Annual Report
Calendar Year 2011

The University of Kansas Medical Center
3901 Rainbow Boulevard
Kansas City, KS 66160
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OVERVIEW: CY2011 AND FUTURE PLANS

This document represents the first annual report of the newly formed Institute for Reproductive Health and Regenerative Medicine (IRHRM) at the University of Kansas Medical Center (KUMC). Executive Vice Chancellor Barbara Atkinson established the IRHRM during the fall of 2010 with the intent of coalescing the efforts of three smaller research units engaged in overlapping research missions. The Center for Reproductive Sciences, which had its origins in the 1960s under the leadership of Gilbert Greenwald, the research arm of the Department of Obstetrics and Gynecology, and the Institute of Maternal-Fetal Biology, a group with interests in developmental and regenerative biology, were brought under the umbrella of the IRHRM.

The IRHRM is organized into three centers:

i) Center for Epigenetics and Stem Cell Biology (CESCB)
ii) Center for Reproductive Sciences (CRS
iii) Center for Developmental Origins of Health and Adult Disease (CDOHAD)

The goal of the IRHRM is to facilitate investigator and especially multi-investigator research initiatives in basic, translational, and clinical research directed toward reproductive health and regenerative medicine. The institute is committed to enriching the scientific and intellectual environment of its membership and enhancing the infrastructure and resources available to facilitate these endeavors. Programs in faculty development, postdoctoral training, and graduate education are integrated into the institute and will be further developed. Generation of intellectual property and community outreach will also be emphasized. Through these efforts, the institute will become the premier research unit in reproductive health and regenerative medicine. Success will be measured in terms of the profile and impact of research performed by its scientists.

The IRHRM currently consists of 60 researchers at KUMC (56), KU-Lawrence (3), and Kansas State University (1), representing 21 different academic departments. We anticipate growing through the addition of investigators from KUMC, KU-Lawrence, and other Kansas City area institutions. Members participate in IRHRM efforts by performing outstanding research related to the Institute’s mission, pursuing programmatic efforts with colleagues, recommending and hosting visiting scientists for our seminar series, and participating in chalk talks and scientific interactions sponsored by the Institute.

Activities

1) The IRHRM supports submission of grant applications from its membership. Our administrative staff facilitates interactions between the Investigator and the Research Institute/Sponsored Programs Administration staff, including all work in Cayuse (KUMC's online grant submission system). Since October 2010, the IRHRM administrative staff has assisted our members with 48 grant submissions, and initiated another 20 applications. The IRHRM distributes information about relevant grant opportunities and has also recently established an effort to provide scientific peer review and feedback prior to grant application submissions.

2) The IRHRM facilitates programmatic research efforts. This is accomplished in several ways including our monthly center-based chalk talks (see below) and through organizing meetings for investigators with common research interests. Our leadership and administrative staff also are available to guide these focus groups through the preparation of multi-investigator grant applications. These efforts have resulted in the formation of some research focus groups:
i) Stem cells and trophoblast lineage development (Soares, Paul, Rumi, Vivian, Arroyo and a University of Missouri contingent led by R. Michael Roberts)
ii) Molecular regulation of erythropoiesis (Peterson, Fields, Paul, Slawson, Vivian and Fontes)
iii) Obesity, pregnancy, and postnatal outcomes (Carlson, Hull, Gustafson, Colombo, M. Petroff, Wolfe)
iv) Uterine disease (Nothnick, Chennathukuzhi, S. Krieg, A. Krieg, Soares)
v) Placental biology (Soares, Paul, Petroff, Rumi, Wolfe, and Arroyo)

These potential programmatic efforts have different trajectories. Some are close to submitting multi-investigator grant applications, while others are at very early stages of the process.

3) The IRHRM is involved in organizing a number of different events that support its membership. These include:

**Developmental and Regenerative Biology Seminar Series.** The IRHRM supports interactions with 10-12 visiting scientist per semester. Each visiting scientist presents a lecture and meets with faculty and trainees during their visit.

**Greenwald Symposium in Reproduction.** This event is an annual day and a half symposium that was initiated in 2004 to honor Dr. Gilbert Greenwald. The symposium provides our faculty and trainees in the reproductive sciences with an opportunity to interact with outstanding scientists.

**Special Lectures.** The IRHRM organizes two annual lectures. The Donald C. Johnson Lecture is focused on reproduction, whereas the James L. Voogt Lecture is focused on neuroendocrinology. Each lecture brings an outstanding scientist to KUMC to lecture and visit with our faculty and trainees. We anticipate adding a third special lecture focused on stem cell biology this next year (see below).

**Monthly Center Chalk Talks.** Our "Chalk Talks" consist of informal presentations and discussions of research ideas, preliminary data, and potential specific aims for future grant applications. All three of our Centers hold monthly Chalk Talks, and scheduling is flexible to meet the investigators’ needs.

**Trainee Chalk Talks.** We have recently initiated “Chalk Talks” for our trainees. Once a month two trainees present overviews of their research to their fellow trainees. Our trainees lead these interactions with minimal participation of our faculty.

**Monthly Scientific/Social Interactions.** Refreshments are provided following the Monthly Trainee Chalk Talks that all trainees and faculty are invited to attend.

**Retreat.** An IRHRM retreat was held in January 2012. Thirty members of the Institute attended the event. Topics for discussion included developing strategies to improve:

i) our ability to perform research
ii) our training of students and postdoctoral fellows
iii) communication of our achievements

A scientific interaction was also included in the retreat agenda. A number of target areas for development and emphasis emerged from the retreat, including:

i) expand assistance with scientific preparation of grant applications
ii) improve access to human tissues for research
iii) expand stem cell resources
iv) develop trainee enrichment programs  
v) identify support for developing programmatic efforts

4) The IRHRM oversees and maintains equipment that is located on the 3rd floor of the Hemenway Building. The equipment includes centrifuges, microscopes, film developer, etc.

5) The IRHRM manages a Reagent Store, which provides convenient and discounted laboratory reagents and supplies for members of the IRHRM and KUMC research community.

6) The IRHRM also contributes to the communication of the research accomplishments of our membership. These efforts include a website, quarterly newsletter, and interactions with the public relations unit for KUMC.

**Objectives for the coming year**

1) Grant submissions: Our administrative efforts in supporting the submission of grants will continue. We plan to increase the number of research proposals undergoing internal scientific review prior to submission.

2) Programmatic efforts: We will continue to facilitate multi-investigator research initiatives. As the programmatic research focus groups mature, we will help them identify seed funds to assist with their collaborative efforts and prepare them for eventual grant submission.

3) Our seminar series, faculty and trainee chalk talks, and scientific/social interactions will continue during the upcoming year.

4) Greenwald Symposium and special lectures: The 2012 Greenwald Symposium has been set for October 2012 and the speakers and venue determined. The Johnson and Voogt Lectures have been set for the spring of 2013 and the speakers have been confirmed. A new special lecture focused on stem cell biology in honor of Ivan Damjanov, Professor, Department of Pathology, KUMC, is in the planning stages.

5) Retreat: We anticipate having a retreat for the IRHRM membership during late 2012 or early 2013.

6) The IRHRM will continue to manage the Reagent Store and oversee and maintain shared equipment.

7) The IRHRM will also continue to communicate the research accomplishments of our membership through our website and newsletter.

8) New initiatives:

   a) Access to human tissue for research: A plan is being formulated to improve access to human tissue for research. This effort will interface with the KU Cancer Center Biospecimen Core Laboratory and is being developed by the CRS.

   b) Pluripotent stem cell core laboratory: A plan is being developed to establish a core laboratory that will provide experimental tools required for performing research with human pluripotent stem cells. The core is being organized by the CESC and will provide a repository for existing pluripotent stem cell lines, reagents and training required to perform experiments with the stem cells, assistance with the derivation of new stem cell lines, and will interface with the high throughput drug discovery facility on
the KU-Lawrence campus. It is anticipated that the core will facilitate translational research efforts of IRHRM investigators.

c) **Graduate training program in regenerative biology:** We will begin the process to establish a graduate training program in regenerative biology. This effort will require approval by the KUMC administration. This training program will support the training efforts of the laboratories in the IRHRM.

d) **Community Advisory Board:** A community advisory board for the IRHRM will be established with the assistance of the KUMC Endowment Office. This effort will require approval by the KUMC administration. The Community Advisory Board will provide guidance and assistance in obtaining private support for IRHRM activities.
CESCB Overview

Members of the Center for Epigenetics and Stem Cell Biology investigate how cells become specialized in their function. This process is referred to as cell differentiation. Cell differentiation is a hallmark of embryogenesis. During embryonic development, cells increase in number, become specialized, and organize into tissues. Some examples of cell specialization include the formation of red blood cells, which transport oxygen; muscle cells, which produce movement; and neurons, which allow us to reason. The developmental fate of an undifferentiated cell, also referred to as a stem cell, is dictated by the cell's genetic program and its interactions with its environment. Acquisition of a specific cell fate is associated with the systematic modulation of regulatory processes controlling the function of genes and proteins. Abnormalities in cell differentiation cause birth defects and lead to adult disease. Understanding molecular mechanisms controlling cell differentiation will result in the development of new strategies for the treatment of disease. These approaches will include the generation of unique drug- and cell-based therapies. The applications of these new therapeutic tools will be numerous and include potential treatments for infertility and a diverse range of debilitative diseases, such as, cancer, diabetes, liver fibrosis, stroke, heart disease, vascular and blood diseases, Alzheimer's and Parkinson's diseases, and spinal cord injury, in addition to many others.

CESCB Chalk Talks: January 2011 to Present

“Unraveling Early Molecular Events that Underlie DCIS to Invasive Progression”, Fariba Behbod, PharmD, Ph.D., Pathology and Laboratory Medicine, January 11, 2011

“Molecular Signaling in Pluripotent Stem Cell Lineage Commitment”, Soumen Paul, Ph.D., Pathology and Laboratory Medicine, February 14, 2011

“Bioinformatics”, Peter G. Smith, Ph.D., Kansas Intellectual and Developmental Disabilities Research Center, Department of Molecular and Integrative Physiology, Mahesh Vishvanathan, Ph.D., Department of Molecular and Integrative Physiology, Stanislav R. Svojanovsky, Ing., Ph.D., Department of Molecular and Integrative Physiology, Sumedha Gunewardena, D.Phil., Kansas Intellectual and Developmental Disabilities Research Center, Byunggil Yoo, M.S., Kansas Intellectual and Developmental Disabilities Research Center, March 8, 2011

“Round-table Discussion on Forming Focus Groups with Common Research Themes”, Kenneth R. Peterson, Ph.D., Biochemistry and Molecular Biology, April 12, 2011

“Hematopoiesis”, Kenneth R. Peterson, Ph.D., Biochemistry and Molecular Biology, Joseph Fontes, Ph.D., Biochemistry and Molecular Biology, Patrick E. Fields, Ph.D., Pathology and Laboratory Medicine, May 10, 2011


“Transcription Factor NFAT1 in Osteoarthritis and Cartilage Regeneration”, Jinx Wang, M.D., Ph.D., Orthopedic Surgery, October 11, 2011
“Role of HNF4alpha in Regulation of Hepatocyte Proliferation”, Udayan Apte, Ph.D., Pharmacology, Toxicology and Therapeutics, November 10, 2011

“Updates From the Transgenic Facility”, Melissa A. Larson, Ph.D., Transgenic and Gene-Targeting Institutional Facility, Molecular and Integrative Physiology, January 10, 2012

“Genome Sequencing Facility-Services and Strategies”, Clark Bloomer, B.S., Kansas Intellectual and Developmental Disabilities Research Center, February 14, 2012


“Macrophages as Progressive Factors in Polycystic Kidney Disease”, Katherine Swenson Fields, Ph.D., Anatomy and Cell Biology, April 10, 2012
The Center for Reproductive Sciences (CRS)

Center Director: David F. Albertini, PhD

CRS Overview

In seeking new avenues for translational research, the Center for Reproductive Sciences retains a dual focus on the issues of population control and treatment of human infertility. Active basic and applied programs melding experts in the areas of molecular genetics, developmental and cellular biology synergize the use of various animal models with state-of-the-art technology resources to address human reproductive health problems. Amongst these, basic research programs in gonadal physiology, gamete maturation, fertilization, pre and peri-implantation development, reproductive tract disorders, and endocrine disruptors are collaboratively integrated to investigate disease states that impact humans. Genetic and epigenetic causes of birth defects, human ARTs, ovarian cancer, paternal and maternal forms of infertility, endometriosis and uterine fibroids all represent thematic focus groups upon which the Center is designed.

CRS Chalk Talks: February 2011 to Present

“Fertility Preservation: When Translational Medicine Drives Basic Science”, David F. Albertini, Ph.D., Molecular and Integrative Physiology, February 9, 2011

“Serum Amyloid A and the Ovary”, Katherine F. Roby, Ph.D., Anatomy and Cell Biology, March 9, 2011

“Round-table Discussion on Forming Focus Groups with Common Research Themes”, David F. Albertini, Ph.D., Molecular and Integrative Physiology, May 3, 2011

“Assisted Reproduction in Horses and Endangered Species”, Lisa McClellan, DVM, Ph.D., Equine Reproduction Laboratory, Colorado State University, August 26, 2011

“About Human Oocytes and the Recent Cloning of Human ES Cells”, David F. Albertini, Ph.D., Molecular and Integrative Physiology, October 21, 2011

“Contraception and Non-Pregnant Cycles as Risk Factors for Uterine Pathology in Wild Canids”, Cheryl Asa, Ph.D., Director of Research, Saint Louis Zoo, November 28, 2011

“Transforming Growth Factor Beta (TGFβ) Signaling in the Male Excurrent System – It Occurs Physiologically and Imbalances May Impair Human Fertility”, Fernando Pierucci-Alves, D.V.M., College of Veterinary Medicine, Kansas State University, January 11, 2012

“Regulating Cellular Function by the O-GlcNAc Post-Translational Modification”, Chad Slawson, Ph.D., Biochemistry and Molecular Biology, February, 2012


“Ovarian stem cells”, David F. Albertini, Ph.D., Molecular and Integrative Physiology, April 2012
The Center for the Developmental Origins of Health and Adult Disease (CDOHAD)

Center Director: Carl P. Weiner, MD

CDOHAD Overview

The quality of postnatal life has its origins in the womb. Scientists in the Center for the Developmental Origins of Health and Adult Disease seek to understand how maternal physiology and pathology impact fetal development and program postnatal health and disease. Pregnancy is a well conserved process and designed to ensure the survival of the species. A specialized and highly adaptive organ derived from the embryo called the placenta orchestrates pregnancy and creates the milieu in which the fetus develops. Failures in placental adaptations to the maternal environment lead to diseases of pregnancy, such as preeclampsia, intrauterine growth restriction, and pre-term birth. In utero insults have fundamental organizational effects on the developing fetus, which affect postnatal health and susceptibility to adult disease. Cardiovascular disease, obesity, and many cancers have their origins during fetal life. Consequently, the efforts of our researchers are key to improving the health and quality of life of our species.

