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YEAR IN REVIEW
2014-2015

Department leadership changes

On July 1st of 2014, Dr. Peter Smith was named Interim Chair of the Department of Molecular and Integrative Physiology, following Dr. Paul Cheney. Six months later, Dr. Smith started as Senior Associate Dean for Research of our Institution and he stepped down as head of our Department. Dr. Gustavo Blanco took over the position of Interim Chair of Physiology, starting February 1st, 2015. During Dr. Smith’s relative short tenure as Interim Chair, he continued working hard towards keeping the Department of Physiology strong. He supported all current research programs and importantly, he was able to recruit a new Faculty member, Dr. John Thyfault to the Department. This was an impressive accomplishment considering the current shortage of funds. Recruitment of Dr. Thyfault represents an important enhancement for our Department. He has brought with him new expertise, research projects and technologies that will help advance the research efforts and the overall mission of our Department.

Subsequently, under Dr. Blanco, the Department has continued to hold up well, despite the continuing difficult funding environment at the Federal and State levels. The state of Kansas faced serious budget challenges and KU Medical Center sustained a $2.1 million reduction in allotments or budget cuts for fiscal year 2015. Research programs in the various areas have continued vibrant and the Department has maintained a consistent publication level and funding. Also, the Department has had another important year with respect to teaching. In the medical curriculum, the Department was responsible for the Cardiopulmonary and Renal-Endocrine modules. Two of our Faculty, Dr. John Wood and Dr. Michael Wolfe have played an instrumental role in leading those modules. In addition, several of our faculty have been recognized with important teaching awards for their efforts in medical education. Our Faculty have also continued making important contributions to the core IGPBS curriculum and they run different Advanced Physiology courses. We can proudly attest that Physiology Faculty are committed to high quality teaching and are significantly involved in the education mission of our Institution. Regarding service, Dr. Blanco restructured several committees. Our Faculty have served in numerous key committees at our University, the national and international level. Numerous members of our faculty served on NIH grant review panels, editorial boards for different journals and made presentations as invited speakers at other Universities, and national and international meetings. Without a doubt, the continued success of our Department during the period 2014-2015, and over the years, can be credited to the talent and hard work of our Faculty.

Another outstanding aspect to highlight is the excellent support from the office staff. A special thank you to our Senior Administrator, Shari Standiferd for her dedication and hard work. Soon after Dr. Blanco started as Interim Chair, he decided to move the office from its location in the 2nd floor of the Hemenway building to the ground floor of Wahl Hall East. This has helped enhance the identity of our Department and placed the office in a location similarly distant from all Physiology laboratories. Also, changes were made regarding the office staff, with the hire of two part time administrators. This has improved service coverage for all members of the Department.
Finally, we would like to recognize our great supporter and advocate, Jim Osborn, his wife Marion, and his daughter Kathleen. The very generous contributions that they have made over the years have importantly contributed to our success. The lectureship in honor of Kathleen M. Osborn continued this year and is the longest named lectureship at KUMC. We have also enjoyed two endowed professorships that have supported by Mr. Osborn. The Marion M. Osborn Professorship, held by Dr. Leslie Heckert, and the Kathleen M. Osborn Chair, which was formerly held by Dr. Paul Cheney. In addition, Mr. Osborn’s funds have supported a student fellowship in the honor of Kathleen Osborn. After a competitive application process, the first fellowship was presented in the fall of 2014 and the recipient was Faezeh Koohestani, Ph.D., who received it in the fall of 2014. Once again, all members of our Department immensely appreciate the continuous support of Jim Osborn and his family.

HIGHLIGHTS FROM THE 2014-2015 ACADEMIC YEAR

RESEARCH FUNDING: Based on data provided by KUMC Enterprise Analytics, total research funding for the Department was almost 8 million dollars ($7,885,987), an amount which was similar to that of the previous year. Total NIH funding was $4,223,748, which is lower than that of last year ($4,908,943). The latest data available shows that our Department was ranked 31st at the national level for NIH research funding among 82 medical schools receiving NIH funding. While this is a good position for our Department, we would like to improve this ranking. Most of our research programs are supported by major external funding. This is something that we are proud of, especially taking into consideration the extremely
difficult current funding environment. We owe this to the dedication of our Faculty, who have continued crafting high quality research grant proposals.

EDUCATION: The Department has had another outstanding year with respect to teaching. As mentioned previously, Dr. John Wood and Dr. Michael Wolfe lead two key modules of the medical curriculum, the Cardiopulmonary and Renal-Endocrine modules. The Cardiopulmonary module received from the medical students an award for being the best module, presented to the Department at the “Grande Affair” celebration in April. At this same event, two of our Faculty members, Dr. John Wood and Dr. Gustavo Blanco were recognized with “Student Voice Awards” for their excellence in teaching. These awards are a testimony of the long lasting commitment of our Faculty members to education.

TENURE TRACK APPOINTMENTS: Dr. John Thyfault was recruited in the Department as Associate Professor on April 1st, 2015. He came to us from the Department of Nutrition & Exercise Physiology in University of Missouri, Columbia. Dr. Thyfault is working in the area of exercise and how this modifies liver and muscle metabolism.

RESEARCH TRACK APPOINTMENTS: No new research track appointments were made this year.

JOINT AND ADJUNCT APPOINTMENTS: Dr. Randolph Nudo, who transferred to Rehabilitation Medicine as new Vice Chair of Research, was approved for a joint appointment as Professor in our department beginning October 1, 2014.

FACULTY PROMOTIONS: Dr. Vargheese Chennathukuzhi was promoted to Associate Professor with tenure starting July 1, 2015. We are delighted for Dr. Chennathukuzhi’s accomplishments. During the years after being recruited, he has developed a well-funded research program in the area of uterine leiomyomas and he has built a strong research group.

Dr. Shahid Umar was granted tenure at the Associate Professor level. He has developed a strong research program in the area of colon inflammation and cancer. We are proud of these Faculty members.

FACULTY/STAFF DEPARTURES: There have been some departures from the Department.

Dr. Vijayalaxmi Gupta, left on February 1, 2015 to work in the Department Hematology and Oncology here at KUMC. Her current research focus is now multiple myeloma, breast cancer and pancreatic cancer. Dr. Ramakrishna Hegde, Ph.D. left on February 16, 2015 to work as Chief Scientific Officer in MicroProtein Technologies Inc., a biotechnology company in Lenexa, Kansas. There he works on development of reagents for diagnostic and therapeutic use.

Dr. Lynda McGinnis, left on May 13, 2015 to work as Assistant Professor and Director of the Molecular Reproduction Research Laboratory, in the Department of Obstetrics and Gynecology, Division of Reproductive Endocrinology and Infertility in University of Southern California Keck School of Medicine, Los Angeles, CA. Her current project is directed to study the effects of tyrosine kinase inhibitors on reproduction for cancer survivors. In addition, she maintains a collaboration with Dr. Lane Christenson in our Department, to study exosome/microvesicle regulation of oocytes developmental competence, funded through an NIH multi-PI R21 from NICHD.
After 39 years and 8 months of service to the University of Kansas Medical Center and a long and distinguished career, Dr. Paul Terranova officially retired from his position as Professor and Vice Chancellor of Research. Dr. Terranova now is an Emeritus Professor in Physiology. We wish him the best in his retirement.

**FACULTY AWARDS/ACCOMPLISHMENTS:** Dr. Shrikant Anant won the 2014 Research Investigator Award, which was presented to him at Faculty Research Day on October 27, 2014. These awards are given to investigators, who have demonstrated outstanding accomplishments in research and a high potential for development of new research avenues in the future. This award carries a $1,000 stipend.

Dr. Paige Geiger won the 2014 Glendon G. Cox Leadership Award. This award was presented at the annual School of Medicine Faculty Retreat. This award carries a $2,500 stipend. Congratulations to these researchers.

**GRADUATE PROGRAM AND PHYSIOLOGY SOCIETY:** The student led Physiology Society continued functioning this year. A new committee started, integrated by:

- Mina Farahbakhsh (President)
- Wei-Ting Hung (Vice-President)
- Kelsey Hampton (Social Chair)
- Asona Lui (Interim Stower’s Chair)

The graduate students in the department had another active year. We are very pleased with the growth of the graduate program in Physiology. In 2014-2015 eight new students were recruited to the department. These include students who are working at Stowers Research Institute, with faculty members who have academic appointment in Physiology. Currently, our Department has a total of 30 enrolled doctoral students. Several of our students were able to obtain external fellowships to support their training. Funding came from different sources, including the SELF Fellowship program, the KUMC Biomedical Training Program, NSF, and NIH.

The new graduate students included the following individuals and their respective mentors are listed in parenthesis:

**Summer 2014**
- Joshua Curry (Dr. Alan Yu)
- Blake Ebner (Dr. Kausik Si)
- Mina Farahbakhsh (Dr. Vargheese Chennathukuzhi)
- Eric Young (Dr. Danny Welch)

**Fall 2014**
- Erin Hayes (Dr. Joan Lewis-Wambi)
- Akshay Narkar (Dr. Rong Li)
- Zelha Nil (Dr. Kausik Si)
- Ashley Ward (Dr. Paige Geiger)

Three students completed their PhD degrees and 2 students completed a Master’s degree during the year. Congratulations to all of them and their mentors. These are listed below:
Naveen Neradugomma (May 14, 2014) received his degree with Dr. Anant. The title of his dissertation was “Role of Prolactin and Prolactin Receptor Signaling in Colorectal Tumorigenesis”. Naveen is a Senior Research Fellow Department of Pharmaceutics, University of Washington.

Kayla Raider (September 14, 2014) received her MS degree with Dr. Stanford. The title of her thesis was “Effects of a high fat diet on brain metabolism in rats: An in vivo 1H-MRS study”. Kayla Raider is now a stay at home mother with two children.

Erin Hayes received her degree with Dr. Lewis-Wambi on (April 27, 2015). The title of her thesis was “microRNA Sequencing of Long-Term Estrogen Deprived Breast Cancer Cells Reveals a Potential Role for miR-181a in Estrogen-Independent Growth”. Erin Hayes is now working as an instructor for Blue Valley Center for Advancing Professional Studies.

Guangbo Chen (January 15, 2015) received his degree with Dr. Li. The title of his dissertation was “Target the adaptability of heterogenous aneuploidy populations”. Guangbo is currently working at Stanford University.

Lili Pan (January 15, 2015) received her degree with Dr. Peter Baumann from Stowers. The title of her dissertation was “Telomere architecture and maintenance in Schizosaccharomyces pmbe”. Lili is Postgraduate Researcher at Stowers Institute for Medical Research in Peter Baumann’s laboratory.

Prepared by:

V. Gustavo Blanco, MD/PhD
Professor and Interim Chair
Front Row (left to right): Paul Cheney, Paige Geiger, John Stanford, Phil Lee, Gustavo Blanco, Michael Wolfe, Peter Smith

Back Row (left to right): Vargheese Chennathukuzhi, Steven LeVine, Lane Christenson, John Thyfault, Norberto Gonzalez, Shahid Umar, Melissa Larson, Dharmalingam Subramaniam, Leslie Heckert, Andrei Belousov, Warren Nothnick, John Wood

Not Pictured: David Albertini, Shrikant Anant, Sam Enna, Sumedha Gunewardena, T. Rajendra Kumar, Prabhu Ramamoorthy, Joseph Tash
Department of Molecular & Integrative Physiology Graduate Students
2014-2015

Right Row (top to bottom): Wei-Ting Hung, Kelsey Hampton, Mina Farahbakhsh, Lei Pei

Left Row (top to bottom): Joshua Curry, Amanda Brinker, Jessica Venugopal

Not Pictured: Amy Cantilena, Guangbo Chen, Li Chen, Blake Ebner, Erin Hayes, Swathi Iyer, Mohammed Khan, Liying Li, Asona Lui, John Mcginnis, Michelle McWilliams, Danny Miller, Wahid Mulla, Akshay Narkar, Zelha Nil, Lili Pan, Margaret Pruitt, Archana Raman, Robert Rogers, Nairita Roy, Ashley Ward, Eric Young, Chuankai Zhou
DEPARTMENT ROSTER
July 1, 2014 – June 30, 2015

a. Faculty

Primary Appointment in Physiology
V. Gustavo Blanco, M.D., Ph.D., Professor & Interim Chair
David F. Albertini, Ph.D., Professor
Shrikant Anant, Ph.D., Professor; Tom and Teresa Walsh Professor of Cancer Prevention; Eminent Scholar, Kansas Bioscience Authority; Associate Director for Prevention and Cancer Control
Andrei Belousov, Ph.D., Associate Professor
Paul D. Cheney, Ph.D., Professor
Vargheese M. Chennathukuzhi, Ph.D., Assistant Professor
Lane K. Christenson, Ph.D., Associate Professor
Salvatore J. Enna, Ph.D., Professor; Associate Dean for Research and Graduate Education
Paige C. Geiger, Ph.D., Associate Professor
Norberto C. Gonzalez, M.D., Professor
Leslie L. Heckert, Ph.D., Marion M. Osborn Professor for Reproductive Sciences
T. Rajendra Kumar, Ph.D., Professor, Director of the Center for Reproductive Sciences
Phil Lee, Ph.D., Associate Professor
Steven M. LeVine, Ph.D., Professor
Warren Nothnick, Ph.D., Professor
Randolph J. Nudo, Ph.D., Professor, Director of The Landon Center on Aging, Vice Chair of Research
Peter G. Smith, Ph.D., Professor, Director of the Institute for Neurological Disorders, Co-Director of the Kansas Intellectual and Developmental Disabilities Research Center, Senior Associate Dean for Research
John A. Stanford, Ph.D., Associate Professor
Joseph S. Tash, Ph.D., Professor
John P. Thyfault, Ph.D., FACSM, Associate Professor
Shahid Umar, Ph.D., Associate Professor
Michael W. Wolfe, Ph.D., Associate Professor
John G. Wood, Ph.D., Associate Professor

Emeritus
Lawrence P. Sullivan, Ph.D., Professor
Thomas J. Imig, Ph.D., Professor
Paul F. Terranova, Ph.D., Professor
James L. Voogt, Ph.D., Professor
Stowers Affiliates
Peter Baumann, Ph.D., Professor
Scott Hawley, Ph.D., Professor
Sue Jaspersen, Ph.D., Associate Professor
Rong Li, Ph.D., Professor
Kausik Si, Ph.D., Associate Professor

Research Track Faculty
Shawn Frost, Ph.D., Research Assistant Professor
Sumedha Gunewardena, D.Phil., Research Assistant Professor
Vijayalaxmi Gupta, Ph.D., Research Assistant Professor
Ramakrishna Hegde, Ph.D., Research Assistant Professor
Melissa Larson, Ph.D., Research Assistant Professor & Director of Transgenic Facility
Lynda McGinnis, Ph.D., Research Assistant Professor
Satish Ramalingam, Ph.D., Research Assistant Professor
Prabhu Ramamoorthy, Ph.D., Research Assistant Professor
Dharmalingam Subramaniam, Ph.D., Research Assistant Professor

Joint Appointment in Physiology
Richard Barohn, M.D., Professor (Chair, Neurology)
Sandra Billinger, PT, Ph.D., FAHA, Associate Professor (Physical Therapy and Rehabilitation Science)
William Brooks, Ph.D., Professor (Director, Hoglund Brain Imaging Center)
Jeffrey Burns, M.D., Professor (Neurology, Director of Alzheimer and Memory Center & Alzheimer’s Disease Clinical Research Program)
Mark Chertoff, Ph.D., Associate Professor (Hearing & Speech)
In-Young Choi, Ph.D., Associate Professor (Neurology & Hoglund Brain Imaging Center)
Buddhadeb Dawn, M.D., Professor, Director, Division of Cardiovascular Disease (Internal Medicine)
Animesh Dhar, Ph.D., Research Associate Professor (Cancer Biology)
Navneet Dhillon, PhD., Assistant Professor (Pulmonary and Critical Care Medicine)
Dan Dixon, Ph.D., Associate Professor (Cancer Biology)
Tomoo Iwakuma, M.D., Ph.D., Associate Professor (Cancer Biology)
Jill Jacobson, M.D., Professor (Pediatrics)
Benyi Li, Ph.D., Associate Professor (Urology)
Joan Lewis-Wambi, Ph.D., Assistant Professor (Cancer Biology)
Joshua Mammen, M.D., Associate Professor (General Surgery)
Ajay Nangia, M.B.B.S., FACS, Associate Professor (Urology Surgery)
Jules Nazzaro, M.D., Associate Professor (Neurosurgery)
Brian Petroff, DVM, Ph.D., Associate Professor (Internal Medicine & Scientific Director, Breast Cancer Prevention Center)
Janet Pierce, D.S.N., ARNP, CCRN, Professor (School of Nursing)
Jeff Radel, Ph.D., Associate Professor (Occupational Therapy)
Joint Appointment in Physiology (continued)
Cary Savage, Ph.D., Professor (Psychiatry and Behavioral Science)
William (Zhiming) Suo, M.D., Research Associate Professor (Neurology)
Russell H. Swerdlow, M.D., Professor (Neurology)
Dennis Valenzeno, Ph.D., Associate Dean for Medical Sciences (School of Medicine – Wichita)
Darren Wallace, Ph.D., Associate Professor (Internal Medicine)
Steven Warren, Ph.D., Professor (Applied Behavioral Science, KU-Lawrence; Director, Schiefelbucsh Institute for Life Span Studies)
Carl Weiner, M.D., M.B.A., Professor (Chair, Ob-Gyn)
Danny Welch, Ph.D., Professor & Chairman (Cancer Biology)
Alan Yu, MB, B.Chir., Professor & Director (Kidney Institute)

