Annual Report of the
Department of Molecular & Integrative Physiology
University of Kansas Medical Center

Covering the period July 1, 2013 – June 30, 2014
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After 13 years (2001-2014) as Chair of the Department, Dr. Cheney stepped down as of July 1st, 2014 to begin a three year phased retirement. Dr. Peter Smith, long-time and highly respected member of the department, was named as interim Chair. Dr. Cheney has been a faculty member in the department for 36 years and leaves with mixed feelings. On the one hand, additional free time to pursue other interests is a source of pleasant anticipation, but stepping away from a position of leadership in serving the department and its faculty will be missed. During Dr. Cheney’s tenure as Department Chair there have been many changes. The faculty size has grown modestly from 20 to 23 tenure track faculty members. During this period 11 faculty members left the department as part of retirements, transfers or departures from the University while 14 faculty members were added to the department as external recruitments and interdepartmental transfers. Some external recruitments came by way of the Cancer Center. These recruitments have further strengthened the cancer pathophysiology research theme in the department, which previously resided primarily within the reproductive biology group of the department. Additional recruitments have further strengthened the other areas of research focus in the department including neuroscience, reproductive biology and integrative physiology. Only 39% of the faculty members remain from 2001 when Dr. Cheney took over as department Chair. Research track faculty grew from 4 to 10 during this period and there was also a considerable expansion of the doctoral program from 16 students (2001) to 30 students (2004).

Total research funding in the department from 2001-2014 varied over quite a range from $4,584,661 to $10,943,448 depending on the year but overall there was considerable growth. For instance, the average funding level over the five year period from 2009-2014 was $8,177,934 compared to $5,240,738 for the five year period from 1996-2001. However, the financial squeeze at NIH and extremely competitive funding environment has taken its toll on our department like it has on most departments and universities. Total NIH funding ranged from 5-7 million/year during the period from 2001 to 2011 but in the most recent years has dropped to about 4 million/year. In some cases, major funding from Foundations has replaced NIH funding. Overall, our department has held up well under the most recent funding crisis – a credit to our talented and vibrant faculty.

The department has had an important role in education with responsibility for two modules (Cardio-Pulmonary and Renal-Endocrine) in the medical curriculum and several required and elective graduate courses. Our faculty members continue to make an important contribution to the core IGPBS curriculum. All Physiology faculty members are committed to high quality education and this is a source of great pride, but two individuals deserve special mention. Dr. John Wood and Dr. Gustavo Blanco truly excel in terms of teaching excellence. Their efforts have been consistently recognized each year by the Student Voice naming them “Outstanding Instructors of the Year” and this will undoubtedly continue for many years to come.

A great source of stability and support for the department over all these years has come from our outstanding office staff. In particular, our senior administrators, Linda Carr and more recently Shari Standiferd, who took over when Linda retired in 2011, deserve special recognition for their expertise and dedication. Their support of the Department Chair, the faculty in general and the students, postdocs and laboratory staff has been truly outstanding and highly appreciated.

Finally, it is an honor to recognize our greatest advocate and supporter - Jim Osborn, his wife Marion and his daughter Kathleen. Their interest in our department and very generous support has contributed enormously to the success we have enjoyed. The Kathleen M Osborn Lectureship is the longest running named lectureship at KUMC and a source of great pride for our department and the University. We have also benefited immensely from two endowed professorships in the department –
the Marion M Osborn Professorship, held by Dr. Leslie Heckert, and the Kathleen M. Osborn Chair, held by Dr. Paul Cheney until his retirement as Chair at the end of this academic year. Most recently, with Jim Osborn’s support, we have now been able to create a student fellowship in Kathleen’s honor. The first recipient of the Kathleen M. Osborn Fellowship in Reproductive Biology will be named in the Fall of 2014 following a competitive application process. Our deepest thanks and appreciation goes to Jim Osborn and family.

HIGHLIGHTS FROM THE 2013-2014 ACADEMIC YEAR

RESEARCH FUNDING: Total research funding for the department was just under eight million dollars ($7,897,952) based on data provided by KUMC Enterprise Analytics. While this is not a record amount, it is still a very healthy level of funding. Total NIH funding improved this year rising to $4,908,943 from $4,364,350 last year. Based on the latest available data, our department was ranked 31st nationally in NIH research funding among 82 medical schools receiving NIH funding. This is an improvement from 45th last year. However, among the 141 accredited MD-granting medical schools in the United States, 31st places us easily in the top 25th percentile. Although we would like to improve our ranking among public and private medical schools, our current position is still something we can take pride in. Nearly every faculty member’s research program was supported by major external funding. It is a tribute to the dedication and talent of our faculty that the department has continued to do so well in spite of the extremely difficult federal and private research funding environment.

EDUCATION: To the credit of all the individual faculty instructors and particularly to Dr. Wood and Dr. Wolfe, Directors respectively of the Cardiopulmonary and Renal-Endocrine modules, these modules were, once again, both rated highly by the students. We also had yet another very successful year in terms of teaching awards. At the “Grande Affair” celebration in April, Dr. Wood and Dr. Blanco were recognized for excellence in teaching. They each won the Student Voice Award for “Outstanding
Lecturer” in the first year of the medical curriculum. This continues what is now many consecutive years for each of them winning this award. We congratulate both John and Gustavo on their teaching success. And once again this year our department was the recipient of the “Outstanding Module in the First Year” award, which went to the Cardio-pulmonary module. As director of this module, Dr. Wood deserves a lot of credit for the continued success of this module.

**BUDGET CUTS:** Thankfully, no budget cuts had to be absorbed this year. We hope this continues and that we might actually get back to seeing some budget increases, which are badly needed, particularly for salaries.

**TENURE TRACK APPOINTMENTS:** No new tenure track appointments were made during the year.

**RESEARCH TRACK APPOINTMENTS:** Ramakrishna (Rama) Hegde, Ph.D., was appointed as a research assistant professor in the department beginning July 1st, 2013. Rama’s research interest is HIV and AIDS focusing primarily on the neurological disease associated with AIDS. Rama received his Ph.D. from the Postgraduate Institute of Medical Education and Research in Chandigarh, India and did postdoctoral work in the Marion Merrell Dow laboratory of Viral Pathogenesis with the late Dr. Bill Narayan.

**JOINT AND ADJUNCT APPOINTMENTS:** No new joint appointments were made during the year.

**FACULTY PROMOTIONS:** We are delighted that Dr. Raj Kumar was promoted to full professor starting July 1st, 2014. Raj has developed a very well-funded research program on regulation of the hypothalamic-pituitary-gonadal axis and has established himself as a leader in the field. Raj was also appointed as Director of the Center for Reproductive Sciences within the Institute for Reproductive Health and Regenerative Medicine. Congratulations to Raj.

**FACULTY/STAFF DEPARTURES:** We are pleased to report that there were no faculty (tenure track) or staff departures during the year.

**FACULTY AWARDS/ACCOMPLISHMENTS:** Teaching awards were mentioned above. Dr. Warren Nothnick was honored at Faculty Research Day (October 8th, 2013) as a recipient of the 2013 Faculty Investigator Research Award. These awards are given to outstanding investigators who have demonstrated significant research accomplishments and a high potential for sustained productive research in the future. Congratulations on this impressive achievement. This award carries a $1,000 stipend.

**GRADUATE PROGRAM AND PHYSIOLOGY SOCIETY:** The graduate students in the department had another active year. The “Physiology Society” leadership included Anand Venugopal as President, Jessica Johnson as Vice President and Keke Pounds as Social Event Coordinator. We are very pleased with the success of the graduate program in Physiology. Five new students were recruited to the department. Including students who are working at Stowers with faculty members who have their academic appointment in Physiology, we now have 28 doctoral students actively enrolled in the department. The number of students who have won external fellowships to support their training is also very pleasing. Sources of this support include the Self Fellowship program, the KUMC Biomedical Training Program and the NIH.
New Students – Summer 2013
Asona Lui – Dr. Joan Lewis-Wambi
Margaret Pruitt – Dr. Peter Baumann

New Students – Fall 2013
Amanda Brinker – Dr. Danny Welch
Kelsey Hampton – Dr. Danny Welch

New Students – Spring 2014
Kayla Raider – Dr. John Stanford

Ten students completed PhD degrees and 2 students completed a Master’s degree during the year. Congratulations to all of them and their mentors.

<table>
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<tr>
<th>Summer 2013 – PhD</th>
<th>Fall 2013</th>
<th>Spring 2014</th>
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<tbody>
<tr>
<td>JB Fitzgerald</td>
<td>Sarah Smith - PhD</td>
<td>Anand Venugopal - PhD</td>
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<tr>
<td>Jitu George</td>
<td>Evan Janzen – MS</td>
<td>Keke Pounds - MS</td>
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<td>Jason Gill</td>
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<td>Kyle Jansson</td>
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<tr>
<td>Ram Kannan</td>
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<tr>
<td>Bliss O’Bryhim</td>
<td></td>
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<tr>
<td>Ed Urban III</td>
<td></td>
<td></td>
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<tr>
<td>Huan Yang</td>
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</tbody>
</table>

Prepared by:

Dr. Paul D. Cheney
Professor and Kathleen M. Osborn Chair
Front Row (left to right): John Stanford, Peter Smith, T. Rajendra Kumar

Middle Row (left to right): Phil Lee, Paige Geiger, Lynda McGinnis, Warren Nothnick, Shahid Umar, Joseph Tash, Melissa Larson, Shrikant Anant

Back Row (left to right): Vargheese Chennathukuzhi, Satish Ramalingam, V. Gustavo Blanco, Lane Christenson, Steven LeVine, John Wood, Prabhu Ramamoorthy, Andrei Belousov, Dharmalingam Subramaniam, Norberto Gonzalez, Shawn Frost, Ramakrishna Hegde

Not Pictured: David Albertini, Paul Cheney, Sam Enna, Sumedha Gunewardena, Vijayalaxmi Gupta, Leslie Heckert, Randolph Nudo, Paul Terranova, Michael Wolfe
Department of Molecular & Integrative Physiology Graduate Students 2013-2014

Front Row (left to right): Jessica Venugopal, Erin Hayes, Andrew Trembath

Back Row (left to right): Asona Lui, Kelsey Hampton, Michelle McWilliams, Wei-Ting Hung

Not Pictured: Amanda Brinker, Amy Cantelina, Guangbo Chen, Li Chen, Jitu George, Jason Gill, Swathi Iyer, Evan Janzen, Jessica Kay, Mohammed Khan, Liying Li, Yuan Li, Danny Miller, Wahid Mulla, Naveen Neradugomma, Lili Pan, Lei Pei, Keke Pounds, Archana Raman, Robert Rogers, Nairita Roy, Anand Venugopal, Huan Yang, Yubai Zhao, Chuankai Zhou
DEPARTMENT ROSTER
July 1, 2013 – June 30, 2014

a. Faculty
Primary Appointment in Physiology
Paul D. Cheney, Ph.D., Professor & Kathleen M. Osborn 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, Prevention and Cancer Control, The University of Kansas Cancer Center; Associate Dean for Research, University of Kansas School of Medicine
Andrei Belousov, Ph.D., Associate Professor
V. Gustavo Blanco, M.D., 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 Training
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., Associate 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
Peter G. Smith, Ph.D., Professor, Director of the Institute for Neurological Disorders, Co-Director of the Kansas Intellectual and Developmental Disabilities Research Center
John A. Stanford, Ph.D., Associate Professor
Joseph S. Tash, Ph.D., Professor
Paul F. Terranova, Ph.D., Professor, Vice Chancellor for Research, Senior Associate Dean for Research and Graduate Education
Shahid Umar, 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
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 Ramamooorthy, 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, Research Assistant Professor (Physical Therapy and Rehabilitation Science)
William Brooks, Ph.D., Professor (Director, Hoglund Brain Imaging Center)
Jeffrey Burns, M.D., Associate Professor (Neurology, Director of Alzheimer and Memory Center & Alzheimer’s Disease Clinical Research Program)
Mark Chertoff, Ph.D., Associate Professor (Hearing & Speech)
In-Young Choi, Ph.D., Assistant Professor (Neurology & Hoglund Brain Imaging Center)
Buddhadeb Dawn, Ph.D., Professor (Internal Medicine)
Animesh Dhar, Ph.D., Research Associate Professor (Cancer Biology)
Navneet Dhillon, Ph.D., Assistant Professor (Pulmonary and Critical Care Medicine)
Robyn (Honea) Dickinson, Ph.D., Research Assistant Professor (Alzheimer and Memory Program)
Dan Dixon, Ph.D., Associate Professor (Cancer Biology)
Thomas Imig, Ph.D., Professor (Otolaryngology)
Tomoo Iwakuma, Ph.D., Associate Professor (Cancer Biology)
Benyi Li, Ph.D., Associate Professor (Urology)
Joshua Mammen, M.D., Assistant Professor (General Surgery)
Ajay Nangia, M.B.B.S., FACS, 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, Associate Professor (School of Nursing)
Jeff Radel, Ph.D., Associate Professor (Occupational Therapy)
Joint Appointment in Physiology (continued)
Cary Savage, Ph.D., Associate Professor (Psychiatry and Behavioral Science
William (Zhiming) Suo, M.D., Research Associate Professor (Neurology)
Russell H. Swerdlow, M.D., Professor (Neurology)
Dennis Valzeneno, Ph.D., Associate Dean for Medical Sciences (School of
  Medicine – Wichita)
Darren Wallace, Ph.D., Research Associate Professor (Internal Medicine)
Steven Warren, Ph.D., Professor (Applied Behavioral Science, KU-Lawrence;
  Director, Schiefelebuch 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, BChir, Professor & Director (Kidney Institute)