CDOHAD Chalk Talks: January 2011 to Present


“Programming for a Poor Future: Chronic Hypoxia Increases Caspase-3 Activation in Fetal Heart by IL-6/MMP9/CDC42”, Yafeng Dong, Ph.D., Obstetrics and Gynecology, January 18, 2011

“Adaptations at the Maternal-Fetal Interface”, Michael J. Soares, Ph.D., Pathology and Laboratory Medicine, February 15, 2011

“mTOR Signaling and Trophoblast Cells (Arroyo)/A Mouse Model for Studying Histone Demethylation in Cancer & Development (Krieg)”, Juan A. Arroyo, Ph.D., Obstetrics and Gynecology, Adam J. Krieg, Ph.D., Obstetrics and Gynecology, April 19, 2011


“DHA and the Developing Human Brain”, Susan E. Carlson, Ph.D., Dietetics and Nutrition, March 20, 2012

“Biomagnetometry: Applications for Measures of Fetal Cardiac Autonomic Control and Neurobehaviors”, Kathleen M. Gustafson, Ph.D., Neurology, Hoglund Brain Imaging Center, April 17, 2012
EVENTS

SEMINAR PROGRAM

Research Seminar Series in Developmental and Regenerative Biology

Established in Spring 2005 as the Research Seminar Series in Cancer and Developmental Biology, this seminar program's research emphasis and focus has evolved over time into developmental and regenerative biology. Distinguished scientists from across the nation present their work at KUMC and meet with faculty and trainees. The seminars are held at 8:30 am on Thursdays and are sponsored in part by the Peter T. Bohan Fund at the University of Kansas Medical Center. Below we have provided a full list of our Spring 2011 – Spring 2012 seminars.

“Genetic Mechanisms in Endometriosis”, Serdar E. Bulun, M.D., Northwestern University Feinberg School of Medicine, February 10, 2011

“DNA Methylation and Epigenetic Reprogramming”, J. Richard Chaillet, M.D., Ph.D., University of Pittsburgh, February 24, 2011

“The Essential Role of Endothelial Heterogeneity in Blood Vessel Formation”, Victoria Bautch, Ph.D., University of North Carolina, March 10, 2011

“Changes in Chromatin Structure Can Regulate Gene Expression”, David Stillman, Ph.D., University of Utah Health Sciences Center, April 7, 2011

“Chasing Cancer”, Anthony Blau, M.D., University of Washington, April 21, 2011

“Targeting an Embryonic Pathway to Suppress the Metastatic Phenotype”, Mary J.C. Hendrix, Ph.D., Northwestern University School of Medicine, May 12, 2011

“Molecular Complexity in Embryo Implantation: Lessons from Mouse Models”, Inaugural Donald C. Johnson Lecture in Reproduction, Sudhansu K. Dey, Ph.D., Cincinnati Children’s Hospital Medical Center, May 19, 2011

“Generating Gene Knockout Rats Using Rat Embryonic Stem Cells”, Qi-Long Ying, Ph.D., University of Southern California, August 18, 2011

“Regulation of Pluripotency and Cell Fate Determination”, Stephen Dalton, Ph.D., University of Georgia, August 25, 2011

“Epigenetic Insights into Mouse Placentation”, Julie Baker, Ph.D., Stanford School of Medicine, September 8, 2011

“The Study of Oncogenic Signaling Networks Using Novel Genetically Engineered Model Systems”, Kay-Uwe Wagner, Ph.D., University of Nebraska Medical Center, September 15, 2011

“Crosstalk between Apoptosis and Autophagy: Mechanisms for Effective Cancer Therapies”, Hong-Gang Wang, Ph.D., Penn State College of Medicine, October 20, 2011

“Dynamic Chromosome Positioning During Mammalian Meiotic Cell Divisions”, Rong Li, Ph.D., Stowers Institute for Medical Research, November 10, 2011

“Use of Hepatocytes and Stem Cells to Study and Treat Liver Disease”, Ira J. Fox, M.D., Children’s Hospital of Pittsburgh, November 17, 2011

“The Use of Human Pluripotent Stem Cells in the Study of Liver Disease and Development”, Stephen A. Duncan, Ph.D., Medical College of Wisconsin, December 15, 2011


“Foxo Transcription Factors in the Maintenance and Differentiation of the Mammalian Germline”, Diego H. Castrillion, M.D., Ph.D., UT-Southwestern Medical Center, March 22, 2012

“From Ovulation to Ovarian Cancer, a Surprising Journey”, Donald C. Johnson Lecture in Reproduction, JoAnne S. Richards, Ph.D., Baylor College of Medicine, March 29, 2012

“The Etiology of Ovarian Cancer: Lessons Learned from Mouse Models”, Barbara Vanderhyden, Ph.D., University of Ottawa, April 26, 2012

“New Approaches of Gene Discovery in Reproductive Endocrinology: Use of Human Disease Models”, Inaugural James L. Voogt Lecture in Neuroendocrinology, William F. Crowley, Jr., M.D., Massachusetts General Hospital, May 3, 2012

“Dynamics and Importance of Epigenetic Patterning in Germ Cells and Embryos”, Jacquetta Trasler, M.D., Ph.D., McGill University, May 17, 2012
SPECIAL LECTURES

Annual Donald C. Johnson Lecture in Reproduction

In honor of Dr. Johnson's research career, the reproductive biology group at the University of Kansas Medical Center hosts an annual lecture in the Spring, the Donald C. Johnson Lecture in Reproduction.

2011 Inaugural Donald C. Johnson Lecture in Reproduction

Sudhansu K. Dey, PhD
Lova Riekert Chair & Professor of Pediatrics
Director, Division of Reproductive Sciences
Cincinnati Children's Hospital Medical Center
“Molecular Complexity in Embryo Implantation: Lessons from Mouse Models”
May 19, 2011

2012 Donald C. Johnson Lecture in Reproduction

JoAnne S. Richards, PhD
Distinguished Professor of Molecular and Cellular Biology
Baylor College of Medicine
“From Ovulation to Ovarian Cancer, a Surprising Journey”
March 29, 2012

2013 Donald C. Johnson Lecture in Reproduction

Günter P. Wagner, PhD
Alison Richard Professor of Ecology and Evolutionary Biology
Yale University
Spring 2013

Annual James L. Voogt Lecture in Neuroendocrinology

In honor of Dr. Voogt's research career, the IRHRM at the University of Kansas Medical Center hosts an annual lecture in the Spring, the James L. Voogt Lecture in Neuroendocrinology.

2012 James L. Voogt Lecture in Neuroendocrinology

William F. Crowley, MD
Daniel K. Podolsky Professor of Medicine
Harvard Medical School
Director of Clinical Research
Massachusetts General Hospital
Director, Harvard Reproductive Endocrine Science Center
“New Approaches of Gene Discovery in Reproductive Endocrinology: Use of Human Disease Models”
May 3, 2012
2013 James L. Voogt Lecture in Neuroendocrinology

P. Michael Conn, PhD
Director of the Office of Research Advocacy, Senior Scientist in Reproductive Sciences & Neuroscience
Oregon National Primate Research Center
Professor of Physiology and Pharmacology, Cell Biology and Development, and OB/GYN
Oregon Health & Science University
May 2013
SYMPOSIUM

Annual Gilbert S. Greenwald Symposium on Reproduction

The reproductive biology group at the University of Kansas Medical Center hosts the annual Gilbert S. Greenwald Symposium on Reproduction in honor and as a memorial to the life and research career of Gilbert S. Greenwald, Ph.D. Professor Greenwald had an illustrious career as a Distinguished Professor at the Medical Center and as an internationally recognized reproductive biologist.

8th Annual Gilbert S. Greenwald Symposium on Reproduction
September 22-23, 2011

Kenneth S. Korach, PhD, Keynote Lecturer
Director, Environmental Disease & Medicine Program; Chief, Laboratory of Reproductive & Developmental Toxicology, NIEHS/NIH
"Biological Consequences Associated with Estrogen Receptor Insensitivity"

Yaacov Barak, PhD (Plenary)
Associate Professor of Obstetrics, Gynecology & Reproductive Biology, University of Pittsburgh
"Molecular Insights into the Placental Functions of PPARgamma"

Gerrit J. Bouma, PhD
Assistant Professor of Biomedical Sciences, Animal Reproduction & Biotechnology Lab, Colorado State University
"Exosomal Stem Cell Factors in Ovarian Cancer"

Blanche Capel, PhD (Plenary)
James B. Duke Distinguished Professor, Department of Cell Biology, Duke University Medical Center
"A Systems View of the Battle of the Sexes"

Buffy S. Ellsworth, PhD
Assistant Professor of Physiology, Southern Illinois University
"The Forkhead Transcription Factor, FOXP3, is Required for Normal Reproductive Function"

Asgi T. Fazleabas, PhD (Plenary)
Professor & Associate Chair for Research, Department of Obstetrics and Gynecology & Reproductive Biology, Michigan State University
"The Impact of Endometriosis on Uterine Receptivity"

Aaron J.W. Hsueh, PhD (Plenary)
Professor, Division of Reproductive & Stem Cell Biology, Department of Obstetrics & Gynecology, Stanford University School of Medicine
"Ovarian Follicle Activation and Maturation"

Tony M. Plant, PhD (Plenary)
Professor of Obstetrics, Gynecology & Reproductive Sciences, University of Pittsburgh
"Role of Hypothalamic KNDy Neurons in the Control of Puberty Onset in the Male Monkey"
Quinton A. Winger, PhD
Assistant Professor of Biomedical Sciences, Animal Reproduction & Biotechnology Lab, Colorado State University
"LIN28 Controls Proliferation & Differentiation of Trophoblast Progenitor Cells"

Jennifer Wood, PhD
Assistant Professor of Animal Science, University of Nebraska - Lincoln
"Effect of an Obese Phenotype on Transcriptional & Post-transcriptional Regulation of Oocyte mRNA Abundance"

9th Annual Gilbert S. Greenwald Symposium on Reproduction
October 11-12, 2012
Michael Wolfe, PhD, Chairman, Organizing Committee

R. Michael Roberts, PhD, Keynote Lecturer
Curator’s Professor, Animal Sciences, University of Missouri-Columbia

Michael S. Bloom, PhD
Assistant Professor of Environmental Health Sciences, University of Albany (SUNY) School of Public Health

Francesco J. DeMayo, PhD (Plenary)
Dan L. Duncan Professor & Gordon Cain Professor of Molecular and Cellular Biology
Baylor College of Medicine

Courtney Griffin, PhD
Assistant Member, Cardiovascular Biology Research Program, Oklahoma Medical Research Foundation, Adjunct Assistant Professor of Cell Biology
University of Oklahoma Health Sciences Center

Bruce D. Murphy, PhD (Plenary)
Director of the Center for Research in Animal Reproduction, Veterinary Biomedicine, University of Montreal

Kyle Orwig, PhD (Plenary)
Associate Professor of Obstetrics, Gynecology & Reproductive Sciences, and Molecular Genetics and Biochemistry, University of Pittsburgh

Fernando Pierucci-Alves, DVM
Assistant Professor of Anatomy and Physiology, College of Veterinary Medicine
Kansas State University

Joan Riley, PhD
Assistant Professor of Obstetrics and Gynecology, Washington University

