26-29, 2003 – Attended the NIH Testis Workshop in Phoenix, Arizona.
- July 19-22, 2003 – Attended the Annual meeting of the Society for the Study of Reproduction in Cincinnati, Ohio.
- May 2-6, 2004 – Attended the Annual meeting of the Aerospace Medical Association in Anchorage, Alaska.

Committees:

KUMC

- Member, Biotech Facility Oversight Committee
- Director, Imaging Core Laboratory, Center for Reproductive Sciences
- Chairman, Department of Anatomy & Cell Biology

National

- Member, MIT MARS Gravity Biosatellite Project, Faculty Advisory Panel
- Member, NIH Special Study section for PO1 renewal application
- Member, NASA Developmental Biology Study Section
- Member, NASA Biospecimen Sharing Program Study Section
- Investigator, NASA Advanced Animal Habitat for the International Space Station Workgroup
- Member, American Society for Cell Biology
- Member, Society for the Study of Reproduction
- Member, American Society for Gravitational and Space Biology

Editorial and Grant Reviews:

- Ad hoc reviewer, Biology of Reproduction
- Ad hoc reviewer, Blood
- Ad hoc reviewer, Cancer Research
- Ad hoc reviewer, Cell Motility and the Cytoskeleton
- Ad hoc reviewer, Cell Physiology
- Ad hoc reviewer, Developmental Biology
- Ad hoc reviewer, FASEB Journal
- Ad hoc reviewer, Fertility and Sterility
- Ad hoc reviewer, Gamete Research
- Ad hoc reviewer, Journal of Andrology
- Ad hoc reviewer, Journal of Applied Physiology
- Ad hoc reviewer, Journal of Cell Biology
- Ad hoc reviewer, Journal of Cellular Biochemistry
- Ad hoc reviewer, Reproduction and Fertility

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

Editorial and Grant Reviews (*continued*)

Ad hoc reviewer, Molecular Endocrinology  
Ad hoc reviewer, Nature  
Ad hoc reviewer, Science  
Ad hoc reviewer, Andrew W. Mellon Foundation  
Ad hoc reviewer, National Science Foundation  
Ad hoc reviewer, National Institutes of Health (outside review)  
Ad hoc reviewer, United States Department of Agriculture

Seminars presented:

May 29, 2003 – Presented a seminar entitled “Two novel approaches to design and synthesis of male contraception: 1) second generation lonidamine analogues and 2) testis-specific targeted enzymes.” NIH/NICHD.  
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>®</sup>” at “The Future of Male Contraception,” NIH Conference, in Seattle, Washington.

Teaching activities:

PHSL 802 – Medical Physiology  
3 hours lecture  
4 hours conference sessions  
PHSL 894 – IGPBS Module 4  
13 hours lecture  
PHYS – Reproductive Biology  
2 hours lecture

Trainees:

Melissa Emerson – Summer student  
Adam Gregg – Summer student  
Brent Burroughs – Summer student  
Jennifer Brann – Research Assistant  
Stan Fernald – Research Assistant  
Sotirios Macheras – Research Assistant  
Stacy Wolfe – Research Assistant

**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 granulosa 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 16-18, 2003 – Attended the NIEHS Center Review Panel, Research Triangle Park, North Carolina.
- July 19-22, 2003 – Attended the 36th Annual Meeting, Society for the Study of Reproduction, Cincinnati, Ohio.
- October 26-28, 2003 – Attended the NIH/NCRR KBRIN meeting, Washington D.C.
- February 25-27, 2004 – Attended the Ovarian Focus Group, NICHD, Oregon National Primate Research Center, Beaverton, Oregon.
- March 1-2, 2004 – Attended the NIH, Study Section-Alcohol and Toxicology 4, Washington, D.C.
- April 1-2, 2004 – Attended the Women's Reproductive Health Symposium, Meharry Medical College.
- May 2-4, 2004 – Attended the Reproductive Biology and Medicine Workshop, Ottawa, Ontario.
- May 19-21, 2004 – Attended the NICHD Directors Meeting, NIH, Pittsburgh, Pennsylvania.
- June 5-6, 2004 - American Society for Reproductive Immunology, St. Louis, Missouri.
- June 7-11, 2004 - Gordon Research Conference, Colby Sawyer College, New London, Massachusetts.
- June 16-19, 2004 Attended the 86<sup>th</sup> Annual Meeting of the Endocrine Society, New Orleans.

Committees:

Departmental

Member, Molecular & Integrative Physiology Teaching Committee

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 Biomedical Research Network

Member, Director, Biomedical Research Training Program, KUMC

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

Committees (*continued*)

Local

Member, GCRC Advisory Group  
Chair, Search Committee, Hall Professorship in Molecular Medicine, KUMC  
Chair, Search Committee, Kansas Cancer Institute Director, KUMC  
External Advisory Board, Biostatistics Core, Kansas Cancer Institute  
KUMC Research Institute Advisory Board, Board of Director  
Kansas Biomedical Research Infrastructure Network Advisory Committee  
(KBRIN), Kansas City.  
Kansas Cancer Experimental Therapeutics Advisory Committee (COBRE),  
Lawrence, Kansas.