Adjunct Appointment in Physiology
Mark Weiss, Ph.D., Professor (Kansas State University College of Veterinary Medicine)
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<tr>
<th>b. Graduate Students</th>
<th>Joined Physiology</th>
<th>Prelims</th>
<th>Candidate</th>
<th>Requirements Fulfilled</th>
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<tr>
<td>Amanda Brinker</td>
<td>08/13</td>
<td>04/14</td>
<td>Ph.D.</td>
<td></td>
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<tr>
<td>Amy Cantilena</td>
<td>06/12</td>
<td>04/13</td>
<td>M.D./Ph.D.</td>
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<tr>
<td>Guangbo Chen</td>
<td>08/08</td>
<td>01/11</td>
<td>Ph.D.</td>
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<tr>
<td>Li Chen</td>
<td>06/11</td>
<td>04/12</td>
<td>Ph.D.</td>
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<tr>
<td>Joshua Curry</td>
<td>06/14</td>
<td></td>
<td>M.D./Ph.D.</td>
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<tr>
<td>Blake Ebner</td>
<td>06/14</td>
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<td>M.D./Ph.D.</td>
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<tr>
<td>Mina Farahbakhsh</td>
<td>06/14</td>
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<td>M.D./Ph.D.</td>
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<tr>
<td>Kelsey Hampton</td>
<td>08/13</td>
<td>04/14</td>
<td>M.D./Ph.D.</td>
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<tr>
<td>Erin Hayes</td>
<td>08/14</td>
<td></td>
<td>M.S.</td>
<td>04/15</td>
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<tr>
<td>Wei-Ting Hung</td>
<td>08/11</td>
<td>04/13</td>
<td>Ph.D.</td>
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<td>Swathi Iyer</td>
<td>08/11</td>
<td>09/12</td>
<td>Ph.D.</td>
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<td>Mohammed Khan</td>
<td>06/11</td>
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<tr>
<td>Liying Li</td>
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<td>04/12</td>
<td>Ph.D.</td>
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<tr>
<td>Asona Lui</td>
<td>06/13</td>
<td>11/14</td>
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<tr>
<td>John McGinnis</td>
<td>06/12</td>
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<tr>
<td>Michelle McWilliams</td>
<td>08/13</td>
<td>04/14</td>
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<td>Danny Miller</td>
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<td>06/13</td>
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<tr>
<td>Wahid Mulla</td>
<td>08/12</td>
<td>04/13</td>
<td>Ph.D.</td>
<td>Transferred to J. Hopkins</td>
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<tr>
<td>Akshay Narkar</td>
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<td>Ph.D.</td>
<td>Transferred to J. Hopkins</td>
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<tr>
<td>Zelha Nil</td>
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<td>05/15</td>
<td>Ph.D.</td>
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<tr>
<td>Lili Pan</td>
<td>08/10</td>
<td>03/12</td>
<td>Ph.D.</td>
<td>01/15</td>
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<tr>
<td>Lei Pei</td>
<td>08/11</td>
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<td>Ph.D.</td>
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<tr>
<td>Margaret Pruitt</td>
<td>04/13</td>
<td>04/15</td>
<td>M.D./Ph.D.</td>
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<td>Archana Raman</td>
<td>08/12</td>
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<tr>
<td>Robert Rogers</td>
<td>08/11</td>
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<td>Ph.D.</td>
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<tr>
<td>Nairita Roy</td>
<td>08/12</td>
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<td>Ph.D.</td>
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<tr>
<td>Jessica Venugopal</td>
<td>06/11</td>
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<tr>
<td>Ashley Ward</td>
<td>08/14</td>
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<td>Eric Young</td>
<td>06/14</td>
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<td>M.D./Ph.D.</td>
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<tr>
<td>Chuankai Zhou</td>
<td>05/10</td>
<td>03/14</td>
<td>Ph.D.</td>
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</tbody>
</table>
c. Postdoctoral Fellows
Ishfaq Ahmed, Ph.D.
Aritra Bhattacherjee, Ph.D.
Pavla Brachova, Ph.D.
Prasad Danawate, Ph.D.
Gaurav Fnu, Ph.D.
Faezeh Koohestani, Ph.D.
Deep Kwarta, Ph.D.
Colin McCoin, Ph.D.
E. Matthew Morris, Ph.D.
Parthasarathy Rangarajan, Ph.D.
Badal Roy, Ph.D.
Scott Sands, Ph.D.
Lesya Holets, Ph.D.

d. Temporary Students
Ganesh Aruna
Julia Balmaceda
Cameron Banning
Joseph Blond
Shaon Borosha
Nitish Chaimalakondia
Nicholas Duethman
Olivia Eller
Saurabh Harohalli
Manahil Khan
Aishwarya Kumar
Melissa Krystel-Whittemore
Camron Myers
Colton Nielson
Pranav Rao
Anamika Ratri
Avani Sharma
Kavya Shivashankar
Bethany Snyder
Yashi Wang
Kathleen White
David Wilson
Zainab Afsal
**e. Research Staff**
Janna Belousova – Senior Research Asst.
Illya Bronshteyn – Research Associate
Anuradha Chakrabarty – Senior Scientist
Sornakala Ganeshkumar – Research Asst.
Ian Graham – Research Technician
Naomi Holloway, Research Associate
Xiaoman Hong – Senior Research Assoc.
Dora Krizsan-Agbas – Senior Scientist
Zhaohui Liao – Research Associate
Jacob May – Technician
Jeff McDermott – Research Associate
Sivapriya Ponnurangam – Research Assoc.
Satheest Sainathan – Senior Scientist
Sarah Tague – Senior Scientist
Gladis Sanchez – Research Associate
David Standing – Research Technician
Shuan Sheila Tsau – Research Assistant
Suwen Wei – Senior Research Associate
Joshua Wheatley – Research Assistant
Huizhen Wang – Senior Scientist
Ying Mu – Research Associate
Delin Ma, M.D. – Research Assistant
Julie Allen – Research Associate
Lily Gan, MD, Ph.D.–Research Assistant
Uma Sharma – Research Assistant
Erica Okwuazi – Research Technician
Eric Yarns – Research Assistant

**f. Support Staff**
Lynn LeCount – Managing Editor
Jennifer McNichols – Editorial Coordinator
Shari Standiferd – Director of Operations
Jennifer Wallace – Accountant
Charlotte Weber – Accountant
Sara Verga – Student Assistant
Notes Concerning Graduate Students

Amanda Brinker completed her third year as a graduate student. She co-authored an article entitled “Zinc Finger Nuclease-Mediated Gene Knockout Results in Loss of Transport Activity for P-glycoprotein, BCRP, and MRP2 in Caco-2 Cells” published in Drug Metabolism and Disposition and co-authored an entry currently in press for Encyclopedia of Cancer entitled “BRMS1”. She presented her talk “A Role for Mitochondria in Metastatic Cancer” at the METAivor Sea to Sea for MBC event. She was first author on an abstract entitled “Effect of mitochondrial haplotype on tumor formation and metastasis” presented as a poster at the 2014 University of Kansas Cancer Research Forum. She was first author on an abstract entitled “Mitochondrial haplotype effects on tumor formation and metastasis are both cell autonomous and non-cell autonomous” which she presented as a poster at the 2015 American Association for Cancer Researchers (AACR) Annual Meeting in Philadelphia, and as a talk at the 2015 Student Research Forum at the University of Kansas Medical Center. She presented her talk “A long and winding road: My journey to industry and back” at the 2015 AACR Undergraduate Symposium where she also served as an invited panelist. Additionally, she was honored with a 2015 AACR-Woman in Cancer Research Scholar Award in February of 2015, and was awarded a Susan G. Komen Kansas Affiliate Travel Award for attendance to the annual meeting. She was recently awarded a Biomedical Research Training Program Fellowship for 2015-2016.

Joshua Curry was accepted to attend the Tutored Research and Education for Kidney Scholars (TREKS) program at the Mount Desert Island Biologic Laboratory in Bar Harbor, Maine. As a part of this he received a travel award to attend the 2015 Kidney Week, sponsored by the American Society of Nephrology.

Mina Farahbakhsh presented her talk “Regulation of REST Target Genes and miRNA29 in Uterine Leiomyomas” at the 2015 University of Kansas Medical Center Student Research Forum. She also presented posters of “Regulation of REST Target Genes in Uterine Fibroids” at the 2014 Greenwald Symposium and the 2015 Kansas IDeA Network of Biomedical Research of Excellence. At the 2015 Society for the Study of Reproduction and 2015 Iowa State Stupka Symposium she presented posters titled “Role of REST Target Genes in the Pathogenesis of Uterine Leiomyomas.” She was active in the 2014-2015 Student Governing Council, and representative of the Graduate Student Council. She served as the President of the Physiology Society. Farahbakhsh received a SGC travel award spring 2015, as well as The Larry Ewing Memorial Trainee Travel Fund (LEMTTF), and FY16 BRTP (Biomedical Research Training Program) awards.
Kelsey Hampton served as Physiology Society Vice President until December of 2014, when she then became the group’s Social Chair. In November 2014, she presented a poster at the University of Kansas Cancer Center Retreat entitled “Differential Metastatic Efficacy of Alternate Kisspeptins.” At the Student Research Forum in March 2015, Kelsey gave a seminar entitled “Metastasis Suppression by Non-KP54 Kisspeptins” and tied for First Place in her session. Kelsey was awarded a Physiology Society Travel Award and a Susan G. Komen Travel Award to attend the American Association for Cancer Research Annual Meeting in Philadelphia, PA to present her poster “Metastasis Suppression by Non-KP54 Kisspeptins.” At this meeting, she was awarded a Women in Cancer Research Scholar Award. As a co-author with her mentor, Dr. Danny Welch, Kelsey published an article entitled “KiSS-1: Metastasis Suppressor” in the Encyclopedia of Cancer, which is currently in press. In April 2014, Kelsey was chosen to serve as a committee member for the AACR Associate Member Council-led Communications Committee to develop blog posts and communication strategies for the organization.

Erin Hayes Won the 1st place in the 2015 Annual Student research forum oral presentation, section G at KUMC.

Asona Lui passed her comprehensive exam and was the co-author on a paper entitled “Targeting interferon stimulated genes sensitizes aromatase inhibitor-resistant breast cancer cells to estrogen induced apoptosis.” She was designated a Minority Scholar in Cancer Research at AACR 2015, where she presented a poster titled “Overexpression of interferon stimulated genes is critical for the survival of aromatase inhibitor-resistant breast cancer cells” and was the recipient of a seed grant by the American Medical Association Foundation. Asona was selected to present a poster at the Capitol Graduate Research Summit and received 1st place among KUMC students, earning her a scholarship from the Kansas Legislature. Asona was recently awarded a Biomedical Research Training Program Fellowship for 2015-2016.

Michelle McWilliams presented a selected oral presentation at the Gilbert S. Greenwald Symposium for Reproduction and Regenerative Medicine, titled The Role of PRICKLE-1 in the Pathogenesis of Uterine Leiomyoma. At the 2015 KUMC Student Research Forum, she was awarded the Bob Klein Award for the Best Three-Minute-Thesis presentation, titled Uterine Fibroids: A Detective Mystery, as well as a First Place Award for her presentation The Role of GPR10 and the loss of REST in the Pathogenesis of Uterine Leiomyoma. Michelle served as the student representative on the KUMC Research Advisory Council. She also served on the planning committee for the Greenwald Symposium.
Danny Miller was first author on a commentary titled “Tetrad analysis in the mouse” published in Nature Genetics. He was also co-author on a manuscript titled "Synaptonemal complex extension from clustered telomeres mediates full-length chromosome pairing in Schmidtea mediterranea" published in PNAS. Danny was also TA for the Advanced Drosophila Genetics and Genomics course at the Welcome Trust in Hinxton, UK, and TA for the Computational and Comparative Genomics course at CSHL.

Lei Pei was first author on two poster presentation in 2015 American society of Nephrology "Claudin-2 Null Mice Reveal Increased Renal Transcellular Na Transport And Kidney Oxygen Consumption" and 2015 American society of Nephrology entitled "Paracellular Na\sup+\[/sup\] Transport by Claudin-2 Enhances the Efficiency of Oxygen Usage by the Kidney and Protects against Ischemic Injury". She received 800 dollars Kidney STARS travel award to attend 2015 American Society of Nephrology. She also won the second place on 2015 Annual Student research forum oral presentation, section F in KUMC.

Maggie Pruitt was awarded a National Research Service Award (NRSA) from NCI, NIH on her project titled, "The randomization of the telomerase RNA template to define the role of telomere sequence in telomere structure, function, and cellular survival." Maggie presented a first author poster at the April Cold Spring Harbor Laboratory Telomeres and Telomerase meeting entitled, "In Flask Evolution of Chromosome End Sequences." She also presented a talk at the Student Research Forum entitled," A Competitive Growth Experiment Reveals Patterns in Mutant Telomerase RNA Template Sequences." Lastly, Maggie passed her comprehensive exam last spring.

Archana Raman was a co-author on a paper entitled "Phosphodiesterase Isoform Regulation of Cell Proliferation and Fluid Secretion in Autosomal Dominant Polycystic Kidney Disease", published in Journal of American Society of Nephrology. She was also the lead author on an abstract entitled "Integrin Linked Kinase Promotes Cyst Growth and Fibrosis in ADPKD" selected for poster publication in the Journal of the American Society of Nephrology. Archana was also awarded the Biomedical Research Training Program (BRTP) fellowship for the year 2015-2016 for her research application entitled “The role of ILK in periostin-induced cyst growth and fibrosis in PKD”. At the Student Research Forum 2015, she was awarded first place for her presentation entitled "Periostin Activation of Integrin-Linked Kinase Promotes Epithelial Cell Proliferation and Cyst Growth in Polycystic Kidney Disease".
Robert Rogers was first author of a manuscript published in the Journal of Applied Physiology entitled: Heat Shock Proteins: in vivo heat treatments reveal adipose tissue depot-specific effects. Robert was co-author of a manuscript published in Brain Research entitled: Effects of discontinuing a high-fat diet on 6-hydroxydopamine-induced nigrostriatal dopamine depletion in rats. Robert presented a poster at the American College of Sports Medicine’s Integrative Physiology of Exercise Conference in Miami, Florida entitled: Heat shock protein expression levels are lower in skeletal muscle of rats selectively bred to be low capacity runners. Robert also presented a lecture at the Biomedical Research Training Program Symposium entitled: Heat treatment protects against skeletal muscle insulin resistance following a short-term dietary challenge in rats selectively bred as low capacity runners.

Jessica Venugopal served as co-chair of the Photography and Publicity Committee for the 2015 KUMC Student Research Forum. She also gave an oral presentation at the Student Research Forum entitled: “Ouabain enhances apoptosis in ADPKD cells via the intrinsic pathway.” Jessica also participated in the inaugural 3 Minute Thesis Competition, with an oral presentation entitled: “Autosomal dominant polycystic kidney disease and the hormone ouabain.” Jessica is also a co-author on a paper entitled: “Ouabain regulates CFTR-mediated anion secretion and Na,K-ATPase transport in ADPKD cells” accepted in the Journal of Membrane Biology.

Ashley Ward completed her second year as a graduate student. She was a part of the Food is Medicine group on campus that received the KUMC Student Organization Award and she successfully passed her comprehensive exams.
COURSES TAUGHT

Medical Curriculum Core Courses
CORE 815 – Cardiopulmonary. Dr. Geiger, Dr. Gonzalez, Dr. Smith, and Dr. Wood

CORE 820 – Gastrointestinal Tract and Nutrition. Dr. LeVine

CORE 825 – Renal and Endocrine System. Dr. Blanco and Dr. Wolfe

CORE 830 – Reproduction and Sexuality. Dr. Albertini, Dr. Tash, and Dr. Wolfe

CORE 840 – Brain and Behavior. Dr. Cheney, Dr. Frost, Dr. LeVine, and Dr. Stanford

CORE 860 – Integration and Consolidation, Dr. Blanco, Dr. Gonzalez and Dr. Wood

Departmental Graduate Courses
PHSL 834 – Reproductive Physiology. Dr. Albertini, Dr. Chennathukuzhi, Dr. Christenson, Dr. Kumar, Dr. Nothnick, Dr. Wolfe (Not taught this year)

PHSL 835 – Integrative Physiology of Exercise. Dr. Geiger, Dr. Gonzalez

PHSL 842 – Comprehensive Human Physiology. Dr. Belousov, Dr. Blanco, Dr. Geiger, Dr. LeVine, Dr. Wolfe, Dr. Umar, Dr. Wood

PHSL 846 – Advanced Neuroscience. Dr. Cheney, Dr. Enna, Dr. Frost, Dr. Lee, Dr. Smith and Dr. Stanford

PHSL 848 – Molecular Mechanisms of Neurological Disorders. Dr. Enna, Dr. LeVine, Dr. Nudo, Dr. Stanford

IGPBS Courses
GSMC 851 – Molecular Genetics. Dr. Chennathukuzhi, Dr. Christenson, Dr. Umar

GSMC 853 – Cellular Structure. Dr. Belousov and Dr. Blanco

GSMC 854 – Cell Communication. Dr. Albertini

GSMC 852 – Introduction to Biomedical Research Dr. Christenson

GSMC 856 – Introduction to Research Ethics Dr. Wolfe
DEPARTMENT SEMINARS

The Department Seminar program was directed by Dr. John Stanford. Thirty six speakers made presentations, thirteen of which were from outside the university. In addition to support from the department, Abrahams J. Hambleton Lectureship in Physiology Endowment Fund, Kathleen M. Osborn Memorial Lectureship in Physiology Endowment Fund, the Office of the Dean of the School of Medicine, the KIDDRC, Landon Center of Aging and the Center for Reproductive Sciences made important financial contributions to our program.