Yoel Sadovsky, MD (Plenary)
Director, Magee-Womens Research Institute; Elsie Hilliard Hillman Chair of Women’s Health Research; Professor of OB/GYN, Microbiology and Molecular Genetics, and Clinical and Translational Science, Department of OB/GYN and Reproductive Sciences
University of Pittsburgh
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<th>Name</th>
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<tr>
<td>David F. Albertini, PhD</td>
<td>Professor of Physiology, Director, CRS</td>
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<tr>
<td>Udayan Apte, Ph.D.</td>
<td>Assistant Professor of Pharmacology, CESCB</td>
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<td>Juan A. Arroyo, Ph.D.</td>
<td>Assistant Professor of Obstetrics &amp; Gynecology, CDOHAD</td>
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<tr>
<td>Fariba Behbod, PharmD, Ph.D.</td>
<td>Assistant Professor of Pathology, CESCB</td>
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<tr>
<td>*Kelly A. Bosak, Ph.D., A.P.R.N., BC.</td>
<td>Assistant Professor of Nursing, CDOHAD</td>
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<td>Merlin G. Butler, M.D., Ph.D., F.F.A.C.M.G</td>
<td>Director, Division of Research, Prof. of Psychiatry, Behavioral Sciences and Pediatrics, CESCB</td>
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<tr>
<td>Susan E. Carlson, Ph.D.</td>
<td>AJ Rice Professor of Nutrition, CDOHAD</td>
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<td>Julie A. Carlsten Christianson, Ph.D.</td>
<td>Assistant Professor of Anatomy, CDOHAD</td>
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<td>Nikki Cheng, Ph.D.</td>
<td>Assistant Professor of Pathology, CESCB</td>
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<tr>
<td>*John Colombo, Ph.D.</td>
<td>Professor of Cognitive Psychology, CDOHAD</td>
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<tr>
<td>Ivan Damjanov, M.D., Ph.D.</td>
<td>Professor of Pathology, CESCB</td>
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<td>Majed Dasouki, M.D.</td>
<td>Professor of Pediatric Genetics, CESCB</td>
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<tr>
<td>*Michael Detamore, Ph.D.</td>
<td>Associate Professor of Chemical &amp; Petroleum Engineering, KU-Lawrence CESCB</td>
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<tr>
<td>Yafeng Dong, Ph.D.</td>
<td>Assistant Professor of Ob/Gyn, Director, Molecular Biology Core, CDOHAD</td>
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<td>Name</td>
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<tr>
<td>Patrick E. Fields, Ph.D.</td>
<td>Assistant Professor of Pathology</td>
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<td>Timothy A. Fields, M.D., Ph.D.</td>
<td>Associate Professor of Pathology</td>
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<td>Katherine Swenson Fields, Ph.D.</td>
<td>Research Associate Professor of Anatomy</td>
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<td>Kathleen M. Gustafson, Ph.D.</td>
<td>Research Assistant Professor of Neurology</td>
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<td>Jeffrey M. Holzbeierlein, M.D.</td>
<td>John W. Weigel Endowed Associate Professor of Urology</td>
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<td>Holly Hull, Ph.D.</td>
<td>Assistant Professor of Dietetics and Nutrition</td>
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<td>Tomoo Iwakuma, M.D., Ph.D.</td>
<td>Associate Professor of Cancer Biology</td>
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<td>Rajasingh Johnson, M.Phil., Ph.D., H.C.L.D.</td>
<td>Assistant Professor of Medicine</td>
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<td>Dev Karan, Ph.D.</td>
<td>Assistant Professor Urology Surgery</td>
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<td>Sarah L. Kieweg, Ph.D.</td>
<td>Assistant Professor of Mechanical Engineering, KU-Lawrence</td>
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<td>S. Samuel Kim, M.D., F.A.C.O.G.</td>
<td>Associate Professor of Obstetrics and Gynecology</td>
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<tr>
<td>Gregory S. Kopf, Ph.D.</td>
<td>Associate Vice Chancellor for Research Administration Professor of Physiology</td>
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<tr>
<td>Adam J. Krieg, Ph.D.</td>
<td>Assistant Professor of Obstetrics and Gynecology</td>
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<tr>
<td>Sacha A. Krieg, M.D., Ph.D., F.A.C.O.G.</td>
<td>Assistant Professor of Obstetrics and Gynecology</td>
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* indicates new members, April 2012
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<tr>
<th>Name</th>
<th>Title</th>
<th>Institution</th>
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<tr>
<td>Melissa A. Larson, Ph.D.</td>
<td>Research Assistant Professor of Physiology</td>
<td>CRS</td>
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<tr>
<td>Benyi Li, Ph.D.</td>
<td>Associate Professor of Urology</td>
<td>CRS</td>
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<tr>
<td>Clifford W. Mason, Ph.D.</td>
<td>Research Assistant Professor of Obstetrics and Gynecology</td>
<td>CDOHAD</td>
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<tr>
<td>Ann Manzardo, Ph.D., M.S.C.R.</td>
<td>Assistant Professor of Psychiatry and Behavioral Sciences</td>
<td>CESCB</td>
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<tr>
<td>Ajay K. Nangia, M.B.B.S.</td>
<td>Associate Professor of Urology; Clinical Director of Andrology</td>
<td>CRS</td>
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<tr>
<td>Soumen Paul, Ph.D.</td>
<td>Associate Professor of Pathology</td>
<td>CESCB, CRS</td>
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<tr>
<td>Brian K. Petroff, D.V.M., Ph.D.</td>
<td>Associate Professor of Internal Medicine</td>
<td>CRS</td>
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<td>Evelyn A. Reynolds, M.D.</td>
<td>Assistant Professor of Obstetrics &amp; Gynecology</td>
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<td>Gene Lee, M.D.</td>
<td>Assistant Professor of Obstetrics and Gynecology</td>
<td>CDOHAD</td>
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<tr>
<td>Renée S. Mijal, Ph.D., M.P.H.</td>
<td>Assistant Professor of Preventive Medicine and Public Health</td>
<td>CDOHAD</td>
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<tr>
<td>Warren B. Nothnick, Ph.D., H.C.L.D.</td>
<td>Professor of Obstetrics &amp; Gynecology</td>
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<tr>
<td>Kenneth R. Peterson, Ph.D.</td>
<td>Professor &amp; Vice Chair of Biochemistry</td>
<td>CESCB</td>
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<tr>
<td>Philippe Prochasson, Ph.D.</td>
<td>Assistant Professor of Pathology</td>
<td>CESCB</td>
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<tr>
<td>Katherine F. Roby, Ph.D.</td>
<td>Research Associate Professor of Anatomy</td>
<td>CRS</td>
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<td>M.A. Karim Rumi, M.B.B.S., M.S., Ph.D.</td>
<td>Research Assistant Professor of Pathology CESCBB</td>
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<td>Irfan Saadi, Ph.D.</td>
<td>Assistant Professor of Anatomy CESCBB</td>
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<tr>
<td>Chad Slaudson, Ph.D.</td>
<td>Assistant Professor of Biochemistry CESCBB</td>
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<tr>
<td>Peter G. Smith, Ph.D.</td>
<td>Professor of Physiology CRS</td>
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<tr>
<td>Michael J. Soares, Ph.D.</td>
<td>Director, IRHRM University Distinguished Professor of Pathology CDOHAD, CRS, CESCBB</td>
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<tr>
<td>Russell H. Swerdlow, M.D.</td>
<td>Professor of Physiology CESCBB</td>
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<td>Paul F. Terranova, Ph.D.</td>
<td>Professor of Physiology Vice Chancellor for Research CRS</td>
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<td>Patricia A. Thomas, M.D., M.A., F.C.A.P.</td>
<td>Professor of Pathology CRS</td>
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<td>J. Brantley Thrasher, M.D., F.A.C.S.</td>
<td>Professor and the William L. Valk Chair of Urology CRS</td>
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<tr>
<td>Gregory B. Vanden Heuvel, Ph.D.</td>
<td>Associate Professor of Anatomy CESCBB</td>
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<td>Jay L. Vivian, Ph.D.</td>
<td>Assistant Professor of Pathology CESCBB</td>
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<td>Jinxi Wang, M.D., Ph.D.</td>
<td>Harrington Distinguished Professor of Orthopedic Surgery CESCBB</td>
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<tr>
<td>Carl P. Weiner, M.D., M.B.A.</td>
<td>Professor &amp; Chair, Obstetrics and Gynecology Associate Director, IRHRM Director, CDOHAD</td>
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<td>Mark L. Weiss, Ph.D.</td>
<td>Professor of Anatomy and Physiology, Kansas State University CESCBB</td>
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<td>Name</td>
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<tr>
<td>Michael W. Wolfe, Ph.D.</td>
<td>Associate Professor of Physiology</td>
<td>CDOHAD, CRS</td>
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<tr>
<td>Thomas M. Yankee, Pharm.D., Ph.D.</td>
<td>Associate Professor of Microbiology</td>
<td>CESCB</td>
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<tr>
<td>Alan S. L. Yu, M.B., B.Chir.</td>
<td>Harry Statland and Solon Summerfield Professor of Medicine</td>
<td>CESCB</td>
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<tr>
<td>Xuan Zhang, PhD</td>
<td>Research Assistant Professor of Surgery</td>
<td>CRS</td>
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Our laboratory employs genetic, molecular and imaging strategies to study basic aspects of the process of reproduction that bear on human disease and its clinical management by stem cell therapy. The overall emphasis is on Women's Health in relation to causes of human infertility, ovarian cancer, and the deployment of Assisted Reproductive Technologies (ARTS) for improving egg and embryo quality in human and animal models. Three project areas are actively under study:

1. Fertility Preservation-ameliorating the loss of fertility experienced by women undergoing radiation or chemotherapy is the goal of this research. Using our long standing interest in signaling between the somatic and germ cell components of the ovarian follicle, we have initiated projects that focus on (1) understanding the mechanisms that underlie DNA damage and repair in oocytes following chemotherapy or radiation induced damage; and (2) implementation of cryopreservation strategies for oocytes and ovarian tissues that could subsequently be used for embryo production.

2. Cell Cycle Regulation In Oocytes and Embryos-how modifications in cell cycle checkpoint control ensure chromosome balance during meiosis in oocytes and mitosis in embryos is investigated by biochemical, live cell imaging, and pharmacological approaches that permit assessment of genomic integrity during cell cycle progression. This strategy is used to understand the effects of maternal aging and/or environmental chemicals (endocrine disruptors) on oocytes or embryos produced by ARTs (in vitro maturation, in vitro fertilization).

3. Stem Cell Biology- stem cells derived from adult, embryonic, or iPS sources hold great promise for providing new insights into the origins of human disease and strategies for treatments. Improvements in derivation and maintenance of stem cell lines are needed for the utility of genetically stable cells capable of realizing these promises. Our lab studies human and rat embryonic stem cells by focusing on culture conditions that assure genetic stability during proliferation and differentiation into neural progenitors. We are exploring the role of the Notch signaling pathway in an effort to understand regulation of apoptotic, autophagic, and necrotic pathways mediated by the microtubule cytoskeleton.

Committees

KUMC
Member, 7 Ph.D. Committees

National
Chair, Research Committee for Society of Reproductive Biology and Technology (SRBT)
Member, organization for the American Society of Reproductive Medicine (ASRM)
Member, ASRM Executive Committee

Editorial and Grant Reviews
Editor-in Chief, Journal of Assisted Reproduction and Genetics
David F. Albertini, Ph.D. (Continued)

Associate Editor, Fertility and Sterility, Zygote

Reviewer, Nature, Science, PNAS, 28 other journals

Grant Reviewer - Wellcome Trust (UK), Belgian Science Council, NIH, March of Dimes, Maryland State Stem Cell Initiative

Member, Maryland State Stem Cell panel

Study Section – NIH

Study Section - ICER

Seminars Presented

2011 - "Recent advances in the cryopreservation of oocytes and ovarian tissues," Wayne State U School of Medicine, Dept OB/GYN, Alfred L. Deutsch Memorial Lecture, Detroit MI.

2011 - “Mechanisms of Oocyte In Vitro Maturation,” Symposium on Human ARTs, IMI Center for reproductive Medicine, Gudalajara Mexico.

2011 - “Linking oocyte history to the embryo’s fate,” Program in Reproductive Endocrinology, University of Wisconsin, Madison, WI.

2011 - “Linking oocyte quality to fetal aneuploidies: the case of the aging cell cycle,” University of Texas-Southwestern, Program in Reproductive Medicine, Dept of OB/GYN, Dallas Texas.

2011 - “Human ARTs: past, present, and future,” Washington State University, NIH Biotechnology Symposium, Pullmann WA.


2011 - “Genome Integrity Maintenance: from oogenesis to implantation,” School of Veterinary Science, University of Milan, Milan IT.

2011 - “How the physiology of ovulation is related to Human IVM,” Biogensi Center for Reproductive Medicine, Monza. IT.

2011 - “Oocyte Genome Integrity: an intrinsic DNA damage and repair mechanism,” The Ovarian Club, First International Congress, Barcelona, SP.

2011 - “Managing genome integrity from oocyte to embryo: the case for quality control,” Cornell Weill School of Medicine, Center for Reproductive Medicine, New York City, N.Y.
David F. Albertini, Ph.D. (Continued)

2011 - “A fresh look at human oocyte genome integrity: looking beyond aneuploidy,”
New York University School of Medicine, Department of OB/GYN, New York City, N.Y.

2011 - “Oocyte Quality Evaluation: How good is our technology?” Serono Synposia
International Foundation, Meeting on “Controlled Ovarian Hyperstimulation and
Gamete and Embryo Selection,” Yokohama, Japan.

Academic Honors

Alfred Deutsch Memorial Lecture, Wayne State University School of Medicine, Detroit, MI.
**Udayan Apte, Ph.D.**  Assistant Professor  
Department of Pharmacology, Toxicology and Therapeutics  
Member, Center for Epigenetics and Stem Cell Biology

Dr. Udayan Apte’s research is focused on understanding the basic mechanisms of hepatocyte proliferation and applying them to develop novel therapies for acute liver failure and hepatocellular cancer.

Liver is exposed to a number of drugs and toxic chemicals due to its anatomical and physiological role and is prone to drug-induced acute liver failure (ALF). ALF is a common and growing clinical problem, with liver transplantation as the only viable treatment option. Recent studies indicate that stimulating regeneration in the ALF patients may have immense therapeutic potential. However, the detailed mechanisms of liver regeneration following acute liver failure are unknown. Similarly, currently there are no reliable biomarkers to detect innate liver regeneration in ALF patients. Dr. Apte’s laboratory is investigating the mechanisms of liver regeneration and exploring novel biomarkers of liver regeneration following acute liver failure using acetaminophen overdose, the most common cause of ALF in the US, as a model system.  

Another aspect of liver regeneration that we understand very little about is the mechanisms of termination of liver regeneration. It is known that liver regrowth following surgical resection is tightly regulated and liver size is precisely maintained. However, the pathways that terminate liver regeneration and regulate liver size are not completely clear. Dr. Apte’s laboratory is exploring novel pathways involved in termination of liver regeneration. Dr. Apte is also testing the hypothesis that signaling pathways that terminate liver regeneration following PHX are dysfunctional during pathogenesis of hepatocellular carcinoma (HCC), the most common hepatic malignancy.

The specific pathways under investigation in Dr. Apte’s laboratory include hepatocyte nuclear factor-4alpha (HNF-4α), Wnt/β-catenin signaling and the Hippo Kinase signaling pathway. They are also interested in identifying the role of epigenetic changes regulated by these pathways associated with hepatocyte proliferation.

**Meetings Attended**

2011 – Experimental Biology, Washington DC  
2011 – American Association for the Study of the Liver Diseases, San Francisco, CA

**Committees**

Departmental  
Member, Seminar Committee  
Member, Postdoctoral Career Development Committee

**Editorial and Grant Reviews**

Ladies Auxiliary of VFW Postdoctoral Grant Review Committee
Udayan Apte, Ph.D. (continued)

Seminars Presented

October 18, 2011 - “Mechanisms of Liver Regeneration Following Acute Liver Failure,”
Acute Liver Failure Study Group Pathogenesis Forum, Dallas TX

Trainees

Chad Walesky – Graduate Student

Seth Septer – Clinical Fellow
Juan A. Arroyo, Ph.D., Assistant Professor
Department of Obstetrics and Gynecology
Member, Center for the Developmental Origins of Health and Adult Disease

Trophoblast cells are important for normal placental growth and development. Aberrant trophoblast functioning is associated with poor placentation influencing fetal health. The focus of our laboratory has been in the molecular signaling of trophoblast cells apoptosis and the regulation of cell invasion during pregnancies complicated with Intrauterine Growth Restriction, Preterm Delivery and Preeclampsia. We are also interested in the role of the mTOR family of proteins in placental and trophoblast development and functioning across gestation during these diseases.