National

Member, Editorial Board, Endocrine  
Member, Editorial Board, Journal of Pharmacology and Experimental  
Therapeutics  
Assistant Editor, XPHARM, Endocrinology Section  
Member, NIH Study Section, Alcohol and Toxicology 4  
Member, NIEHS Center Review Panel  
Member, Chair, Ovarian Focus Group, NICHD, U54 Specialized Centers  
Program in Reproduction Research  
Member, Bayer Corporation, Consultant on Reproduction  
Member, EPA, advisor on internal promotion of personnel

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 Center Site visit, Chair, University of Washington, May 12-14, 2004  
NIH, Study Section-Alcohol and Toxicology 4, Washington, DC, March 1-2, 2004

Seminars Presented:

November 12, 2003 – Presented a seminar entitled “Tumor Necrosis Factor Regulation of Ovarian Aromatase.” Department of Obstetrics & Gynecology, University of Nebraska.  
January 21, 2004 – Presented a seminar entitled “Src Tyrosine Kinase and Ovarian Function”, Endocrine Cancer Group, University of Colorado.  
May 3, 2004 – Presented a seminar entitled “Endocrine Disruption of Ovarian Function.” Ottawa University, Ottawa, Ontario, Canada.  
May 1, 2004 – Presented a seminar entitled “Tumor Necrosis Factor Regulation of Ovarian Aromatase.” Department of Obstetrics & Gynecology, Meharry Medical College.  
May 2, 2004 – Presented a seminar entitled “Src Tyrosine Kinase and Ovarian Function, Department of Obstetrics & Gynecology, Meharry Medical College.

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

Seminars Presented (*continued*)

June 8, 2004 – Presented a seminar entitled “Dioxin Disruption of Ovarian Function: Antiestrogenic Effects, Colby Sawyer College, New London, Massachusetts (Gordon Research Conference).

Teaching Activities:

PHSL 800/801 - Medical Physiology

8 conferences – 2 hours each

Endocrine Toxicology – given to Pharmacology Graduate Students

2 – 2 hour lectures

Reproductive Endocrinology –given to IGPBS Students

4 – 2 hour lectures

Trainees:

Ning Lei - Graduate Student

Brian Hermann – Graduate Student

Shalmica Williams – Graduate Student

Claire Redmon Crouch – Graduate Student (Pharmacology)

Gaurav Chaturvedi – Post-doctoral Fellow

Koji Arai – Post-doctoral Fellow, DVM

Dan Kort – Medical Student

Joseph Bradley – Medical Student

**Dennis P. Valzeno, Ph.D.**, Professor

*Summary of Research: Our major focus during the past year has been the direction of the Digital Photobiology Compendium, a web-based project in which a worldwide group of faculty are creating a set of about 100 interactive learning modules. The effectiveness of these modules as learning aids is being critically evaluated.*

Meetings Attended:

- July 5-9, 2003 – Attended the 31<sup>st</sup> Annual Meeting of the American Society for Photobiology in Baltimore, Maryland.
- April 17-21, 2004 – Attended the Annual Meeting of the American Physiological Society, “Experimental Biology” in Washington, D.C.
- July 25-31, 2003 – Attended the Annual Meeting of the American Society of Plant Biologists, Honolulu, Hawaii.
- November 22-24, 2003 – Attended the 31<sup>st</sup> Annual FIPSE Project Directors’ Meeting, Washington, D.C.
- May 5-7, 2004 – Attended the University of Washington School of Medicine Administrators meeting, Blaine, Washington.

Committees:

Departmental

- Course Director, Medical Physiology 801 & 802
- Chair, Department Teaching Committee

KUMC

- Member, School of Medicine Promotions and Tenure Committee
- Member, Education Council
- Member, Medical Faculty Year 1/2 Oversight Committee
- Member, Medical School Curricular Revision Working Group
- Chair, Nutrition in the KUMC Medical Curriculum Committee (an *ad hoc* sub-Committee of Education Council)

National

- Chair, Education Committee, American Society for Photobiology
- Site Coordinator, Photobiology Online; World Wide Web site for 14 national and international societies

International

- Member, Education and Training Group, European Society for Photobiology
- Web site coordinator, International Union of Photobiology

Editorial and Grant Reviews:

- Senior Associate Editor - *Photochemistry and Photobiology*
- Ad hoc reviewer – *Photochemical and Photobiological Sciences*
- Ad hoc reviewer – *Journal of Research on Teaching in Education*

Academic Honors:

- Elected Secretary-General, International Union of Photobiology

**Dr. Valzeno** (*continued*)

Teaching Activities:

PHSL 801 - Medical Physiology

1 hour course introduction lecture

5 hours lecture

2 hour Question & Answer

10, 2-hour conferences + 2, 1-hour organizational conferences

4, 2-hour laboratories

Cardiovascular Fellowship education program

2 hours lecture

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

*Summary of Research: The area of investigation in my laboratory centers around prolactin, a pituitary hormone that is important in development of the lactating mammary gland. Excess levels of prolactin are known to result in infertility in women and impotency in men. The present focus of our work is on the brain mechanisms by which prolactin regulates gene expression and secretion of gonadotropin releasing hormone (GnRH) from the hypothalamus. Some of the systems that we investigate include dopaminergic, serotonergic, galaninergic, opioidergic and GnRH neurons. We use a variety of molecular and cellular techniques, as well as whole animal models, to identify the phenotype of the neurons that are part of the brain circuit that responds to prolactin.*

Meetings Attended:

November 8-12, 2003 - Attended the Annual Meeting of the Society for Neurosciences, New Orleans, Louisiana.