09/03/14  Kayla Raider  
Graduate Student  
Molecular & Integrative Physiology  
KUMC  
Effects of a high fat diet on brain metabolism in rats: An in vivo 1H-MRS study

09/08/14  Lori Raetzman, Ph.D.  
Associate Professor  
Molecular & Integrative Physiology  
University of Illinois at Urbana Champaign  
Urbana, IL  
Pituitary Gland Development: Kickin’ it up a Notch

09/15/14  Jingsong Zhou, Ph.D.  
Professor of Physiology  
Kansas City University of Medicine and Biosciences  
Kansas City, MO  
Mitochondria, Ca Signaling and Neuromuscular Disease

09/22/14  Frank Kruse, MS  
Vice President  
KU Biosciences & Technology Business Center  
Kansas City, KS  
BTBC and the Enterpreneurial Ecosystem

09/29/14  John P. Thyfault, Ph.D., FACSM  
Associate Professor of Nutrition and Exercise Physiology  
Department of Medicine-Division of Gastroenterology and Hepatology  
University of Missouri- Harry S. Truman VA Hospital-Research Service  
Columbia, MO  
Hepatic Mitochondrial “Fitness” and Protection against Fatty Liver Disease
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<tr>
<th>Date</th>
<th>Speaker</th>
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<tr>
<td>10/06/14</td>
<td>In-Young Choi, Ph.D.</td>
<td>What Can In Vivo NMR Measure of Neurochemical Profiles Tell Us About Metabolic Disorders?</td>
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<td>Associate Professor</td>
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<td>Hoglund Brain Imaging Center</td>
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<td>10/13/14</td>
<td>Lei Pei</td>
<td>Roles of Claudin-2 in Paracellular Transplant in Renal Proximal Tubules</td>
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<td>10/20/14</td>
<td>Nash N. Boutros, MD</td>
<td>Epilepsy Spectrum Disorders</td>
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<td>Professor and Chair</td>
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<td>Department of Psychiatry</td>
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<td>University of Missouri- Kansas City</td>
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<td>10/27/14</td>
<td>Archana Raman</td>
<td>Role of Integrin-Linked Kinase in Polycystic Kidney Disease</td>
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<td>11/03/14</td>
<td>John McGinnis</td>
<td>Neuronal basis of energy perception and long-term memory</td>
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<td>11/10/14</td>
<td>Rodney D. Newberry, MD</td>
<td>New Roles for Goblet Cells in Intestinal Immunity</td>
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<td>Associate Professor</td>
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<td>Division of Gastroenterology</td>
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<td>Washington University</td>
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<td>St. Louis, MO</td>
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<tr>
<td>11/17/14</td>
<td>Wei-Ting Hung</td>
<td>Extracellular vesicles in ovarian antral follicle: characterization and function</td>
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<td>11/24/14</td>
<td><strong>Kathleen M. Osborn Memorial Lectureship</strong></td>
<td>An ancient gene paralog pair that serves as a molecular rheostat</td>
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<td>Miles Wilkinson, Ph.D.</td>
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<td>Professor</td>
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<td>Department of Reproductive Medicine</td>
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<td>University of California, San Diego</td>
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<td>12/01/14</td>
<td>Amy Cantilena</td>
<td>Graduate Student</td>
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<td>12/08/14</td>
<td>Francisco Gonzalez-Lima, Ph.D.</td>
<td>Professor (George I. Centennial Professorship)</td>
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<tr>
<td>12/15/14</td>
<td>Diana M Duffy, Ph.D.</td>
<td>Professor and Vice Chair (Research)</td>
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<tr>
<td>01/6/15</td>
<td>Guangbo Chen</td>
<td>Graduate Student</td>
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<tr>
<td>01/12/15</td>
<td>Krishna Dummula MD, MPH, FAAP</td>
<td>Assistant Professor</td>
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<tr>
<td>01/20/15</td>
<td>Lili Pan</td>
<td>Graduate Student</td>
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<tr>
<td>01/26/15</td>
<td>Michelle McWilliams</td>
<td>Doctoral Candidate</td>
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<td>02/02/15</td>
<td>Holly Hull, Ph.D.</td>
<td>Assistant Professor</td>
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</table>
02/09/15  Michael J. Wacker, Ph.D.  Kidney-bone-heart crosstalk: cardiovascular effects induced by the osteocyte-derived hormone, FGF23
Associate Professor
Department of Basic Medical Science
University of Missouri-Kansas City
School of Medicine
Kansas City, MO

02/16/15  Asma Zaidi, Ph.D.  The neuronal calcium pump: a target of brain aging and neurodegeneration
Professor
Department of Biochemistry
Kansas City University of Medicine and Biosoience
Kansas City, MO

02/23/15  Warren Nothnick, Ph.D., HCLD  MicroRNAs in endometriosis pathogenesis and treatment: Dissection the complexity of the miR451-MIF pathway
Professor
Molecular & Integrative Physiology
KUMC

03/02/15  Paige C. Geiger, Ph.D.  Obesity, insulin resistance and diabetes: Sex differences and the role of estrogen receptors
Associate Professor
Molecular & Integrative Physiology
KUMC

03/09/15  Zijian Xie, Ph.D.  Na/K-ATPase, Salt Handling and Tissue Fibrosis
Investigator and Director
Marshall Institute for Interdisciplinary Research
Marshall University
Huntington, WV

03/23/15  Qi Chen, Ph.D.  Losing and finding our way at C: Vitamin C in cancer treatment
Assistant Professor
Pharmacology, Toxicology & Therapeutics
KUMC

04/06/15  Danny Miller  Somatic mosaicism in Turner syndrome and congenital heart defects
Graduate Student
Molecular & Integrative Physiology
KUMC
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<th>Date</th>
<th>Name</th>
<th>Title</th>
<th>Affiliation</th>
<th>Location</th>
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<tr>
<td>04/13/15</td>
<td>Craig Van Horne, MD, Ph.D.</td>
<td>Multimodal DBS therapy for Parkinson’s disease: Peripheral nerve tissue grafts targeted to reverse disease progression</td>
<td>Associate Professor Neurosurgery</td>
<td>University of Kentucky Lexington, KY</td>
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<tr>
<td>04/27/15</td>
<td>Erin Hayes</td>
<td>microRNA Sequencing of Long-Term Estrogen Deprived Breast Cancer Cells Reveals a Potential Role for miR-181a in Estrogen-Independent Growth</td>
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<td>Graduate Student</td>
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<td>Molecular &amp; Integrative Physiology</td>
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<td>04/27/15</td>
<td>Michael W. Wolfe, Ph.D.</td>
<td>Gonadal regulation of growth and metabolism is ESR1-dependent in rate</td>
<td>Associate Professor</td>
<td>KUMC</td>
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<tr>
<td>04/27/15</td>
<td>John A Stanford, Ph.D.</td>
<td>Neuromuscular effects of targeted strength training in the SOD1-G93A rat model of ALS</td>
<td>Associate Professor</td>
<td>KUMC</td>
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<tr>
<td>05/04/15</td>
<td>Steven LeVine, Ph.D.</td>
<td>Iron deposition in multiple sclerosis: Experimental models reveal insight about disease mechanisms</td>
<td>Professor</td>
<td>KUMC</td>
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<tr>
<td>05/04/15</td>
<td>Shahid Umar, Ph.D.</td>
<td>Enteric Pathogens and Disease Pathogenesis</td>
<td>Associate Professor</td>
<td>KUMC</td>
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<tr>
<td>05/11/15</td>
<td>Kathleen Gustafson, Ph.D.</td>
<td>Developmental Origins-Programming for Long-Term Health</td>
<td>Director of Fetal Magnetoencephalography Research Associate Professor Department of Neurology</td>
<td>KUMC</td>
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<tr>
<td>05/18/15</td>
<td>Voyages Seminar</td>
<td>“What did you discover? Reflections on a lifetime of research in physiology”</td>
<td>Norberto Gonzalez, MD Professor Molecular &amp; Integrative Physiology</td>
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<td>KUMC</td>
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a. Manuscripts Published


Belousov, A.B. and J.D. Fontes, Role of neuronal gap junctions in NMDA receptor-mediated excitotoxicity and ischemic neuronal death. *Neural Regeneration Research, invited paper, submitted for publication, 2015."


b. Manuscripts in Press


Q. Yang, M. Gong, S. Cai, T. Zhang, J. T. Douglas, V. Chikan, N. M. Davies, P. Lee, I.-Y. Choi, S. Ren, M. L. Forrest, Combining hard and soft magnetism into a single core-shell nanoparticle to achieve both hyperthermia and image contrast, Therapeutic Delivery (in press)


c. Abstracts


A. J. Hughes, I.-Y. Choi, P. Lee, P. Adany, D. R. Denney, S. G. Lynch, Cognitive Impairment, Oxidative Stress, and Neurodegeneration in MS, the 30th Americas and European Committee for Treatment and Research in Multiple Sclerosis (ACTRIMS-ECTRIMS), Boston, MA, September 10-13, 2014 – poster presentation


Faezeh Koohestani, Michelle McWilliams, Riley Werttenberger, Vargheese Chennathukuzhi. WNT and mTOR pathways in the G-protein coupled receptor 10 (GPR10) transgenic mouse model of uterine fibroids. American Society for Reproductive Medicine 2014 Annual Meeting. Honolulu, Hawaii

Faezeh Koohestani, Michelle McWilliams, Wendy Jefferson, Kavya Shivashankar, Carmen Williams & Vargheese Chennathukuzhi. “WNT/PCP Pathways in the Pathogenesis of Uterine Fibroids” Society for the Study of Reproduction (SSR), San Juan, Puerto Rico, USA, 18–22 June 2015. – Won the Best Poster Award

Heckert PhD, Valentine Agbor PhD, Tatiana Karpova PhD "DMRT1 in Sertoli Cells Regulates Adult Leydig Cell Maturation" Abstract XXIII North American Testis Workshop April 15-18, 2015 Salt Lake City, Utah.


I. Chappell, P. Lee, T. E. Mclff, E. B. Toby, K. J. Fischer, Comparing Cartilage T2 Relaxation Times and Joint Contact Pressures of Normal and Injured Wrists, The Biomedical Engineering Society (BMES), San Antonio, TX, October 22-25 (2014) – poster presentation


Michelle M. McWilliams, Faezeh Koohestani, Carmen Williams, Sumedha Gunewardena, T. Rajendra Kumar, Vargheese Chennathukuzhi. Prickle-1 (pk-1) links environmental estrogen exposure to the loss of rest in uterine leiomyoma. American Society for Reproductive Medicine 2014 Annual Meeting. Honolulu, Hawaii


RESEARCH SUPPORT


**V.M. Chennathukuzhi:** KU Endowment Startup funds – 2009-current.


NICHHD – “Kansas University Training Program in Neurological and Rehabilitation.”
Annual Direct Costs: $266,000.

**S. Frost:** NIH/NINDS – “Reorganization of motor cortex following brain injury.”
February 1, 2008 – January 31, 2015. Principal Investigator: RJ Nudo, Co-Investigator:

**P.C. Geiger:** NIA/NIAMS – “Targeting stress-mediated pathways in the treatment of
Geiger. Annual Direct Costs: $155,000.

Liver Cobre Pilot Award – “Heat shock proteins and mitochondria in the prevention of
non-alcoholic fatty liver disease.” April 1, 2015 – June 30, 2015. Annual Direct Costs:
$50,000.

KINBRE Pilot Award – “Targeting estrogen receptor alpha in the prevention of obesity

IRHRM Pilot Award – “The role of estrogen receptor alpha in control of energy balance
and glucose homeostatis.” October 1, 2014 – September 30, 2015. Annual Direct
Costs: $10,000.

**N.C. Gonzalez:** NIH – “Targeting stress-mediated pathways in the treatment of muscle

American Heart Association – “Hypoxia adaptation by a unique mechanism of

**L.L. Heckert:** Marion M. Osborn Endowment

NIH – “Molecular Regulation of Cell Development and Differentiation.” September 1,
Andrews and M. Soares. Co-Director of Core B: L.L. Heckert. Direct costs:
$1,500,000/yr


RI – “Travel award to NA Testis Workshop.” April 2015. $326.


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**M.A. Larson**: Center of Biomedical Research Excellence (COBRE)


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NIH – “Cell-cycle regulatory kinases as targets for male contraceptive drug development.” April 1, 2014 – March 31, 2019.


ACTIVITIES OF THE FACULTY

David F. Albertini, Ph.D., Professor

Physiology and developmental biology of mammalian reproduction, particularly in oogenesis, and the translation of basic science on oocyte and embryo quality to human assisted reproductive technologies.

Meetings Attended:
- September 13, 2014 – “Is aneuploidy so bad for human embryos after all?” Aneuploidy Symposium, Canadian Fertility and Andrology Society, Quebec City, Canada
- October 9 – 12, 2014 – “New insights into the biology of the ovarian reserve,” and “Revisiting the mechanism of LH-induced oocyte maturation: more questions than answers.” Tecnobios Procreazione Symposium, Rome Italy
- October 21, 2014 – “Gateways to success: the sperms’ perspective for finding and penetrating the egg,” Society for Male Reproduction and Urology Symposium, American Society for Reproductive Medicine annual meeting; Honolulu, Hawaii

Committee Activities:
- Departmental
  Member, Graduate Student Committee Member
  Danny Miller, M.D./Ph.D.
  Swathi Iyer, Ph.D.
- National
  Member, Worcester Polytechnic Institute
  Member, International Ovarian Club Board

Editorial and Grant Reviews:
- Editor-in-Chief, Journal of Assisted Reproduction and Genetics
- Associate Editor, Zygote
- Section Editor, “Gametes and Embryos” in 4th Edition Knobil and Neill’s Physiology of Reproduction, Editors-in-Chief Tony M. Plant and Anthony J. Zeleznik
- Ad hoc Reviewer, Science
- Ad hoc Reviewer, Nature
- Ad hoc Reviewer, Nature Medicine
- Ad hoc Reviewer, PNAS
- Ad hoc Reviewer, Human Reproduction
Dr. Albertini (continued)

Editorial and Grant Reviews (continued)
Ad hoc Reviewer, *Biology of Reproduction*
Ad hoc Reviewer, *PLoS One*
Grant Reviewer, Maryland State Stem Cell Grant review Committee
Grant Reviewer, MRC Grant Reviews (UK)

Seminars Presented:
February 15, 2015 – “Building an ovary is a complicated matter.” ESHRE Workshop on Development of the Mammalian Gonad, Muenster, Germany

Teaching Activities:
CORE 830 – Fertilization
1 hour lecture
PHSL 834 – Reproductive Physiology
5 – 2 hour lectures
IGBPS – Cell Cycle
3 – 2 hour lectures

Other Activities:
Attendee, Ovarian Club Organizing Committee (annual meeting)
Attendee, International Society for Fertility Preservation (annual meeting)
**Shrikant Anant, Ph.D.** Professor; Tom and Teresa Walsh Professor of Cancer Prevention; Eminent Scholar, Kansas Bioscience Authority; Associate Director of Prevention and Cancer Control

I am currently the Tom and Teresa Walsh Professor of Cancer Prevention and the Kansas Mason Professor of Cancer Research in the Department of Molecular and Integrative Physiology at the University of Kansas Medical Center. I am an RNA biologist with interests in understanding the mechanisms that regulate gene expression at the posttranscriptional levels of mRNA stability and translation during tumorigenesis. My laboratory has been a leader in the identification of novel RNA binding protein protooncogenes and tumor suppressors. In addition, we have been leading the efforts on determining the mechanism by which natural and synthetic compounds affect cell signaling pathways in gastrointestinal cancer cells. My lab members primarily focus their work on gastrointestinal cancers. Specific areas of research include: a) Regulation of gene expression at the levels of mRNA stability and translation, b) Cancer Stem Cells, and c) mechanisms of chemoprevention by dietary factors and its novel derivatives.

Meetings Attended:

- January 2015 – 3rd International Conference on Herbal and Synthetic Drug Studies, Pune, India
- March 2015 The Second Shanthi Sitaraman Intestinal Pathobiology Symposium, Georgia State University, the Petit Science Center February 2014 – present, Biomimetic Tissue Engineered Workshop, Washington, DC
- January 2014 – Keynote Speaker, University of Madras, India Symposium on Emerging Diseases (February 2015)
- Invited Speaker, Indian Science Congress, Mumbai, India
- December 2014 – Invited Speaker, Massachusetts General Hospital, Gastroenterology
- October 2014 – Invited Speaker, Annual Symposium of Texas A&M Digestive Disease Research Center, College Station
- September 2014 – Invited Speaker, Biochemistry and Molecular Biology, University of Nebraska, Department of Biochemistry and Molecular Biology
- August 2014 – Keynote Speaker, Prof. KJ Endowment Lecture Series, Vellore Institute of Technology, India
- July 2014 – Invited Speaker, Department of Genetics, Sri Ramachandra Medical College, Chennai, India
- July 2014 – Invited Speaker, Department of Endocrinology, University of Madras, India
Dr. Anant (continued)

Committee Activities:
Departmental
  Member, Promotion and Tenure Committee
  Graduate Student Committee Member
    Kelsey Hampton, M.S.
    Swathi Iyer, M.S.
    Asona Lui, M.D./Ph.D.
    Kishore Polireddy, M.S.
    Lili Pan, M.S.