Seminars Presented

April 19, 2011 – “mTOR Signaling and Trophoblast Cells” (Research presentation) Maternal-Fetal Health Center, KUMC Institute for Reproductive Health and Regenerative Medicine, University of Kansas Medical Center, Kansas City, KS.
Fariba Behbod, PharmD., Ph.D., Assistant Professor
Department of Pathology and Laboratory Medicine
Member, Center for Epigenetics and Stem Cell Biology

Research in our laboratory is focused on investigating the cellular and molecular factors in ductal carcinoma in situ (DCIS) and their surrounding microenvironment that promote a transition to invasive ductal carcinoma (IDC). Towards this goal, we have developed the first in vivo model of DCIS progression by transplantation of primary cells derived from patient’s DCIS samples inside the mouse mammary ducts. The model, known as mouse-intraductal (MIND), provides a unique tool to study the early processes of DCIS progression in vivo in a manner that is specific to the individual patient’s tumor subtype. In our recent manuscript, in the Journal of Pathology, we have demonstrated that the xenografted DCIS lesions recapitulated the pathology and heterogeneity of human disease thus providing a powerful tool for the characterization of the distinct cellular and molecular basis of inter- and intra-tumoral heterogeneity and the processes of DCIS to early invasive breast cancer progression. I have a dual doctorate degree in clinical pharmacology and basic sciences in cell biology and pharmacology. My post-doctoral training was funded by NCI (NRSA; 2003-2006) and focused on characterization of mouse mammary normal and cancer stem cells. I have also received a K99/R00 (2007-2012) for studying the role of cancer stem cells in the development and progression of subtypes of human DCIS. The ultimate goal of our studies is the identification of therapeutic targets for prevention of IDC and finding biomarkers for predicting the subset of DCIS patients at risk for progression to invasive disease.

Committees

KUMC

Member, M.D./Ph.D. Admission Committee

Member, Flow Cytometry Advisory Committee

Member, KUCC Cancer Prevention Program; Co-leader; Stem Cell and Biomarkers

Editorial and Grant Reviews

Grant Reviewer, CDMRP, NIEHS/NIH
Merlin G. Butler, M.D., Ph.D., F.F.A.C.M.G.  Director, Division of Research
Professor of Psychiatry, Behavioral Sciences and Pediatrics
Departments of Psychiatry & Behavioral Sciences and Pediatrics
Member, Center for Epigenetics and Stem Cell Biology

Genetics of obesity, autism and developmental disabilities; Prader-Willi syndrome. Under the direction of Dr. Butler, the primary focus of the research program is understanding the cause and diagnosis of Prader-Willi syndrome (PWS), as the clinical genetic model of obesity and genomic imprinting, and for genotype-phenotype correlations by utilizing an NIH funded rare disease center for genetics and natural history studies in PWS and early onset morbid obesity. PWS is the most commonly recognized cause of life-threatening obesity in children generally due to errors in genomic imprinting usually a 15q11-q13 chromosome deletion of paternal origin. The 15q11-q13 region involves important genes for development of obesity, behavioral problems and autism. This research has led to the discovery of genomic imprinting and clinical differences in PWS subjects having either the larger typical type I or smaller type II chromosome 15q11-q13 deletion. Greater maladaptive and abnormal behavioral scores are seen in those PWS subjects with the larger type I deletion and candidate genes identified. Other obesity-related measures under study include body composition, energy balance, regional fat distribution, neuroimaging patterns and neuropeptides regulating eating behavior and comparison with PWS genetic subtypes. Furthermore, DNA, coding and non-coding RNA (microRNAs) studies are underway with targeted messenger RNAs from structural and regulatory genes involved in the pathogenesis of obesity, autism and neurodevelopment. Analyzing and comparing coding and non-coding RNA patterns in individuals with Prader-Willi syndrome and those with simple obesity will allow for identification of disturbed obesity-related gene network pathways leading to potential treatment modalities applicable to the general population. In collaboration with others, functional MRI scans and startle modulation responses in PWS and matched obese subjects using food picture stimulation paradigms during pre- and post-meal assessments are underway to better understand specific brain regions involved in eating behavior and satiation. More recently, studies are underway to examine induced pluripotent stem cells in PWS and to characterize their cell biology which is required to learn more about pathophysiology and to develop potential therapeutic interventions.

Meetings Attended


June 27, 2011 – “X chromosome inactivation in blood and prefrontal cortex or women with alcoholism,” 34th Annual Scientific Meeting of the Research Society on Alcoholism, Atlanta, Georgia.

June 27, 2011 – “Genome wide promoter methylation in prefrontal cortex of alcoholics and controls using NimbleGen DNA methylation 2.1M arrays,” 34th Annual Scientific Meeting of the Research Society on Alcoholism., Atlanta, Georgia.


Merlin G. Butler, M.D., Ph.D., F.F.A.C.M.G. (continued)

November 3, 2011 – “X chromosome inactivation in blood and prefrontal cortex or women with alcoholism,” KUMC Faculty Research Day and Poster Session., Kansas City, Kansas.


December 4, 2011 – “Food motivation circuitry dysfunction during hunger and satiety: From active anorexia nervosa to extreme obesity,” 50th Annual Meeting of the American College of Neuropsychopharmacology, Waikaloa Beach, Hawaii.

Committees

National

Member - Scientific Advisory Board, Prader-Willi Syndrome Association (USA); Steering Committee, Heartland Regional Genetics and Newborn Screening Collaborative; Telemedicine Task Committee (Genetics Services), Heartland Regional Genetics and Newborn Screening Collaborative; National Institutes of Health Ad-Hoc Grant Review Committee; Foundation for Prader-Willi Research, One Small Step for Prader-Willi Syndrome Research Initiative; PWS Medical Advisory Board (Ferring Pharmaceuticals); National Institute of Health Rare Disease Consortium (Prader-Willi, Angelman, and Rett syndromes)

Chair, Scientific Advisory Board, Prader-Willi Syndrome Association (USA)

Board of Consultants, Midwest Bioethics Center, Kansas City

Chairperson, Heartland Regional Genetics and Newborn Screening Collaborative (Research Committee)

Invited Participant, Growth Hormone in PWS Clinical Care Guidelines Workshop, (Growth Hormone Research Society), Montreal, Quebec, Canada, October 3-6, 2011

Merlin G. Butler, M.D., Ph.D., F.F.A.C.M.G.  (continued)

**Editorial and grant reviews**

Grant Reviewer, Pediatric Endocrine Society and Medical Research Council (MRC) - United Kingdom


**Seminars Presented**

April 14, 2011 - “Genetics of Autism,” Department of Preventive Medicine and Public Health, Clinical and Translational Research Seminar Series, Kansas University Medical Center, Kansas City, Kansas

April 29, 2011 - “Genetics of Autism,” Department of Psychiatry and Behavioral Sciences Grand Rounds, Kansas University Medical Center, Kansas City, Kansas

May 21, 2011 – “Practice and Application of Medical Genetics in Clinical Care,” Stormont-Vail Hospital Grand Rounds, Topeka, Kansas

May 22, 2011 - “Genetics for the General Public,” North Cross Methodist Church, Kansas City, Missouri


September 21, 2011 – “Principles and Practice of Medical Genetics,” Department of Psychiatry and Behavioral Sciences, KUMC

September 24, 2011 – “Genetics of Obesity,” Stormont-Vail Hospital Grand Rounds, Topeka, Kansas

September 30, 2011 – “Genetics of Autism,” Department of Neurology and Neurosurgery Grand Rounds, KUMC

October 3-6, 2011 – “Growth Hormone in Prader-Willi Syndrome Clinical Care Guidelines,” Growth Hormone Research Society Workshop, Montreal, Canada


**Academic Honors**

Medical Science Award of Excellence, American Biographical Institute
Merlin G. Butler, M.D., Ph.D., F.F.A.C.M.G. (continued)


Biltmore Who’s Who, 2011

Selected by “Consumers’ Research Council of America, Guide to America’s Top Physicians”, 2011


Medical Science Award of Excellence selected by the American Biographical Institute, 2011


Man of the Year Award selected by the American Biographical Institute, 2011
Susan E. 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 (BIRCWH)  
President, International Society for the Study of Fatty Acids and Lipids (ISSFAL)  
Member, Developmental Origins of Health and Disease (DOHAD)  
Department of Dietetics and Nutrition  
Member, Center for the Developmental Origins of Health and Adult Disease  

We do intervention studies using docosahexaenoic acid (DHA) and arachidonic acid (AA)  
supplementation in pregnant women, infants and children that focus largely on pregnancy outcomes  
and infant/child developmental outcomes. My collaboration is with Dr. John Colombo at the University  
of Kansas, who is the current directory of the Lifespan Institute (KU and KUMC). Our current NICHD  
funding is to evaluate children from 2 to 6 years of age who were born to pregnant women provided 600  
mg/day of docosahexaenoic acid (DHA), a nutritional source of long chain omega-3 fatty acids in a  
Phase III trial. The specific developmental outcomes we target are autonomic nervous system  
development, cognitive development and visual acuity development. In addition, we monitor infant/child  
growth, illness and food intake.  

Committees  
KUMC  
Chair, Faculty Affairs Research Committee (FARC)  
School of Health Professions elected representative to the Faculty Assembly  
Steering Committee  

Editorial and grant reviews  
Ad hoc Reviewer - American Journal of Clinical Nutrition (Consulting Editor 2007-2012), Clinical  
Nutrition and Obesity (Editorial Board) (journal stopped 2009), Update on Pediatrics  
(Editorial Board), Journal of Nutrition, European Journal of Clinical Nutrition, American  
Society for Parenteral and Enteral Nutrition, Journal of Pediatric Gastroenterology and  
Biology and Medicine, Journal of Pediatrics, Pediatric Research, Pediatrics, Acta Paediatrica  
Scandinavica, National Academy of Sciences, New England Journal of Medicine, New York  
Academy of Sciences, World Health Organization, National Science Foundation, Journal of  
Comparative Physiology, Journal of Human Lactation, Nutritional Neuroscience, Review ~40  
manuscripts/year for pediatric, lipid and nutrition journals  

Seminars Presented  
April 15, 2011 – “Ramifications of insufficient DHA: evidence from studies during  
pregnancy and infancy,” American Association of Physical Anthropologists  
Annual Meeting, Minneapolis, MN.  

fatty acids and cognitive and visual acuity development: Methodologic and  
Cartagena, Colombia.
Trainees

Amanda Foiles – Graduate Student
Sarah Douglas - Graduate Student
Sarah Scroggs – Graduate Student
Ka Ian Chen – Graduate Student
Crystal Wilson – Graduate Student
Claire Cody – Graduate Student
Sara Moukarzel – Graduate Student
Danielle Atwood - Graduate Student
Susan Scholtz – Graduate Student
Marlies Ozias – Graduate Student
Brandon Hidaka – Graduate Student
My laboratory is interested in investigating the functions of stromal fibroblasts in the tumor microenvironment during breast cancer progression. Fibroblasts are a major cellular component of the tumor microenvironment and influence cancer cell behavior directly and indirectly through secretion of soluble factors, including growth regulators and angiogenic factors. While genetic alterations in breast fibroblasts may exert pro-tumorigenic effects, little is known of the cellular and molecular signals that regulate fibroblast functions in the tumor microenvironment. Studies in my laboratory suggest that fibroblasts may interact with breast cancer cells to regulate cancer cell motility and invasion through chemokines signaling. Chemokines are a family of soluble proteins which signal through seven transmembrane G coupled receptors and regulate immune cell recruitment during inflammatory responses and defenses against foreign pathogens. Studies in our laboratory indicate that CCL2 and CXCL1 chemokine signaling may also regulate fibroblast interactions with other cell types in the microenvironment to promote tumor progression. Using multiple approaches including mouse models of cancer, molecular biology, biochemistry and cell culture systems, we are interested in:

- Understanding the mechanisms through which chemokines regulate fibroblast : cancer cell interactions during cancer progression
- Understanding the mechanisms through which chemokines regulate fibroblast mediated immune cell recruitment
- Identifying the signaling pathways regulated by chemokine signaling in the breast cancer microenvironment
- Identifying the regulatory mechanisms of chemokine expression

Ultimately, we are interested in understanding the functions of stromal cells in the tumor microenvironment and the impact of the tumor microenvironment on metastatic spread. By identifying and understanding the molecular signals that create a tumor permissive environment, these studies may contribute to identifying new molecular targets for therapy and developing improved methods for diagnosing and treating metastatic breast cancer.

Editorial and Grant Reviews


Seminars Presented


Nikki Cheng, Ph.D. (continued)

Trainees

Wei-Bin Fang – Postdoctoral Fellow
An Zou – Graduate Student
Malinda Algaier – Rotation Student
Chronic pelvic pain encompasses a number of debilitating syndromes and is the most common indication for referral to women’s health specialists. A history of early adverse events including injury, infection, neglect or abuse is prevalent among chronic pelvic pain patients and up to 80% present with symptoms of more than one syndrome. Our long-term goal is to determine how the nervous system is manipulated by early adverse events to produce long-term pain in directly affected and adjacent pelvic organs. We have developed pre-clinical models of colonic and vaginal hypersensitivity through neonatal maternal separation or neonatal organ irritation in mice. Mice that received intracolonic mustard oil as neonates have an increase in the percentage of colon-specific sensory neurons that express the transient receptor potential channel ankyrin 1 (TRPA1), which is required for normal viscerosensory function. We are currently investigating whether neonatal vaginal irritation or stress caused from maternal separation will produce a similar effect, as well as the signaling cascades involved, with the ultimate goal of identifying and validating potential targets for therapeutic intervention in the treatment of chronic pelvic pain.

Meetings Attended

May 7-10, 2011 – Digestive Disease Week 2011, Chicago, IL.

July 22-23, 2011 – 2011 Midwest Pain Interest Group Meeting, Chicago, IL.