Committees:

Departmental

Chair, Seminar committee for FY2005

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

Member, Search Committee for Associate Vice-Chancellor for Compliance

Local

Member, KCALSI-Neurosciences Hot Team

Member, KCALSI-Academic Research Group

National

Member, NIH Biochemical Endocrinology Study Section

Editorial and Grant Reviews:

Ad hoc reviewer -Neuroendocrinology

Ad hoc reviewer - Cellular and Molecular Endocrinology

Ad hoc reviewer - Endocrine

Ad hoc reviewer - Brain Research

Ad hoc reviewer - Journal of Endocrinology

Ad hoc reviewer - NIH Biochemical Study Section

Trainees:

Bo Zhang – Post-doctoral Fellow

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

*Summary of Research: Mammalian reproduction is regulated by a number of hormones produced at various locations: hypothalamus in the brain, gonadotropes within the anterior pituitary gland, the gonads and also by the placenta during pregnancy. Luteinizing hormone (LH) and chorionic gonadotropin (CG) are synthesized in pituitary gonadotropes and placenta, respectively, and are essential to mammalian reproduction. Research in my laboratory is directed towards understanding the cellular and molecular mechanisms involved in regulating the genes encoding these hormones. One area of emphasis is on how gonadotropin-releasing hormone secreted by hypothalamic neurons signals to the pituitary to induce the expression of the genes for LH. A second area focuses on elucidating the events associated with the differentiation of placental trophoblast cells and their acquisition of expression of CG. We use a variety of experimental approaches and models to examine cell differentiation and gonadotropin gene expression such as the study of DNA-protein and protein-protein interactions, DNA microarrays, promoter analysis, transgenic mice and human embryonic stem cells. Our overall goal is to identify the physiologically relevant molecular and cellular events responsible for regulating cell differentiation and expression of the gonadotropin subunit genes. This will provide a better understanding of how the reproductive system is normally regulated and ultimately, will provide clues as to how diseases, drugs and the environment impact reproductive success.*

Meetings Attended:

June 3-6, 2004 – Attended the 24<sup>th</sup> Annual meeting of the American Society for Reproductive Immunology, St. Louis, MO

Committees:

Departmental

Member, Teaching Committee

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, KUMRI Strategic Alliance Advisory Group

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

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

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  
Reviewed grants for Kansas City Area Life Sciences Institute, Inc

Teaching Activities:

PHSL 802 – Medical Physiology  
6 hours lecture  
18 hours conferences  
PHSL 834 – Reproductive Physiology (Course Director)  
7 hours lecture  
IGPBS Module 4 – Cell & Developmental Biology  
6 hours lecture

Trainees:

Gaurav Chaturvedi - Postdoctoral fellow  
Megan Kaba - Graduate Student (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 myself 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.*

Meetings Attended:

April 2004 – Attended the spring FASEB meetings held in Washington D.C.

Committees

Departmental

Member, Audrey Franz' thesis committee

Member, CV Faculty Search Committee

KUMC

Member, Bioengineering Faculty Search Committee.

Member, Student Success Committee for Curriculum Revision

Editorial and Grant Reviews:

Editorial board, International Journal of Surgical Research

Ad hoc reviewer, American Journal of Physiology: Gastrointestinal and Liver section

Ad hoc reviewer, Journal of Cardiovascular Research

Ad hoc reviewer, Gastroenterology

Ad hoc reviewer, Free Radicals in Biology and Medicine

Ad hoc reviewer, Pharmacology and Toxicology

Ad hoc reviewer, Microvascular Research

Ad hoc reviewer, British Journal of Pharmacology

Seminars:

Presented a seminar entitled “Hypoxia, ROS, and microcirculation” to the Department of Medicine, KUMC.

Academic Honors:

Student Voice Award for Excellence in Teaching in Medical Physiology

Student Voice Award for Small Group Discussion

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

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

2 hours

Summer Prematriculation Program

2 hrs conference

2 hrs lab

Trainees:

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

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

Matt Jordan – 1<sup>st</sup> year Medical Student, Summer Research Program

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

*Summary of Research: My research focuses on functional deficits induced by SIV infection of rhesus monkeys by taking advantage of recent advances in multi-electrode array implant technology to record activities of populations of neurons from primary motor cortex over the course of disease progression. The study attempts to provide evidence of functional injury to neurons and possible pathophysiological mechanisms underlie behavioral deficits.*

*Trainees:*

Fengfeng Wang – Post-doctoral Fellow