KUMC
  Member, Faculty Position Search Committee – Cancer Center
  Member, Faculty Position Search Committee – Cancer Biology
  Member, Genomic Facility Advisory Committee
  Member, KUCC Scientific and Clinical Research Sub-Committee

National
  Member, Cancer Research UK Programme – Norbury Peer Review
  Chair, VA Gastroenterology Review Committee

Editorials and Grant Reviews:
  Member, NIH Chemo/Dietary Prevention (CDP) Study Section
  Chair, Chemoprevention SEP Panel
  Member, NCI SPORE review panels (2012 Oct- Discussion Leader, GI SPORE)
  Member, Fellowships Panel, Complementary and Alternative Medicine
  Chair, NCCAM Program Projects Study Section
  Chair, VA Gastroenterology Merit Review Study Section (2014-2016)
  Editorial Board Member, BMC Physiology (2011-present)
  Editorial Board Member, Cancer Research (2013-present)
  Editorial Board Member, Clinical Medicine: Gastroenterology (2007-present)
  Editorial Board Member, ECAM (2006-present)
  Editorial Board Member, Molecular Carcinogenesis (2014-present)
  Editorial Board Member, European Journal of Clinical Medicine (2010-present)
  Editorial Board Member, Immuno Gastroenterology (2011-present)
  Editorial Board Member, International Journal of Cancer (2008-present)
  Editorial Board Member, International Journal of Oncology (2008-present)
  Editorial Board Member, Translational Gastrointestinal Cancer (2011-present)
  Ad hoc Reviewer, EMBO Journal
  Ad hoc Reviewer, PNAS USA
  Ad hoc Reviewer, Gastroenterology
  Ad hoc Reviewer, Molecular and Cellular Biology
  Ad hoc Reviewer, Journal of Lipid Research
  Ad hoc Reviewer, Metabolism
  Ad hoc Reviewer, American Journal of Physiology-GI
  Ad hoc Reviewer, Digestive Diseases and Science
  Ad hoc Reviewer, Gut
Dr. Anant (continued)

Editorial and Grant Reviews (continued)
- Ad hoc Reviewer, *AJP GI and Liver*
- Ad hoc Reviewer, *Journal of Biological Chemistry*
- Ad hoc Reviewer, *Cancer Research*
- Ad hoc Reviewer, *Human Heredity*
- Ad hoc Reviewer, *Journal of Cellular Biochemistry*

Teaching Activities:
- Carcinogenesis and Cancer Biology course
  - 1 lecture

Trainees:
- Afreen Sayed, Graduate Student
- Zainab Afsal, Rotation student
- Julia Balmaceda- Summer Student
- Parasarathy Rangarajan, Post-doctoral Fellow (Effect on Cyclopirox on Bladder Cancer)
- Deep Kwatra, Post-doctoral Fellow (Bitter melon and its component Charantin on colon cancer therapy)
- Gaurav FNU, Post-doctoral Fellow (Honokiol effect on Melonama)
- Prasad Dandawate- Postdoctoral Fellow (Jak2 and Stat3signling pathway on pancreatic cancer)
- Satheesh K. Sainathan- Senior Scientist (Prolatin and its signaling pathways)
- Dr. Pablo Angulo, DO, Fellow in Children Mercy Hospital (Osteosarcoma – therapy)
- Sivapriya Ponnurangam, Research Associate
- David Standing, Research Technician
- Dharmalingam Subramaniam, Research Assistant Professor- Molecular & Integrative Physiology
- Satish Ramalingam, Research Assistant Professor - Molecular & Integrative Physiology
- Prabhu Ramamoorthy, Research Assistant Professor - Molecular & Integrative Physiology
- Dr. Aravind Sugmar, MD, Assistant Professor- Internal Medicine (Effect of Gedunin and its analog on pancreatic cancer)
- Dr. Seth Septer, MD, Assistant Professor -Children Mercy Hospital (FAP, Colon Cancer Prevention and therapy)
- Dr. Kathrine Chastain, Assistant Professor- Children Mercy Hospital (Sarcoma in a Dish)
- Dr. Joshua Mammen, M.D./Ph.D., Associate Professor of Surgery and Molecular & Integrative Physiology (Effect of Honokiol on Melanoma)
- Dr. Animesh Dhar, Associate Professor of Cancer Biology (Histone demethylases in Cancer)
- Dr. Sufi Thomas, PhD – Associate Professor Otolaryngology and Cancer Biology
Dr. Anant (continued)

Trainees (continued)
  Dr. Ramesh Balusu, PhD – Assistant Professor, Hematologic Malignancies and Cellular Therapeutics
  Dr. Rekha Rao Manepalli, PhD – Assistant Professor, Hematologic Malignancies and Cellular Therapeutics

Other Activities:
  Thomas O Sullivan Foundation- Golf Tournament; Colon cancer awareness

  Rod Rogers Memorial Golf Tournament- Golf Tournament; Pancreatic cancer awareness
Andrei B. Belousov, Ph.D., Associate Professor

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

Meetings Attended:
March 28- April 1, 2015- *International Gap Junction Conference.* Valparaiso, Chile

Committee Activities:
Departmental Member, Graduate Student Advisory Committee
KUMC Physiology Department Representative, KUMC Faculty Council Member, Interdisciplinary Graduate Program in Biomedical Sciences (IGPBS) Admission Committee

Editorial and Grant Reviews:
Ad hoc Reviewer, *Nature Reviews Neuroscience*
Ad hoc Reviewer, *Frontiers in Cellular Neuroscience*
Ad hoc Reviewer, *International Journal of Molecular Sciences*
Ad hoc Reviewer, *Behavioral Brain Research*
Ad hoc Reviewer, *FEBS Letters* (2 papers)
Ad hoc Reviewer, *Neuroscience*
Ad hoc Reviewer, *African Journal of Biotechnology*
Ad hoc Reviewer, *Translational Neuroscience*
Ad hoc Reviewer, *The open Neuroscience Journal*
Editorial Board Member, *the Open Neuroscience Journal (ON), Bentham Science Publishers*
Served on as institutional reviewer for *The Research Foundation Flanders* (Fonds Wetenschappelijk Onderzoek-Vlaanderen, FWO), which is an independent funding agency that supports fundamental research in Belgium.

Academic Honors:
I gave an invited lecture at the *International Gap Junction Conference,* Valparaiso, Chile, March 28-April 1, 2015.

Teaching Activities:
PHSL 842 – Comprehensive Human Physiology
  9 – 2 hour lectures
PTRS 863 – Pathobiology of Human Function
  1 – 2 hour lecture
GSMC 853 – Cellular Structure
Dr. Belousoy (continued)

Training Activities (continued)
   2 – 2 hour lectures
      1 – 2 hour seminar
   T32 Summer Journal Club
      1– 2 hour discussion

Trainees:
   Janna V. Belousova, Senior Research Assistant
Our laboratory studies the role of ion-transport proteins of the plasma membrane in cell function. Research is focused on the Na, K-ATPase, a plasma membrane enzyme system that uses the energy from ATP to maintain high intracellular K$^+$ and low intracellular Na$^+$ concentrations in the cell, which are essential for cell function. The Na,K-ATPase comprises a group of isozymes, each characterized by unique enzymatic properties and a cell-dependent and developmentally regulated pattern of expression. Our research is focused on two main projects.

1. **Studies on Na,K-ATPase alpha4.** Alpha4 is an isoform of the catalytic subunit of the Na,K-ATPase that is selectively expressed in spermatozoa. We have found that alpha4 has functional properties that are different from those of the other Na,K-ATPase isoforms. Alpha4 is expressed in the mid-piece of the sperm flagellum, and is important for sperm motility and fertility. A variety of molecular, cell biology and genetics approaches are being used to study the regulation, activity and mechanisms of action of alpha4 in sperm physiology. Also, we are searching for compounds that will specifically inhibit alpha4, with the idea of using them as male contraceptive agents. These studies will help understand the importance of ion transport in male gamete fertility and contraception.

2. **Studies on the role of the Na,K-ATPase in autosomal dominant polycystic kidney disease (ADPKD).** We have found that renal epithelial cells from patients with ADPKD and various mouse models of ADPKD, have Na,K-ATPase with an abnormally high affinity for ouabain, a hormone released by the adrenal glands. We have demonstrated that ouabain stimulates cyst formation and growth by ADPKD cells and kidneys. This places ouabain as an agent that can exacerbate the progression of ADPKD. Currently, using human kidney ADPKD cells and different mouse models of ADPKD, we are investigating the mechanisms by which ouabain affects cyst formation and progression in the disease and how to interfere with these effects. Our goal is to find pharmacological approaches to slow ADPKD cystogenesis.

Meetings Attended:
- **August-September 2014** – Chair of a session entitled: ATPases. Physiology, Medicine and Therapy. 14th International ATPase Conference. Lunteren, The Netherlands
- **October 2014** – Gladis Sanchez, Shameen Sultana Syeda, Kwon Ho Hong, Gunda Georg and Gustavo Blanco. Cardenolide inhibition of the sperm-specific Na,K-ATPase α4 for male contraception.
- **October 2014** – Blanco G. Na,K-ATPase alpha4 inhibitors as male contraceptives. U01 Meeting, KUMC
- **April 2015** – Blanco G. Na,K-ATPase α4 isoform as a target for male contraception. American Society of Andrology Meeting, Salt Lake City
Committee Activities:

Departmental

Member, Ph.D. Thesis Committee for Michelle McWilliams (Dept. Physiology)
Member, Ph.D. Thesis Committee for Archana Raman (Dept. Physiology)
Member, Ph.D. Thesis Committee for Pei-Lei (Dept. Physiology)
Member, Ph.D. Thesis Committee for Wei-Ting (Dept. Physiology)
Member, Ph.D. Thesis Committee for Wen Zhao (Dept. Pharmacology)
Member, Ph.D. Thesis Committee for Kelly Boxberger (Dept. Pharmacology)
Member, Ph.D. Thesis Committee for Yuchen Zhang (Dept. Pharmacology) KUMC
Member, Department P&T Committee
Member, Physiology Department Advisory Finance Committee
Member, Comprehensive exam Committees for graduate students

KUMC

Director, Developmental Research Project Core of the K-INBRE.
Member, Wescoe Society, serving as a mentor for medical students.
Member, MD/Ph.D. Admission Committee Program, including interviewing students
Member, Kidney Institute Executive Board
Member, LCME visit for accreditation committee of KUMC
Member, University Biotechnology Sequencing Facility
Member, Organization of the Greenwald Symposium in Reproduction

Editorial and Grant Reviews:

Editorial Board Member, *American Journal of Physiology, Metabolism and Endocrinology Section*
Editorial Board Member, *Journal of Assisted Reproduction and Genetics*
Reviewer, *Andrology*
Reviewer, Agencia Nacional de Investigacion e Innovacion, Uruguay 2014
Reviewer, National Agency for Scientific Promotion and Technology, Argentina
Reviewer, German-Israeli Foundation for Scientific Research and Development
Charter Member, NIH CMIR Study Section
Member, Selection Awards Committee for the American Society of Andrology
Dr. Blanco (continued)

Seminars Presented:
January 2015 – Radbound University Medical Center, Nijmegen, The Netherlands

Academic Honors:
Students Voice Award for Excellence in Teaching (2014-2015), University of Kansas Medical Center

Teaching Activities:
Renal Physiology, CORE 825 – Renal Endocrine System, Medical Physiology
11 hours lecture
4 hours Interactive clinical cases in renal physiology
2 hours review for renal physiology for Board preparation
4 hours small group facilitation
Integration and Consolidation CORE 860 – Renal Physiology for Medical Students
1 hour Lecture
Renal Physiology. Board review, Step Prep
1 contact hour.
IGPBS 853 – Cell membrane structure and transport systems of the plasma membrane.
6 hours lecture.
Advanced Topics in Renal Physiology. Kidney Institute Course.
4 contact hours
Comprehensive Human Physiology, PHSL 842 – Graduate student course.
6 contact hours.
Pre-Med college students from KU
2 contact hour.
Wescoc Society Mentor
1 hour group session
Ion motive ATPases – Radbound University Medical Center, Nijmegen, The Netherlands

Other Activities:
Thesis Dissertation committees for the following students:
Carina Henriksen, Aarhus University, Aarhus, Denmark
Karl Weigand, Radbound University, Nijmegen, The Netherlands
Dr. Blanco (continued)

Trainees:
   Gladis Sanchez, Research Associate.
   Project title: Na,K-ATPase alpha4 as a target for male contraception.

   Jeff McDermott, Research Associate.

   Jessica Venugopal, Graduate Student.
   Project title: Ouabain induced and Na,K-ATPase mediated effects in polycystic kidney disease
Paul D. Cheney, Ph.D., Professor

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

Meetings Attended:

Committee Activities:
Departmental
Comprehensive Exam Committees:
Dissertation Advisor, MD/PhD Committee for Naomi Butler Tjaden
Member, Ph.D. Committee for Anaria Barnds (Biomedical Engineering)

School of Medicine
Member, Internal Advisory Committee, NIH Neuroscience Rehabilitation Training Grant, Dr. Nudo, PI.
Member, Mentoring Awards Review Committee

KUMC
Member, Institute for Neurological Disorders Executive Committee
Co-director, Neuromuscular and Movement Disorders Division of the Institute for Neurological Disorders
Dissertation Co-advisor, Sommer Amudson – Ph.D. Bioengineering
Research Mentor, Hesham Soloman, M.D. – Senior neurosurgical resident

KUMC-KU Lawrence
Member, KU Bioengineering Advisory Committee
Member, KIDDRC Internal Scientific Advisory Committee
KIDDRC Theme leader, Neurobiology of Mental Retardation and Developmental Disabilities

National
Member of the UMKC School of Medicine Endowed Chair Review Committee for the review of Dr. John Wang, Professor of Anesthesiology, January 22nd, 2015

Editorials and Grant Reviews:
Ad hoc Reviewer, J. Neurophysiology
Ad hoc Reviewer, J. Neuroscience
Ad hoc Reviewer, Experimental Brain Research
Ad hoc Reviewer, Brain
Ad hoc Reviewer, Cerebral Cortex
Dr. Cheney (continued)

Editorials and Grant Review (continued)
Ad hoc Reviewer, Brain Stimulation
Ad hoc Reviewer, Neuroscience Letters
Grant Reviewer, KUMC, Woodyard Fellowship Applications, Institute for Neurological Disorders
Grant Reviewer, KUMC Biomedical Research Training Program
Grant Reviewer, Frontiers Clinical Pilot and Collaborative Studies Funding Program and KUMC Research Institute Internal Clinical Pilot Research Grant and Lied Basic Science Grant Programs
Grant Reviewer, Letters of intent for KIDDRC U54 research projects

Teaching Activities:
PHSL 846 – Advanced Neuroscience
   Summer 2015, 3 students
   6 lecture hours
REHS 962 – Advanced Rehabilitation Science
   Fall 2014, 4 students
   2 hours lecture
Mechanical Engineering, Biomechanics (Dr. Carl Luchies-Director)
   Fall 2014, 30 students
   2 hours lecture
PTRS 882- Pathobiology of Human Function
   Spring 2015, 6 students
   2 hours lecture
Dissertation co-advisor – Sommer Amundson, Ph.D. Bioengineering student
Research Mentor – Hesham Soloman, M.D. Senior neurosurgical resident
Vargheese M. Chennathukuzhi, Ph.D., Assistant Professor

My research interests include uterine fibroids, fertility and contraception. Uterine fibroids are the most common tumors of the female reproductive tract and are the predominant indication for hysterectomies in the US. Yet, there is no approved drug to treat uterine fibroids chronically. Our laboratory is currently trying to understand the regulation and function of GPR10, a G protein-coupled receptor aberrantly expressed in uterine fibroids. Activation of GPR10 by its cognate ligand promotes cell proliferation, specifically in cultured primary leiomyoma (fibroid) cells. We have generated transgenic mice overexpressing GPR10 in the myometrium in order to understand its role in the pathogenesis of fibroids. Transgenic mice expressing hGPR10 in the myometrium develop uterine fibroids that are phenotypically identical to the human disease. We plan to use this preclinical model for the development of small molecule modulators of GPR10 as treatment for fibroids. In addition, we have identified the molecular machinery that regulates aberrant expression of GPR10 in uterine fibroids. We are currently developing loss of function models for REST, the transcriptional repressor of GPR10, and for PRICKLE 1, the gene that regulates REST.

Our laboratory is also interested in molecules that regulate sperm function and male fertility. We are studying functional regulation of the sperm specific sodium-proton exchanger (sNHE) in expression systems that utilize chimeric channels.

Committee Activities:
Departmental
Member, Thesis Committee, Zahraa Alali
Member, Thesis Committee, Younshim Park
Member, Thesis Committee, Sara Pearson
Member, Thesis Committee Wei-Ting Hung
Member, Thesis Committee Safder Saieed
Member, Thesis Committee Ashley Ward
Member, Finance Committee
Member, GSAC
Co-coordinator, Physiology Seminar Series
KUMC
Member, D3ET (Drug Discovery, Delivery and Experimental Therapeutics), IAMI

Editorial and Grant Reviews:
Reviewer, Human Reproduction
Reviewer, Biology of Reproduction
Reviewer, Molecular Reproduction and Development
Reviewer, Developmental Biology
Member, Special Emphasis Panel/Scientific Review Group 2015/10 ZRG1 EMNR-A (02) M
Member, Special Emphasis Panel/Scientific Review Group ZRG1 EMNR D2015 (02)
Dr. Chennathukuzhi (continued)

Seminars Presented:
November 14, 2014 – “REST and the pathogenesis of uterine leiomyomas.”
University of Missouri, Columbia
December 11, 2014 – “The role of REST in the pathogenesis of uterine fibroids.”
Anatomy and Cell Biology, KUMC

Teaching Activities:
PHSL 834 – Reproductive Physiology
Course Co-Director
9 hours
IGPBS 851 – Genetic Switches-Gene
6 hours

Trainees:
Faezeh Koohestani, Ph.D. (Postdoctoral Fellow): The Role of REST in the pathogenesis of uterine fibroids
Michelle McWilliams (Graduate Student): Estrogenic regulation of PRICKLE1 and its effect on REST in uterine fibroids
Mina Farahbakhsh (M.D./Ph.D. Graduate Student): Role of ADAM12 and other REST target genes in uterine fibroids
Sornakala Ganeshkumar (Research Assistant)
Kavya Shivashankar (Summer Intern, June – Aug 2014, Undergraduate Student, Columbia, NY.
Ganesh Aruna (Summer Intern, June – Aug 2015, High School Senior):
Regulation of PRICKLE1 in Alzheimer’s disease
Fertility control is a major health concern for premenopausal women. Research in my laboratory focuses on understanding the terminal events involved in follicular development, ovulation and luteal tissue formation. The studies have direct implications in development of a fertile healthy oocyte, contraception and disease conditions such as polycystic ovarian syndrome and ovarian cancer. Current studies focus on understanding the role microRNA post-transcriptional gene regulation plays in the ovulatory process. The laboratory is also working to understand what role extracellular vesicles (exosomes and microvesicles) play in ovarian function (oocyte maturation, granulosa cell function) and in ovarian cancer. These studies use the latest state of the art technologies, including next-gen-sequencing, nanoparticle analysis in addition to standard molecular and biochemical techniques. The laboratory also uses a comparative approach using human, bovine and murine cells and animal studies in both cows and mice to gain further insights into the reproductive biology of the ovary.