Editorial and Grant Reviews


Trainees

Angela Pierce – PhD student and Self Fellow scholar

Zhen Zhang – Rotating IGPBS student
**Ivan Damjanov, M.D., Ph.D.**  Professor  
Department of Pathology and Laboratory Medicine  
Member, Center for Epigenetics and Stem Cell Biology  

Collaborative research providing histopathologic and immunohistochemical expertise  

**Meetings Attended**  
2011 - US-Canadian Academy of Pathology, Annual Meeting, San Antonio, TX  
2011 - American Association of Clinical Pathology, Annual Meeting, Las Vegas, NE  

**Committees**  
Departmental  
Chairman, Promotion and Tenure Committee  

**Editorial and Grant Reviews**  
Editorial Board, *International Journal of Developmental Biology, Modern Pathology, Croatian Journal of Medicine*  

**Seminars Presented**  
October 10-12, 2011 "Teratoma, the little tumor that could", Abcam Meeting, "Rediscovering Pluripotency - from Teratocarcinoma to Embryonic Stem Cells", Cardiff, Wales, UK,  

**Academic Honors**  
Bohan Teaching Award, KUMC
Majed J. Dasouki, M.D., Professor
Department of Pediatrics & Internal Medicine
Member, Center for the Developmental Origins of Health and Adult Disease

- Biochemical Genetics & Clinical Cytogenetics & general Clinical Genetics
- Newborn Screening & & Tandem Mass Spectrometry
- Novel therapies and clinical trials in various metabolic genetic disorders
- Disorders of Mitochondrial Fatty Acid Oxidation (FAO) and Oxidative-Phosphorylation (OX-PHOS)
- Gene mapping of single gene disorders using various molecular methods: linkage, FISH
- Array Comparative Genomic Hybridization
- Exome sequencing

Meetings Attended


Seminars Presented

March 9, 2011 - “Liver Transplantation in Patients with Glycogen Storage Disease,” Grand Attending Rounds, Department of Pediatrics. University of Kansas Medical Center. Kansas City, KS.


Yafeng Dong, Ph.D, Research Associate Professor
Director, Molecular Biology Core Facility
Department of Obstetrics and Gynecology
Member, Center for the Developmental Origins of Health and Adult Disease

The problem of perinatal brain injury, in terms of the costs to society and to the affected individuals and their families, is extraordinary. The most common underlying cause of perinatal brain injury is hypoxia/ischemia. Intrauterine hypoxia and birth asphyxia induced brain damage are associated with increased perinatal mortality and long term sequelae of neurodevelopmental compromise, seizure disorders and cerebral palsy. The roles of ROS, Ca2+, NMDA receptors, excitatory amino acids, and apoptotic genes on fetal brain injury have been studied exclusively. These works have led to substantial conceptual agreement on a general outline of how fetal brain injury triggers and evolves to produce neuropathologic lesions and neurodevelopmental disabilities. However, the precise etiological factors responsible for the development of the majority of fetal hypoxic brain injury have not been identified.

Seminars Presented

January 18, 2011 – “Programming for a Poor Future: Chronic Hypoxia Increases Caspase-3 Activation in Fetal Heart by IL-6/MMP9/CDC42”. (Research presentation) Maternal-Fetal Health Center, KUMC Institute for Reproductive Health and Regenerative Medicine, University of Kansas Medical Center, Kansas City, KS.

Editorial and Grant Reviews

Ad hoc Reviewer, American Journal of Obstetrics and Gynecology
Patrick E. Fields, Ph.D.  Assistant Professor
Department of Pathology and Laboratory Medicine
Member, Center for Epigenetics and Stem Cell Biology

Work in our laboratory is focused on the mechanisms of T cell activation and differentiation as they relate to immunological tolerance and disease. Specifically, we are interested in both membrane-proximal and -distal (nuclear) events regulating the gene expression involved in cell fate decisions during peripheral T cell differentiation. These studies will facilitate our long-term goal, which is to understand normal T cell function at the molecular level.

A major area of focus in the laboratory is the study of chromatin remodeling in the regulation of cytokine gene expression during Th1/Th2 differentiation. We recently identified a locus control region (LCR), which regulates gene expression in the Th2 cytokine locus. LCRs are regulatory elements that are thought to control gene expression by among other mechanisms, regulating the accessibility of gene promoters to transcriptional machinery. We will use genetic and molecular biology approaches to study the mechanism by which this LCR functions.

The study of membrane-proximal signaling will focus on the regulation of the Ras/MAP kinase pathway by a novel family of negative feedback inhibitors that are induced by T cell receptor stimulation. The members of this gene family show different patterns of expression in T cells and their expression changes dramatically upon T cell activation and differentiation. Preliminary studies have revealed that these gene products may mediate cell fate decisions by regulating cell survival and differentiation. These studies will be extended by using genetic (knockout and transgenics) as well basic molecular biology and biochemical approaches to examine the role of this gene family in the immune response.

Committees

KUMC

Member, Microarray Facility Committee

Member, Transgenic Mouse Facility Committee

Member, Faculty Council Committee

Alternate Member, Graduate Program Advisory Committee

Departmental

Member - Research Seminar Series in Regenerative and Developmental Biology Planning Committee, Pathology Graduate Program Advisory Committee, Search Committee for new Pathology/IMFB faculty, Website Development Committee, Dissertation Committees for Jessica Copeland, Beth Dille, Damayanti Chakraborty, Todd Bradley, Yi Feng, Shane Stecklein, Jitu George, Fang Tao, Caitlin Linscheid, Jackie Peda

Alternate Member, Graduate Program Advisory Committee

Editorial and Grant Reviews

Ad hoc Reviewer - Proceedings of the National Academy of Sciences, USA (PNAS), Immunity, Molecular and Cellular Biology (MCB), Immunology
Patrick E. Fields, Ph.D. (continued)

Grant Reviewer

The Research Council for Earth and Life Sciences (ALW)

Netherlands Organization for Scientific Research (NWO) Study Section

NIH/NIGMS, MBRS Study Section; Genetics Panel Study Section

Trainees

Yi Feng – Graduate Student

Mingcai Zhang – Postdoctoral Fellow

Manoela Ortega - Postdoctoral Fellow
Our lab is focused on understanding Wnt signaling pathways and their role in guiding differentiation and tumorigenesis. The Wnts are a family of extracellular signaling proteins that are critical for appropriate development, as they regulate behavior and cell fate decisions of stem cells and other progenitor cells. In addition, Wnt signaling can influence cell proliferation, differentiation, migration, and morphology in both adult and progenitor cells. Thus, it is not surprising that aberrant Wnt signaling can lead not only to morphogenetic defects in developing animals, but also to the development of proliferative diseases, including cancer.

The best characterized Wnt signaling pathway, referred to as the "canonical" Wnt pathway, controls the fate of cellular β-catenin, a multifunctional protein and transcriptional co-activator. Activation of canonical Wnt signaling results in β-catenin stabilization and its subsequent translocation into the nucleus. Once in the nucleus, accumulated β-catenin binds members of the TCF/LEF family and induces transcription of Wnt target genes. It is the stabilization of β-catenin and its nuclear accumulation that is commonly thought to account for the cellular outcomes that are elicited by canonical Wnts. However, we have found this simple model to be insufficient to explain the transcriptional and cellular changes stimulated by canonical Wnts and have observed that auxiliary pathways stimulated in parallel by canonical Wnts can modulate β-catenin-dependent transcriptional induction. We are focused on delineating the molecular components of these auxiliary pathways and the mechanisms by which they affect changes in gene transcription and cellular decisions. In addition, studies are underway to develop agents that interfere with Wnt signaling pathways targeting proliferative diseases driven by Wnt. As model systems, we currently use pluripotent mesenchymal stem cells, which can self renew or differentiate along osteogenic, chondrogenic, myogenic, or adipogenic lineages, as well as cancer cell lines of varying aggressiveness. We are also in the process of building mouse models to study these phenomena. Our studies aim to bridge an understanding of the normal biology of Wnt signaling with an understanding how this signaling goes awry in developmental diseases and cancer.

Meetings Attended


June 26-July 1, 2011 – “Wnt5a, Which is Upregulated in ADPKD Cyst Epithelial Cells, Promotes Activating Phosphorylation of ERK, JNK and NFκB in vitro,” FASEB Research Conference—Polycystic Kidney Disease, From Bench to Bedside. Saxtons Rivers, VT.
Timothy A. Fields, M.D., Ph.D. (continued)

Committees

KUMC

Member, Clinical and Translational Research Education Center Steering Committee

Member, Academic Committee (Faculty Council), sub-committee: Admissions

Member, Medical School Admissions Selection Committee

Vice Chair, Research Committee (Faculty Council)

Chair, MD-PhD Admissions Committee

Trainees

Jessica Rossol-Allison – Graduate Student/Postdoctoral Fellow

Jacqueline Peda – Graduate Student
Since the 1980's, there has been increasing recognition that events that occur in utero have long-term implications for future health. Maternal nutrition, physical activity, psychological stress and social disparities have the potential to put the fetus at risk or "program" the offspring for obesity, insulin resistance, diabetes, cardiovascular disease and cancer. Our research is focused on the developmental origins of health and disease. To accomplish these studies, we use a dedicated fetal biomagnetometer to measure naturally occurring magnetic fields that surround bioelectric currents in the maternal and fetal bodies. There are only two dedicated fetal biomagnetometers in the United States. This device is housed at the Hoglund Brain Imaging Center on the Kansas University Medical Center campus. It allows for completely safe, non-invasive studies of women during their pregnancy.

Of principal importance to our research is the magnetocardiogram (MCG), recorded simultaneously from mother and child. Using the MCG, we are able to determine fetal behavioral states and fetal movements including non-nutritive sucking and swallowing, hiccups and periodic fetal breathing. During these unique fetal activities, we have shown how the fetus regulates its heart rate and heart rate variability and how these activities differ when women exercise during pregnancy or take an omega-3 supplement. We now know that when women exercise during pregnancy, their fetus has greater ability to vary its heart rate which may give it an adaptive advantage. Development and maturation of fetal cardiac autonomic control not only gives us insight into cardiac regulation, but also brain development. The autonomic nervous system, in particular vagal regulation, has also been linked to basic cognitive components related to arousal and attention. We believe we have a unique opportunity to make significant contributions to the field of developmental origins.

Meetings Attended


September 18-21, 2011 - Developmental Origins of Health and Disease 7th World Congress, Portland, Oregon USA.

Committees

Member, PhD Advisory Committee – Shengqi Li, PhD student

Editorial and Grant Reviews

Ad hoc Reviewer, Child Development, Journal of Parenteral and Enteral Nutrition

Grant Reviewer, University of Kansas, Frontiers Clinical Pilot Program

Seminars Presented

April 29, 2011 – “DHA Supplementation During Pregnancy and Fetal Cardiac Autonomic


February, 2011 – “Applications and Principles of Fetal Biomagnetometry,” REHS 863 Pathobiology of Human Function Graduate Course, KUMC.


**Academic Honors**

February 2011 – Faculty Travel Award

**Trainees**

Alexandrea Armfield – Undergraduate Student

Christopher Bryant – Undergraduate Student
Jeffrey M. Holzbeierlein, M.D.  John W. Weigel Endowed Associate Professor
Director of Urologic Oncology, Department of Urology
Member, Center for Reproductive Sciences

Dr. Holzbeierlein specializes in the treatment of genitourinary malignancies including prostate, bladder, kidney, testicular, and penile cancers. His research interest includes the androgen receptor as a target of Hsp90 inhibitors in prostate cancer and clinically decreasing the morbidity associated with cystectomy.

Committees

KUMC

Member - Executive Research Committee, Data Safety and Review Monitoring Board, Compliance Committee, Cancer Committee, Pensions and Benefits Committee, LCME Task Force Committee, Radiation Oncology Search Committee, Ophthalmology Chair Search Committee, Nominating Committee for the Medical Staff

National

Member - American Urological Association Practice Guidelines Committee, Public Relations and Media Committee for the American Urological Association, Young Urologist’s Committee for the American Urological Association, American Board of Urology Examination Committee

Chairman, Fellowship Committee for the Society for Urologic Oncology

Editorial and grant reviews


Trainees

Joshua Griffin – Fellow
Holly R. Hull, Ph.D., Assistant Professor  
Department of Dietetics and Nutrition  
Member, Center for the Developmental Origins of Health and Adult Disease

Dr. Hull’s research agenda revolves around two themes: examining factors that influence maternal cardiometabolic health during pregnancy and exploring maternal factors that impact fetal development and infant growth and health. Current research ongoing in Dr. Hull’s laboratory examines the influence of in utero hyperglycemia and maternal obesity on fetal growth and offspring adiposity and early growth, a second study examines the impact of maternal body composition, inflammation and fat patterning on infant body composition and a final study is a physical activity intervention to encourage appropriate weight gain in pregnancy.

Meetings Attended

March 30, 2011 – “Predictors of infant body composition when classified by birth weight categories,” Graduate Research Education and Technology (GREAT) Symposium, Oklahoma City, OK.


October 2011 – The Obesity Society Annual Meeting, Orlando, FL.

November 2011 – Building Interdisciplinary Careers in Women’s Health Annual Meeting, Washington, D.C.


Committees

National

Member - Dean’s Research Committee, OU Health Sciences Center; Statistical Sub-Committee, OU Health Sciences Center; Student Grant Sub-Committee, OU Health Sciences Center; Faculty Board, OU Health Sciences Center; By-Laws, OU Health Sciences Center; Academic Misconduct, OU Health Sciences Center; Rehabilitation Sciences Doctoral Admissions Committee, OU Health Sciences Center; Nutritional Sciences Doctoral Admissions Committee, OU Health Sciences Center; PhD Advisory and Development; Nutrition Clinic

Chair, Tenure Track Faculty Committee, OU Health Sciences Center

Editorial and Grant Reviews

Holly R. Hull, Ph.D. (continued)


Seminars Presented

January 14, 2011 – “Are mothers unknowingly shaping their children’s future health?” KUMC.

January 24, 2011 – “The influence of maternal adiposity on the changing metabolic profile during pregnancy,” Pediatric Metabolic Research Institute, College of Medicine, University of Oklahoma Health Sciences Center.