Adjunct Appointment in Physiology
Shilpa Buch, Ph.D., Professor (Pharmacology & Experimental Neuroscience,
  University of Nebraska Medical Center)
Jill Jacobson, M.D., Professor (Chief, Endocrinology/Diabetes, Children’s Mercy
  Hospital)
Gregory Kopf, Ph.D., Associate Vice Chancellor for Research
William E. Truog, M.D., Professor (Children’s Mercy Hospital, University of
  Missouri-Kansas City School of Medicine)
Mark Weiss, Ph.D., Professor (Kansas State University College of Veterinary
  Medicine)
Rachel Williams, Ph.D., Research Instructor (Senior Research Scientist,
  MidAmerica Neuroscience Institute)
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<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>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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<td>Li Chen</td>
<td>06/11</td>
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<td>Ph.D.</td>
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<td>Jitu Wilson George</td>
<td>12/06</td>
<td>12/11</td>
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<td>08/13</td>
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<tr>
<td>Jason Gill</td>
<td>06/09</td>
<td>11/11</td>
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<td>07/13</td>
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<tr>
<td>Wei-Ting Hung</td>
<td>08/11</td>
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<td>Swathi Iyer</td>
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<td>09/12</td>
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<td>Evan Janzen</td>
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<td>Jessica Johnson</td>
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<td>Jessica Kay</td>
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<td>Mohammed Khan</td>
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<td>Liying Li</td>
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<td>Asona Lui</td>
<td>06/13</td>
<td>04/14</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>Wahid Mulla</td>
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<td>Naveen Neradugomma</td>
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<tr>
<td>Lili Pan</td>
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<td>Lei Pei</td>
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<td>Keke Pounds</td>
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<td>Archana Raman</td>
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<td>Robert Rogers</td>
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<td>Nairita Roy</td>
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<tr>
<td>Anand Venugopal</td>
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<tr>
<td>Yubai Zhao</td>
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<td>Chuankai Zhou</td>
<td>05/10</td>
<td>03/14</td>
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c. Postdoctoral Fellows
Peter Adany, Ph.D.
Ishfaq Ahmed, Ph.D.
Aritra Bhattacharjee, Ph.D.
Pavla Brachova, Ph.D.
Stacey DeJong, Ph.D.
Huyen Van Doan, Ph.D.
Jonathan Fitzgerald, Ph.D.
Gaurav Fnu, Ph.D.
Lesya Holets, Ph.D.
Faezeh Koohestani, Ph.D.
Deep Kwarta, Ph.D.
Aramadhaka Lavakumar Reddy, Ph.D.
Parthasarathy Rangarajan, Ph.D.
Badal Roy, Ph.D.
Scott Sands, Ph.D.
Gustaf Van Acker, Ph.D.
Yun Zhou, Ph.D.

d. Temporary Students
Jeremy Ambrose
Julia Balmaceda
Nitish Chaimalakondia
Saurabh Harohalli
Andre Koop
Aishwarya Kumar
Sydnee Lim
T.J. Murray
Raphatphorn (Sine) Navakanitworakul
Patrick Nudo
Chloe Ortbals
Vivek Panchananam
Nicole Rogers
Avani Sharma
Kavya Shivashankar
Ravi Thombre
Alissa Urich
Ashley Ward
Kathleen White
David Wilson
e. Research Staff
Janna Belousova – Senior Research Assoc.
Illya Bronshteyn – Research Associate
Anuradha Chakrabarty – Senior Scientist
Ian Edwards – Research Assistant
Amada Graham – Research Assistant
Ian Graham – Research Technician
Joshua Holbert – Research Assistant
Xiaoman Hong – Senior Research Assoc.
Dora Kriksan-Agbas – Senior Scientist
Zhuang Li – Senior Research Assoc.
Zhaohui Liao – Research Associate
Jeff McDermott – Research Associate
Jeremy Polk – Research Assistant
Sivapriya Ponnurangam – Research Assoc.
Satheest Sainathan – Research Associate
Gladis Sanchez – Research Associate
David Standing – Research Technician
Shuan Sheila Tsau – Research Associate
Suwen Wei – Senior Research Associate
Riley Wertenberger – Research Assistant
Jonathan Wheatley – Research Assistant
Huiwen Wang – Senior Scientist
Hongyu Zhang – Senior Scientist

f. Support Staff
Leigh Ann Arbucke – Senior Coordinator
Lynn LeCount – Managing Editor
Jennifer McNichols – Administrative Assistant
Liz Meng – Grant Financial Accountant
Shari Standiferd – Operations Manager
Jennifer Wallace – Administrative Assistant
Notes Concerning Graduate Students

Amanda Brinker completed her second year as a graduate student. She is a third author on a review published in Cancer Microenvironment entitled “Microenvironmental Influences on Metastasis Suppressor Expression and Function during a Metastatic Cell’s Journey.” She attended the American Association for Cancer Researchers annual conference in San Diego this past spring, and successfully passed her comprehensive exams.

Jessica Johnson was first author on a poster entitled: “Mechanism of gedunin-induced mitotic arrest and cell death in cisplatin-resistant ovarian cancer cells” presented at the KU Cancer Center Symposium. At the KUMC student research forum, Jessica presented another poster on which she was first author, entitled: "Gedunin, a novel HSP90-inhibitor, synergizes with cisplatin and paclitaxel to inhibit growth of chemoresistant ovarian cancer cell lines." For this presentation she was awarded Honorable Mention in the poster presentation section. This poster was also presented by Jessica at the American Association of Cancer Research (AACR) Annual Conference. Finally, she became an associate member of AACR.

Asona Lui joined the Lewis-Wambi laboratory in the KUCC. She was the recipient of the 1st place award in the disease systems session of the KU Student Research Forum (SRF) 2014 for her oral presentation on the utility of mTOR inhibition in aromatase-inhibitor resistant breast cancer cell models. She also received the Physiology Society Spring Travel Award to attend the American Association of Cancer Researchers (AACR) national meeting in San Diego, CA where she presented a poster titled “Everolimus inhibits the proliferation of aromatase-inhibitor resistant breast cancer cells.”

Michelle McWilliams was awarded the 2013-2017 Madison and Lila Self Graduate Fellowship, a four year award providing tuition, increased stipend, and an extensive Fellow Development program in leadership and communication.

First author of poster presented at Society of Self Fellows annual poster session in Lawrence Kansas titled “Estrogen regulation of PRICKLE-1 leads to the loss of REST in Uterine Fibroids.”

First author of abstract titled “PRICKLE-1 links environmental estrogen exposure to the loss of REST in uterine leiomyoma” to be presented at the American Society for Reproductive Medicine 2014 Annual Meeting.

Earned “honors” designation upon passing comprehensive exam April 2014.

2013-2014 President of the Physiology Society

Served as elected senator for KUMC Student Governing Council 2013-2014 academic year and as Chair of the SGC student health and insurance sub-committee.
Served as chair of the judging committee for the 2013 KUMC student Research Forum.

Served as trainee co-chair for the Gonadotropins session at the 2013 Society for the Study of Reproduction Annual Conference in Montreal, Canada.

**Danny Miller** was co-author on a paper titled "Discovery of Supernumerary B Chromosomes in Drosophila melanogaster" published in Genetics as well as "Structured illumination microscopy identifies Corolla as a novel synaptonemal complex central region protein in Drosophila melanogaster" also published in Genetics. He was first author on an abstract titled "Recombination generates sequence diversity among balancer chromosomes in Drosophila melanogaster" presented at the Biology of Genomes meeting at Cold Spring Harbor. He received a $1,000 travel award from the Stowers Institute to attend the Biology of Genomes meeting at Cold Spring Harbor, and a $450 travel award from the Turner Syndrome Society of America to attend the Turner Resource Network Symposium in Jacksonville. He attended the course Computational and Comparative Genomics at Cold Spring Harbor and was the teaching assistant for Drosophila Genetics and Genomics, a week-long course at the Wellcome Trust in Hinxton, UK. He presented two seminars at the Stowers Institute. A 20-minute seminar titled "Using next-generation sequencing to identify genomic structural variants" and the other an hour-long seminar titled "Somatic Mosaicism".

**Lei Pei** was a co-author on a paper entitled: "Conserved aromatic residue confers cation selectivity in claudin-2 and claudin-10b." and a paper entitled "Comprehensive cysteine-scanning mutagenesis reveals Claudin-2 pore-lining residues with different intrapore locations."

She was also a co-author on an abstract entitled: "Impaired efficiency of oxygen usage in claudin-2 null mice reveals physiological role of the paracellular pathway" and an abstract entitled: "The efficient use of oxygen in the kidney is impaired in claudin-2 deficient mice."

**Margaret Pruitt** presented a poster entitled, "In vivo selection for new telomerase RNA template regions in S. pombe," at the EMBO: Telomeres, Telomerase and Disease conference. She was awarded a Stowers Travel Scholarship to present the EMBO meeting.

**Archana Raman** was a co-author on a paper entitled "Periostin promotes renal cyst growth and interstitial fibrosis in polycystic kidney disease" published in Kidney International. She was also the lead author on an abstract entitled "Periostin Activation of Integrin-Linked Kinase Stimulates Akt/mTOR and GSK3[beta]/[beta]-catenin Mediated Proliferation of Human ADPKD Cells" and co-author on an abstract entitled "Kidney-Selective AMPK Activator NT1021 Inhibits Cyst-like Tubule Expansion in Pkd1 Mutant Kidneys", both 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 2014-2015 for her research application entitled “The role of integrin linked kinase (ILK) in promoting cyst growth and fibrosis in PKD”.

Robert S Rogers was first author on a paper currently being revised and re-submitted for the Journal of Applied Physiology entitled “Heat Shock Proteins: in Vivo Heat Treatments Reveal Adipose Tissue Depot-Specific Effects.” He presented “Heat shock protein levels are lower in skeletal muscle of rats selectively bred with low endurance running capacity and high susceptibility to metabolic diseases” at the University of Kansas Medical School Student Research Forum. His University of Kansas Medical Center Biomedical Research Training Fellowship was renewed for a second year. He also had an abstract accepted for presentation entitled “Heat Shock Protein Expression Levels are Lower in Skeletal Muscle of Rats Selectively Bred to be Low Capacity Runners” at the American College of Sports Medicine’s Integrative Physiology of Exercise Meeting in Miami, Florida during September of 2014.

Eric Young was co-author on a paper published in Histopathology entitled “Progressive Loss of Myogenic Differentiation in Leiomyosarcoma Has Prognostic Value.” He also had an abstract published entitled, “Regulation of Proliferative Compartments in the Zebrafish Neuromast” at the University of Kansas Medical Center 36th Annual Student Research forum in April of 2014. He presented “Regulation of Proliferative Compartments in the Zebrafish Neuromast,” and was awarded Honorable Mention at the University of Kansas Medical School Student Research Forum. He was a Supplemental Instruction Lecturer for the course, Genetics and Neoplasia, at the University of Kansas Medical Center
COURSES TAUGHT

**Medical Curriculum Core Courses**
CORE 815 – *Cardiopulmonary*. Drs. Geiger, Gonzalez, Wood

CORE 820 – *Gastrointestinal Tract and Nutrition*. Dr. LeVine

CORE 825 – *Renal and Endocrine System*. Drs. Blanco and Wolfe

CORE 830 – *Reproduction and Sexuality*. Drs. Albertini, Tash, and Wolfe


CORE 860 – *Integration and Consolidation*, Drs. Blanco, Wood

**Departmental Graduate Courses**
PHSL 800 – *Medical Physiology* Dr. Smith

PHSL 834 – *Reproductive Physiology*. Drs. Blanco, Chennathukuzhi, Christenson, Kumar, Nothnick, Wolfe

PHSL 835 – *Integrative Physiology of Exercise*. Drs. Geiger, Gonzalez


PHSL 844 – *Neurophysiology* Dr. Cheney


PHSL 848 – *Molecular Mechanisms of Neurological Disorders*. Drs. LeVine, Stanford

**IGPBS Courses**
GSMC 851 – *Molecular Genetics*. Drs. Chennathukuzhi, Christenson, and Kumar

GSMC 853 – *Cellular Structure*. Drs. Belousov and Blanco

GSMC 854 – *Cell Communication*. Dr. Albertini

GSMC 856 – *Introduction to Research Ethics* Dr. Wolfe
The Department Seminar program was directed by Dr. John Stanford. Thirty six speakers made presentations, eight of which were from outside the university. In addition to support from the department, the Office of the Dean of the School of Medicine, the KIDDRC, Landon Center of Aging and the Center for Reproductive Sciences made important financial contributions to our program.