Committee Activities:

Departmental
Co-Director, Graduate Student – GSAC
Member, Departmental Finance Committee
Graduate Student Committee Member:
  Erin Farmer (Hays) (Physiology)-M.S. Advisory Committee Chair
  Jennifer Crow (Pathology) - Ph.D. Advisory & Dissertation Member
  Stacey Keller (Biostatistics) – M.S. Advisory Committee Member
  Li Chen (Physiology) – Ph.D. Advisory Committee Member
  Bryce Warren (Anatomy) – Ph.D. Advisory Committee Member
  Hanan Elsarraj (Pathology) – Ph.D. Advisory Committee Member

KUMC
Member, Advisory Committee for the Microarray Facility
Member, Mass Spectrometry Oversight Committee

National
Director on SSR Board, Society for Study of Reproduction Program Committee
Co-Program Chair, 2016 SSR Meeting
Section Director, Frontiers in Reproduction Course at Marine Biol. Laboratory

Editorial and Grant Reviews:
Ad hoc Reviewer, Cell and Tissue Research
Ad hoc Reviewer, Endocrinology
Ad hoc Reviewer, Reproduction
Ad hoc Reviewer, FEBS Letters
Ad hoc Reviewer, Plos Genetics
Ad hoc Reviewer, Plos One
Ad hoc Reviewer, Mutation Research Reviews
Dr. Christenson (continued)

Editorials and Grant Review (continued)
Ad hoc Reviewer, Steroids
Ad hoc Reviewer, Biology of Reproduction
Ad hoc Reviewer, Molecular and Cellular Endocrinology
Ad hoc Reviewer, Journal of Assisted Reproduction and Genetics
Ad hoc Reviewer, Molecular Human Reproduction
Ad hoc Reviewer, Journal of Ovarian Research
Ad hoc Reviewer, Journal of Assisted Reproduction and Genetics
Ad hoc Reviewer, Board of Reviewing Editors for Biology of Reproduction
Ad hoc Reviewer, Israel Science Foundation, March 24, 2015
Ad hoc Reviewer, Environment and Health Fund (EHF) in Israel, June 23, 2015
Ad hoc Study Section Reviewer: National Institute of Health-Cellular, Molecular and Integrative Reproduction (CMIR), February 16, 2015
Reviewer, National Institute of Health- Reproduction, Andrology and Gynecology Study Section 2015-19

Seminars Presented:
Department of Biology, University of Kentucky, Lexington, KY

Teaching Activities:
GSMC 851 - Molecular Genetics (IGPBS)
  2-2 hour lectures
GSMC 852-Introduction to Biomedical Research (IGPBS)
  2 hour lecture
PHSL 851-Seminar
  2-1 hour lectures

Trainees:
Wei-Ting Hung – Ph.D. Advisor: Exosomes in ovarian function
Jasmine Nwachokor –MS Clinical Research KUMC – (Co-Advisor for MS Clinical Res.): Serum Exosomal MicroRNA as a Clinical Biomarker for diagnosing Barrett’s Esophagus and Esophageal Adenocarcinoma
Pavla Brachova – Postdoctoral Fellow: The role of CD81 in follicular exosome function
Xiaoman Hong- Senior Research Associate
Lynda McGinnis- Research Assistant Professor-Attained independent funding (NIH-R21) under my supervision and a faculty position at the University of Southern California
**Salvatore J. Enna, Ph.D.**, Professor; Associate Dean for Research and Graduate Education; Professor, Department of Pharmacology, Toxicology and Therapeutics

Research focused on neurotransmitters and neurotransmitter receptors, with particular emphasis on the structure, function and pharmacology of GABA receptors.

Meetings Attended:
- May 2015 – “IUPHAR Mission”, ASCEPT-BPT Joint Scientific Meeting, Hong Kong, China
- July 2015 – “GABA Receptors and Cognition: Perspectives for Drug Development”, Summer School of Neuroscience, University of Catania, Catania, Italy

Committee Activities:
- **KUMC**
  - Associate Director, Internal Advisory Committee, Kansas University Training Program in Neurological and Rehabilitation Sciences
  - Member, Research and Training Committee
  - Member, Executive Research Committee
- **National**
  - Chair, Nebraska-BRIN External Advisory Committee
  - Member, PhRMA Foundation Pharmacology Advisory Panel
  - Member, Research Advisory Council, University of Missouri-Kansas City School of Pharmacy
  - Member, GABA-B Nomenclature Database Committee
  - Member, UMKC School of Pharmacy Research Advisory Council
  - Member, Institute of Medicine, Neuroscience Training Workshop Planning Committee
- **International**
  - President, Secretary General, International Union of Basic and Clinical Pharmacology Executive Committee

Editorials and Grant Reviews:
- Editor-in-Chief, *Biochemical Pharmacology*
- Executive Editor-in-Chief, *Pharmacology & Therapeutics*
- Co-Editor, *xPharm*
- Co-Editor-in-Chief, *Current Protocols in Pharmacology*
- Series Editor, *Advances in Pharmacology*
- Guest Editor, *Biological and Pharmaceutical Bulletin*
- Section Head, Neuropsychology and Psychopharmacology, *Faculty of 1000 Pharmacology* Section Editor, *Reference Module in Biomedical Sciences*
Dr. Enna (continued)

Editorials and Grant Review (continued)
Editorial Advisory Board Members:
- Brain Research
- Life Sciences
- CNS Drug Review
- Current Opinion in Pharmacology
- Chinese Medicine
Ad hoc Reviewer, Proceedings of the National Academy of Sciences USA
Ad hoc Reviewer, Journal of Pharmacology and Experimental Therapeutics
Consultant:
- Axinn
- Veltrop
- Harkrider
- LLP

Seminars Presented:
October 2014 – “Alternative Approaches to Lead Generation”, University of Milan School of Medicine, Milan, Italy, October
October 2014 – “Preparing a Research Article”, University of Milan School of Medicine, Milan, Italy

Teaching Activities:
Faculty Advisor Orr Society Mentor for:
- Jason-Flor Sisante
- Linda D'Silva
- Josh Mark, Karin Valle (Preparation of NRSA Grant Proposal)

Graduate
School of Pharmacy (Lawrence Campus)
- 3 hours Lecture
Psychiatry Residents Lecture
- 2 hours Lecture
PHSL 846 Advanced Neuroscience
- 3 – 2 hour lectures
Graduate Students: Research Integrity
- 1 hour
Directed Summer Research Integrity/Journal Club for T32 Students:
- 10 hours
PHSL 848 Molecular Mechanisms in Neurological Disorders
- 2 – 2 hour Small Group Sessions
- 3 – 2 hour lecture
Dr. Enna (continued)

Associates
Ms. Lynn LeCount, Managing Editor, *Biochemical Pharmacology; Pharmacology & Therapeutics; Pharmacology International, and Advances in Pharmacology*
Ms. Jennifer McNichols, Editorial Coordinator, *Biochemical Pharmacology; Pharmacology & Therapeutics, Pharmacology International, and Advanced in Pharmacology*

Academic Honors:
Paoletti Medal from the European Pharmacology Society in Recognition of Significant and Sustained Contributions to Pharmacology Research and Training

Elected President of the International Union of Basic and Clinical Pharmacology (IUPHAR)

UMKC School of Pharmacy Graduate School Distinguished Alumnus of the Year Award for Outstanding Service to the Pharmaceutical Profession, the Scientific Community, and to UMKC (Inaugural Recipient)
Shawn Frost, Ph.D., Research Assistant Professor

Our laboratory studies neural plasticity in response to neurological injury and behavioral experience. We are interested in the underlying mechanisms of recovery after injury that can be used in the development of therapeutic interventions in treatment of stroke and brain injury. In a second project, we are currently developing an electronic aid to bridge the damaged spinal cord to connect the brain to spinal motor neurons below the level of injury.

Meetings Attended:

Committee Activities:
- KUMC Member, Society for Neuroscience, Kansas City Chapter
- Participant, Brain Awareness Week activities

Editorials and Grant Reviews:
- Reviewer, Stroke (8/4/2014)
- Reviewer, Stroke (11/10/2014)
- Reviewer, Stroke (12/3/2014)

Seminars Presented:
- April 11, 2015 –“The Gross Brain Anatomy.” KUMC Brain Fair, Kansas City, KS
- May 20, 2015 –“Neuroscience: the scientific study of the nervous system.” Symington Elementary School, Kansas City, MO

Teaching Activities:
- CORE 840 – Brain and Behavior
  20 hours lab
- PHSL 846 – Advanced Neuroscience
  2 hours lecture
- Student Research Forum
  1.5 hours - Workshop on Presentations
- Advisor to two Graduate Students
Paige C. Geiger, Ph.D., Associate Professor

Type 2 diabetes (T2D) is one of the leading causes of mortality and morbidity in the world. T2D is characterized by insulin resistance and is typically correlated with obesity and aging. In our lab, we study the molecular mechanisms underlying age-related and high fat diet-induced insulin resistance. We hypothesize that oxidative stress is responsible for inhibiting insulin signaling and for the impairment of glucose homeostasis. Stress kinases such as JNK and IKK-β are activated by oxidative stress and have recently been implicated in inhibiting insulin signal transduction. Thus, we are examining the targeted inhibition of stress kinases to improve insulin sensitivity. We are also exploring therapeutic interventions such as heat therapy, exercise and anti-oxidant treatment in high fat-fed rats.

Meetings Attended:
- April 16-17, 2015 – “Heat shock proteins in the Pathogenesis and Treatment of Type 2 Diabetes.” Climate Change: Biological Consequences of Heat Stress, Iowa State University
- 2014 – McLaughlin M, Geiger PC, Durham D. “How to Build a WIMS Organization on Limited Funds.” Consultation Breakfast Table Topics Proposal for AAMC Group on Faculty Affairs Conference 2014

Committee Activities:
- Departmental
  - Member, Graduate Student Advisory Committee:
    - Chair, Ashley Ward Archer Ph.D. candidate
    - Chair, Robert Rogers Ph.D. candidate
    - Member, David Wilson M.S. candidate
    - Member, Jackie Thompson Ph.D. candidate
    - Member, Narita Roy Ph.D. candidate
    - Member, Isabella Fuentes Ph.D. candidate
    - Member, Michael Cooper Ph.D. candidate
    - Member, Kathleen M. Osborn Fellowship Committee
    - Member, Seminar Committee
- KUMC
  - Member, Exercise is Medicine Student Group Faculty Advisor
  - Member, American Medical Women’s Association Faculty Advisor
  - Member, KUMC Research Advisory Committee
  - Member, Emily Taylor Center for Women and Gender Equity Advisory Board
  - Member, Cray Diabetes Center Advisory Board
  - Member, A Healthy U Workplace Wellness Program Physical Activity Committee
  - Member, KUMC Student Union Corporation Board
  - Member, KUMC Lied Pilot Program Grant Review Committee
  - Member, Orr Society Faculty Advisor
Dr. Geiger (continued)

Editorials and Grant Reviews:
Ad hoc Reviewer, *American Journal of Physiology* Endocrinology
Ad hoc Reviewer, *Metabolism*
Ad hoc Reviewer, *Diabetes*
Ad hoc Reviewer, *Physiology*
Ad hoc Reviewer, *Applied Physiology*
Editorial Board Reviewer, *American Journal of Physiology: Regulatory, Integrative and Comparative Physiology*
Reviewer, NIH Integrative Physiology of Obesity (IPOD) Study Section
Reviewer, NIH/NIA Special Emphasis Panel Program Project
Member, NIH Webinar on Molecular Mechanisms whereby Physical Activity Benefits Health-Integrated Physiology

Seminars Presented:
March 2, 2015 – “Obesity, insulin resistance and diabetes: Sex difference and the role of estrogen receptors.” Department of Molecular and Integrative Physiology, Kansas City, KS
March 5, 2015 – “Heat shock proteins and mitochondrial function in the prevention of fatty liver disease and hepatic insulin resistance.” Novel Approaches in the Study of Liver Disease, Mini Symposium by KU Liver Center Disease Cobre, Kansas City, KS
April 24, 2015 – “The role of estrogen receptor alpha in control of energy balance and glucose homeostasis.” Institute of Reproductive Health and Regenerative Medicine, Kansas City, KS

Teaching Activities:
PHSL 842 – Comprehensive Human Physiology
11 – 2 hour lectures
CORE 815 – Cardiopulmonary Module, M1 Students
4 hours lecture
4 hours small group
Integrative Physiology of Exercise
64-2 hour lectures
Orr Society M1/M2 Advisor

Trainees:
Joshua Wheatley, MS – Research Associate
Robert Rogers, MA, PhD – Doctoral Student
Ashley Ward Archer – Doctoral Student
Kathleen White – M1, student volunteer
David Wilson, KU-Lawrence Masters student
Olivia Eller, IGPBS rotation student
Camron Myers, SME High school student volunteer
Dr. Geiger (continued)

Trainees (continued)
  Joseph Blond, KINBRE Summer Scholar, undergraduate

Academic Honors:
  Glendon G. Cox Faculty Leadership and Excellence Award
  Central Exchange Women in STEMM Inaugural STEMMY Award – Rising Trendsetter
Norberto C. Gonzalez, M.D., Professor

I am currently in the Phased Retirement program at 50% effort. This is my last year in the department. I have already closed my laboratory and terminated my last NIH R01 grant which was originally funded in 1988. Currently my research efforts consist of collaborations with colleagues, mainly Dr. Geiger and Dr. Wood from our Department, and Dr. Kasturi from Pharmacology.

My research during the last several years has centered on the mechanisms of adaptation to alveolar hypoxia in intact animals. Alveolar hypoxia occurs when the environmental oxygen levels are reduced as it happens in altitude, or when pulmonary function is altered, as in COPD, ARDS, and restrictive pulmonary diseases. My laboratory has been involved in two main aspects of the effects of hypoxia in intact animals. One involves the mechanisms by which aerobic capacity is affected by hypoxia; these studies have been carried out in a rat model that allows the characterization of the systemic O₂ transport from the atmosphere to the cell at rest and during maximal exercise. In these studies we have investigated the roles several factors on the determinants of maximal exercise capacity, including exercise training, changes in red blood cell mass and alterations of the affinity of Hb for O₂. Longitudinal studies in rats artificially bred for diverging aerobic capacity have provided important clues on the development of the determinants of exercise capacity along several generations. The information obtained in these studies has helped advance the understanding of the role of hypoxia on the different steps of the O₂ cascade from atmosphere to cell and, by extension, of the factors that determine aerobic capacity. A second major research theme has involved the mechanisms by which alveolar hypoxia induces systemic inflammation. In collaboration with Dr. Wood we carried out experiments in which the microcirculation was directly visualized in vivo. These studies showed that hypoxia induces systemic inflammation triggered by activation of alveolar macrophages, and demonstrated the sequence of events that lead from reduction in the alveolar O₂ tension to the development of inflammation in the systemic microcirculation. This extrapulmonary effect of alveolar macrophage activation by hypoxia may be a contributory mechanism of the systemic effects frequently present in patients with systemic hypoxia originated by pulmonary diseases.

Committee Activities:
  Departmental
    Chair, Departmental Appointments, Promotions and Tenure Committee
    Member, Dissertation Committee for Robert Rogers, Ph.D. candidate

Editorial and Grant Reviews:
  Editorial Board Reviewer, Hypoxia, Dove Press
  Reviewer, Welcome Trust, United Kingdom
  Reviewer, 2015 Fellowship Application
  Ad hoc Reviewer, The Journal of Applied Physiology
  Ad hoc Reviewer, Respiratory Physiology & Neurobiology
  Ad hoc Reviewer, The American Journal of Physiology, Regulatory, Integrative and Comparative Physiology
Dr. Gonzalez (continued)

Editorials and Grant Review (continued)
   Ad hoc Reviewer, *American Journal of Physiology, Heart and Circulatory Physiology*
   Ad hoc Reviewer, *Hypoxia*
   Ad hoc Reviewer, *PLOS One*
   Ad hoc Reviewer, *The European Journal of Applied Physiology*
   Ad hoc Reviewer, *Experimental Physiology*
   Ad hoc Reviewer, *International Journal of Sports Medicine*

Seminars Presented:
   June 18, 2015 – “What did you discover? Reflections on a lifetime of research in physiology” Department of Molecular and Integrative Physiology, KUMC

Teaching Activities:
   CORE 815 Respiratory Physiology, Cardiopulmonary Module
      6 lectures
      1 review session
      3 – 2 hour small group meetings
   CORE 860 Regulation of the acid-base balance, Integrative and Consolidation Module
      1 lecture
   PHSL 835 – Integrative Physiology of Exercise
      6 – 2 hour lectures
   Medical Student Mentoring
      10 sessions
Sumedha Gunewardena, Ph.D., Research Assistant Professor

Research Interest: Bioinformatics and computational genomics: modeling protein-DNA interactions, biological sequence analysis, microarray data analysis, biological pathways and network analysis, development of computational tools and databases.

Published publication:


Leslie L. Heckert, Ph.D., Marion M. Osborn Professor for Reproductive Sciences

The research in our laboratory focuses on the transcriptional and cell-signaling processes for proper function and development of the gonads. Sequence and structural information of the genome are queried to identify new proteins and regulatory pathways that direct cellular differentiation and gametogenesis, with the goal of extending our understanding of the mechanistic requirements for fertility, as a means to improve the options for contraception as well as diagnosis and treatment of infertility. Current research is focused on genes that encode the follicle-stimulating hormone receptor (FSHR) and doublesex and mab-3 related transcription factor 1 (DMRT1) and using genome editing technology to evaluate the function of predicted regulatory elements in vivo. FSHR is required for cells to respond to the pituitary hormone FSH and thus hormone signaling occurs only in cells that produce the receptor. FSHR expression is highly cell-specific, limiting FSH response to only somatic cells of the gonads. DMRT1 is a transcription factor that is essential for male fertility. It is found only in the testis, where it is required for the differentiation and survival of both germ cells and Sertoli cells.