Trainees

Jessica Nunez – Graduate Student
Renna Crawford – Graduate Student
Sara Chandra – Graduate Student
Shengqi Li – Graduate Student
Debbie Obaden – Graduate Student
Cheng Li – Graduate Student
Emily Zans – Graduate Student
Rajasingh Johnson, M.Phil., Ph.D., HCLD (ABB) Assistant Professor
Department of Medicine, Division of Cardiovascular Diseases
Member, Center for Epigenetics and Stem Cell Biology

- Reprogramming of somatic cells to generate induced pluripotent (iPS cells) or multipotent stem cells and its therapeutic potential in regenerative medicines;
- Study the mechanisms of reprogramming by histone deacetylation and DNA methylation;
- Use of embryonic and adult stem cells in cardiovascular and lung vascular repair and regeneration.

Committees

National

Member, Basic Cell and Regenerative Cell Biology grant study section, American Heart Association

Judge, UIC Student Research Forum

KUMC

Member, Judge’s panel for KUMC Resident, postdoc and fellow research day

Editorial and Grant Reviews

Editorial Board Member, Advances in Life Sciences, Cell Science and Therapy, Journal of Immunology and Immunopathology Research, Indian Journal of Multidisciplinary Research


Ad hoc Grant Reviewer, NIH/NIA-SBIR Translational Research in Aging

Ad hoc Grant Reviewer, NIH/NIEHS- Environmental Stem Cell Research
Dev Karan, Ph.D, Assistant Professor
Department of Urology
Member, Center for Reproductive Sciences

- Prostate cancer biology
- Cancer immunology immunotherapy
- Inflammation
- Prostate tumor microenvironment

Meetings Attended

April 2-6, 2011 - 102nd AACR Meeting

May 13-17, 2011 - American Association of Immunologists

May 14-19, 2011 - American Urological Association

September 14-17, 2011 - South Central Section of the American Urological Association.

Editorial and Grant Reviews

Editorial Board Member, Journal of Andrology


Grant Reviewer - DOD-PCRP Panel; NIH (mail reviewer, challenge grants); Czech Science Foundation, Czech Republic; Sultan Qaboos University, Research and Innovation Affairs Department, Oman; Institutional Grant Funding, KUMC

Committees

Local

Member, IACUC at the VA, Kansas City, MO

Seminars Presented

Sarah L. Kieweg, Ph.D., Assistant Professor
Department of Mechanical Engineering-KU School of Engineering, Lawrence, KS
Member, Center for the Developmental Origins of Health and Adult Disease

Drug delivery of microbicides to the lower female reproductive tract for the prevention of HIV transmission; non-newtonian fluid mechanics; squeezing flows and gravity-driven flows; rheology; transport phenomena.contributions to the field of developmental origins.

Seminars Presented


Dr. S. Samuel Kim is an internationally renowned specialist in reproductive endocrinology and infertility. He has 20 years' experience in clinical reproductive medicine and surgery. Dr. Kim is also a highly-esteemed scientist whose reputation as a pioneer in ovarian tissue cryopreservation and transplantation has been recognized worldwide. He spearheaded the founding of the International Society for Fertility Preservation (ISFP), and currently serves ISFP as President. Dr. Kim is Division Director for Reproductive Endocrinology and Infertility at the University of Kansas and Medical Director for the Center for Advanced Reproductive Medicine. He received numerous scientific awards and has been lecturing around the world. In 2011, he published a comprehensive textbook, “Principles and Practice of Fertility Preservation”.

Meetings Attended

2011 – “Proteomic Technology for Investigation of Ovarian Cryopreservation,” ISFP World Congress in Miami Beach, FL.

Committees

KUMC

Member, KU Faculty Council

Member, OB/GYN Education Committee

Member, Department Resident Research Committee

National

Scientific Committee for the 2nd World Congress on Fertility Preservation

Editorial and Grant Reviews

Editorial Board Member, Public Library of Science (PLoS ONE), Journal of Assisted Reproduction and Genetics (JARG)

S. Samuel Kim, M.D., FACOG (continued)

Seminars Presented

2011 - “DNA damage/repair with ovarian tissue cryopreservation,” The 2nd World Congress on Fertility Preservation, Miami Beach, FL.

2011 – “Ovarian tissue cryobanking: from Edinburgh to Kansas City,” Reproductive Function and Dysfunction, Edinburgh, UK.

2011 – “Current Research and Clinical Practice of Ovarian Tissue Cryobanking,” Korean Society for Reproductive Medicine, Seoul, Korea,


Academic Honors

ASRM Star Award
Gregory S. Kopf, Ph.D., Associate Vice Chancellor for Research Administration
Executive Director, KUMC Research Institute
Professor, Department of Molecular and Integrative Physiology
Member, IRHRM Internal Advisory Board
Member, Center for Reproductive Sciences

My academic research interests have focused on invertebrate and mammalian fertilization, gametogenesis, and early events of egg activation. Much of this work was carried out as a faculty member in the Dept. of Obstetrics and Gynecology at the University of Pennsylvania School of Medicine. Prior to coming to KUMC, I was Assistant Vice President and Interim Vice President, Discovery at Wyeth Pharmaceuticals. In this capacity, I directed a drug discovery group responsible for the identification, validation and patenting of various targets for contraception and other disease areas in women's health (osteoporosis; reproductive disorders; urinary incontinence). My group was also involved in HTS assay development, compound testing, and lead optimization and I was also involved in various in- and out-licensing activities for Wyeth.

Committees

National

Member, Finance Subcommittee, Kansas University Center for Technology Commercialization
Chairman, Long Acting Injectable Contraceptive (LA6+) Technical Advisory Group, Family Health International
Participant, NICHD Vision Workshop on Reproduction

KUMC

Member - Committee to Evaluate the Performance of the Executive Vice Chancellor, Industry Relations Taskforce, Search Committee for the Director of the KU Center for Technology Commercialization, Executive Committee, Kansas IDeA Network of Biomedical Research Excellence (K-INBRE), Incentives and Awards Committee, Kansas IDeA Network of Biomedical Research Excellence (K-INBRE)

Editorial and Grant Reviews

**Gregory S. Kopf, Ph.D.** (continued)

*European Journal of Contraception & Reproduction Healthcare*

Advisory Board, *Zoological Science*

Associate Editor, *Zygote*

Grant Reviewer - National Institutes of Child Health and Development, National Cancer Institute, National Science Foundation, The Wellcome Trust, Human Frontier Science Program Organization, World Health Organization, March of Dimes, United States Department of Agriculture, United States - Israeli Binational Science Foundation, Medical Research Council of Canada, Swiss National Science Foundation, The Leverhulme Trust, Jeffress Memorial Trust Grant Reviewer, University of Iowa Diabetes and Endocrinology Research Center, The Arkansas Science and Technology Authority

**Seminars Presented**

November 4-7, 2011 – The 2011 Grand Challenges Meeting, New Delhi, India.

October 29-31, 2011 – The Future of Contraception Initiative, Seattle, WA.

Adam J. Krieg, Ph.D.  Assistant Professor
Department of Obstetrics and Gynecology
Member, Center for Epigenetics and Stem Cell Biology

The primary focus of our laboratory is the study of the transcriptional mechanisms activated in response to reduced cellular oxygen, or hypoxia. A significant proportion of hypoxic gene expression is mediated by the Hypoxia Inducible Factors (HIFs), transcription factors that induce the expression of genes important for anaerobic metabolism, blood vessel recruitment, cell motility, and stem cell maintenance. Of particular interest is the hypoxic expression of several histone demethylase genes by the HIFs. Since histone demethylases affect gene expression by modifying the chromatin of target genes, hypoxic regulation of this phenomenon creates an intriguing link between cellular microenvironment, HIF activation, and downstream cascades of gene expression that could prolong the initial cellular response to hypoxia. We are currently studying the functional consequences of hypoxic histone demethylase expression in the context of normal cell biology and in disease states ranging from cancer to intrauterine growth restriction.

Meetings Attended


Committees

Member, 2012 Greenwald Symposium Planning Committee

Seminars Presented

May 12, 2011 - “Analysis of Histone Demethylase Activity in Hypoxic Cancer Cells,” (Research Presentation) Annual External Advisory Committee meeting for NIH/NCRR COBRE: Molecular Recognition of Cell Development and Differentiation 5P20 RR024214. University of Kansas Medical Center, Kansas City, KS.

April 19, 2011 – “A Mouse Model to Evaluate histone Demethylase Function in Cancer and Development” (Research presentation) Maternal-Fetal Health Center, KUMC Institute for Reproductive Health and Regenerative Medicine, University of Kansas Medical Center, Kansas City, KS.

March 15, 2011 – “Functional Analysis of Histone Demethylase Activity in Hypoxic Cancer Cells” (Research Presentation) COBRE Lunch Seminar. University of Kansas Medical Center, Kansas City, KS.

Trainees:

Lei Qiu - Graduate Student
Judy Chapman - Postdoctoral Fellow
Sacha A. Krieg, M.D., Ph.D., FACOG  Assistant Professor  
Director of the Recurrent Pregnancy Loss Program  
Division of Reproductive Endocrinology and Infertility  
Department of Obstetrics & Gynecology  
Member, Center for Reproductive Sciences  

Pregnancy loss is the most common complication of human pregnancy, impacting approximately 10-15% of all human conceptions. While for most fertile couples miscarriage is a sporadic event, approximately 1-5% of fertile couples suffer from recurrent pregnancy loss (RPL), having a profound impact on their fertility and emotional well being. Although RPL has been attributed to several hematologic, anatomic, hormonal and genetic defects, more than 50% of cases remain classified as having unknown etiology. My research interests focus on this subgroup of patients, in particular patients who are at risk for having endometrial causes of early pregnancy loss. To date we have investigated decidual contributions to recurrent miscarriage via microarray analysis. We are beginning to further characterize dysregulated gene products both at a molecular level and in an in vitro model of trophoblastic invasion.

**Meetings Attended**

2011 – American Society for Reproductive Medicine

**Editorial and Grant reviews**

Ad hoc Reviewer - Reproductive Biology and Endocrinology, Gynecological Endocrinology

Reviewer, ASRM scientific program and abstract review committee

**Seminars Presented**


Melissa A. Larson, Ph.D., Research Assistant Professor
Department of Molecular and Integrative Physiology
Technical Director, Transgenic and Gene-Targeting Institutional Facility
Member, Center for Reproductive Sciences

Dr. Larson serves as the Technical Director of the Transgenic and Gene-Targeting Facility, a shared, core, research support facility providing a centralized service for the production of transgenic and gene-targeted mice for the investigators of KUMC and the surrounding Kansas City research community. The facility provides services that include the generation of transgenic mice by pronuclear microinjection, generation of chimeric mice by blastocyst injection, targeting of embryonic stem cells, sperm and embryo cryopreservation and genotyping of mice. The facility provides consultation on new projects and training and demonstration in microinjection, embryo transfer surgeries and ES cell culture. The lab is also investigating new technologies that improve the production and maintenance of gene-modified mice, as well as introducing new services and technologies to our users. In addition, Dr. Larson's laboratory has conducted experiments to determine whether a novel recombinase, Dre, functions in mice. Demonstration of its action has provided another tool to manipulate the mouse genome in vivo.

Meetings Attended

May 16-17, 2011 – “Advances in Reproductive Biology and Genetics,” Mizzou Advantage Conference, Columbia, MO.

October 23-26, 2011 – Transgenic Technology Meeting, International Society for Transgenic Technologies, St. Pete Beach, FL.

Committees

Departmental

Member, Molecular and Integrative Physiology Mentoring Website Committee

KUMC

Member, Institutional Animal Care and Use Committee

Member, Women in Medicine and Science Mentoring Committee

Member, Programmatic Sub-Committee of the IACUC
Eugene Lee, M.D., Assistant Professor
Department of Obstetrics and Gynecology
Member, Center for the Developmental Origins of Health and Adult Disease

Dr. Lee has recently completed his training in maternal-fetal medicine at the University of Colorado, and is pursuing a career in academic medicine under the WRHR training grant here at KUMC. The topic of his proposal is abnormal uterine contractility which manifests clinically as labor dystocia. The processes of cervical ripening, uterine activation, and electrophysiologic signaling and the coordination of them are topics of interest.
Benyi Li, Ph.D., Associate Professor
Director of Basic Science Research
Department of Urology
Member, Center for Epigenetics and Stem Cell Biology

Critical to the prevention and treatment of urologic cancers is basic science research. In the Urologic laboratory at Kansas University Medical Center we are investigating the various causes of cancer. Dr. Benyi Li, M.D., PhD. received training in molecular biology and prostate cancer research in China, Japan, and Baylor College of Medicine, Houston, TX. His interests focus on molecular pathways which cause prostate cancer to grow and metastasize. In addition, he has created an inducible Akt system to allow further study of the molecular mechanisms behind prostate cancer.

Meetings Attended


The 13th international symposium of Society of Chinese Bioscientists in America (SCBA) Guangzhou, China.

Sept 14-18, 2011 – “L-type calcium channel alpha 1D modulates androgen receptor signaling in prostate cancer cells,” Annual meeting, SCS AUA, San Antonio, TX.


Sept 14-18, 2011 – “Casein kinase 2 inhibition attenuates androgen receptor function and cell proliferation in prostate cancer cells,” Annual meeting, SCS AUA, San Antonio, TX.

Seminars Presented


July 26, 2011 – “A update on prostate cancer research, from bench to bed-side,” The 13th international symposium of Society of Chinese Bioscientists in America (SCBA), Guangzhou, China.
Benyi Li, Ph.D. (continued)

October 27, 2011 – “Non-coding RNA updates,” China Three George University, Yichang, China.

October 30, 2011 – “Long non-coding RNA in Gene regulation and human diseases Guangdong Medical College Hospital, Zhanjiang, China.

December 12, 2011 – “Phosphoinositide-3-Kinase Pathway in Androgen Receptor Signaling and Prostate Cancer Progression,” Creighton University Medical Center, Omaha, NE.

Trainees

Xing Zeng – Post Doctoral Student
Ruibao Cheng - Post Doctoral Student
Yun Li – Visiting Fellow
Clifford W. Mason, Ph.D. Research Assistant Professor
Department of Obstetrics and Gynecology
Member, Center for the Developmental Origins of Health and Adult Disease

The core of our research focuses on the pathopharmacology of the maternal-placental-fetal unit. Intrauterine infection is a major threat to mother and baby. It is associated with more than 50% of women who deliver prematurely and is implicated in fetal/neonatal neurological and respiratory damage. Our data indicate there are changes in drug transport proteins in placenta of women with infection and associated chorioamnionitis. Changes in placental transporters could result in altered fetal drug exposure leading to therapeutic insufficiency or drug toxicity. Our research addresses three core questions. First, how do pathophysiological responses to infection affect placental drug transporters? Second, do pathological changes in transporter expression levels correlate with placental drug transfer, and therapeutic outcome? Finally, what are the regulatory pathways that drive transporter expression and can pharmacoresistance to drugs be overcome by targeted inhibition of proteins within these pathways? Our laboratory seeks to test the hypothesis using mouse models of infection-induced chorioamnionitis. The results will help predict how pathophysiologic responses to infection during pregnancy alter placental transfer and therapeutic efficacy of drugs.