<table>
<thead>
<tr>
<th>Date</th>
<th>Speaker</th>
<th>Title</th>
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<tbody>
<tr>
<td>07/01/13</td>
<td>Jason S. Gill</td>
<td>Nova Mediates Experience Dependent Processing of Orb2A mRNA</td>
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<td>Graduate Student</td>
<td>Molecular &amp; Integrative Physiology</td>
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<td>07/10/13</td>
<td>Jitu George</td>
<td>Transcriptional regulation of SF-1 mRNA in the hypothalamic-pituitary-adrenal/gonadal axis</td>
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<td>08/29/13</td>
<td>Evan Janzen</td>
<td>Regulation of telomerase reverse transcriptase expression in Schizosaccharomyces pombe</td>
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<td>Graduate Student</td>
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<tr>
<td>09/09/13</td>
<td>Shirley ShiDu Yan, M.D.</td>
<td>Mechanisms of Mitochondrial and Synaptic Degeneration &amp; Rescue in Alzheimer’s disease</td>
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<tr>
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<td>Distinguished Professor</td>
<td>Pharmacology &amp; Toxicology</td>
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<td>School of Pharmacy</td>
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<td>University of Kansas</td>
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<td>Lawrence, KS</td>
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<td>09/16/13</td>
<td><strong>Fred Samson Lecture</strong></td>
<td>Traveling Through Signals in Membrane Traffic To Unravel the Secrets of Salt Balance</td>
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<td>Paul A. Welling, M.D.</td>
<td>Professor</td>
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<td>Professor</td>
<td>Molecular &amp; Integrative Physiology</td>
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<td>Physiology</td>
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<td>University of Maryland School of Medicine</td>
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<td>Baltimore, MD</td>
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<td>09/23/13</td>
<td>Lane Christenson, Ph.D.</td>
<td>Pathways and genes regulated LH-induced microRNA-21 in granulosa cells</td>
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<td>Associate Professor</td>
<td>Molecular &amp; Integrative Physiology</td>
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<td>09/30/13</td>
<td>Gustavo Blanco, M.D., Ph.D.</td>
<td>Professor, Molecular &amp; Integrative Physiology, KUMC</td>
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<tr>
<td>10/07/13</td>
<td>Luciano DiTacchio, Ph.D</td>
<td>Assistant Professor, Pharmacology, Toxicology, &amp; Therapeutics, KUMC</td>
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<tr>
<td>10/14/13</td>
<td>David C. Spray, Ph.D</td>
<td>Professor, Dominick P. Purpura Department of Neuroscience, Albert Einstein College of Medicine, Bronx, NY</td>
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<tr>
<td>10/21/13</td>
<td>Blake Peterson, Ph.D</td>
<td>Regents Distinguished Professor, Medicinal Chemistry, University of Kansas, Lawrence, KS</td>
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<td>10/28/13</td>
<td>David Albertini, Ph.D</td>
<td>Professor, Molecular &amp; Integrative Physiology, KUMC</td>
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<tr>
<td>11/04/13</td>
<td>Nancy Monson, Ph.D.</td>
<td>Associate Professor, Department of Neurology and Neurotherapeutics, Department of Immunology, University of Texas Southwestern, Dallas, TX</td>
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<td>11/18/13</td>
<td>Norberto Gonzalez, MD</td>
<td>Professor, Molecular &amp; Integrative Physiology, KUMC</td>
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<td>11/25/13</td>
<td>Nairita Roy</td>
<td>Finding methylation in the mitochondrial-DNA in the ageing model of mitochondrial cybrids</td>
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<tr>
<td>12/02/13</td>
<td>Anand Venugopal</td>
<td>RNA binding protein RBM3 and colon cancer stem cells</td>
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<tr>
<td>12/09/13</td>
<td>Steven M. Shapiro, M.D., MSHA</td>
<td>Newborn Jaundice and Bilirubin-Induced Neurological Damage: Research from the Bench to Bedside</td>
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<td>12/16/13</td>
<td>Joseph Tash, Ph.D.</td>
<td>Reproduction at 7860 meters/sec: Impacts of space flight on male and female reproductive health</td>
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<tr>
<td>01/06/14</td>
<td>Michele T. Pritchard, Ph.D</td>
<td>Mechanisms of hepatic fibrosis in autosomal recessive polycystic kidney disease</td>
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<td>01/06/14</td>
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<tr>
<td>01/13/14</td>
<td>Kristi Neufeld, Ph.D.</td>
<td>Mouse model reveals roles for nuclear Apc in regulation of differentiation, inflammation &amp; tumor suppression</td>
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<tr>
<td>01/27/14</td>
<td>Tomoo Iwakuma, M.D., Ph.D.</td>
<td>Targeting oncogenic mutant p53 for cancer therapy</td>
</tr>
<tr>
<td>02/03/14</td>
<td>Chad Slawson, Ph.D.</td>
<td>Regulating Mitochondrial Function and the Cell Cycle by O-GlcNAc Cycling</td>
</tr>
</tbody>
</table>
02/10/14  Susan Carlson, Ph.D.  
AJ Rice Professor of Nutrition and Director  
Director, PhD Program in Medical Nutrition Science  
Director, KUMC Biomedical Interdisciplinary Research Careers in Women’s Health  
Department of Dietetics and Nutrition  
KUMC

Evidence he Low US Intake of DHA Impacts Development

02/17/14  Lili Pan  
Graduate Student  
Molecular & Integrative Physiology  
KUMC

Telomere architecture and length regulation in fission yeast

02/24/14  Lynda Bonewald, Ph.D.  
Vice Chancellor for Translational and Clinical Research  
University of Missouri – Kansas City School of Dentistry  
Kansas City, MO

Muscle-Bone Interactions Independent of Loading

03/03/14  Jessica Johnson  
Graduate Student  
Molecular & Integrative Physiology  
KUMC

Characterization of gedunin: a novel therapeutic for the treatment of serous ovarian cancer

03/10/14  Li Chen  
Graduate Student  
Molecular & Integrative Physiology  
KUMC

The role of mammalian methyltransferase Tgs1 in RNA processing

03/14/14  Anand Venugopal  
Graduate Student  
Molecular & Integrative Physiology  
KUMC

Identification of the RNA binding Protein RBM3 as a novel effector of β-catenin signaling and colon cancer stem cells

03/17/14  Liying Li  
Graduate Student  
Molecular & Integrative Physiology  
KUMC

Attempt to visualize long term memory through oligomerization of Drosophila CPEB Orb2
03/31/14  Robert Rogers  
Graduate Student  
Molecular & Integrative Physiology  
KUMC  
Heat shock protein, endurance capacity, and susceptibility to metabolic diseases

04/07/14  Aron Fenton, Ph.D.  
Associate Professor  
Biochemistry & Molecular Biology  
KUMC  
Counteracting Hyperglycemia by Targeting Allosteric Regulation of Liver Pyruvate Kinase

04/14/14  Carmen J. Williams, M.D., Ph.D.  
Principal Investigator  
Reproductive Medicine Group  
Laboratory of Reproductive and Developmental Toxicology  
National Institute of Environmental Health Sciences  
KUMC  
Estrogenic chemical exposure and female reproductive tract dysfunction

04/21/14  Omar A. Gharbawie, Ph.D.  
Postdoctoral Fellow  
Psychology Department  
Vanderbilt University  
Mapping the parietal-frontal network that mediates prehension in non-human primates

05/05/14  Irving H. Zucker, Ph.D., F.A.H.A.  
Theodore F. Hubbard Professor of Cardiovascular Research  
Chairman, Department of Cellular and Integrative Physiology  
Interim Editor in Chief, The American Journal of Physiology-Heart and Circulatory Physiology  
University of Nebraska Medical Center  
The regulation of sympathetic nerve activity in heart failure: Role of Angiotensin and Oxidative Stress

05/12/14  Dianne Durham, Ph.D.  
Associate Dean for Faculty Affairs and Faculty Development  
Professor, Otolaryngology  
KUMC  
Noise-induced auditory neuroplasticity – CNS mechanism of tinnitus?

05/19/14  Naveen Neradugomma  
Graduate Student  
Molecular & Integrative Physiology  
KUMC  
Role of Prolactin and Prolactin Receptor Signaling in Colorectal Tumorigenesis

21
a. Manuscripts Published


Christenson, L.K., S. Gunewardena, X. Hong, M. Spitschak, A. Baufeld, and J. Vanselow. Research Resource: Pre-ovulatory LH surge effects on follicular theca and granulosa transcriptomes”. Mol Endo


Gupta V, Holets L, Roby KF, Enders G & Tash JS. A tissue retrieval and post-harvest processing regimen for animal tissues compatible with long term storage on the International Space Station and post-flight Biospecimen Sharing Program. Accepted for publication in BioMed Research International for special edition on space biology research.


Ramalingam S, Anant S, CELF2 (CUGBP, Elav-like family member 2); Atlas Genet Cytogenet Oncol Haematol. May 2014


b. Manuscripts in Press


c. Abstracts


Blanco G. Over-expression of the polycystin-1 (PC1) C-tail enhances the sensitivity of M-1 cells to the effects of ouabain. American Society of Nephrology Meeting, Atlanta, GA, November 2013.


Dasouki M., Roberts J., Gonzalez K., Zeng W., Butler M., Belousov A., Saadi I. Haploinsufficiency of GJB5 identified via exome sequencing causes a novel form of cutis laxa. The American Society of Human Genetics Meeting; Boston, MA; October 22-26, 2013.


Hughes J, Choi I-Y, Lee P, Denney DR, Lynch SG, "Cerebral glutathione and neuropsychological impairment in three subtypes of multiple sclerosis" Multiple Sclerosis Journal 2013; 19:204, the 29th European Committee for Treatment and Research in Multiple Sclerosis (ECTRIMS) and the 18th Annual Conference of rehabilitation in MS (RIMS) - ECTRIMS/RIMS, Copenhagen, Denmark, October 2-5 (2013) P509 – poster presentation


Modaresi S, Kallem MS, Lee P, McIff TE, Toby EB, Fischer KJ, Evaluation of midcarpal capitate contact mechanics in normal, injured and post-operative wrist, American Society of Biomechanics, Omaha, Nebraska, September 4-7 (2013)
Nothnick WB, Graham A, Falcone T. (2014) Mis-expression of miR451 and target transcript macrophage migration inhibitory factor in endometriotic implant tissue from women with severe endometriosis. 12th World Congress on Endometriosis, Sao Paolo, Brazil.


Tandutinib affects colon cancer stem cells in part through suppression of Notch- Signaling Pathway. 12th Annual AACR International Conference on Frontiers in Cancer Prevention Research, National Harbor, MD, October, 2013

Curcumin prevents intestinal tumorigenesis in APCmin/+ mice and affects stem cell viability by affecting oncogenic YAP1 function. 12th Annual AACR International Conference on Frontiers in Cancer Prevention Research, National Harbor, MD, October, 2013

Honokiol prevents colonic tumorigenesis and affects stem cell viability in part through suppression of oncogenic YAP1. 12th Annual AACR International Conference on Frontiers in Cancer Prevention Research, National Harbor, MD, October, 2013

Neuromuscular alterations following unilateral isometric strength training in SOD1-G93A rats. Poster presented at the 43rd Annual Meeting of the Society for Neuroscience in San Diego, CA.

Hyperactivity and mild hyperbilirubinemia: Locomotor and orolingual function across the lifespan in jaundiced in the Gunn rats. Poster presented at the Pediatric Academic Societies Annual Meeting in Vancouver, Canada.

Presymptomatic defects of neuromuscular junctions in ALS model mice. Poster presented at The Synaptic Basis of Neurodegenerative Disorders, 23rd Neuropharmacology Conference, P016, in San Diego, CA.


RESEARCH SUPPORT


Biomedical Research Training Program. Principal Investigator: D. Kwatra, Mentor: S. Anant

F30 fellowship grant from the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK). Principal Investigator: A. Venugopal, Mentor: S. Anant.

American Cancer Society. Principal Investigator: A. Sugumar, Sponsor: S. Anant.


Lied Pilot Program Grant, University of Kansas - Role of Na,K-ATPase alpha4 in energy producing mechanisms of sperm. 2013. Principal Investigator: G. Blanco.

NIH - Inhibitors of Na,K-ATPase alpha4 as male contraceptives


**S.J. Enna**: Elsevier – Editorial Office. $140,000

International Union of Basic and Clinical Pharmacology – Secretary-General Office. $52,800

NICHHD – “Kansas University Training Program in Neurological and Rehabilitation.” Principal Investigator: R.J. Nudo. Associate Director: S.J. Enna (10% Effort). Total award $1,144,745 (Year 05: $244,129).


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


**M.A. Larson**: Center of Biomedical Research Excellence (COBRE) Institutional Development Award (IDeA), National Center for Research Resources, NIH – “Molecular regulation of cell development and differentiation.” September 1, 2012-June 30, 2017. Principal Investigator: D. Abrahamson

Core B – “Transgenic Facility.” Principal Investigator: M.A. Larson. Total direct costs for entire project period $617,085.


K-INBRE NextGen RNAseq Pilot project grant – “Consequences of long-term space flight on gene transcriptome health in mouse testis.” Principal Investigator: J.S. Tash


MAITF - Computer-Enhanced Simulation for Pre-Clinical Medical Students
Principal Investigator: Emily Diederich
ACTIVITIES OF STAFF

David F. Albertini, Ph.D., Professor

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

Meetings Attended:
   January 2014 – Association of Clinical Embryologists, Sheffield, UK
   January 2014 – Updates in Infertility Treatment, Prague, CZ

Committee Activities:
   Departmental
      Member, Promotion and Tenure Committee
      PhD committees-11; Prelim Exam committees-4
   KUMC
      Member, Executive Faculty Council
      Director, Zeiss Confocal Microscopy Facility
   National
      Ad hoc, NIH CMIR Study Section
      Study Section Chair, TEDCO Stem Cell Program, Maryland State
      (February 8-9, 2014)

Editorial and Grant Reviews:
   Editor-in-Chief, Journal of Assisted Reproduction and Genetics
   Editorial Board, Zygote
   Ad hoc Reviewer, Science
   Ad hoc Reviewer, PNAS
   Ad hoc Reviewer, Nature, Nature Genetics
   Ad hoc Reviewer, Development
   Ad hoc Reviewer, Biology of Reproduction
   Ad hoc Reviewer, Reproduction
   Ad hoc Reviewer, Tissue Engineering
   Ad hoc Reviewer, Developmental Biology
Dr. Albertini (continued)

Editorial and Grant Reviews (continued)
Ad hoc Reviewer, Molecular Endocrinology
Ad hoc Reviewer, Cell
Ad hoc Reviewer, Cell Stem Cell
Ad hoc Reviewer, Molecular Reproduction and Development
Ad hoc Reviewer, Stem Cell
Ad hoc Reviewer, Fertility and Sterility
Ad hoc Reviewer, Reproduction
Grant Reviewer, CMIR, NIH
Grant Reviewer, State of Maryland Stem Cell Research Program
Grant Reviewer, Science Council of Ireland
Grant Reviewer, Israel Science Foundation

Books Published:

Seminars Presented:
September 11, 2013 – “How basic science advances are optimizing human ARTs.” ObGyn Grand Rounds. UMASS Memorial Hospital, Dept. OB/GYN, Worcester, MA
September 11, 2013 – “Mechanisms underlying surveillance and maintenance of genomic integrity in the female germ line of mammals.” Department of Cell Biology. UMASS Medical Center, Worcester, MA.
November 16, 2013 – “The magical mystery tour from primordial to antral follicle: Role of the ovarian stroma.” Ovarian Club III. Paris, France
January 23-26, 2014 – “Biology of the ovarian reserve” and “Ovarian Stem Cells: facts and fallacies,” Updates in Infertility Treatments, Ferring Inc. Prague, Czech Republic
Dr. Albertini (continued)

Academic Honors:
   Section Editor, Handbook of Reproductive Physiology, 4th edition
   Awarded Fellowship for Visiting Scientist, School of Veterinary Medicine, Sassari University, Sardinia, Italy (planned for June 2015).