Committee Activities:
   Departmental
      Member, Graduate Student Advisory Committee
      Member, Department Finance Committee
      Member, Promotions & Tenure Committee
   KUMC
      Member, IGPBS Curriculum Development and Oversight Committee
      Member, Transgenic and Gene Targeting Core Oversight Committee
      Member, Institutional Biosafety Committee
      Member, Research Misconduct Committee
   National
      Member, Program Committee, XXII North American Testis workshop
      Member, Future Meetings Committee, Society for the Study of Reproduction
      Vice Chair, XXII North American Testis Workshop
      Chair, Abstract Review Committee, XXII North American Testis Workshop
      Chair, XXIV North American Testis Workshop

Editorial and Grant Reviews:
   Reviewer, Lied Basic Science grant applications
   Reviewer, KIDDRC Letters of Intent
   Ad hoc reviewer, Biology of Reproduction
   Editorial Board Member, Endocrinology
Dr. Heckert (continued)

Trainees:
  Valentine Agbor, Ph.D. – Post Doctoral Volunteer
T. Rajendra Kumar, Ph.D., Professor, Director of the Center for Reproductive Sciences

Our laboratory studies development and regulation of the hypothalamus-pituitary-gonadal (HPG) axis using both gain-of-function transgenic and loss-of-function gene knockout approaches. These unique genetic models mimic many of the human diseases and thus enable us to experimentally tract them spatio-temporally. Specific projects include unraveling signaling pathways in the hypothalamus that contribute to male sexual behavior, understanding human pituitary null cell tumor pathobiology and developing preventive strategies, delineating mechanisms of secretion of pituitary gonadotropins, and age-dependent gonadotropin regulation of testis and ovarian development and function. These translational studies have significant impact in understanding the physiology and pathology of the reproductive axis including abnormal reproductive tract development, infertility, and cancer of the pituitary and gonads.

Meetings Attended:

September 9, 2014 – “Gonadotrophin re-routing and ovarian gene networks.” International Conference on Gonadotrophin Receptors III, Tours, France
January 13, 2015 – “Gonadotrophin re-routing and ovarian function.” UT Southwestern Medical School-Reproductive Biology Seminar Series, Cecil H. and Ida Green Center for Reproductive Biology Sciences and the Department of Obstetrics and Gynecology, Dallas, TX
February 10, 2015 – “Genetics and Physiology of FSH secretion.” Department of Obstetrics and Gynecology, University of Colorado Denver School of Medicine, Aurora, CO
February 27, 2015 – “FSH signaling in ovarian function and osteoporosis in postmenopausal women.” Ansh Labs, Webster, Texas
March 28, 2015 – “Genetic Modification of Pituitary Gonadotropic Hormone Trafficking and Secretion.” The American Society for Pharmacology & experimental Therapeutics- FASEB, Symposium on “Protein trafficking as a target for drug development, Boston, MA
June 1, 2015 – “FSH signaling in ovarian and bone function.” Department of Oral and Craniofacial Sciences, University of Missouri, Kansas City, KS
June 18, 2015 – “Gonadotrophin re-routing and evolution of estrus cycles.” 48th Annual Meeting of the Society for the Study of Reproduction, Symposium on “Neuroendocrine Control of Reproduction-some things old, some things new, some things borrowed, some things left to pursue.” San Juan, Puerto Rico

Committee Activities:
Departmental
Chair, Osborn Endowment Student Scholar Funding Committee
**Dr. Kumar (continued)**

Committee Activities (continued)

- Member, Department of Molecular & Integrative Physiology Seminar Committee
- Judge, Physiology Society Travel Award Applications Evaluation Committee
- Member, Department of Molecular & Integrative Physiology, Promotions & Tenure Committee
- Member, Thesis Committee, N.K. Neradugomma
- Member, Thesis Committee, Jessica Johnson
- Member, Thesis Committee, Kira Marshall
- Member, Thesis Committee, Michelle McWilliams
- Member, Thesis Committee, Mina Farabaksh
- Member, Thesis Committee, Zelha Nil
- Member, Thesis Committee, Afreen Sayed

**KUMC**

- Member, IGPBS Students’ Recruitment Committee
- Member, Faculty Evaluation Committee
- Ad-hoc Member, Faculty Hearing Committee
- Member, MD/PhD Student’s Selection Committee

**National**

- **July 19-23, 2014:** Invited Member, 2014 SSR Program Committee, Grand Rapids, MI.
- **July 19-23, 2014:** Lead Reviewer, SSR 2014 Abstract Evaluations, Sections: Endocrinology: Gonadotropins & Endocrinology: Other, Grand Rapids, MI.
- **July 19-23, 2014:** Chair, Neuroendocrine Module, SSR 2014 Annual Meeting, Grand Rapids, MI.
- **June 2015 – June 2016:** Invited Member, SSR Nominating Committee
- **2014-2017:** Member, Endocrine Society Research Affairs Core Committee.
- **2014 – 2016:** Endocrine Society Member Representative, FASEB Science Research Conference Advisory Committee.
- **March 2015:** Endocrine Society 2015 Annual Meeting at San Diego, Judge to evaluate Presidential Posters.
- **March 2015:** Chair, Platform Session on “Basic and Clinical Aspects of Sexual Reproduction”, Endocrine Society 2015 Annual Meeting at San Diego.
- **March 2015:** Member, US Capitol Hill Visiting Team from the Endocrine Society Research Affairs Core Committee, Represented the State of Kansas.
- **2014-2017:** Review Member, FASEB SRCAC proposals’ Evaluation Committee, Invited nominee from the Endocrine Society Research Advisory Core Committee
Dr. Kumar (continued)

Committee Activities (continued)

December 2014: Expert Referee for evaluating Graduate Student’s Pre-Thesis Submission, Physiology Section, Faculty of Medicine, University of Cordoba, Spain.

Editorial and Grant Reviews:

- Associate Editor, *Molecular Reproduction and Development*
- Senior Editor, *Journal of Assisted Reproduction and Genetics*
- Editorial Board Reviewer, *Biology of Reproduction*
- Reviewer, *American Journal of Physiology: Endocrinology & Metabolism*
- Reviewer, *Biochemica Biophysica Acta (Molecular and Cellular Research)*
- Reviewer, *Biology of Reproduction*
- Reviewer, *BMC Cell Biology*
- Reviewer, *Cell and Tissue Research*
- Reviewer, *Clinical Endocrinology*
- Reviewer, *Development*
- Reviewer, *Developmental Biology*
- Reviewer, *Endocrine*
- Reviewer, *Endocrine-Related Cancer*
- Reviewer, *Endocrinology*
- Reviewer, *FEBS Letters*
- Reviewer, *Fertility and Sterility*
- Reviewer, *Genesis*
- Reviewer, *Genomics*
- Reviewer, *Hormones & Cancer*
- Reviewer, *Journal of Andrology*
- Reviewer, *Journal of Assisted Reproduction and Technology Manuscript*
- Reviewer, *Journal of Cell Biology*
- Reviewer, *Journal of Cell Science*
- Reviewer, *Journal of Clinical Endocrinology & Metabolism*
- Reviewer, *Journal of Clinical Investigation*
- Reviewer, *Journal of Endocrinology*
- Reviewer, *Journal of Urology*
- Reviewer, *Molecular and Cellular Biology*
- Reviewer, *Molecular and Cellular Endocrinology*
- Reviewer, *Molecular Endocrinology*
- Reviewer, *Molecular Reproduction and Development*
- Reviewer, *Oncogene*
- Reviewer, *PLOS ONE*
- Reviewer, *PLOS Genetics*
- Reviewer, *Proceeding of the National Academy of Sciences (USA)*
- Reviewer, *Physiology & Behavior*
- Reviewer, *Physiological Genomics*
- Reviewer, *Reproduction*
- Reviewer, *Reproductive Biology*
- Reviewer, *Reproductive Biology and Endocrinology*
- Reviewer, *Reproductive Sciences*
Dr. Kumar (continued)

Editorials and Grant Review (continued)
Reviewer, RNA
Reviewer, Science
Reviewer, The FASEB Journal
Reviewer, Trends in Endocrinology and Metabolism

Seminars Presented:
January 7, 2015 – “Constructive versus Regulated Hormone Secretion and Ovarian function” Center for Reproductive Sciences, Chalk Talk, Seminar to KUMC IRHRM/CRS Faculty Members

Teaching Activities:
Advanced Developmental Biology; Anatomy – 868
2 – 4 hour Lectures
Tumor development; Cancer Biology – 800
2 – 3 hour Lectures

Trainees:
Dr. Huizhen Wang, Ph.D., Senior Scientist
Ian Graham, Technician
Jacob May, Technician
Dr. Kyle Smith, Neurosurgery Resident
Saurabh Harohalli, Summer Student
Avani Sharma, Summer Student
Pranav Rao, Summer Student
Yashi Wang, Summer Volunteer

Academic Honors:
Promoted to Professor, Department of Molecular & Integrative Physiology
Appointed as Director, Center for Reproductive Sciences, Institute for Reproductive Health and regenerative Medicine
August 13, 2014 – “Functional genomics of pituitary gonadotropins” Ansh Labs, Webster, TX
September 9, 2014 – Invited Speaker – “Gonadotropin re-routing and ovarian gene networks” International Conference on Gonadotropins and Gonadotropin Receptors III, Tours, France
January 13, 2015 – “Gonadotropin re-routing and ovarian function” UT Southwestern’s Reproductive Biology Seminar Series, Cecil H. and Ida Green Center for Reproductive Biology Sciences and the Department of Obstetrics and Gynecology, Dallas, TX
March 8, 2015 – Invited Speaker – “Regulation of distinct GPCR pathways by 2014: Appointed Director, Center for Reproductive Sciences, Institute of Reproductive Health and Regenerative Medicine

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Dr. Kumar (continued)

Academic Honors (continued)

2014: Outstanding Reviewer Award for 2013, Endocrine Society- Molecular Endocrinology Journal
Melissa A. Larson, Ph.D., Research Assistant Professor, Director of KUMC Transgenic and Gene-Targeting Institutional Facility

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

Committee Activities:
   KUMC
   Member, Institutional Animal Care and Use Committee
   Member, Programmatic Sub-Committee of the Institutional Animal Care Use Committee
   Member, Women in Medicine and Science Mentoring Committee
   Co-Chair, Women in Medicine and Science Mentoring Committee
   Member, Institutional BioSafety Committee
   National
   Representative, American Association for Laboratory Animal Science on behalf of the International Society for Transgenic Technologies

Seminars Presented:
   October 3, 2014 – Current Issues in Biotechnology, “Transgenic and Gene-Targeting Facility” Department of Clinical Laboratory Sciences, University of Kansas Medical Center, Kansas City, KS

Trainees:
   Suwen Wei, Senior Research Associate
   Illya Bronshteyn, Research Associate
Phil Lee, Ph.D., Associate Professor

Dr. Lee received his Ph.D. in Biophysical Sciences and Medical Physics from University of Minnesota. His research topic was the physiological bases of functional magnetic resonance imaging (MRI) signals and development of novel non-invasive magnetic resonance techniques for the biophysical investigation. Dr. Lee’s current research interests include the characterization and understanding of biological processes in the neurodegenerative brain at the cellular, molecular and functional levels using in vivo bioengineering approaches including state-of-the-art magnetic resonance techniques.

Meetings Attended:
October 29-30, 2014 – Faculty Research Day Participation, KUMC Research Institute, Kansas City, KS
P. Adany, P. Lee, I.-Y. Choi, Performance Optimized Lipid Artifact Removal (POLAR) with BASE-SLIM, 2014 Faculty Research Day and Poster Session
J. L. Harris, H.-W. Yeh, I.-Y. Choi, P. Lee, R. Swerdlow, W. M. Brooks, "Neuroimaging biomarkers reveal mechanisms of traumatic injury in the aged brain" 2014 Faculty Research Day and Poster Session

Committee Activities:
KUMC
Director, MR Technology at the Hoglund Brain Imaging Center

Editorials and Grant Reviews:
Ad hocReviewer, Frontiers in Neurology
Ad hocReviewer, International Journal of Molecular Sciences
Ad hocReviewer, Journal of Magnetic Resonance Imaging
Ad hocReviewer, Magnetic Resonance Materials in Physics, Biology and Medicine
Ad hocReviewer, Metabolic Brain Disease
Ad hocReviewer, Neurochemical Research
Ad hocReviewer, NMR in Biomedicine
Reviewer, Conference proceedings of International Society for Magnetic Resonance in Medicine
Reviewer, Conference proceedings of Human Brain Mapping

Teaching Activities:
PHSL 846/ANAT 846 – Advanced Neuroscience
2 hours lecture
9.4T MRI New Users Workshop discussion
1 hour
Dr. Lee (continued)

Teaching Activities (continued)

National Multiple Sclerosis Research Meeting
3 hours
Advisor:
   Graduate Students: Andrea Nuckolls, Mark Burghart, Rodrigo Dennis Perea
   Resident: Rawan Albadareen M.D.
Other Activities:
   Consultant of MR program of Center for Brain, Biology and Behavior at University of Nebraska
Steven M. LeVine, Ph.D., Professor

Our research is directed at advancing the understanding of the pathogenic mechanism in multiple sclerosis, which is a neurological disease that causes sensory, motor and/or cognitive declines. We also study experimental interventions for this disease. Our research incorporates a team approach that includes clinical samples, immunology, and animal models. Additional studies address intervention strategies for Krabbe’s disease (a.k.a., globoid cell leukodystrophy). We also study mechanisms of toxin and bacterial induced vessel injury.

Meetings Attended:
April 30, 2015 – 6th Annual University of Toronto Neuroinflammation Symposium and Manitoba – Ontario endMS Regional Research and Training Centre Retreat. Invited Plenary Speaker. Toronto, Canada
April 29, 2015 – ApoPharma, Inc. Invited seminar, Toronto, Canada
July 27-29, 2014 – Hunter’s Hope Annual Medical and Science Symposium, Ellicottville, NY

Committee Activities:
Departmental
Member, Graduate Student Advisory Committee
Member, Thesis Committee for Mohammed Khan
Member, Thesis Committee for Jason Gill
Member, Qualifying exam committee for Asona Lui
Member, Qualifying exam committee for Margaret Pruitt

KUMC
Member, Safety Committee for the Smith East Building
Member, Multiple Sclerosis Research Group

Editorials and Grant Reviews:
Ad hoc Reviewer, Journal of Neuroscience Research
Ad hoc Reviewer, Journal of Neurological Sciences
Ad hoc Reviewer, Neurobiology of Disease
Ad hoc Reviewer, PLoS One
Ad hoc Reviewer, Science Translational Medicine
Reviewer, 2 pilot grants for the Frontiers Inter-Institutional Pilot Program
Founding Editor & Member of Editorial Board, NeuroMetals

Seminars Presented:
May 4, 2015 – Iron deposition in multiple sclerosis: experimental models reveal insights about disease mechanisms (half seminar). Department of Molecular and Integrative Physiology, University of Kansas Medical Center, Kansas City, KS
Dr. LeVine (continued)

Seminars Presented (continued)

May 15, 2015 – “Iron deposition in multiple sclerosis: experimental models reveal insights about disease mechanisms.” University of Kansas Medical Center, Kansas City, KS

Teaching Activities:

CORE 820 – Gastrointestinal Tract and Nutrition
5 hours lecture to first year medical students

CORE 840 – Brain, Mind and Behavior
~4 hours of Neuropathology Labs for second year medical students

NURO 848 – Molecular Mechanisms of Neurological Disorders
1 hour group session
2 hour lecture

PHSL 848 – Molecular Mechanisms of Neurological Disorders
2 hours lecture

ANAT 848 – Molecular Mechanisms of Neurological Disorders
2 hours lecture

PHSL 842 – Comprehensive Human Physiology
4 hours lecture to graduate students
1 hour paper discussion

Trainees:

Scott Sands, Ph.D. – Post-Doctoral fellow
Sheila Tsau – Research Associate
Douglas Brandt – DVM

Other Activities:

Led a preview session for Faculty for one of the Neuropathology Labs for the second year medical students in the Brain, Mind and Behavior (CORE 840) course, Fall 2014

Reviewer for a proposal sent to the Stanford Synchrotron Radiation Light source for access to beam time
The uterus is a vital organ for the successful propagation of all higher species. Understanding the molecular mechanisms that contribute to the development and subsequent function of the uterus are absolutely essential for successful reproduction to occur. It is well established that complex interactions among biological mediators dictate the normal pattern of uterine development and that disruption of these factors plays a causative role in uterine abnormalities, disease and infertility. Our research focuses on three major areas: 1) the role of microRNAs (miRNAs) in the pathophysiology of the female disease, endometriosis, 2) the role of miRNAs in uterine decidualization and early pregnancy loss/embryo implantation insufficiencies, and 3) the identification and development of novel, estrogen-sparing targets for endometriosis treatment. Collectively, the research in my laboratory focuses on examining the mechanisms which regulate normal uterine development and function, identifying those factors which contribute to these mechanisms and understanding how alterations in these mechanisms lead to uterine diseases such as endometriosis and recurrent pregnancy loss/infertility. The long-term goal of the research conducted in my laboratory is to better our understanding of the pathophysiology of these uterine diseases and in turn develop novel diagnostic/prognostic markers and therapeutic agents for their treatment.