Meetings Attended

February 7-12, 2011 - “Molecular Assessment of the Myometrium During Preterm (PTL) and Term Labor (TL) Using Gene Expression and Biological Pathway Analysis,” Society for Maternal Fetal Medicine, San Francisco, CA.


November 16, 2011 - 2011 BIRCWH Directors and Scholars Meeting, Hilton Rockville Hotel and Executive Meeting Center, Rockville, MD.

November 17, 2011 - Eighth Annual Interdisciplinary Women’s Health Research Symposium, National Institute of Health, Bethesda, MD.
Renée S. Mijal, Ph.D., M.P.H., Assistant Professor
Department of Preventive Medicine and Public Health
Member, Center for the Developmental Origins of Health and Adult Disease

Trained in basic science and population-health sciences, I am interested in utilizing molecular tools in epidemiologic studies of reproductive health outcomes to improve measurement of exposures, refine classification of pregnancy outcomes and to better understand etiology. Areas of particular interest include: preeclampsia, preterm delivery and impaired fetal growth; measurement of environmental exposures; the study of the potential effects of environmental factors on reproductive/pregnancy outcomes; how one's pregnancy experience shapes and/or predicts later health outcomes; use of biomarkers in health-related research.

Meetings Attended

June 2011 - Society for Pediatric and Perinatal Epidemiologic Research Meeting. Montreal, Quebec, Canada.

June 2011 - Third North American Congress of Epidemiology Montreal, Quebec, Canada.

October 2011 – “Effect of smoking on human sperm parameters is modified by glutathione-S-tranferase (GST) T1 genotype,” Greenwald Symposium, KUMC.

October 2011 – “The effect of smoking on human sperm parameters on mid-pregnancy angiogenic marker levels among pregnancies ending in the delivery of small-for-gestational age (SGA) infants,” Greenwald Symposium, KUMC.

October 2011 - International Society of Exposure Science, Baltimore, MD.

Committees

KUMC

Member, Environmental Health Concentration Planning Committee
Member, Education Committee – Institute for Community and Public Health
Member, Greenwald Symposium Planning Committee

National

Member, Women in Medicine and Science Awards Committee

Editorial and Grant Reviews

Ad hoc Reviewer, Journal of Exposure Science and Environmental Epidemiology, Toxicology Letters, Society for Pediatric and Perinatal Epidemiologic Research
Renée S. Mijal, Ph.D., M.P.H. (continued)

Trainees

Ann Manzardo – Graduate Student
Anne Brammeier – Graduate Student
Jodi Gentry – Graduate Student
Christina Ciaccio – Graduate Student
Jennifer Goldman – Graduate Student
Ajay K. Nangia, M.B., B.S. Associate Professor
Clinical Director of Andrology
Department of Urology
Member, Center for Reproductive Sciences

Dr. Nangia's interests in the field of urology are micro-surgical reconstruction including vasectomy reversal, male infertility and male sexual/reproductive dysfunction. He is actively involved with research in male contraception, as well as the study of vitamin D in sperm/testicular physiology.

Meetings Attended


2011 – “How do the new 2010 WHO criteria for semen analyses affect those presenting to infertility clinics?”, SCS, AUA, Washington D.C.

2011 – “How do the new 2010 WHO criteria for semen analyses affect those presenting to infertility clinics?”, ASRM, Orlando, FL.

Committees

National

Male Infertility Chair, AUA Program Planning Committee, American Urological Association

Member - Executive Committee, American Society of Andrology; Resident Education Committee, American Society for Reproductive Medicine; AUA Reconstructive Surgery Steering Committee, American Urological Association; AUA Men’s Health Initiative Committee, American Urological Association; AUA Public Media Committee, American Urological Association; Member, Resident Prize Paper Committee, South Central Section of the AUA; Executive Committee of the Society for Assisted Reproductive Technology Research

Board Member, Health Policy Committee, South Central Section of the AUA

Peer Reviewer, AUA Vasectomy Guidelines Committee, American Urological Association

KUMC

Member, Student Promotions Subcommittee

Member, Election Committee

Member, EMR Advisory Committee

Member, Surgical Cohort Nominating Committee, UKPI

Departmental

Member, Ethics Committee, Urology Staff Liaison
Ajay K. Nangia, M.B., B.S.  (continued)

Faculty Member, Urology Resident Education Committee

Editorial and grant reviews

Editorial Board Member, Journal of Andrology, Journal of Assisted Reproductive Genetics


Seminars Presented

June 2011 – “Erectile Dysfunction,” Us Too – Prostate Cancer Awareness, KUMC

August 2011 – “Male Fertility and Sterility – what a gynecologist needs to know,” Grand Rounds, KUMC Dept. of OB/GYN

September 2011 – “Failed Vasectomy – The Gift that keeps on Giving,” South Central AUA Meeting, San Antonio, TX


November 2011 – “Microscopic Varicocelectomy,” RAMES 1st Annual Meeting, Orlando, FL

November 2011 – “All About Sex,” Plenary Session, Dept. of Health and Human Services, Kansas City

Warren B. Nothnick, Ph.D., H.C.L.D.  Associate Professor
Department of Obstetrics & Gynecology
Member, Center for Reproductive Sciences

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 and the use of miRNA therapy in the treatment of this disease, 2) the role of miRNAs in uterine decidualization 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 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

2011 – “Expression of miRNA-451 and Macrophage Migration Inhibitory Factor are Altered in Endometriotic Implants of Mice with Surgically-Induced Endometriosis” 58th Annual Meeting for the Society for Gynecological Investigation.

Committees

Departmental

Member, Lacey Luense (Doctoral candidate)

KUMC

Member, 3rd Floor Enrichment Committee, Institute for Reproductive Health and Regenerative Medicine

Member, The Gilbert S. Greenwald Reproductive Biology Symposium planning committee

Member, KUMC Animal Care & Use Program Task Force

Chairman, Institutional Animal Care and Use Committee (IACUC)

Chairman, DC Johnson Student Scholar Award Committee

Editorial and grant reviews

Ad hoc reviewer - American Journal of Obstetrics and Gynecology, Biology of Reproduction, Cancer, Current Medicinal Chemistry, Current Opinion in Molecular Therapeutics,
Grant Reviewer, PAR09-247 Ancillary Clinical Studies: Nephropathy and Urinary Incontinence, ZDK1 GRB-J (M4) 1, April 4, 2011 (Teleconference)

Grant Reviewer, NIH/NICHD U54 Specialized Cooperative Centers Program in Reproduction and Infertility Research (SCCPIR) Program

Editorial Consultant, American College of Physicians, Physicians’ Information and Education Resource (PIER) on Endometriosis

Managing Editor, Frontiers in Bioscience, Reproductive Medicine

Editorial Consultant, Physicians’ Information and Education Resource (PIER), American College of Physicians, Endometriosis Module

Member, Board of Reviewing Editors, Biology of Reproduction

**Academic Honors**

Soumen Paul, Ph.D., Assistant Professor
Department of Pathology and Laboratory Medicine
Member, Centers for Reproductive Sciences, Epigenetics and Stem Cell Biology, Developmental Origins of Health and Disease

Molecular Control of Early Lineage Development:
We are investigating the role of GATA family of transcription factors during early lineage specification, specifically on the development of Trophectoderm (TE) lineage. The hypothesis is GATA3 and GATA2 function is important for TE and trophoblast lineage development. We recently showed that both GATA2 and GATA3 are expressed in trophoblast stem (TS) cells. However, GATA3 is the most abundant GATA factor in TS cells. We showed that during early lineage commitment, GATA3 is expressed between 4 cell and morula stages, and later at the blastocyst stage it’s expression is restricted at the TE lineage. Our gain-in- and loss-of-function analyses revealed that GATA3 is important for TE-specific gene expression and also TE development. We are now studying the molecular mechanisms that regulate GATA factor function and the target genes that are regulated by GATA factors during trophoblast lineage development. We are also studying the epigenetic mechanisms that regulate and are regulated by GATA factors.

Transcriptional Mechanisms of endothelial cell development and function:
We are asking the transcriptional mechanisms that regulate endothelial cell specification during development and their function during adult angiogenesis. We are using both ES cell differentiation system and mouse models. The focus of our study is to understand how co-operative function of different transcription factors and epigenetic components regulate different stages of endothelial development and how their function differs during pathological angiogenesis. In addition, we are also asking the mechanisms through which these transcription factors regulate the global chromatin structures in endothelial cells during physiological and pathological angiogenesis.

Role of Protein Kinase C signaling in Stem Cell Pluripotency:
We found that inhibition of protein kinase C signaling maintains embryonic stem cell pluripotency. We are now asking down stream molecular mechanisms by which PKC signaling is dictating ES cell differentiation vs. pluripotency.

Meetings Attended

Committees
KUMC
Member, Organizing Committee of the 8th Annual Gilbert S. Greenwald Symposium on Reproduction

Editorial and grant reviews
Ad hoc Reviewer - Stem Cells, Journal of Molecular and Cellular Cardiology, Placenta, Journal of Biological Chemistry, Molecular Reproduction and Development
Soumen Paul, Ph.D. (continued)

Grant Reviewer, U54 Specialized Cooperative Centers Program in Reproduction and Infertility Research (SCCPIR), Reproductive Sciences, NICHD Pilot project grant, submitted in SCCPIR Center, Michigan State University

Seminars Presented

March 2011 – Invited talk, Kansas State University, Manhattan, KS

April 2011 – Invited talk, NICHD: Collaborative research group of NICHD on embryo implantation

Trainees

Nairita Roy – Graduate Student

Nathan A. Wilson – Rotational Graduate Student

Carrie A. Malcom – Rotational Graduate Student

Allen Chazelle – Rotational Graduate Student

Debasree Dutta – Postdoctoral Fellow

Pratik Home - Postdoctoral Fellow

Biswarup Saha - Postdoctoral Fellow

Partho Chattoraj - Postdoctoral Fellow

Ganeshkumar Rajendran - Postdoctoral Fellow
Red blood cells carry oxygen to tissues and organs throughout the body and ferry waste carbon dioxide from them to the lungs for exhalation. Hemoglobin is the molecule in red blood cells responsible for this transport and is comprised of two α-like globin chains, two β-like globin chains and four heme molecules. Many diseases of red blood cells, termed hemoglobinopathies, have been described. Sickle cell disease (SCD) affects red cell shape and renders them ineffective; resulting in anemia along with attendant complications. SCD is gene-derived; that is, it is caused by a single point mutation in the coding sequence of the adult β-globin gene. A second disease of these cells, β-thalassemia, also causes anemia. β-thalassemias result from an array of mutations in the β-globin locus that affect β-globin gene function. Gene therapy could aid in the replacement of the mutant globin gene and help cure these disorders.

The human β-globin locus consists of five functional β-like globin genes, all of which serve as the β-chain in the hemoglobin molecule during different stages of development. The ε-globin gene is expressed in the primitive yolk sac during the first six weeks of gestation; the Δγ- and γ-globin genes are transcribed in the fetal liver from the sixth week to shortly after birth; and the β- globin gene (and to a much lesser extent the δ-globin gene) is expressed in bone marrow soon after birth for the duration of life. The ε-globin and γ-globins are silenced in the adult. Introducing an active fetal γ-globin gene in the adult by bone marrow transplantation to substitute for a defective adult β-globin gene is one goal of current gene therapy efforts. Realizing this goal requires understanding the molecular mechanisms that regulate globin gene switching. Our laboratory is focused on the cis- and trans-control of human β-like globin gene expression during development; that is, the identification and characterization of DNA elements and transcription factors regulating globin synthesis via interaction of the proteins with these sequences. A major regulatory motif of this class is the locus control region (LCR). The mechanisms by which LCRs function are largely unknown, but it is becoming clear that they are important regulatory elements for developmental control of gene expression, not only for the β-globin locus, but for other mammalian loci as well. Mechanisms underlying the developmental regulation of globin gene switching that are under analysis in the lab include: 1) the sequence determinants of LCR-globin gene interaction and their specificity, 2) the function of the LCR DNase I-hypersensitive sites, 3) the physical structure of LCR-globin gene contacts, 4) the role of chromatin domain boundary elements within the β-globin locus, 5) γ-globin gene silencing - identification of both cis-acting silencer sequences and repressor proteins, and 6) activation of γ-globin gene expression - validation of putative, partially characterized protein activators, identification of novel transactivators, and testing of pharmacologic activators. Experimental systems involve analysis of transgenic mice and cell lines produced with human β-globin locus yeast artificial chromosomes (β-YACs) as transgenes, as well as the ancillary bacterial and yeast molecular biology procedures necessary to generate these mice and cell lines. In addition, we have established unique cell lines from the bone marrow and fetal liver of our β-YAC transgenic mouse lines using a novel system to enforce dimerization of growth signal transduction monomers into a functional molecule, resulting in multi-potential cell lines that proliferate, but do not differentiate. These will be used to select for novel hereditary persistence of fetal hemoglobin (HPFH) mutations, fetal globin transactivator proteins and for screening small molecule inducers of γ-globin gene expression. A variety of cutting-edge molecular biology and biochemistry techniques are used to study cis-regulation, protein-DNA, and protein-protein interaction aspects of gene expression during development within these systems.
Kenneth R. Peterson, Ph.D. (continued)

Meetings Attended


Committees

Departmental

Member, Graduate Committee
Chairman, Appointments, Promotions and Tenure Committee
Member, BMB KLSIC Space Advisory Committee

KUMC

Chair, Institutional Human Stem Cell Research Oversight Committee
Member, High Throughput Genomics Facility Advisory Committee
Chair, Advisory Board for Transgenic and Genetic Technologies Support Facility

Editorial and grant reviews


Grant Reviewer - Wellcome Trust grants, National Science Foundation grants, Special Emphasis Panel/Scientific Review Group 2011/05 HLBP, Workgroup 014, NHLBI P01 Review, NHLBI, 2011, Special Emphasis Panel/Scientific Review Group 2011/05 ZDK1 GRB-6 (M3) 1, Hemoglobinopathies Program Projects Teleconference, NIDDK

Guest Editor, Anemia, Sickle Cell Disease: Genetics, Cellular and Molecular Mechanisms, and Therapies special issue, 2011-2012.