Teaching Activities:
   CORE 830 – Reproduction and Sexuality
       First year medical students (lecture and discussion group)
   Graduate Physiology – Reproductive Physiology
       5, 2 lecture hours, one discussion group
   IGBPS – Cell Cycle
       2 2hour lectures, one discussion group
Shrikant Anant, Ph.D., Professor; Tom and Teresa Walsh Professor of Cancer Prevention; Eminent Scholar, Kansas Bioscience Authority; Associate Director of Cancer Prevention and Control; Associate Dean of Research

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 proto-oncogenes 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:

- September 2013 – AACI/CCAF Annual Meeting, Washington, DC
- October 2013 – American Association for Cancer Research (AACR) Annual Meeting, Washington, DC
- February 2014 – Biomimetic Tissue Engineered Workshop, Washington, DC
- March 2014 – NIH/NCCAM PK29 Meeting, Washington, DC
- April 2014 – Experimental Biology (EB) Annual Meeting, San Diego, CA
- March 2014 – Digestive Disease Week Annual Meeting (DDW), Atlanta, GA
- June 2014 – Department of Veteran Affairs Gastroenterology Meeting, Washington, DC
- June 2014 – NIH/CDP Study Section, Washington, DC
- June 2014 – Gastrointestinal Mucosal Pathobiology Meeting (GMBP), Chicago, IL

Committee Activities:

Graduate Student Committee Member

- Hampton, Kelsey (Molecular and Integrative Physiology, University of Kansas Medical Center)
- Iyer, Swathi (Molecular and Integrative Physiology, University of Kansas Medical Center)
- Lui, Asona (Molecular and Integrative Physiology, University of Kansas Medical Center)
- Neradugomma, Naveen (Molecular and Integrative Physiology, University of Kansas Medical Center)
- Venugopal, Anand (Molecular and Integrative Physiology, University of Kansas Medical Center)
Dr. Anant (continued)

Committee Activities (continued)

KUMC
- Member, Faculty Position Search Committee – Cancer Center
- Member, Faculty Position Search Committee – Cancer Biology
- Member, Faculty Position Search Committee – Molecular Regulation of Cell Development and Differentiation COBRE
- Member, Genomic Facility Advisory Committee
- Member, Graduate Affairs Committee
- Member, KUCC Scientific and Clinical Research Sub-Committee

National
- Member, Cancer Research UK Programee – Norbury Peer Review
- Member, GAST Review Committee
- Member, APS International Physiology Committee

Editorials and Grant Reviews:
- 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, *American J. Physiology*
- Ad hoc Reviewer, *Cell Physiology*
- Ad hoc Reviewer, *Physiological Genomics*
- Ad hoc Reviewer, *Molecular Microbiology*
- Ad hoc Reviewer, *Infection and Immunity*
- Ad hoc Reviewer, *GI and Liver*
- Ad hoc Reviewer, *Journal of Biological Chemistry*
- Ad hoc Reviewer, *Cancer Research*
- Ad hoc Reviewer, *Digestion*
- Ad hoc Reviewer, *Cancer Letters*
- Ad hoc Reviewer, *Biotechniques*
- Ad hoc Reviewer, *Human Heredity*
- Ad hoc Reviewer, *Journal of Applied Physiology*
- Ad hoc Reviewer, *Journal of Cellular Biochemistry*
- 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)
Dr. Anant (continued)

Editorials and Grant Reviews (continued):
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)

Seminars Presented:
August 2013 – “Cancer Stem Cells: Targeting Colon Cancers” Amrita Bioquest 2013, Mumbai (Bombay)
August 2013 – “Cancer Stem Cells: A Novel Kinase Target” Digestive Disease Research Center, Austin, TX
August 2013 – “Stem Cells and Cancer Chemoprevention: Let’s take it up a Notch” Tumor Board Meeting, Tampa, FL
September 2013 – “Phytochemicals target Notch signaling in Colon Cancer Stem Cells” IAMBR Cancer – Present and Future Perspective, Mauritius, India
November 2013 – “Targeting Cancer Stem Cells: Taking it up a Notch” Cancer Biology Fall Seminar Series, Arizona
March 2014 – “Cancer Stem Cells: A novel Kinase Target” Division of Digestive Diseases at Emory University School of Medicine, Atlanta, GA
April 2014 – “Honokiol suppresses stem cells in colon cancer stem cell by Inhibiting Hippo signaling” Cancer Research Institute Seoul National University, South Korea
May 2014 – “Colon Cancer Stem Cells: A Notch Above” Cedars-Sinai Medical Center Medical College of Wisconsin “personal, Los Angeles, CA

Teaching Activities:
Carcinogenesis and Cancer Biology course
1 lecture

Trainees:
Balmaceda, Julia – Summer Intern
Chaimalakonda, Nitish – Summer Intern
Dhar, Animesh – Faculty Member (Cancer Biology)
Fnu, Gaurav – Post-Doc Fellow
Garimella, Rama – Junior Faculty (Dietetics and Nutrition)
Johnson, Jessica – Graduate Student
Kwatra, Deep – Post-Doc Fellow
Mammen, Josh – Junior Faculty (Surgery)
Nerudagomma, Naveen – Graduate Student
Ortbals, Chloe – Summer Intern
Panchananam, Vivek – Summer Intern
Dr. Anant (continued)

Trainees (continued)
Ponnurangam, Priya – Research Associate
Ramalingam, Satish – Junior Faculty (Physiology)
Ramamoorthy, Prabhu – Junior Faculty (Physiology)
Rangarajan, Parasarathy – Post-Doc Fellow
Satheest, Sainathan – Research Associate
Standing, David – Research Associate
Subramaniam, Dharmalingam – Junior Faculty (Physiology)
Thombre, Ravi – Summer Intern
Urich, Alissa – Summer Intern
Venugopal, Anand – MD/PhD Graduate Student
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:
    July 13-18, 2013- International gap junction conference. Charleston, South Carolina
    May 3-12, 2014 – Molecular mechanism on synaptic protein turnover in memory formation. Shanghai, China. (Invited lecture.)

Committee Activities:
    Departmental
    Member, Graduate Student Advisory Committee
    KUMC
    Member, School of Medicine Faculty Council

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, Behavioural Brain Research
    Ad hoc Reviewer, FEBS Letters (2 papers)
    Ad hoc Reviewer, Neuroscience
    Ad hoc Reviewer, Brain Research
    Reviewer of abstracts for International Stroke Conference 2014, February 2014, San Diego, CA
    Editorial Board Member, The Open Neuroscience Journal (ON), Bentham Science Publishers
    Served on an inter-institutional study section to review Frontiers Pilots grants, the KUMC Research Institute Clinical Pilots and Lied Basic Science Grants

Seminars Presented:
    November 19, 2013 – Invited Lecture, Colorado State University, Fort Collins, CO

Academic Honors:
    I gave an invited lecture at the Molecular mechanism on synaptic protein turnover in memory formation meeting, Shanghai, China, May 3-12, 2014.
    I have been invited to present our work at The International Gap Junction Conference 2015, Valparaiso, Chile, March 28 - April 2, 2015
    I supported a grant submission by Andre Koop, a KUMC Medical Student, for the KUMC T32 Summer Trainee program. This proposal was awarded.
Dr. Belousoy (continued)

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
       2 – 2 hour lectures
       1 – 2 hour seminar

Trainees:
   Jeremy Polk, BS, Research Assistant
   Yun Zhou, PhD, Postdoctoral Fellow
   Janna V. Belousova, Senior Research Assistant
   Andre Koop, Medical Student who did a research project in my laboratory
       Supported by the KUMC T32 Sumer Trainee program.
V. Gustavo Blanco, M.D., Ph.D., Professor

Our laboratory studies the role of ion-transport proteins of the plasma membrane in cell function. Research is focused on the Na, K-ATPase, a plasma membrane enzyme system that uses the energy from ATP to establish high intracellular K+ and low intracellular Na+ concentrations which are essential for maintaining cell volume, membrane potential, pH and ion balance. 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. Research is focused on two main projects.

1. We are studying the function of alpha4, a particular isoform of the catalytic subunit of the Na,K-ATPase that is selectively expressed in spermatozoa. We have found that this isoform, has functional properties that are different from all other Na,K-ATPases. Alpha4 is expressed in the mid-piece of the sperm flagellum, and is important for 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 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. In addition, we are studying the role of the Na,K-ATPase in autosomal dominant polycystic kidney disease (ADPKD). Working with renal cells from patients with ADPKD and various mouse models of ADPKD, we have found that the Na,K-ATPase exhibits an abnormally increased sensitivity to ouabain, a hormone released by the adrenal glands. Importantly, ouabain stimulates cystogenesis in ADPKD cells and kidneys. Currently, we are investigating how ouabain affects cyst formation and progression in the disease.

Meetings Attended:

November 2013 – American Society of Nephrology Meeting, Atlanta, GA
October 2013 – The Gilbert S. Greenwald Symposium on Reproduction, Kansas City, KS
July 2013 – Gordon Conference Fertilization and Activation of Development, Holderness, NH

Committee Activities:

   Member, Ph.D.Thesis Committee for Felcy Selwyn (Dept. Pharmacology).
   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
Dr. Blanco (continued)

Committee Activities (continued)
Departmental
  Director, Developmental Research Project Core of the K-INBRE.
  Member, Committee to oversee the Biotechnology Support Facility at KUMC.
  Member, Medical Students Wescoe Academic Society.
  Member, Kidney Institute Executive Board.
  Member, Admissions Committee for MD/PhD Program.
  Member, LCME visit for accreditation of KUMC committee.
  Member, committee for the organization of the Greenwald Symposium in Reproduction.
  Member, committee for selecting the University Chancellor's Teaching Award.

National
  Member, Awards Committee for the American Society of Andrology.

Editorial and Grant Reviews:
  Editorial Board Member, American Journal of Physiology: Endocrine and Metabolism
  Editorial Board Member, Journal of Assisted Reproduction and Fertility
  Reviewer, American Journal of Physiology
  Reviewer, Journal of Assisted Reproduction and Genetics
  Reviewer, Journal Biological Chemistry
  Grant proposal reviewer, Fundazione Cariplo, Italy.
  Charter Member, NIH CMIR Study Section

Seminars Presented:
  July 2013 – “Molecular mechanisms of male gamete function,” Gordon Conference Fertilization and activation of Development. Holderness, NH
  September 2013 – “Ouabain induction of epithelial to mesenchymal transition (EMT) in autosomal dominant polycystic kidney disease.” Kidney Institute, KUMC
  September 2013 – “The sperm Na,K-ATPase is essential for male fertility and an attractive target for male contraception, Department of Physiology, KUMC
  April 2014 – “Alpha4, a unique Na,K-ATPase that allows sperm to swim and be fertile.” K-INBRE, EAC Meeting

Academic Honors:
  Distinguished alumni, University of Cordoba, Argentina, April 2013.
  Students Voice Award for Excellence in Teaching (2013-2014), University of Kansas Medical Center.
Dr. Blanco (continued)

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
      6 hours remediation course
   Renal Physiology for Medical Students. Integration and Consolidation.
      2 hours Lecture
   Renal Physiology. Board review, Step Prep
      1 contact hour.
   IGPBS. Cell membrane structure and transport systems of the plasma membrane.
      6 hours lecture.
   Biology of Reproduction for Graduate Students
      4 hours lecture
      2 hours paper discussions
   Advanced Topics in Renal Physiology. Kidney Institute Course.
      4 contact hours
   Comprehensive Human Physiology. Graduate student course.
      6 contact hours.
   Pre-Med college students from KU, Phi Delta Epsilon pre medical fraternity.
      1 contact hour.

Trainees:
   Graduate Students: Kyle Jansson
      Malinda Algaier
   Research associate: Gladis Sanchez.
      Jeffrey McDermott
   Postdoctoral fellows: Aramadhaka Lavakumar Reddy
Paul D. Cheney, Ph.D., Professor & Kathleen M. Osborn Chair

Neurophysiological techniques are used to investigate the functional contribution of neurons in the cerebral cortex and brainstem to the control of voluntary movement. The spike (action potential) activity of single neurons is recorded in awake monkeys trained to perform various movement tasks. Computerized analysis techniques are used to reveal the functional contribution of a neuron 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:
November 9-13, 2013 – 43rd Annual Meeting of the Society for Neuroscience
2nd Annual Meeting of the Society for Neuroscience, San Diego, CA.

Committee Activities:
Comprehensive Exam Committees:
  Dissertation Advisor, MD/PhD Committee for William Messamore
  Co-Dissertation Advisor, Ph.D Committee for Sommer Amundson
    (Biomedical Engineering, Co-Advisor: Dr. Carl Luchies)
  Member, Comprehensive and Dissertation Committees for Anadia Barnds
    (Biomedical Engineering PhD program)

Departmental
  Coordinator, Fred Samson Memorial Lectureship, September 16, 2013,
    Dr. Paul Welling, University of Maryland School of Medicine

School of Medicine
  Member, Executive Dean Search Committee
  Member, Executive Dean Search Committee, Executive Committee
  Member, Executive Committee for the re-accreditation process culminating in a site visit by the Liaison Committee on Medical Education (LCME) in the Fall of 2013
  Chair, LCME Self-Study Committee on Faculty
  Member, Dean’s Leadership Committee
  Member, Internal Advisory Committee, Neuroscience Rehabilitation Training Grant, Dr. Nudo, PI.
  Member, Mentoring Awards Review Committee

KUMC
  Interviewed numerous candidates for various positions including Executive Dean
  Member, Institute for Neurological Disorders Executive Committee
  Member, Institute for Neurological Disorders Advisory Committee
  Co-director, Neuromuscular and Movement Disorders Division of the Institute for Neurological Disorders
  Member, Professional Development and Faculty Affairs (PDFA) Planning Committee
Committee Activities (continued):
KUMC-KU Lawrence
Member, KU Bioengineering Advisory Committee
Member, KIDDRC Internal Scientific Advisory Committee
KIDDRC Theme leader, Neurobiology of Mental Retardation and Developmental Disabilities

Editorials and Grant Reviews:
Ad hoc Reviewer, *PlosOne*
Ad hoc Reviewer, *J. Neurophysiology*
Ad hoc Reviewer, *J. Neuroscience*
Ad hoc Reviewer, *J. Physiology*
Ad hoc Reviewer, *Experimental Brain Research*
Ad hoc Reviewer, *Brain*
Ad hoc Reviewer, *Cerebral Cortex*
Ad hoc Reviewer, *J. Comp Neurology*
Ad hoc Reviewer, *Neuroscience Letters*
Grant Reviewer, KUMC, Woodyard Fellowship Applications, Institute for Neurological Disorders

Seminars Presented:
May 19, 2014 – Physiology Department “Voyages” lecture, “Brain Control of Movement: My Scientific Journey.”
September 5, 2013 – Presentation for the IGPBS new student interaction.