Meetings Attended:
March 25-28, 2015 – Society for Reproductive Investigation, San Francisco, CA

Committee Activities:
Departmental
Member, Doctoral Dissertation Committee for Wei-Ting Hung
Member, Department of Molecular & Integrative Physiology, University of Kansas Medical Center, Departmental Promotion and Tenure Committee, 2014 – present
Member, Department of Molecular & Integrative Physiology, University of Kansas Medical Center, Finance Committee, 2014-present

KUMC
Chairman, Laboratory Animal Resources Advisory Committee for the University of Kansas Medical Center, 2013 – present
Scientific Director, Laboratory Animal Resources; University of Kansas Medical Center, 2013 – present
Member, Advisory Committee for the University of Kansas Medical Center Institutional Official, 2013-present
Member, The Gilbert S. Greenwald Reproductive Biology Symposium Planning Committee, 2013-present
Member, Strategic planning committee, Center for Reproductive Sciences, University of Kansas Medical Center, 2014 – present
Dr. Nothnick (continued)

Editorial and Grant Reviews:
Ad hoc Reviewer, *American Journal of Obstetrics and Gynecology*
Ad hoc Reviewer, *Biology of Reproduction*
Ad hoc Reviewer, *Endocrinology*
Ad hoc Reviewer, *Fertility and Sterility*
Ad hoc Reviewer, *Gynecologic and Obstetric Investigation*
Ad hoc Reviewer, *Human Reproduction*
Ad hoc Reviewer, *Journal of Assisted Reproduction and Genetics*
Ad hoc Reviewer, *Journal of Clinical Endocrinology and Metabolism*
Ad hoc Reviewer, *Molecular Endocrinology*
Ad hoc Reviewer, *Molecular Human Reproduction*
Ad hoc Reviewer, *Molecular Reproduction and Development*
Ad hoc Reviewer, *PLoS ONE*
Ad hoc Reviewer, *Reproduction*
Ad hoc Reviewer, *Reproductive Biology and Endocrinology*
Ad hoc Reviewer, *Reproductive Sciences*
Ad hoc Reviewer, Israel Science Foundation (ISF), 2014
Vice-Chair, NIH/EMN Initial Review Group, Integrative and Clinical Endocrinology and Reproduction Study Section (ICER), June 11 - 12, 2015.
Vice-Chair, NIH/EMN Initial Review Group, Integrative and Clinical Endocrinology and Reproduction Study Section (ICER), February 12 -13, 2015.
Randolph J. Nudo, Ph.D., Professor & Vice-Chair of Research, Director of The Landon Center on Aging

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 development and application of neuroprosthetic microdevices that interface with the brain to repair communication links within after injury. 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.

Meetings Attended:
December 18, 2014 - Invited Speaker, “Shaping plasticity to enhance recovery after brain injury.” Peter Jay Sharp Foundation Visiting Professor in Neurological Rehabilitation, Division of Rehabilitation Medicine, Weill Cornell Medical College, New York, NY
March 2, 2015 – Keynote Speaker, “Closed-loop approaches for enhancing recovery after brain and spinal cord injury.” 1st International Brain Stimulation Conference, Singapore
March 2015 – Keynote Speaker, “Applications of closed-loop approaches to therapeutic brain stimulation.” International Workshop on Clinical Brain-Machine Interface Systems, Tokyo Japan
May 2015 – Keynote Speaker, European Conference on NeuroRehabilitation, Maastricht, The Netherlands

Committee Activities:
Department
T32 Mentor, Neurological and Rehabilitation Sciences Training Program
Dr. Nudo (continued)

Committee Activities (continued)

KUMC

Member, International Advisory Board for Interdisciplinary Geriatric Education
Co-Director, Brain Injury and Repair Division, Institute for Neurological Discoveries
Co-Chair, Scientific Advisory and Review Committee, Heartland Institute for Clinical and Translational Research Center
Chair, Internal Advisory Committee, University of Kansas Alzheimer's Disease Center
Director, KL2 training program, Heartland Institute for Clinical and Translational Research Center

National

Member, External Advisory Committee, NIH COBRE (Center for Research in Human Movement Variability), University of Nebraska, Omaha, NE
Member, National Advisory Board on Medical Rehabilitation Research, NICHD-NIH
Member, External Advisory Board, T32 in Predoctoral Training of Neuroscientists, University of Minnesota, Minneapolis, Minnesota
Board Member, 2015 International Workshop on Clinical Brain-Machine Interfaces

Editorial and Grant Reviews:

Editor-in-Chief: Neurorehabilitation and Neural Repair (2013-present)
Deputy Editor: Brain Stimulation, Basic, Translational and Clinical Research in Neuromodulation
Associate Editor: Restorative Neurology and Neuroscience
Member, editorial board: Neuroscience and Biobehavioral Reviews
Member, editorial board: Frontiers in Neuroprosthetics (2013-present)
Ad hoc Reviewer, Stroke
Ad hoc Reviewer, Journal of Comparative Neurology
Ad hoc Reviewer, Somatosensory and Motor Research
Ad hoc Reviewer, Journal of Neuroscience Methods
Ad hoc Reviewer, Cerebral Cortex
Grant Reviewer, Italian Multiple Sclerosis Society
Grant Reviewer, NIH-NICHD Loan Repayment Program
Grant Reviewer, Italian Ministry of Education, University and Research (MIUR)
Ad hoc Reviewer, Annals of Neurology
Ad hoc Reviewer, Archives of Physical Medicine and Rehabilitation
Ad hoc Reviewer, Behavioural Brain Research
Ad hoc Reviewer, Brain
Ad hoc Reviewer, Brain Research
Ad hoc Reviewer, Brain Stimulation
Dr. Nudo (continued)

Editorial and Grant Reviews (continued)
Ad hoc Reviewer, Brain Structure and Function
Ad hoc Reviewer, Cerebral Cortex
Ad hoc Reviewer, Clinical Neurophysiology
Ad hoc Reviewer, Cognitive
Ad hoc Reviewer, Affective and Behavioral Neuroscience
Ad hoc Reviewer, European Journal of Neuroscience
Ad hoc Reviewer, Exercise and Sport Sciences Reviews
Ad hoc Reviewer, Experimental Brain Research
Ad hoc Reviewer, Human Brain Mapping
Ad hoc Reviewer, IEEE Transactions on Neural Systems and Rehabilitation Engineering
Ad hoc Reviewer, Institute for Laboratory Animal Research Journal
Ad hoc Reviewer, Journal of Cerebral Blood Flow and Metabolism
Ad hoc Reviewer, Journal of Comparative Neurology
Ad hoc Reviewer, Journal of Neural Engineering
Ad hoc Reviewer, Journal of Neurophysiology
Ad hoc Reviewer, The Journal of Neuroscience
Ad hoc Reviewer, Journal of Neuroscience Methods
Ad hoc Reviewer, Learning and Memory
Ad hoc Reviewer, Motor Control
Ad hoc Reviewer, Nature Reviews Neuroscience
Ad hoc Reviewer, Neurobiology of Learning and Memory
Ad hoc Reviewer, Neuropharmacology, Neurocase
Ad hoc Reviewer, Neurorehabilitation and Neural Repair
Ad hoc Reviewer, Neuroscience, Neurotherapeutics
Ad hoc Reviewer, Proceedings of the National Academy of Sciences
Ad hoc Reviewer, Somatosensory and Motor Research
Ad hoc Reviewer, Stroke
Ad hoc Reviewer, Vision Research

Seminars Presented:
June 2014 - Invited Speaker, III Workshop of Synaptic Plasticity: From Bench to Bedside, Milazzo, Sicily
December 18, 2014 - Invited Speaker, “Shaping plasticity to enhance recovery after brain injury.” Peter Jay Sharp Foundation Visiting Professor in Neurological Rehabilitation, Division of Rehabilitation Medicine, Weill Cornell Medical College, New York, NY
March 2, 2015 - Keynote Speaker, “Closed-loop approaches for enhancing recovery after brain and spinal cord injury.” 1st International Brain Stimulation Conference, Singapore
Dr. Nudo

Seminars Presented

March 2015 - Keynote Speaker, “Applications of closed-loop approaches to therapeutic brain stimulation.” International Workshop on Clinical Brain-Machine Interface Systems, Tokyo, Japan

April 2015 - Invited Speaker, “Adaptive stimulation approaches to enhancing neuroplasticity and behavioral recovery after brain injury.” Symposium on Motor Control Satellite Meeting, Charleston, SC

May 2015 - Keynote Speaker, European Conference on NeuroRehabilitation, Maastricht, The Netherlands

Teaching Activities:

Faculty Research Series
1 hour lecture

Advanced Rehabilitation
4 hours of lectures

Pathobiology of Human Function II
1 hour lecture

PHSL 848 Molecular Mechanisms of Neuro Disorders
1 hour lecture

Introduction to Clinical Research
4 hours of lecture

T32 Mentor/Training Program:
Fall: 2 students
Spring: 2 students

Trainees:

David Guggenmos, Ph.D., Neuroprosthetic repair after traumatic brain injury
Shawn Frost, Ph.D.,
Scott Barbay, Ph.D.
Heather Hudson, Ph.D., Anatomical changes after closed-loop stimulation post-traumatic brain injury.
David Bundy, Ph.D., Event-related local field potential recordings in rodents.
Caleb Dunham, Ph.D.
Hongyu Zhang, Ph.D.
Jordan Borrell, Project Title: Topographical Mapping of the Outputs to Hindlimb Muscles using Intraspinal Microsimulation.
Max Murphy, Project Title: Describing spike-timing dependent synaptic modification for use with a rehabilitative brain-computer interface.

Other Activities:

Patent Applications:
Dr. Nudo (continued)

Academic Honors:
**Prabhu Ramamoorthy, Ph.D.**, Research Assistant Professor

Colorectal cancer is a major malignancy worldwide and is the second leading cause of cancer death in the United States. Treatment and prevention of colon cancer is often unsuccessful and has an extremely high morbidity rate. The major feature of solid tumors is hypoxia; the decreased availability of oxygen has been shown to increase chemotherapy resistance thereby favoring tumor progression. Hypoxia and heat shock protein 90 (HSP90) stabilize HIF-1α (hypoxia inducible protein-1α), a transcription factor that regulates expression of vascular endothelial factor (VEGF) and inducible nitric oxide synthase (iNOS). In contrast, HSP90 inhibitors inhibit the expression of VEGF and iNOS suggesting that HSP90 is a critical player in HIF-1α mediated expression of these genes. My research focuses on understanding the mechanism of hypoxia-mediated regulation of cancer stem cells and the effect of hypoxia on hypoxia inducible factor. In addition, to determine the effect of natural HSP90 inhibitors, celastrol and triptolide on the growth and tumor formation of cancer stem cells. Addition to this, isolating cancer cells from fresh human cancer patient sample and to try HSP90 inhibitor with and without hypoxia.

Committees

KUMC
- Member, Enhanced Academic Club
- Member, Dissertation Committee for T. Kavitha Rajathi
- Member, Faculty Position Search Cancer Biology Committee

Editorials and Grant Reviews:
- Ad hoc Reviewer, *PLOS ONE*
- Ad hoc Reviewer, *Environmental Toxicology*
- Ad hoc Reviewer, *Chemical Biology & Drug Design*
- Ad hoc Reviewer, *Applied Physiology Nutrition and Metabolism*

Seminars Presented:

Trainees:
- Dr. Katherine Chastain, Children Mercy Hospital - Sarcoma in a Dish Project
- Dr. Seth Septer, Children Mercy hospital - Familial Adenomatous Polyposis project
- Dr. Sreekar, VA Kansas City- Biomarker and Barrett Esophagus in a Dish project
- Dr. Prasad Dandawate, Postdoctoral Fellow
- Dr. Parthasarathy Rangarajan, Postdoctoral Fellow
- Afreen Syed, Graduate Student

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Nerves regulate function and structure of target 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 nerves and targets in controlling end organ activity and in processing sensory signals. We are particularly interested in how hormones and vitamins can regulate neuronal function in conditions such as chronic pain syndromes, the role of renin-angiotensin systems in sensory nerve growth and sensitization, and how genetic variants can lead to developmental neurological disorders.

Committee Activities:

Departmental
Member, Student Advisory Committee for Angela Pierce
Member, Student Advisory Committee for Li Zhou

KUMC
Director, Frontiers Pilots and Collaborative Research Projects program, CTSA
Member, Anesthesiology Chair Search Committee
Chair, KUMC Genomics Core Advisory Committee
Member, Mass Spectroscopy Advisory Board
Member, Research Institute Executive Director Search Committee
Affiliate Member, KU Cancer Center
Member, Alzheimer’s Disease Center Internal Advisory Board, and Executive Committee
Chair, Ad Hoc committee on Research Grant Bridging Policies
Chair, Executive Committee, Institute for Neurological Discoveries
Chair, Woodyard Fellowship in Neurodegenerative Disorders Selection Committee
Chair, NexGen Sequencing Pilot Awards Selection Committee
Director, Spinal Cord Injury Repair Program
Member, Cross Campus IT Committee
Member, Research Advisory Council

National
North American Representative to the Executive Committee, International Society for Autonomic Neuroscience
Member, Board of Trustees, National Parkinson Foundation Heartland
Dr. Smith (continued)

Editorials and Grant Reviews:
Ad hoc Reviewer, Cardiovascular Research
Ad hoc Reviewer, Autonomic Neuroscience: Basic and Clinical
Ad hoc Reviewer, Journal of Neuroscience
Ad hoc Reviewer, Molecular & Cellular Endocrinology
Ad hoc Reviewer, Journal of Physiology (Lond.)
Reviewer, Somatosensory and Chemosensory Systems; NIH Reviewer, P20 Developmental Grants in benign Urology, NIDDK Reviewer, NIDDK Nociceptor Genito-Urinary Molecular Anatomy Project (nGUDMAP) (Co-Chair)
Associate Editor, 2011-present, Autonomic Neuroscience: Basic and Clinical Guest Editor, 2013-2015, Autonomic Neuroscience: Basic and Clinical, Special Issue: Estrogen and the autonomic nervous system

Teaching Activities:
PHSL 846 – Advanced Neuroscience
4 hours lecture
PHSL 830 – Cardiovascular Physiology
CORE 815 – Cardiopulmonary
3 hour lecture
COPD Small Group
4 hours

Trainees:
Anuradha Chakrabarty, Ph.D. Senior Scientist, AT2 in pain and axon sprouting
Sarah Tague, PhD, Senior Scientist, Role of vitamin D in joint pain
Aritra Bhattacherjee, PhD, Post-doctoral fellow, Sensory disorders in Rett syndrome
Dora Krizsan-Agbas, PhD, Senior Scientist, Stem cell repair in spinal cord injury
Zhaozhui liao, MD, Research associate, Hormone and reproductive tract innervation
Ying Mu, MS, Research Associate, Expression of AT2 in sensory neuronal cell lines
John A. Stanford, Ph.D., Associate Professor

My research is focused on preclinical models of normal aging and age-related diseases and conditions that affect motor function, such as Parkinson’s disease (PD), Amyotrophic Lateral Sclerosis (ALS) and neonatal hyperbilirubinemia (kernicterus). We are currently examining the effects of a high fat diet-induced on neurological function in attempts to understand the co-morbidity between Type 2 Diabetes and age-related diseases such as PD and Alzheimer’s disease (AD). We are also studying the effects of isometric strength training on neuromuscular denervation in the SOD1-G93A rat model of ALS. Our most recent studies involve characterizing behavioral and neurological abnormalities in the Gunn rat model of kernicterus.

Meetings Attended:
May 2, 2015 – “Effects of Tongue Force Training on Bulbar Motor Function in Female SOD1-G93A Rats.” 22nd Annual Meeting of the American Society for Neural Therapy and Repair, Clearwater Beach, FL

Committee Activities:
Departmental
Member, Graduate Student Committee Member
Jason Flor-Sistante, Ph.D.
Matthew Stroh, Ph.D.
Sidrah Sheik, KCUMB College of Biosciences II year Research track program
Sha Neisha Williams, KCUMB College of Biosciences II year Research track program
Coordinator, Seminar Series
Member, Finance Committee

KUMC
Member, Rodent Behavior Advisory Committee
Member, KUMC Neuroscience Graduate Program Advisory Committee
Member, KIDDRC Core B Advisory Committee
Member, Society for Neuroscience Kansas City Chapter Executive Committee
Co-President, Society for Neuroscience Kansas City Chapter
Member, Kansas Board of Regents KUMC Program Review for Dept. of Anatomy & Cell Biology
Member, KUMC IGPBS Admissions Committee (Neuroscience representative)
Program Director, KUMC Biomedical Research Training Program
Campus Coordinator, K-INBRE Associate Director and KUMC

Editorial and Grant Reviews:
Reviewer, Annals of Biomedical Engineering
Reviewer, Behavioral Pharmacology
Reviewer, Experimental Neurology
Dr. Stanford (continued)

Editorials and Grant Reviews (continued)
Ad hoc Reviewer, Journal of Alzheimer’s Disease
Ad hoc Reviewer, Acta Biochemica et Biophysica Sinica
Ad hoc Reviewer, Psychopharmacology
Ad hoc Reviewer, Neurobiology of Disease
Ad hoc Reviewer, Journal of Applied Physiology
Ad hoc Reviewer, British Journal of Pharmacology
Ad hoc Reviewer, Cell Death & Disease
Ad hoc Reviewer, Pharmacology, Biochemistry & Behavior
Ad hoc Reviewer, Neurotoxicity Research
Ad hoc Grant Reviewer, Parkinson’s UK
Ad hoc Grant Reviewer, Research Grants Council (Hong Kong)
Ad hoc Grant Reviewer, Wellcome Trust

Seminars Presented:
August 15, 2014 – “Translatable Measures of Motor Function and Strength Training in Preclinical Models of Parkinson’s Disease and ALS.” Science Friday Seminar Series, Kansas City University of Medicine and Biosciences, Kansas City, MO
March 4, 2015 – “Translatable Measures of Motor Function and Strength Training in Preclinical Models of Parkinson’s Disease and ALS.” Department of Chemistry Seminar Series, Wichita State University, Wichita
April 27, 2015 – “Neuromuscular Effects of Targeted Strength Training in the SOD1-G93A Rat Model of ALS.” Department of Molecular & Integrative Physiology, University of Kansas Medical Center, Kansas City, KS

Teaching Activities:
CORE 840 – Brain and Behavior.
PHSL 846 – Advanced Neuroscience
  Course Director
  20 hours classroom teaching
PHSL 848 – Molecular Mechanisms of Neurological Disorders
  6 hours classroom teaching

Trainees:
Delin Ma, MD – Visiting Scholar: Preclinical Studies of Kernicterus
Lily Gan, MD – Visiting Scholar: Preclinical Studies of Amyotrophic Lateral Sclerosis
Aishwarya Kumar – Undergraduate Student: Preclinical Studies of Amyotrophic Lateral Sclerosis
Cameron Banning – Undergraduate Student: Preclinical Studies of Amyotrophic Lateral Sclerosis
Bethany Snyder – High School Student: Preclinical Studies of Amyotrophic Lateral Sclerosis
Dharmalingam Subramaniam, Ph.D., Research Assistant Professor

My research is focused on gastrin mediated carcinogenesis and chemoprevention.

a) Gastrin mediated carcinogenesis is to determine the response of gastric epithelial cells to gastrin, a small peptide hormone and also infection by Helicobacter pylori, which are gram negative, microaerophilic, spiral shaped bacilli. Infection with Helicobacter pylori results in hypergastrinemia and gastric cancer. In this area is to determine the different gastrin induced cellular signaling response in gastric and colon epithelial cells and its subsequent effects on the expression of proinflammatory gene COX-2 and IL-8 expression at the transcriptional and posttranscriptional levels.

b) Chemoprevention, to determine the signaling mechanisms of dietary phytochemicals & their analogues, and chemotherapeutic agents against colon and pancreatic cancer.