Teaching Activities:
PHSL 844 – Neurophysiology
Spring 2014, 4 students
Course director, sole instructor
15 lecture hours
Prepared all topic objectives and readings, evaluated student presentations

PHSL 846 – Advanced Neuroscience
Summer 2013, 8 students
6 lecture hours

REHS 962 – Advanced Rehabilitation Science
Fall 2013, 4 students
2 hours lecture

CORE 840 – Brain and Behavior: Small group lectures/labs/conferences,
Fall 2013
5 - 2-3 hour small group sessions
Mechanical Engineering, Biomechanics (Dr. Carl Luchies-Director)
Fall 2013, 28 students
2 hours lecture
Dr. Cheney (continued)

PTRS 882- Pathobiology of Human Function
Spring 2014, 5 students
2 hours lecture

Trainees:
Sommer Amudson – Ph.D. Bioengineering Student, co-advisor
Stacey DeJong, Ph.D. – Post-Doc, mentor
Austin Oder – Ph.D. student in Hearing and Speech, Comprehensive exam & Dissertation committees
Corbin Reagan – PhD student in Mechanical Engineering, Comprehensive exam Committee member
Hesham Soloman, M.D. – Senior neurosurgical resident, research mentor
Vargheese M. Chennathukuzhi, Ph.D., Assistant Professor

My research interests include uterine fibroids, fertility and contraception. Our laboratory is currently trying to understand the roles of GPR10, and its upstream regulator REST, in the pathogenesis of uterine fibroids. We identified that the loss of REST, a tumor suppressor protein, leads to the overexpression of GPR10 in fibroids. We have generated transgenic mice overexpressing GPR10 in the myometrium in order to understand its role in the pathogenesis of fibroids. Additionally, we have generated a conditional knockout mouse model for REST to understand its role in the development of fibroids.

Meetings Attended:
March 26-29, 2014 – SGI 61st Annual Scientific Meeting, Florence, Italy (Invited Speaker)

Committee Activities:
Departmental
Member, Thesis Committee for J.B. Fitzgerald
Member, Thesis Committee for Jitu George
Member, Thesis Committee Elizabeth Dille
Member, Thesis Committee Wei-Ting Hung
Member, Thesis Committee Safder Saheed
Member, Thesis Committee Ashley Ward

KUMC
Member, KU Cancer Center
Member, D3ET (Drug Discovery, Delivery and Experimental Therapeutics), IAMU
Member, KU Med Faculty Council

Editorial and Grant Reviews:
Reviewer, JARG
Reviewer, PLoS One
Reviewer, Obstetrics and Gynecology International
Reviewer, Human Reproduction Update
Reviewer, Endocrinology
Reviewer, Biology of Reproduction
Reviewer, Reproduction
Member, Special Emphasis Panel/Scientific Review Group 2014/01 ZRG1 EMNR-P (02) M (11/07/2013)
Grant Reviewer, CTSA pilot grants at KUMC

Seminars Presented:
Dr. Chennathukuzhi (continued)

Teaching Activities:
- PHSL 834 – Reproductive Physiology
  Course Co-Director
  15 hours
- GMSC 851 – Molecular Genetics
  6 hours lecture

Trainees:
- Michelle McWilliams – Graduate Student
- Mina Farahbakhsh – MD PhD Student
- Faezeh Koohestani, PhD – Post doctoral fellow
- Kavya Shivashankar – Summer student
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.

Meetings Attended:

Committee Activities:
   Departmental
      Co-Director, Graduate Student - GSAC
   KUMC
      Member, Advisory Committee for the Microarray Facility
      Member, Mass Spectrometry Oversight Committee
   National
      Member, Society for Study of Reproduction Program Committee

Editorial and Grant Reviews:
   Reviewing Editorial Board Member, Biology of Reproduction
   Editorial Board Member, Journal of Assisted Reproduction and Genetics
   Ad hoc Reviewer, Endocrinology
   Ad hoc Reviewer, Reproduction
   Ad hoc Reviewer, Molecular Endocrinology
   Ad hoc Reviewer, Fertility and Sterility
   Ad hoc Reviewer, Domestic Animal Reproduction
   Ad hoc Reviewer, Nature Reviews Endocrinology
   Ad hoc Reviewer, PNAS
   Ad hoc Reviewer, Journal Clinical Endocrinology and Metabolism
   Ad hoc Reviewer, Molecular Reproduction and Development
   Ad hoc Reviewer, Human Fertility
   Ad hoc Reviewer, Plos One
   Ad hoc Reviewer, Mutation Research Reviews
Dr. Christenson (continued)

Editorial and Grant Reviews (continued):
U54 Project Reviewer, National Institute of Health, November 7-9, 2013
Bethesda, MD
Ad hoc Reviewer, Israel Science Foundation, March 3, 2014
U01 ExRNA Study Section Member, for Defining A Comprehensive Reference Profile of Circulating Human Extracellular RNA, National Institute of Health, March 26, 2014

Seminars Presented:
September 26-29, 2013 – “Noncoding RNAs and ovarian events” Canadian Fertility and Andrology Society, Victoria, BC
September 7-9, 2013 – “Folliculosomes, exosomes within the follicular fluid and potential roles in fertility” American Society of Exosome and Microvesicles
October 7, 2013 – “Pathways and genes regulated by LH-induced microRNA-21 in granulosa cells” Department of Biology, University of Texas San Antonio
December 3, 2013 – “Pathways and genes regulated by LH-induced microRNA-21 in granulosa cells” Department of Molecular Biology and Bioinformatics, Faculty of Science, Prince of Songkla University, Hat Yai, Songkhla, Thailand

Academic Honors:
Invited Speaker, University of Kentucky, Seminar Series Feb 12, 2015
Elected to Board of Directors for Society for Study of Reproduction, July 2014

Teaching Activities:
Director, Section 1 in the Frontiers in Reproduction course at Woods Hole May 1-May 14, 2014
4 hours lecture
20 hours lab
GSMC 851 – Molecular Genetics (IGPBS)
3 – 2 hour lectures on Post-transcriptional gene regulation
December 2013

Trainees:
Wei-Ting Hung – Ph.D. Candidate
Jasmine Nwachokor – MS Clinical Research KUMC – Co-Mentor with Ajay Bansal
Pavla Brachova – Postdoctoral Fellow – joined June 2014
Jeremy Ambrose – KINBRE Summer Scholar 2014, Undergraduate at Benedictine College.
Dr. Christenson (continued)

Trainee (continued)
Raphatphorn (Sine) Navakanitworakul, PhD candidate
Molecular Biology and Bioinformatics, Faculty of Science
Prince of Songkla University, Hat Yai, Songkhla, Thailand, 90112
Visiting PhD. Student
Salvatore J. Enna, Ph.D., Professor; Associate Dean for Research and Graduate Training; Professor, Department of Pharmacology, Toxicology and Therapeutics

Research was focused on defining the pharmacological and biochemical properties of neurotransmitter receptors, in particular those for GABA. In recent years emphasis was placed on characterizing the regulation of GABA$_B$ receptor expression and function in human brain autopsy material and laboratory animals.

Meetings Attended:

- July 2013 – Asia Pacific Federation of Pharmacologists Meeting, Shanghai, China
- August 2013 – Nebraska INBRE Meeting, Grand Island, Nebraska
- September 2013 – Wiley Editorial Board Meeting, Philadelphia, Pennsylvania
- October 2013 – PhRMA Foundation Meeting, Washington, D.C.
- October 2013 – NC-IUPHAR Meeting, Paris, France
- November 2013 – Society for Neuroscience Meeting, San Diego, California
- December 2013 – American College of Neuropsychopharmacology Meeting, Hollywood, Florida
- February 2014 – Training in Neurotherapeutics Discovery and Development for Academic Scientists, Bethesda, Maryland
- April 2014 – NC-IUPHAR Meeting, Edinburgh, Scotland
- April 2014 – Experimental Biology/American Society for Pharmacology and Experimental Therapeutics Meeting, San Diego, California

Committee Activities:

KUMC
- Associate Director, Internal Advisory Committee, Kansas University Training Program in Neurological and Rehabilitation Sciences
- Member, Research and Training Committee

National
- Member, Nebraska-BRING External Advisory Committee
- Member, PhRMA Foundation Pharmacology Advisory Panel
- Member, Research Advisory Council, University of Missouri-Kansas City School of Pharmacy
- Member, Institute of Medicine, Neuroscience Training Workshop Planning Committee

International
- Chair, Secretary General, International Union of Basic and Clinical Pharmacology Executive Committee
- Member, International Union Basic and Clinical Pharmacology Nomenclature Committee
Dr. Enna (continued)

Editorials and Grant Reviews:
- Editor-in-Chief, *Biochemical Pharmacology*
- Executive Editor-in-Chief, *Pharmacology & Therapeutics*
- Editor-in-Chief, *Pharmacology International*
- Co-Editor, *xPharm*
- Co-Editor, *Current Protocols in Pharmacology*
- Series Editor, *Advances in Pharmacology*
- Guest Editor, *Biological and Pharmaceutical Bulletin*
- Section Head (Neuropharmacology and Psychopharmacology), *Faculty of 1000 Biology Literature Search Service*
- Editorial Advisory Board, *Brain Research*
- Editorial Advisory Board, *Life Sciences*
- Editorial Advisory Board, *CNS Neuroscience and Therapeutics*
- Editorial Advisory Board, *Current Opinion in Pharmacology*
- Pharmacology Subject Editor, *Reference Module in Biomedical Sciences*
- Grant Reviewer, PhRMA Foundation
- Consultant, Simmons & Simmons LLP, Paris, France
- Consultant, Axinn, Veltrop & Harkrider LLP, Hartford, Connecticut

Seminars Presented:
- July 2013 - Invited Plenary Lecture: “GABA Receptor Allosterism”, Asia Pacific Federation of Pharmacologists Meeting, Shanghai, China

Academic Honors:
- Visiting Professor in the Department of Pharmacology, University of Catania, Catania, Italy, October, 2013
- Elected as President (2014-2018) of the International Union of Basic and Clinical Pharmacology (IUPHAR)
- Appointed Chair of the External Advisory Committee, Nebraska INBRE
- Awarded the Paoletti Medal from the European Pharmacology Society in Recognition for Significant and Sustained Contributions to Pharmacology Research and Training
- Appointed Pharmacology Section Editor for the Reference Module of Biomedical Sciences
Dr. Enna (continued)

Teaching Activities:
   Medical School
      Faculty Advisor
      Orr Society: Josh Mark, Andrew Kwan, Karen Valle
      Lectures
         Small Group Discussion Leader, COPD
   Post-Graduate
      Psychiatry Residents Lectures: Neurochemistry, Neurotransmitters, and
         Psychiatric Illness: 2 hours
      Graduate Students: Neurochemistry and Neuropharmacology, Advanced
         Neuroscience Course: 6 hours
      Graduate Students: Research Integrity: 1 hour
      Directed Summer Research Integrity/Journal Club for T32 Students:
         10 hours

Associates
   Ms. Lynn LeCount, Managing Editor, Biochemical Pharmacology; Pharmacology
      & Therapeutics; Advances in Pharmacology
   Ms. Jennifer McNichols, Editorial Coordinator, Biochemical Pharmacology;
      Pharmacology & Therapeutics
   Ms. Leigh Ann Arbuckle, Senior Coordinator
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:
November 12, 2013 – Society for Neuroscience, San Diego, CA

Editorials and Grant Reviews:
Reviewer, J. Neuroscience 7/23/2013
Reviewer, J. Neuroscience Methods 4/23/2014
Reviewer, Stroke 8/4/2014

Seminars Presented:

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

Trainees:
Advisor/mentor in conjunction with Dr. Nudo as primary advisor/mentor:
Maria Iliakova – Medical Student
Edward Urban, III – Medical Student
Jordan Burrell – Graduate Student
Maxwell Murphy – Graduate Student
Patrick Nudo – Summer Student/Research Assistant
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.

Committee Activities:
Departmental
  Member, Graduate Student Advisory Committee
KUMC
  Immediate Past President, Women in Medicine and Science
  Founding Member, Moms in Medicine and Science
  Co-Founder and Faculty Advisor, Exercise is Medicine student organization
  Member, ENT Chair Search Committee
  Member, Research Advisory Committee
  Member, Emily Taylor Center for Women and Gender Equity Advisory Board

Editorials and Grant Reviews:
  Editorial Board Member, American Journal of Physiology: Regulatory, Integrative and Comparative Physiology
  Ad hoc Reviewer, Journal of Applied Physiology
  Ad hoc Reviewer, American Journal of Physiology
  Ad hoc Reviewer, Medicine in Science and Sports Exercise
  Ad hoc Reviewer, Exercise and Sports Science Reviews
  Ad hoc Reviewer, Diabetes
  Ad hoc Reviewer, American Journal of Physiology: Regulatory, Integrative and Comparative Physiology
  Ad hoc Reviewer, Journal of Cellular Physiology
  Ad hoc Reviewer, Journal of Gerontology
  Ad hoc Reviewer, Cell Stress and Chaperones
  Ad hoc Reviewer, Applied Physiology, Nutrition and Metabolism
  Ad hoc Reviewer, NIH Integrative Physiology of Obesity (IPOD) Study Section, October 2013, February & June 2014
  Ad hoc Member, National Institute of Aging, NIH, PPG study section review, June 2014
Dr. Geiger (continued)

Academic Honors:
   Glendon G. Cox Faculty Leadership and Excellence Award
   Central Exchange Women in STEMM Inaugural STEMMY Award – Rising Trendsetter

Teaching Activities:
   Human Physiology
      11 lecture hours
   Cardiopulmonary Module, M1 Students
      5 hours lecture
      4 hours small group

Trainees:
   Robert Rogers – Doctoral Candidate (post comps)
   Kathleen White – KU-Lawrence undergraduate, Summer student 2013 & 2014
   David Wilson – KU-Lawrence master’s student, Summer student 2013
   Ashley Ward – Truman State University graduate and Fulbright Scholar, IGPBS Rotation Spring 2014
Norberto C. Gonzalez, M.D., Professor

My research interests center on the mechanisms of adaptation to alveolar hypoxia in intact animals. Alveolar hypoxia occurs when the oxygen levels are reduced in the environment, as it happens in altitude, or when pulmonary function is altered, as in COPD or in restrictive pulmonary diseases. In the last few years my laboratory has studied the mechanisms by which maximal $O_2$ uptake is altered by hypoxia in a rat model that allows the characterization of the systemic $O_2$ transport from the atmosphere to the cell. In these studies we have investigated the roles of normoxic and hypoxic exercise training, red blood cell mass, alterations of the affinity of Hb for $O_2$, among other factors on the determinants of maximal aerobic capacity. Longitudinal studies in rats artificially bred for diverging aerobic capacity have provided important clues on the development of mechanisms of systemic $O_2$ transport along several generations. Another important line of studies involves the interactions between hypoxia and inflammation. Our laboratory demonstrated that hypoxia induces systemic inflammation triggered by activation of alveolar macrophages. This finding highlights the extrapulmonary effects of alveolar macrophages, which may play a role in the mechanisms of adaptation to hypoxia.

On January 1, 2013 I started the Phased Retirement Program, with 50% effort for 3 years. I closed my lab and terminated my last NIH grant, which was originally funded in 1988.

Committee Activities:
  Departmental Chair, Departmental Appointments, Promotions and Tenure Committee

Editorial and Grant Reviews:
  Member, Editorial Board of Hypoxia, Dove Press
  Ad hoc Reviewer, The Journal of Applied Physiology
  Ad hoc Reviewer, Respiratory Physiology & Neurobiology
  Ad hoc Reviewer, The American Journal of Physiology, Regulatory, Comparative and Integrative Physiology
  Ad hoc Reviewer, American Journal of Physiology, Heart and Circulatory Physiology
  Ad hoc Reviewer, The Journal of Physiology
  Ad hoc Reviewer, The European Journal of Applied Physiology
  Ad hoc Reviewer, Experimental Biology and Medicine
  Ad hoc Reviewer, International Journal of Sports Medicine
  Ad hoc Reviewer, The Journal of Cellular and Molecular Medicine
  Ad hoc Reviewer, The Journal of Assisted Reproduction and Genetics
  Grant Reviewer, United States-Israel Bi-national Foundation (1 grant application)
Dr. Gonzalez (continued)

Seminars Presented:
  September 23, 2013 – “Alveolar hypoxia-induced systemic inflammation”
  Department of Anatomy and Physiology, School of Veterinary medicine,
  Kansas State University
  November 18, 2013 – “Alveolar hypoxia, alveolar macrophages and systemic
  Inflammation: Lessons from studies in intact animals” Department of
  Molecular and Integrative Physiology, KUMC

Teaching Activities:
  Respiratory Physiology, Cardiopulmonary Module
    5 lectures
    1 review session
    2 small group meetings
  1 lecture on “Exercise-induced arterial hypoxemia” for fellows in Pulmonary
  Medicine, KUMC
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.

Publications


The first project that I am working on is to synthesize and test reversible non-hormonal non-steroidal male contraceptive agents. Specifically, my role involves testing novel compounds (in-vitro as well in-vivo) as potential male contraceptives. I also work on determining the mechanism of action of potent compounds and facilitating toxicology, fertility studies for the compound likely to advance towards clinical trials.

A second major research interest, concerns whether reproductive potential is affected by space flight. To this effect, we examined the effects of microgravity on the female reproductive tract of mice that were flown on the space shuttle on flights STS-131, STS-133 and STS-135. Our studies on these three space shuttle missions were the first to examine the consequences of space flight on ovaries and uteri of mice. We found that with 12-15 days of space-flight exposure, female mice showed significantly small ovaries. Histological analysis showed that flight mice ovaries had fewer corpora lutea and most of the growing follicles in flight ovaries were atretic, indicative of blocked estrous cycle. Ground and flight mice had no significant difference in number of uterine glands, but there was a trend to-ward smaller uteri in flight mice based on the gross pictures, which correlates with the low estrogen receptor alpha (ERa) level. This sets the foundation for our hypothesis that drop in estrogen in reproductive system may be the cause of other estrogen regulated effects seen in the body (bone and muscle loss, wound-healing, immune functions etc.) when exposed to space-flight.

I recently got involved in determining the molecular mechanism of pulmonary hypertension with the goal of elucidating the role of estrogen in pulmonary hypertension.

Academic Honors:
Invited to judge faculty research papers and posters at KCUMB’s Annual Research day to be held on November 19th 2014.

Trainees:
Mentored summer interns in Dr. Navneet Dhillon’s lab.
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
  KUMC
    Member, IGPBS Curriculum and Oversight Committee
    Member, Transgenic Advisory Committee
    Member, Institution Research and Safety Committee
    Member, Misconduct Inquiry Committee
  National
    Chair, Reproduction, Andrology and Gynecology Study Section, National Institute of Child Health & Human Development
    Member, Future Meetings Committee, Society for the Study of Reproduction

Editorial and Grant Reviews:
  Ad hoc reviewer, Biology of Reproduction
  Ad hoc reviewer, Journal of Clinical Investigation
  Ad hoc reviewer, Journal of Assisted Reproduction and Genetics

Academic Honors:
  Vice Chair, XXIII North American Testis Workshop (held 2015)
  Chair, XXIV North American Testis Workshop (held 2017)
Dr. Heckert (continued)

Teaching Activities:
   Frontiers in Reproduction course at Marine Biology Laboratory, Woods Hole, MA.
   May 13, 2014
      Lecturer, Section 1
   PHSL 834 – Reproductive Physiology
      4 – 1.5 hour lecture
Ramakrishna Hegde, Ph.D., Research Assistant Professor

Our research is focused on the simian immunodeficiency virus (SIV)/AIDS model to better understand the influence of opiate dependency on HIV progression to AIDS. SIV infection in rhesus macaques is one of the best models of HIV-1 infection in humans since the virus has CCR5 phenotype similar to that of HIV. Our findings suggest that morphine has a trend of potentiating virus replication and end-organ pathogenesis, leading to increased mortality in a subset of macaques compared with the virus alone animals. Currently the main focus of our lab research is to address how interactions between morphine & SIV in the acute phase of infection impact disease outcome in the chronic stage neuropathogenesis.

Published publication:

T. Rajendra Kumar, Ph.D., Associate 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:

Committee Activities:
Departmental
Chair, Osborn Endowment Student Scholar Funding Committee
Member, Thesis Committee, Jessica Johnson (served)
Member, Thesis Committee, Michelle McWilliams
Member, Thesis Committee, Mina Farahbakhsh
Member, Thesis Committee, Zelha Nil
Member, Thesis Committee, Kira Marshall – University of Missouri – Columbia

KUMC
Member, Kansas Intellectual and Developmental Disabilities Research Center User Advisory Committee for Core C, Research Design and Analysis
Member, KUMC Flow Cytometry Core Advisory Committee
Member, International IGPBS Student’s Selection Committee
Host, Jim Voogt Annual Lectureship in Neuroendocrinology
Host, DC Johnson Annual Lectureship in Reproduction
Member, Laboratory Animal Research Advisory Committee
Director, Center for Reproductive Sciences, Institute for Reproductive Health & Regenerative Medicine

National
P&T External Evaluation Member, University Virginia Health Sciences Center, Charlottesville, VA
Expert Referee for evaluating the US FDA employee to Permanent Staff Positions, Bethesda, MD.
Member, Society for Study of Reproduction National Program Committee, 46th Annual Meeting Montreal, Canada
Dr. Kumar (continued)

Committee Activities (continued)

Team Leader, Abstract Evaluation Committees on Gonadotropins and Endocrinology-Other Sections, 46th Annual Meeting, Society for Study of Reproduction, Montreal, Canada.
Chair, Hormones Module Session II on Gonadotropins, 46th SSR Annual Meeting, Montreal, Canada.
Co-Chair, Reproductive Axis Determination, Development & Transgender Medicine- Platform Session, Endocrine Society Meeting, San Francisco, CA.

Editorial and Grant Reviews:
Associate Editor, Molecular Reproduction and Development
Senior Editor, Journal of Assisted Reproduction and Genetics
Editorial Board Member, Frontiers in Neuroendocrine Science
Board of reviewing editors, Biology of Reproduction
Manuscript Reviewer, American Journal of Pathology
Manuscript Reviewer, American Journal of Physiology: Endocrinology & Metabolism
Manuscript Reviewer, Archives of Biochemistry and Biophysics
Manuscript Reviewer, Asia Journal of Endocrinology
Manuscript Reviewer, Biochimica Biophysica Acta (Molecular and Cellular Research)
Manuscript Reviewer, Biology of Reproduction
Manuscript Reviewer, BMC Cell Biology
Manuscript Reviewer, Cell and Tissue Research
Manuscript Reviewer, Clinical Endocrinology
Manuscript Reviewer, Development
Manuscript Reviewer, Developmental Biology
Manuscript Reviewer, Endocrine
Manuscript Reviewer, Endocrine-Related Cancer
Manuscript Reviewer, Endocrinology
Manuscript Reviewer, Experimental Gerontology
Manuscript Reviewer, Expert Opinion on Therapeutic Patents
Manuscript Reviewer, FEBS Letters
Manuscript Reviewer, Fertility and Sterility
Manuscript Reviewer, Free Radical Biology & Medicine
Manuscript Reviewer, Genesis
Manuscript Reviewer, Genomics
Manuscript Reviewer, Hormones & Cancer
Manuscript Reviewer, Journal of Andrology
Manuscript Reviewer, Journal of Assisted Reproduction and Technology
Manuscript Reviewer, Journal of Biomedicine and Biotechnology
Manuscript Reviewer, Journal of Biotechnology

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Dr. Kumar (continued)

Editorial and Grant Reviews (continued):

- Manuscript Reviewer, *Journal of Cell Biology*
- Manuscript Reviewer, *Journal of Cell Science*
- Manuscript Reviewer, *Journal of Clinical Endocrinology & Metabolism*
- Manuscript Reviewer, *Clinical Investigation*
- Manuscript Reviewer, *Journal of Endocrinology*
- Manuscript Reviewer, *Journal of Physiology*
- Manuscript Reviewer, *Journal of Urology*
- Manuscript Reviewer, *Life Sciences*
- Manuscript Reviewer, *Microscopy Research & Technique*
- Manuscript Reviewer, *Molecular and Cellular Biology*
- Manuscript Reviewer, *Molecular and Cellular Endocrinology*
- Manuscript Reviewer, *Molecular Endocrinology*
- Manuscript Reviewer, *Molecular Reproduction and Development*
- Manuscript Reviewer, *Oncogene*
- Manuscript Reviewer, *Peptides*
- Manuscript Reviewer, *PLoS One*
- Manuscript Reviewer, *PLoS Genetics*
- Manuscript Reviewer, *Proceeding of the National Academy of Sciences (USA)*
- Manuscript Reviewer, *Physiology & Behavior*
- Manuscript Reviewer, *Physiological Genomics*
- Manuscript Reviewer, *Reproduction*
- Manuscript Reviewer, *Reproductive Biology and Endocrinology*
- Manuscript Reviewer, *Reproductive Sciences*
- Manuscript Reviewer, *RNA*
- Manuscript Reviewer, *Science*
- Manuscript Reviewer, *The FASEB Journal*
- Manuscript Reviewer, *Trends in Endocrinology and Metabolism*

Member, NIH Special Emphasis Review Panel ZRG1-F06-T 20 for Fellowship applications assigned to the Endocrinology, Nutrition, Metabolism and Reproductive Sciences Integrated Review Group.

Member, 2013/08 ZHD1 DSR-Y (50) 1, NIH/NICHD Special Emphasis Review Panel on U01 program center grants on Fragile-X Syndrome.

Member, NIH Special Emphasis Review Panel ZRG1-F06-T 20 for Fellowship applications assigned to the Endocrinology, Nutrition, Metabolism and Reproductive Sciences Integrated Review Group.

External Reviewer, U.S.-Israel Bi-National Science Foundation – Research proposal.

Member, NIH Special Emphasis Panel, 2014/05 ZRG1 F06-T (20) L, Fellowship applications assigned to the Endocrinology, Nutrition, Metabolism and Reproductive Sciences Integrated Review Group.

Centers for Collaborative Research in Fragile X (U54), NIH Special Emphasis Panel, 2014/05 ZHD1 DSR-Y (53) 1.