Meetings Attended:

Committee Activities:
National
Participant, Thomas O Saliva Foundation Golf Tournament; Colon cancer awareness
Participant, 2015 Rod Rogers Memorial Golf Tournament; Pancreatic cancer awareness

Editorial and Grant Reviews:
Reviewer, KUCC Cancer Center pilot projects
Ad hoc Reviewer, PlosOne-4
Ad hoc Reviewer, European Journal for Clinical Investigation-1
Ad hoc Reviewer, Molecular Carcinogenesis-2
Ad hoc Reviewer, International Journal of Biological Sciences-1
Ad hoc Reviewer, Evidenced based Complementary and Alternative Medicine-2
Editorial Board Member, Indian Journal of Applied Microbiology

Seminars Presented:
February 4, 2015 – “Clostridium difficile infection induces NF-kB in intestinal epithelial cells: suppressing inflammatory response by curcumin.” University of Madras, Chennai, India

February 12, 2015 – “Repurposing Strategies for Pancreatic Cancer: Focusing on an Old Antibiotic.” Abedha Inamdhar College, University of Pune, India
Dr. Subramaniam (continued)

Trainees:
Afreen Sayed, Graduate student
Zainab Afsal, Rotation student
Julia Balmaceda, Summer student
Parasarathy Rangarajan, Post-doctoral Fellow: Effect of Cyclopirox on Bladder Cancer
Deep Kwatra, Post-doctoral Fellow: Bitter melon and its component Charantin on colon cancer therapy
Gaurav FNU, Post-doctoral Fellow: Honokiol effect on Melanoma
Prasad Dandawate- Postdoctoral Fellow: Jak2 and Stat3signling pathway on pancreatic cancer
Sivapiya Ponnurangam, Research Associate
David Standing, Research Technician
Dr. Aravind Sugmar, MD, junior faculty member: Effect of Gedunin and its analog on pancreatic cancer
Dr. Seth Septer, MD, junior faculty member –Children Mercy Hospital: FAP, Colon Cancer Prevention and therapy
Dr. Pablo Angulo, DO, Fellow in Children Mercy Hospital: Osteosarcoma – therapy

Academic Honors:
April 2015 – Kansas University Cancer Center Travel Award for the abstract entitled “Quinomycin A affects pancreatic cancer stem cells in part through suppression of Notch Signaling Pathway”. Poster presentation.
106th American Association of Cancer Research Annual meeting, Philadelphia, PA
Joseph S. Tash, Ph.D., Professor

My research is funded both by NIH and by NASA. My NIH-funded research focuses on reproductive biology and the regulation of sperm motility and sperm function, and identification of testis and/or sperm specific functional components that can be targeted for development of reversible non-hormonal male contraceptive agents. My ongoing NIH grant effort is focusing on continued drug development and elucidating the mechanism of action of H2-gamendazole (H2-GMZ), an 100% effective and 100% reversible orally-active, highly-potent anti-spermatogenic contraceptive agent. The project is also discovering alternative chemical scaffold lead agents that target the same Sertoli cell molecular targets as H2-GMZ. We recently met with the FDA to establish the first ever guidance for a non-hormonal male contraceptive that established the testing necessary to enable registering H2-GMZ as an IND and to ultimately enable first-in-human clinical trials.

With regard to gravitational research, I have been funded by NASA since 1996 and examining the effects of space flight on both male and female reproductive health. I have had 5 flight experiments on the Space Shuttle from 1997-2011, including three of the last five shuttle flights). We recently completed a successful flight experiment in May, 2013 on a Russian BION satellite that was the largest and longest animal space flight experiment in NASA and Russian Space Agency history. We are examining the effects of 30 days of space flight, including continuous exposure to microgravity and space radiation, on testis function and sperm health in adult male mice. A new NASA grant scheduled to begin funding in Aug 2013, will be the first ever flight of mammalian and sea urchin sperm to the International Space Station National Laboratory to study the impact of space flight on sperm motility, metabolomics and signal transduction.

Meetings Attended:

October 18-22, 2014 – American Society for Reproductive Medicine.
Minisymposium speaker, Honolulu, HI

October 22-26, 2014 – American Society for Gravitational and Space Research.
Conference Program Chair and Speaker, Pasadena, CA

October 26-27, 2014 – NICHD Contraceptive Discovery and Development
Branch Steering Committee Meeting, Speaker, NIH, Bethesda, MD

October 29, 2014 – Illumina Next-Generation Sequencing Pilot Research
Symposium, KUMC, Kansas City, KS

Committee Activities:

National
Member, NICHD Contraceptive Discovery and Development Branch
(CDDB) Steering Committee
Member, Board of Governors, American Society for Gravitational and
Space Biology
Editorial and Grant Reviews:
Reviewer, U01 Male Contraceptive Discovery and Development Program, Special Emphasis Panel

Seminars Presented:

Teaching Activities:
CORE 830 – Reproduction and Sexuality. Lecture “Prospects for Male Contraception” to first year medical students

Trainees:
Lesya Holets, Ph.D., Post-doc, Cell-cycle regulatory kinases as targets for male contraceptive drug development., H2-Gamendazole analogues as reversible non-hormonal male contraceptive agents
Uma Sharma, M.S., Research Assistant, Cell-cycle regulatory kinases as targets for male contraceptive drug development
Erica Okwuazi, Research Technician, Space flight-altered motility activation and fertility-dependent responses in sperm from sea urchin and rodents
Eric Yarns, Research Assistant, Space flight-altered motility activation and fertility-dependent responses in sperm from sea urchin and rodents, Female reproductive health: Space flight induced ovarian & estrogen signaling dysfunction, adaptation, and recovery

Other Activities:
Consultant to Techshot, for development of snap-freeze hardware/facility for genomic/molecular research on the International Space Station

Academic Honors:
Approved for 6 month Sabbatical, including a 4 month collaboration at the Oregon National Primate Research Center, Oregon Health Science University (with Dr. Mary Zelinski)
John P. Thyfault, Ph.D., FACSM, Associate Professor

Chronic physical inactivity, sedentary behavior, and low aerobic fitness are linked to the development of chronic disease conditions including obesity, insulin resistance, fatty liver disease, type 2 diabetes, and cardiovascular disease. In contrast, daily physical activity and maintenance of aerobic fitness throughout the lifespan are associated with protection against chronic disease(s). The mechanism(s) underlying the development of these diseases and the role that activity and fitness status play in altering susceptibility remain largely unknown and are the focus of our research. We utilize integrative (multi-tissue and whole body), translational (cells, rodents, humans) approaches to perform studies in these areas with a focus on clinical or human relevance.

Meetings Attended:
- October 23, 2014 – Low aerobic capacity and susceptibility for NAFLD and metabolic dysfunction. Canadian Society for Exercise Physiology Annual Meeting. St. John’s, Canada

Committee Activities:
- National Member – Program Committee for the Obesity Society Annual Meeting in Los Angeles, CA
- Member – Program Committee for the Integrative Biology of Exercise meeting to be held in 2016

Editorial and Grant Reviews:
- Ad hoc Reviewer, Diabetes
- Ad hoc Reviewer, AJP Endocrinology
- Ad hoc Reviewer, Obesity
- Ad hoc Reviewer, JAMA
- Ad hoc Reviewer, Medicine and Science in Sports and Exercise
- Reviewer, NIH-NIDDK-Integrative Physiology of Obesity and Diabetes (IPOD) Study Section- February 2015
- Reviewer, NIH-ZRG1 EMNR-Q-Nutrigenetics and Nutrigenomics- July 2015
- Editorial Board Reviewer, Applied Physiology Nutrition and Metabolism
- Editorial Board Reviewer, Experimental Physiology

Seminars Presented:
- April 2015 – Aerobic fitness, mitochondrial dysfunction and susceptibility for NAFLD, St. Louis University, St. Louis, MO
Trainees:
Colin McCoin, Ph.D. – Post-Doctoral Fellow: Regulation of hepatic mitophagy
E. Matthew Morris, Ph.D. – Post-Doctoral Fellow: Mitochondrial dysfunction in hepatic steatosis
Julia Allen – Lab Manager
Research in my laboratory is focused on the role of bacterial infection in colonic crypt hyperplasia and/or inflammation and cancer. Specific research areas include: (a) Epigenetic regulation of cross-talk between components of the Wnt/β-catenin and Notch and NF-κB and Notch pathways in relation to complex inter-relationship amongst cell proliferation, inflammation and cancer; (b) Cancer Stem Cells, (c) miRNAs, (d) EMT and (e) mechanism(s) of chemoprevention by dietary factors and its novel derivatives.

Meetings Attended:

Committee Activities:
KUMC
Member, Faculty Development Committee
Member, Institutional Animal Care and Use Committee (IACUC)
Graduate Student Committee Member: External Advisor
External Advisor, Carla Kantara Ph.D. Neurosciences and Cell Biology
External Advisor, Weijuan Wu Ph.D. Physiology

Editorial and Grant Reviews:
Ad hoc Reviewer, American Journal of Physiology
Ad hoc Reviewer, Biochemical Pharmacology
Ad hoc Reviewer, Biomed Central
Ad hoc Reviewer, Cancer Biology and Therapy
Ad hoc Reviewer, Carcinogenesis
Ad hoc Reviewer, Digestive Diseases and Sciences
Ad hoc Reviewer, FEBS Letters
Ad hoc Reviewer, Molecular Carcinogenesis
Ad hoc Reviewer, Oncogene
Ad hoc Reviewer, PLoS One
Ad hoc Reviewer, The Journal of Pathology
Editorial Board Member, World Journal of Clinical Oncology
Reviewer, NIDDK’s Fellowship in Digestive Diseases and Nutrition
Reviewer, NIH-Patterns of Interaction in Peer Review meetings
Reviewer, NCCAM’s Special Emphasis Panel

Seminars Presented:
May 4, 2015 – “Enteric pathogens and disease pathogenesis.” Department of Molecular and Integrative Physiology, Seminar Series, University of Kansas Medical Center, Kansas City, KS
May 4, 2015 – Host, “microbe interactions: Intestinal response to injury.” Division of Hematology and Oncology’s Head and Neck Cancer residents, University of Kansas Medical Center, Kansas City, KS
Dr. Umar (continued)

Teaching Activities:
  GSMC 851 - Molecular Genetics (IGPBS)
    3 – 2 hour lectures
  PHSL 842 - Comprehensive Human Physiology
    3-2 hour lectures

Trainees:
  Ishfaq Ahmed, Ph.D. – Post-Doctoral Fellow
  Badal Roy, Ph.D. – Post-Doctoral Fellow
  Nikhit Chimalakonda – Volunteer
  Manahil Khan – Volunteer

Academic Honors:
  Invitation for Leading Theme Series – American Journal of Physiology:
    Gastrointestinal and Liver Physiology: ‘Chemoprevention in
    Gastrointestinal Physiology and Disease. Natural products and
  Editor’s Pick: American Journal of Physiology: Gastrointestinal and Liver
  Bacteria Lurking in your colon can influence cancer growth. University of Kansas
    Cancer Center-Cancer Communications- June, 2015.
  Microbiome: Microbial mystery: Nature 521, S10-S11(14 May 2015) doi:
    10.1038/521S10a. Special Invitation for Freelance Interview.
Michael W. Wolfe, Ph.D., Associate Professor

Summary of Research: Proper regulation of the hypothalamic-pituitary-gonadal axis as well as development and regulation of the placenta are essential to mammalian reproduction. Research in my laboratory is directed towards understanding the cellular and molecular mechanisms involved in regulating the genes encoding the hormones within these tissues. An area of interest is how gonadotropin-releasing hormone secreted by hypothalamic neurons signals to the pituitary to induce the expression of the gonadotropin genes and also how gonadal steroids feedback to regulate the hypothalamus and pituitary. A second area focuses on elucidating the events associated with the differentiation and function of placental trophoblast cells. Our overall goal is to identify the physiologically relevant molecular and cellular events responsible for regulating cell differentiation and tissue/organ function. 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:
January 2015 – Institute for Reproductive Health and Regenerative Medicine graduate students and post-doctoral fellows. Gave a presentation on “Responsible Conduct of Research: Documentation, Storage, and presentation.”

Committee Activities:
Departmental
Member, Dissertation Committee for Jessica Foster, M.S. candidate
Member, Dissertation Committee for Bhaswati Bhattacharya, M.S. candidate
Chair, Comprehensive Exam for Asona Lui, M.D./Ph.D. candidate
Chair, Comprehensive Exam for Margaret Pruitt, M.D./Ph.D. candidate
Chair, Comprehensive Exam for Ashley Ward, Ph.D. candidate
Chair, Comprehensive Exam for Zelha Nil, Ph.D. candidate
Member, Dissertation Committee for Jessica Johnson-Venugopal, Ph.D. candidate
Member, Dissertation Committee for Eric Young, M.D./Ph.D. candidate
Chair, Graduate Student Advisory Committee
Director, Graduate Education

KUMC
Officer, KUMC Research Integrity
Member, KUMC Graduate Council
Member, IGPBS Advisory Board
Chair, Manuscript dispute resolution committee (appointed by Dr. Peter Smith)
Member, Phase I committee for Medical curriculum
Chair, Phase I committee – Musculo-Skeletal module review committee
Dr. Wolfe (continued)

Seminars Presented:
  May 2014 – “Gonadal regulation of growth and metabolism is ESR1-dependent in rats,” Department of Molecular and Integrative Physiology, KUMC

Teaching Activities:
  Introduction to Research Ethics (GSMC 856)
    12 hours lecture/group discussion
  Comprehensive Human Physiology (PHSL 842)
    10 hours lecture
  Renal-Endocrine Module (CORE 825)
    14 hours lecture
    ~2 hours histopath labs
    ~4 hours PBL
  Reproduction and Sexuality Module (CORE 830)
    3 hours lecture
  Remediation of Renal-Endocrine Module (CORE 825)
    Module Director
    2 – 2 hour review session

Trainees:
  Anamika Ratri, Graduate student
  Dr. Soma Paul
  Shaon Borosha, Volunteer
  Dr. Mina Moussavi, Volunteer – Instructor at University of Central Missouri
John G. Wood, Ph.D., Associate Professor

Microvascular inflammation occurs in a variety of clinical settings and is a significant contributor to patient mortality in these situations. I am working with faculty and residents in the Department of Surgery to study mechanisms involved in microvascular injury following burns as well as hemorrhagic shock/resuscitation. I also collaborated with Dr. Janet Pierce on a project examining the effect of coenzyme Q10, an antioxidant, on inflammation during shock/resuscitation.

Meetings Attended
- March 29- April 1, 2015 – Howard J, Lucero R, Moncure M, Holloway N, and Wood JG. Cutaneous Thermal Injury Increases Leukocyte Adherence in Rat Mesenteric Venules by a Reactive Oxidant-Dependent Mechanism. FASEBJ, poster presentation, Boston, MA

Committee Activities:
- Departmental
  - Member, Blake Ebner Thesis Committee
  - Member, James Weemhoff Thesis Committee
  - Member, Brianna Holt Thesis Committee
  - Member, Jessica Venugopal Thesis Committee
  - Member, Amy Cantilena Thesis Committee
  - Member, Yuchao Xie Thesis Committee
- KUMC
  - Member, Academic and Professionalism Committee
  - Vice-Chair, Promotions SubCommittee
  - Member, Prematriculation planning committee
  - Member, Delp Academic Society
  - Member, Medical student applicant interviews
  - Member, Institutional Animal Care and Use Committee
  - Member, Phase I Committee
  - Member, Committee for Systematic Review of the Blood & Lymph Module
  - Chair, Dept. of Surgery Research Committee
  - Chair, Dept. of Surgery Research Strategic Planning Committee
  - Member, Dept. of Surgery Resident Education Committee
  - Member, Content Experts Committee
  - Member, Readiness for Change Committee
  - Member, Education Council
  - Member, ACE Foundational Science Workgroup
Dr. Wood (continued)

Teaching Activities:
First Year Medical Curriculum – Cardiopulmonary Module
  Module Director
  21.5 hours lecture
  4 hours small group discussion facilitator
  8 hours simulation sessions
  5 hours case presentations facilitator
Pre-Matriculation Program
  Course Director
  14.5 hours lecture
  2 hours small group discussion facilitator
  4 hours case presentation facilitator
Integration and Consolidation
  3 hours lecture
PHSL 842 – Comprehensive Human Physiology
  13 hours lecture
PTOX 887
  4 hours lecture

Trainees:
  Naomi Holloway, Research Associate
  Jessica Hogan, MD, Resident in Dept of Surgery
  Melissa Krystel-Whittemore, Third year medical student
  Nicholas Duethman, Third year medical student
  Colton Nielson, Third year medical student

Academic Honors:
  Above and Beyond Award from First Year Medical Students
  Second Year Outstanding Lecturer
  Cardiopulmonary: First Year Outstanding Medical Module