Special Emphasis Panel, National Institute on Aging, ZAG1 ZIJ-7 (M2)
Dr. Kumar (continued)

Seminars Presented:
- September 4, 2013 – “Gonadotropins and ovarian aging” National Institute of Aging Workshop on Female Reproductive Aging and Women’s Health
- November 1, 2013 – “Genetics and Patho-physiology of pituitary null cell tumors” Department of Biochemistry, KUMC
- November 19, 2013 – “FSH re-routing and ovarian function” Department of Obstetrics and Gynecology, & The Magee Research Institute, University of Pittsburgh School of Medicine, Pittsburgh, PA
- January 16, 2014 – “Genetic modification of gonadotropin secretion and ovarian Function” Department of Molecular Biosciences, Washington State University, Pullman, WA
- March 28, 2014 – “Genetic modification of FSH secretion and ovarian Function” Department of Veterinary Integrative Biosciences, College of Veterinary Medicine & Biomedical Sciences, Texas A&M University, College Station, TX
- April 8, 2014 – “Genetic modification of gonadotropin secretion patterns and ovarian function” Department of Obstetrics and Gynecology Basic Sciences Lecture, University of Colorado Denver School of Medicine, Aurora, CO
- April 9, 2014 – “Ovarian and non-ovarian actions of FSH” Department of Obstetrics and Gynecology, Clinical Grand Rounds, University of Colorado Denver School of Medicine, Aurora, CO
- April 30, 2014 – “Genetic modification of FSH secretion and ovarian Function” Department of Obstetrics & Gynecology. KUMC
- May 7, 2014 – “Gonadotropin re-routing and ovarian function” Division of Animal Sciences, College of Agriculture, Food and Natural Resources, University of Missouri-Columbia, MO

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
Dr. Kumar (continued)

Academic Honors (continued)

age-specific FSH analogs” Endocrine Society 97th Annual Meeting,
Symposium on “GPCR Function in the HPG Axis”, San Diego
March 28, 2015 – Invited Speaker – “Genetic Modification of Pituitary
Gonadotropin 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 18, 2015 – Invited Speaker – “Gonadotropin re-routing and evolution of
estrus cycles” 48th Annual Meeting of the Society for the Study of
Reproduction, Symposium on “Neuroendocrine Control of Reproduction:
Pituitary Focus Group, San Juan, Puerto Rico

Teaching Activities:

IGPBS Unit II: An overview of gene expression
6 hours lecture

PHSL 834 – Reproductive Physiology
Course Director
26 hours lecture

Trainees:

Hui Zhen Wang, Ph.D. – Senior Scientist
Huyen Doan, Ph.D. – Post Doctoral Fellow
Sydnee Lim – Visiting Medical Fellow
Ian Graham (Research Technician)
Saurabh Harohalli (Summer, High School Student)
Avani Sharma (Summer, High School Student)
Melissa A. Larson, Ph.D., Research Assistant Professor, Director of KUMC Transgenic and Gene-Targeting Institutional Facility

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

Meetings Attended:

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 Research Safety Committee

National
- Representative, American Association for Laboratory Animal Science on behalf of the International Society for Transgenic Technologies

Editorials and Grant Reviews
- Reviewer, Journal of Reproduction, Fertility and Development
- Member, Special Emphasis Panel to review proposals in response to FOA NIH PAR 13-243, Renewal of Centers of Biomedical Research Excellence (COBRE). Review was April 10, 2014.
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 2-5, 2013 - 29th European Committee for Treatment and Research in Multiple Sclerosis (ECTRIMS) and the 18th Annual Conference of rehabilitation in MS (RIMS) - ECTRIMS/RIMS, Copenhagen, Denmark
April 26-30, 2014 - Experimental Biology 2014, San Diego, CA
May 10-16, 2014 - International Society for Magnetic Resonance in Medicine (ISMRM) 2014, Milan, Italy
May 21, 24, 2014 - International Society for Neurochemistry supported meeting on Glutamate/GABA and neuro-glia-vascular interplay in norm and pathology, Krakow, Poland
June 4-5, 2014 - European IDEA User Group Meeting, Bristol, UK
June 8-12, 2014 - Organization for Human Brain Mapping (OHBM) 2014, Hamburg, Germany

Editorials and Grant Reviews:
Ad hoc Reviewer, International Journal of Molecular Sciences
Ad hoc Reviewer, Journal of Alzheimer’s Disease
Ad hoc Reviewer, Journal of Magnetic Resonance Imaging
Ad hoc Reviewer, Neurochemistry
Ad hoc Reviewer, Magnetic Resonance Materials in Physics, Biology and Medicine

Academic Honors:
9.4T New Users Workshop discussion, May 28-30, 2014, KUMC/HBIC

Teaching Activities:
PHSL 846/ANAT 846 – Advanced Neuroscience
2 hours lecture

Trainees:
Peter Adany – Post-doctoral Fellow
Rodrigo Dennis Perea – Graduate Student
Isaac Chappell – Graduate Student
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.

Committee Activities:
  Departmental
  Member, Department Promotions and Tenure Committee
  Member, Graduate Student Advisory Committee
  Member, Graduate Student Qualifying Exam Committee
  Member, Thesis Committee for Mohammed Khan
  Member, Thesis Committee for Jason Gill

  KUMC
  Member, Safety Committee for the Smith East Building

Editorials and Grant Reviews:
  Reviewer, Journal of Neuroscience Research
  Reviewer, Nature Reviews Neurology
  Reviewer, Neurotherapeutics

Academic Honors:
  Commentary article written about our research paper (Sands et al., 2014).

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
  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
Lynda K. McGinnis, Ph.D., Research Assistant Professor

*Oocyte quality lays the foundation for embryonic development and the health of the next generation. The environment, whether in vivo and in vitro, affects molecular signaling pathways within the oocyte and thus has a significant influence on oocyte quality.*

Meetings Attended:
- July 22-25, 2013 – Annual meeting of the Society for the Study of Reproduction, Montreal, Canada
- October 12-17, 2013 – American Society of Reproductive Medicine, Boston, MA
- October 17-18, 2013 – Determinants of Gamete and Embryo Quality, National Institute of Child Health and Disease, Boston, MA
- November 8, 2013 – Bedford Stem Cell Institute, Activated Egg Symposium, Waltham, MA

Committee Activities:
- KUMC
  - Member, Post-doctoral Travel Awards Committee, Office of Post-Doctoral Affairs

Editorial and Grant Reviews:
- Ad hoc Reviewer, *Reproductive Biology*
- Ad hoc Reviewer, *Developmental Dynamics*
- Ad hoc Reviewer, *Journal of Assisted Reproduction and Genetics*
- Guest Co-Editor, Special Issue in Honor of Professor John Biggers, *Journal of Reproduction and Genetics*, October 2013
- Associate Editorial Board, *Molecular Reproduction and Development*
- Reviewer, Biomedical Research Training Grants, KUMC, June 6, 2014
Warren B. Nothnick, Ph.D., Professor

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:
- July 22-26, 2013 – Society for the Study of Reproduction, Montreal, Canada
- April 30 – May 3, 2014 – World Congress on Endometriosis, Sao Paulo, Brazil

Committee Activities:
- Departmental
  Member, Doctoral Dissertation Committee for Wei-Ting Hung
  Member, (Oral comprehensive committee), Nairita Roy
  Member, Department of Molecular & Integrative Physiology, University of Kansas Medical Center, Departmental Promotion and Tenure 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
Committee Activities (continued)

International

Co-Chairman, Endometrium (Oral communication session), the 12th World Congress on Endometriosis, April 30 – May 3, 2014, Sao Paulo, Brazil

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

Ad hoc Reviewer, NIH/NICHD, Special Emphasis Panel (ZRG1 EMNR-H(02)M), Member Conflict: Environment, Development, and Reproductive Biology August 8-9, 2013.

Ad hoc Reviewer, NIH/NICHD, Special Emphasis Panel (ZHD1 DRG-D (43) 1, August 1, 2013 (Teleconference).


Teaching Activities:

PHSL 834 – Reproductive Physiology

4 contact hours
Randolph J. Nudo, Ph.D., Professor & Director of the Landon Center on Aging

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

Meetings Attended:
August 10, 2013 - Third Rehabilitation Medicine Summit Forum, Beijing, China.
September 2013 - World Congress of Neurology, Vienna, Austria.
February 27, 2014 – Winter Conference on Neural Plasticity, Vieques, Puerto Rico.
March 13, 2014 – Conference on Systems Neuroscience and Rehabilitation, Tokyo, Japan.
May 13, 2014 – Sensorimotor Rehabilitation: At the crossroad of the Basic and Clinical Sciences, University of Montreal, Montreal Canada.
June 2014 – III Workshop of Synaptic Plasticity: From Bench to Bedside, Milazzo, Sicily.

Committee Activities:
KUMC
Chair, Alzheimer's Disease Center Internal Advisory Committee
KL2 Program Director, Clinical and Translational Science Award
Member, Executive Committee Institute for Neurological Discoveries
Brain Injury and Repair Section Co-Director, Institute for Neurological Discoveries

National
Member, External Advisory Board, NIH COBRE (Center of Biomedical Research Excellence) in stroke recovery, Medical University of South Carolina, Charleston, South Carolina
Member, External Advisory Board, University of Minnesota T32 Training Program in Neuroscience.
Dr. Nudo (continued)

Committee Activities (continued)
   Member, External Advisory Committee, NIH COBRE COBRE (Center of Biomedical Research Excellence) human movement variability, University of Nebraska, Omaha, Nebraska
   External Advisor, K12 Training Program in Neuroengineering, Northwestern University, Chicago, Illinois

International
   Chair, Review Committee for Neuroscience: Optogenetics, Canadian Foundation for Innovation

Editorial and Grant Reviews:
   Editor-in-Chief, *Neurorehabilitation and Neural Repair*
   Deputy Editor, *Brain Stimulation*
   Editorial Board, *Restorative Neurology and Neuroscience*
   Editorial Board, *Behavioral Brain Research*
   Editorial Board, *Frontiers: Neuroprosthetics*
   Ad hoc Reviewer, *Stroke*
   Ad hoc Reviewer, *Journal of Comparative Neurology*
   Ad hoc Reviewer, *Neuroscience*
   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)

Seminars Presented:
   September 2013 - Invited Speaker, World Congress of Neurology, Vienna, Austria.
   October 11, 2013 - Invited Speaker, *Plasticity of Brain Networks and Relationship to Recovery after Injury*, Brain Research Centre, University of British Columbia, Vancouver, Canada
Dr. Nudo (continued)

Seminars Presented (continued):
  February 27, 2014 - Invited Speaker, *Neuroprosthetic tools for repair of the injured brain*, Winter Conference on Neural Plasticity, Vieques, Puerto Rico
  April 4, 2014 - Invited Speaker, Rehabilitation Institute of Chicago, Chicago, Illinois
  April 11, 2014 - Distinguished Lecturer, University of Missouri School of Health Professions Scholarship and Discovery Lecture Series
  May 13, 2014 - Invited Speaker, 36th Symposium of the GRSNC: Sensorimotor Rehabilitation: At the crossroad of the Basic and Clinical Sciences, University of Montreal, Montreal Canada
  June 2014 - Invited Speaker, III Workshop of Synaptic Plasticity: From Bench to Bedside, Milazzo, Sicily

Academic Honors:

Teaching Activities:
  NEUS 840 – Medical Neuroscience
    6 lecture hours
  Faculty Research Series
    1 hour lecture
  Introduction to Clinical Research (Summer)
    1 hour lecture
  Introduction to Clinical Research (Fall)
    1 hour lecture
Dr. Nudo (continued)

Teaching Activities: (continued)
   Rehabilitation Medicine Residency Program
       1 hour lecture
   Topics in Rehabilitation Research (PTRS)
       1 hour lecture

Trainees:
   Stacey Dejong, Ph.D. – post-doctoral fellow
   Gustaf Van Acker, Ph.D. – post-doctoral fellow
   Jordan Borrell, B.S. – graduate student (Bioengineering)
   Kelli Crabtree, M.D. – neurosurgery resident research rotation
Satish Ramalingam, Ph.D., Research Assistant Professor

The goal of my research is to determine the role of RNA Binding proteins in tumor progression and metastasis. Post-transcriptional regulation of gene expression by RNA binding protein is a crucial mechanism in regulating the timing and the amount of expression of genes. Growing evidence indicate that the alteration of the expression and function of RNA binding proteins could potentially play a role in inflammation and cancer. Hence, it is indispensable to identify the RNA binding protein alterations accumulate during cancer progression as well as during the acquisition of metastatic potential in cancer cells.

To understand the mechanisms behind the process of hemangiogenesis and lymphangiogenesis in metastasis. Metastasis entails the spread of cancer cells from a primary tumor throughout the body through the blood or lymphatic systems. Hence, blocking angiogenesis could be a strategy to arrest tumor growth. Therefore, understanding the molecular mechanisms underlying the hemangiogenesis and lymphangiogenesis processes and their regulation will lead to the discovery of pharmaceutical agents with anti-angiogenic activity.

Committee Activities:
KUMC
Member, Institutional Animal Care and Use Committee
Member, Graduate Affairs Committee
Member, KUCC Research Symposium and Research Day Judging Committee

Editorial and Grant Reviews:
Editorial Board Member, Frontiers in Pharmacotherapy of Inflammation
Ad hoc Reviewer, American Journal of Physiology
Ad hoc Reviewer, European Journal of Clinical Investigation
Ad hoc Reviewer, Letters in Drug Design & Discovery
Ad hoc Reviewer, Environmental Toxicology
Ad hoc Reviewer, Chemical Biology & Drug Design
Ad hoc Reviewer, Journal of Cellular and Molecular Medicine
Reviewer, Lady Auxiliary to the Veterans of Foreign Wars Postdoctoral Cancer Research Fellowship Review Panel
Reviewer, American Cancer Society Institutional Research Grant Review Panel
Reviewer, Center of Biomedical Research Excellence (COBRE) Center for Protease Research Pilot Project Review Panel
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.

Meetings Attended:
- October 2013 – AACR Frontiers in Cancer Prevention Research, National Harbor, MD
- November 2013 – KUCC Research Symposium, Overland Park, KS
- February 2014 – 2nd International Conference on "Herbal and Synthetic Drug Studies, Pune, India

Committees
- KUMC
  - Member, Faculty Position Search Cancer Center Committee
  - 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

Patent:

Seminars Presented:
Dr. Ramamoorthy (continued)

Academic Honors:
  Junior Faculty Poster Competition Award Winners- 2nd place in KUCC Research Symposium, 2013
  Travel award for attending the Annual American Association of Cancer Research “Frontiers in Cancer prevention Research” Meeting, KUCC, University of Kansas Medical Center Research Institute, 2013.
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.

Meetings Attended:
July 28 – August 2, 2013. International Society for Autonomic Neuroscience (ISAN), Giessen, Germany
November 25-26, 2013. NICHD Intellectual and Developmental Disabilities Research Center Directors meeting, Bethesda, MD.

Committee Activities:
Departmental
Member, Student Advisory Committee for Angela Pierce
Member, Student Advisory Committee for Yi Zhou
Member, Student Advisory Committee for Aaron Noll

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

National
North American Representative to the Executive Committee, International Society for Autonomic Neuroscience
Editorial Board Member, Autonomic Neuroscience: Basic and Clinical
Dr. Smith (continued)

Editorials and Grant Reviews:

Ad hoc Reviewer, Cardiovascular Research
Ad hoc Reviewer, PLOSOne
Ad hoc Reviewer, Journal of Neuroscience
Ad hoc Reviewer, Experimental Physiology

Reviewer, July 8, 2013. Bethesda MD. Special Emphasis Review for NIDDK Nociceptive GenitoUrinary Development Molecular Anatomy Projects (nGUDMAP) (U01)

Reviewer, April 18, 2014 NATIONAL CENTER FOR COMPLEMENTARY & ALTERNATIVE MEDICINE SPECIAL EMPHASIS PANEL ZAT1 SM 31 L, Fellowships, Career Development and AREA grants
Reviewer and Coordinator, Inter-Institutional Study Section review of proposals for Frontiers and Research Institute Pilot funding programs

Seminars Presented:

August 1, 2013 – “Consequences and Mechanisms of sympathetic axon Degeneration” International Society for Autonomic Neuroscience, Giessen, Germany
November 14, 2013 – “New insights into female pain syndromes” Kansas City University of Medicine and Biosciences, Kansas City, KS
March 29, 2014 – “Neuroscience. The next frontier” Tikkitum Child Development Group, Overland Park, KS

Teaching Activities:

PHSL 800 – Medical Physiology
3 hours lecture
4 hours conference

PHSL 846 – Advanced Neuroscience
4 hours lecture

Science and Rehabilitation of Pain
1 hour lecture

Trainees:

Anuradha Chakrabarty, Ph.D. Senior Scientist
Sarah Tague, PhD, Senior Scientist
Aritra Bhattacherjee, PhD, Post-doctoral fellow
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:
April 24-26, 2014 – Annual Meeting of the American Society for Neural Therapy and Repair, Clearwater Beach, FL.

Committee Activities:
Departmental
  Member, Graduate Student Affairs Committee
  Coordinator, Seminar Series
KUMC
  Member, KIDDRC Rodent Behavior Advisory Committee
  Member, KIDDRC Core B Advisory Committee
  Member, Neuroscience Graduate Program Advisory Committee
  Member, Society for Neuroscience Kansas City Chapter Executive Committee
  Member, Society for Neuroscience Kansas City Chapter Treasurer
  Member, Kansas Board of Regents KUMC Program Review for Dept. of Anatomy & Cell Biology
  Director, KUMC Biomedical Research Training Program
  Member, KUMC IGPBS Admissions Committee

Editorial and Grant Reviews:
  Reviewer, *Annals of Biomedical Engineering*
  Reviewer, *Drug & Alcohol Dependence*
  Reviewer, *Experimental Neurology*
  Reviewer, *Neurobiology of Disease*
  Reviewer, *Neurochemistry International*
  Reviewer, *Pharmacology Biochemistry & Behavior*
  Reviewer, *Neuroscience Letters*
  Reviewer, *Nutritional Neuroscience*
  Ad hoc Grant Reviewer, Parkinson’s UK
  Ad hoc Grant Reviewer, Research Grants Council (Hong Kong)
**Dr. Stanford** *(continued)*

Other Academic Honors:


*Neuromuscular Alterations Following Unilateral Isometric Strength Training in SOD1-G93A Rats.* Invited platform presentation at the 21st Annual Meeting of the American Society for Neural Therapy and Repair, Clearwater Beach, FL, April 25, 2014.

Teaching Activities:

- CORE 840 – Brian and Behavior
  25 hours small group teaching
- PHSL 846 – Advanced Neuroscience
  Course Director
  14 hours classroom teaching

Trainees:

- Kayla Raider – Research Assistant, MS Student Fall 2013 - Summer 2014
- Nicole Rogers – Undergraduate Research Assistant (University of Missouri, Kansas City) Summer 2013
- T.J. Murray – Undergraduate Research Assistant (Rockhurst University) Summer 2014
- Aishwarya Kumar – Undergraduate Research Assistant (University of Kansas) Summer 2014
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, microaerophlic, spiral shaped bacilli. Infection with Helicobacter pylori results in hypergastrenemia 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 phyto-chemicals & their analogues, and chemotherapeutic agents against colon and pancreatic cancer.

Meetings Attended:
October 2013 – 12th Annual AACR International Conference on Frontiers in Cancer Prevention Research, National Harbor, MD

Committee Activities:
Departmental Member, Dissertation Committee for Keke Pounds

Editorial and Grant Reviews:
Ad hoc Reviewer, PlosOne-4
Ad hoc Reviewer, European Journal for Clinical Investigation-1
Ad hoc Reviewer, The Journal of Biological Sciences-2
Ad hoc Reviewer, Current Cancer Drug Targets-1
Ad hoc Reviewer, BMC Cancer-1
Ad hoc Reviewer, British Journal of Cancer-1
Ad hoc Reviewer, Acta Biochimica et Biophysica Sinica-1
Ad hoc Reviewer, International Journal of Biological Sciences-1
Ad hoc Reviewer, Evidenced based Complementary and Alternative Medicine-2

Academic Honors:
October 2013 – Kansas University Cancer Center Travel Award for the abstract entitled “Tandutinib affects colon cancer stem cells in part through suppression of Notch- Signaling Pathway” Poster presentation. 12th Annual AACR International Conference on Frontiers in Cancer Prevention Research, National Harbor, MD, October, 2013
December 4, 2014 – Invited Seminar, “Novel Approaches for Colon Cancer Therapy”. Abeda Inamdar Senior College, University of Pune, Azam Campus, Hidayatullah Road, Pune 411001, India
Dr. Subramaniam (continued)

Trainees:
Anand Venugopal, MD/PhD graduate student
Naveen Nerdagomma, Graduate student
Sivapriya Ponnurangam, Research Associate
David Standing, Research Associate
Parasarathy Rangarajan, Post-doctoral Fellow
Deep Kwatra, Post-doctoral Fellow
Gaurav FNU, Post-doctoral Fellow

Dr. Aravind Sugmar, MD, Junior faculty member
Dr. Seth Septer, MD, Junior faculty member
Dr. Anup Kasi, MD, Fellow in Hematology and Oncology
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:
November 4-7, 2013 – American Society for Gravitational and Space Research, Orlando, FL
November 7-8, 2013 – NICHD Contraceptive Discovery and Development Branch Steering Committee Meeting, Univ. Minnesota
October 17-18, 2013 – Greenwald Symposium, Kansas City, MO

Committee Activities:
National
Member, NICHD Contraceptive Discovery and Development Branch (CDBB) Steering Committee
Member, Board of Governors, American Society for Gravitational and Space Biology
ASGSR Spring Board Meeting and Congressional visits, Washington, DC, Mar 11-13, 2013
Chair, Organizing committee for American Society for Gravitational and Space Research annual conference, Pasadena, CA 2014
Dr. Tash (continued)

Committee Activities (continued):
National
  Member, Organizing committee for American Society for Gravitational and
  Space Research annual conference, Orlando, FL, 2013
  Numerous press interviews regarding both the NASA research and
  Contraceptive Development program

Editorial and Grant Reviews:
  Reviewer, NIH, P01 Special Emphasis Panel (11/14/2013)

Seminars Presented:
  on Male and Female Reproductive Health.” Department of Molecular &
  Integrative Physiology.
  November 4-7, 2013 – Invited Lecture “Sperm functions in the space flight
  Environment: Biophysics at the cellular level.” American Society for
  Gravitational and Space Research. Orlando, FL

Academic Honors:
  Program Chair, 2014 Annual Conference of the American Society for
  Gravitational and Space Research.

Teaching Activities
  Lecture “Prospects for Male Contraception” to first year medical students,
  Reproduction & Sexuality, May 2014

Trainees:
  Lesya Holets, Ph.D. – Post Doctoral Fellow
Shahid Umar, Ph.D., Associate Professor

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)

National
Member, AGA’s Abstract Reviewer Panel

Editorial and Grant Reviews:
Reviewer, Molecular Carcinogenesis
Reviewer, Carcinogenesis
Reviewer, FEBS Letters
Reviewer, American Journal of Physiology
Reviewer, Biomed Central
Reviewer, Biochemical Pharmacology
Reviewer, Oncogene
Reviewer, Digestive Diseases and Sciences
Reviewer, PLoS One
Reviewer, Cancer Biology and Therapy
Reviewer, Journal of Agricultural and Food Chemistry
Ad hoc Member, NIDDK’s Fellowship in Digestive Diseases and Nutrition

Seminars Presented:
April 22, 2014 – “Epigenetic regulation of Wnt signaling in response to bacterial infection.” Department of Pharmacology, Toxicology and Therapeutics Seminar Series, University of Kansas Medical Center, Kansas City, KS
Dr. Umar (continued)

Academic Honors:


University of Kansas Cancer Center’s Facebook page: Keeping Colon Cancer at Bay: Gut Feelings, April 24th, 2014.

Teaching Activities:
Immunology Course
2 – 2 hour lectures
1 – 1 hour paper discussion

Trainees:
Ishfaq Ahmed, Ph.D. – Post-Doctoral Fellow
Badal Roy, Ph.D. – Post-Doctoral Fellow
Miranda Machachek – MD/PhD student, KUMC
**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:**
October 2013 – The 10th Annual Gilbert S. Greenwald Symposium on Reproduction, Kansas City, MO.

**Committee Activities:**

- Chair, Comprehensive Exam for Amanda Brinker, Ph.D. candidate
- Chair, Comprehensive Exam for Kelsey Hampton, Ph.D. candidate
- Chair, Comprehensive Exam for Kayla Raider, Ph.D. candidate
- Chair, Comprehensive Exam for Michelle McWilliams, Ph.D. candidate
- Member, Dissertation Committee for Jitu George, Ph.D. candidate
- Member, Dissertation Committee for Naveen Neradugomma, Ph.D. candidate
- Member, Dissertation Committee for Jessica Johnson, Ph.D. candidate
- Member, Dissertation Committee for Margaret Pruitt, M.D./Ph.D. candidate
- Director, Graduate Program

**KUMC**

- Member IGPBS Advisory Board
- Member of KUMC Graduate Council
- Member of IACUC
- Member of IACUC Programmatic sub-committee
- Member SOM Elections Committee
- Member of the Phase I committee for Medical curriculum
- Member of Phase I committee – Preparation for LCME
- Member of Phase I sub-committee – review of the GIN module
Dr. Wolfe (continued)

Committee Activities (continued):
KUMC
Member of Phase I sub-committee – Comprehensive Exam Working Group
As KUMC Research Integrity Officer I:
   Oversaw three KUMC Research Misconduct Investigation Committees
   Oversaw a KUMC Research Misconduct Inquiry Committee

Teaching Activities:
   Introduction to Research Ethics (GSMC 856)
      10 hours lecture/group discussion
   Comprehensive Human Physiology (PHSL 842)
      10 hours lecture
   Renal-Endocrine Module (CORE 825)
      Module Director
      7 hours lecture
      ~2 hours histopath labs
      ~4 hours PBL
      2 hr review session
   Remediation of Renal-Endocrine Module (CORE 825)
      Module Director
      2 hr review session

Other Personnel:
   Kimberly K. Misner-Iles, Administrative Assistant, Senior Compliance Program Specialist
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
October 6-10, 2013 – American College of Surgeons Meeting, Washington, DC
April 27-30, 2014 – Experimental Biology meeting, Anaheim, CA

Committee Activities:
Departmental
- Member, Naveen Neradugoma Thesis Committee
- Member, Amy Cantilena Thesis Committee
- Member, Anand Venugopal Thesis Committee

KUMC
- Member, Prematriculation Planning Committee
- Module Director, Prematriculation Program
- Member, Department of Surgery Education Committee
- Co-Chair, Department of Surgery Research Committee
- Member, IACUC Committee Member
- Member, 360 Curriculum Review Committee
- Member, Delp Academic Society
- Medical student applicant interviews
- Member, Phase I Committee
- Member, Ben Woolbright Thesis Committee
- Member, Yuchao Xie Thesis Committee
- Member, Curriculum Development committee (Wichita)
- Member, Academic Promotions and Professionalism Committee
- Member, Promotions Sub-Committee
- Member, Content Experts Committee

Seminars Presented:
May 2014 – “Mast cell-dependent and independent microvascular inflammation.”
Department of Surgery

Academic Honors:
- Student Voice Award for Outstanding First Year Teaching
- Cardiopulmonary Module, Best module in first year curriculum 2013-14
- Jessica Hogan, M.D.: First Place Oral Presentation for Residents at Resident, Postdocs, and Fellows Day, May 2014
- Nicholas Duethman, second year medical student.: First Place Oral Presentation, Surgery Section at Student Research Forum, May 2014
**Teaching Activities:**

First Year Medical Curriculum – Cardiopulmonary Module
- Module Director
- 20.5 hours lecture
- 2 hours review
- 4 hours small group discussion facilitator

Second Year Medical Curriculum – Integration & Consolidation Module
- 3 hours lecture

PHSL 842 – Comprehensive Human Physiology
- 11 lecture hours
- 2 paper discussion

First Prep Board Review
- 2.5 hours lecture

Pre-Matriculation Program
- 12 hours lecture
- 2 hours small group discussion facilitator
- 2 hours student case presentations
- 2 hour laboratory
- 3 hours review

Vascular Surgery Program, Department of Surgery
- 2 hours lecture

**Trainees:**

Program Jessica Hogan, M.D. – Fourth Year Resident in the Department of Surgery

Claire Pederson, M.D. – Fifth Year Resident in Department of Surgery

Nick Duethman – Second Year Medical Student