Seminars Presented

2011 - “Transcriptional activation of γ-globin: The therapeutic approach for treatment of sickle cell disease,” Department of Anatomy and Cell Biology, University of Kansas Medical Center, Kansas City, KS.
Kenneth R. Peterson, Ph.D. (continued)

Trainees

Nathan Bushue, - Graduate Rotation Student

Allen Chazelle - Graduate Rotation Student

Prarthana Dalal – Summer Student

Yuliya Matskevych – Summer Student (High School)

Emily Binshtok – Summer Student (High School)

Julia Draper – Volunteer (Undergraduate)
Our research efforts have a dual focus 1) prevention of ovarian aging and chemotherapy and other ovarian toxicant induced infertility 2) prevention of breast and ovarian cancers through the characterization and antagonism of promising targets in human and animal chemoprevention trials. Early work showing ovarian follicular loss in polluted environments (i.e. dioxin) mediated by the aryl hydrocarbon receptor was the underpinning for later work indicating that tamoxifen may protect against follicular loss from alkylating agent chemotherapy. I was recruited to the Department of Medicine, Division of Hematology/Oncology in 2004 to collaborate on translational aspects of early prevention trials in breast and ovarian cancer. This included development of the first model of nearly simultaneous ER+ breast and ovarian pre-cancer which would be invaluable in assessment of risk and mechanism of action biomarker modulation for Phase II human prevention trials. In this manner investigators would be able to preview the effects of an intervention on the ovary as well as breast in a model which is hormonally analogous to a late premenopausal woman. During the validation of this model with the Selective Estrogen Receptor Modulator (SERM), tamoxifen, it was noted that tamoxifen could protect against carcinogen (DMBA) induced ovarian follicle loss and hence aid in preserving fertility. The observations were repeated for cyclophosphamide. The breast and ovarian cancer model itself is being used in a multi-PI multi-project Komen Promise Grant awarded in 2010. I have been instrumental in overseeing the development of more advanced molecular techniques to characterize biomarker change in breast chemoprevention trials from the small amounts of material available from random peri-aerolar fine needle aspirations including proteomics and stem cell markers, lipidomics, hormone measurements and gene expression after and laser capture micro-dissection. I have held a leadership position in the developing University of Kansas Cancer Center as coleader of Cancer Prevention since 2008.

Committees

Departmental

Member, Ad hoc research committee, Department of Internal Medicine

KUMC

Member, KUMC Institutional Animal Care and Use Committee; Kansas University Cancer Center, Protocol Review and Monitoring Committee; Kansas University Cancer Center, Shared Equipment Committee; Kansas University Cancer Center Leadership Council, 2008-present; KUCC ACS Training Grant Advisory Board, 2008-present

Program Coleader, University of Kansas Cancer Center Cancer Prevention and Survivorship

Vice Chair, KUMC Institutional Animal Care and Use Committee

Judge, KUMC Student Research Forum

Judge, KUMC Postdoctoral Research Forum

Scientific Director: Breast Cancer Prevention Laboratory, KU Medical Center
Local Service

Judge, Kansas Junior Science Association

Mentor, Kansas Science Pioneers

Editorial and Grant Reviews


Editorial Board Member - *Current Medicinal Chemistry*

North American Managing Editor - *Reproductive Biology*

Seminars Presented

June 3, 2011 – “Association of BRCA1 promoter methylation in triple-negative breast cancer (TNBC) with resistance to standard anthracycline-based adjuvant chemotherapy,” University of Kansas Cancer Center, Kansas City, KS.

Academic Honors

Chancellor’s Award for Distinguished Teaching, 2011
Philippe Prochasson, Ph.D., Assistant Professor
Department of Pathology and Laboratory Medicine
Member, Center for Epigenetics and Stem Cell Biology

Research in my laboratory is focused on understanding how chromatin remodeling complexes regulate chromatin structure and gene expression in the budding yeast, *Saccharomyces cerevisiae*.

Modulation of chromatin structure plays a central role in all the activities of the eukaryotic genome (e.g. gene expression, DNA replication, DNA repair, mitosis and meiosis). Chromatin structures can influence the binding and function of numerous proteins that collaborate in all these different events involving the genome.

We are mainly interested in the role played by two protein complexes that remodel chromatin structure and regulate gene expression with an emphasis on cell-cycle dependent transcription: (i) the SWI/SNF complex, an ATP-dependent chromatin remodeling complex, which was the first chromatin remodeling complex to be identified (ii) the HIR corepressor complex that I recently characterized as a novel nucleosome assembly factor.

The role of chromatin remodeling complexes, such as the SWI/SNF complex, is known to be broadly required for transcriptional regulation, but their specific roles in cell cycle-dependent transcription remain largely unknown. The recently characterized HIR corepressor complex, which constitutes a novel nucleosome assembly factor, plays also an important role in the regulation of gene transcription, especially on the cell cycle-dependent histone genes. I also identified a very unique feature of the HIR complex which can block SWI/SNF chromatin remodeling activity in vitro, highlighting a potential important role for gene regulation in vivo.

The goal of my laboratory is to gain a detailed understanding of mechanisms involving the yeast SWI/SNF chromatin remodeling complex and the HIR corepressor complex in gene expression and particularly in cell-cycle dependent transcriptional regulation. This will provide us with considerable insight into how the chromatin structure is regulated in a cell cycle dependent manner.

Furthermore, this work has wider implications in that the chromatin remodeling factors studied, SWI/SNF and HIR (human homologue HIRA), are important in the control of genes involved in development as shown by the embryonic lethality of the corresponding knock-out in mice. They are likely to play important role during stem cell differentiation and epigenetic regulation. Their involvement in carcinogenesis is well-documented and SWI/SNF complex is commonly referred as a tumor suppressor "complex".

Therefore, these studies are helping us to understand how perturbations in these processes affect gene transcription, cell cycle progression, and genetic instability which are important steps leading to human diseases including cancer.

Meetings Attended

June 21–June 24, 2011 – “Chromatin and Epigenetic Regulation of Transcription,” 30th Summer Symposium in Molecular Biology, Pennsylvania State University, University Park, PA.

Committees

KUMC
Philippe Prochasson, Ph.D. (continued)

Member - Ph.D. Committees for Lu Chen, Shuai Lu, Mohammad Hossain, Rushi Trivedi, Nairita Roy; Search Committee for the Viral Oncology Recruitment; IGPBS Advisory Board; IGPBS Admission Committee

Departmental

Member, Pathology Graduate Advisory Committee

Editorial and Grant Reviews


Trainees

Leandria Hancock – Postdoctoral Associate

Monica Ferreira – Postdoctoral Associate

Nidhi Vishnoi – Postdoctoral Associate

Amit Amin – Postdoctoral Associate

Yubai Zhao – Graduate Student
Evelyn A. Reynolds, M.D. is a specialist in gynecologic oncology and pelvic surgery. She completed her medical education and residency in obstetrics and gynecology at the University of Rochester School of Medicine in Rochester, NY. Following her residency, she completed a fellowship in pelvic surgery at Emory University in Atlanta, GA and held a faculty position at the same institution. She then joined the Mayo Clinic in Rochester, MN where she completed a fellowship program in gynecological oncology. Throughout her educational and professional career she has actively participated in cancer research. Dr. Reynolds has a particular interest in outcomes-based clinical research and the elimination of health disparities. Her current research involves the assessment of the treatment patterns of older women diagnosed with ovarian cancer.

Seminars Presented

May 11, 2011 – “Epithelial Ovarian Cancer Update: Screening and focus on tumor markers,” Visiting Lecture Series, University of Kansas Medical Center, Wichita, KS.

February 5, 2011 – “Gestational Trophoblastic Disease: Case Report and Review of this Rare Malignancy,” Combined Grand Rounds, Kansas Medical Education Foundation, Topeka, KS.
Katherine F. Roby, Ph.D., Research Associate Professor
Department of Anatomy and Cell Biology
Member, Center for Reproductive Sciences

The laboratory has two major areas of focus, ovarian biology and ovarian cancer. In regard to ovarian biology we are interested in understanding the cellular and molecular events controlling ovarian follicular development and ovulation. Specific interests focus on TNF, Src tyrosine kinase, and serum amyloid A. In regard to ovarian cancer, specific interests include defining the early molecular events associated with initiation of ovarian cancer, identification of targets for drug development, and the preclinical development of new therapies for the treatment of ovarian cancer. Ovarian cancer is primarily an intraperitoneal cancer and thus exhibits unique characteristics that can be exploited in treatment schemes. We have also extended our drug development/treatment studies to other cancers within the peritoneal cavity including disseminated colorectal cancer and mesothelioma.

Meetings Attended


Committees

KUMC

Member - Biostatistics/Informatic Shared Resource (B/ISR) Advisory Committee for the Kansas University Cancer Center; Organizing Committee, Gilbert S. Greenwald Symposium on Reproduction; Executive Research Board, Institute for Reproductive Health and Regenerative Medicine; Institutional Animal Care and Use Committee; Kansas Masonic Cancer Research Institute Membership Committee

Judge: Resident, Postdoc & Fellow Research Day

National

Member, Drug Discovery and Experimental Therapeutics Advisory Board Program

Editorial and Grant Reviews

Member - Review Panel, Pre- and Post-doctoral Biomedical Research Grant Program; American Cancer Society Institutional Research Grant Committee; Review Panel, Kansas University Cancer Center Pilot Project Grant; Review Panel, American Cancer Society Junior Faculty Grants; NIH, Cellular, Molecular and Integrative Reproduction Review Panel; Department of Defense, Congressionally Directed Medical Research Programs Ovarian Cancer Research Program Review Panel OC1 2005 – present; Scientific Advisory Panel, US Environmental Protection Agency. Reevaluation of the human health effects of atrazine. 2010, 2011

Ad hoc reviewer, Biology of Reproduction; International Journal of Cancer; Reproductive Toxicology; Reproduction Fertility and Development; Endocrinology; Journal of Reproductive Immunology; Journal of Reproduction and Fertility; Journal of Endocrinology and Metabolism; Cancer Letters; FEBS Letters; Reproduction;
Katherine F. Roby, Ph.D. (continued)

Toxicological Sciences; Reproductive Biology & Endocrinology; Toxicology and Applied Pharmacology; Oncology Reviews; Reproductive Sciences; Journal of Endocrinology; American Journal of Physiology Endocrinology & Metabolism; International Journal of Nanomedicine; Journal of Ovarian Research; Current Cancer Drug Targets; Journal of Proteome Research

Seminars Presented


March 9, 2011 - Presentation: Institute for Reproductive Health and Regenerative Medicine, Center for Reproductive Sciences Chalk Talk ‘Serum amyloid A and the ovary’.

April 27, 2011 - Presentation and Tour: Members of the Endowment Advancement Board.

June 14, 2011 - Presentation: Kansas high school science teachers summer externship; Statewide Area Health Education Center; University of Kansas Medical Center Outreach Department.

June 28, 2011 - Presentation: Kansas high school science teachers summer externship; Statewide Area Health Education Center; University of Kansas Medical Center Outreach Department.


Trainees

Jessica Johnson – Graduate Student

Caitlin Linscheid – Graduate Student
M.A. Karim Rumi, M.B.B.S., M.S., Ph.D. Research Assistant Professor
Department of Pathology and Laboratory Medicine
Member, Center for Epigenetics and Stem Cell Biology

Our laboratory is interested in the regulation of cell differentiation, especially as related to trophoblast stem cells, and signaling pathways controlling their developmental fate. We are also interested in species-specific reproductive adaptations to physiological stressors and signaling events involved in the establishment and maintenance of pregnancy; including investigations on the prolactin gene family, intrauterine inflammatory and immune cells, uterine vasculature, decidual cells, and the invasive trophoblast cell lineage.

Meetings Attended


Editorial and Grant Reviews

Ad hoc Reviewer - JoVE, Molecular Reproduction and Development
The focus of my research is to understand the pathogenetic mechanisms of craniofacial birth defects. Craniofacial malformations afflict about 5% of all infants born in the United States and comprise approximately one third of all birth defects. These anomalies result in significant medical, social and economic consequences. Orofacial clefts are one such common congenital facial defect that affects 1/800 live births. Cleft lip with or without cleft palate (CL/P) comprises the majority of orofacial clefts. The Center for Disease Control and Prevention (CDC) estimates that the lifetime cost for treating kids born each year with CL/P is over US$697 million. We have identified mutations in a novel cytoskeletal gene, SPECC1L, in patients with a severe manifestation of facial clefts that extend from the oral cavity to the eye - called oblique facial clefts (ObFC). Although less common, insights into the cellular and molecular mechanisms underlying ObFC will directly impact our understanding of more common facial malformations, including cleft lip and hemifacial microsomia.

Meetings Attended

2011 - American Society of Human Genetics 61st Annual Meeting, Montreal, Canada.

Seminars Presented

2011 - Oral Presentation, American Society of Human Genetics 61st Annual Meeting, Montreal, Canada.

2011 – Faculty of Dentistry, McGill University, Montreal, Canada.

Trainees

Nathan Wilson – Rotational Graduate Student
Chad Slawson, Ph.D. Assistant Professor
Department of Biochemistry and Molecular Biology
Member, Center for Epigenetics and Stem Cell Biology

Research Focus: To Understand the Regulation of the Post-Translational Modification O-GlcNAc During Growth and Development:

O-GlcNAc is the addition of a single N-acetyl-glucosamine residue to serine/threonine residues of proteins found in the cytoplasm or nucleus (O-GlcNAcylation). Unlike extracellular glycosylation, the sugar residue is not elongated into complex oligosaccharides and is processed dynamically in response to cellular stimuli by a single O-GlcNAc transferase (OGT) or O-GlcNAcase (OGA). O-GlcNAc is involved in many cellular processes such as nutrient sensing, stress response, transcription, translation, cell signaling, and cell cycle regulation. Currently, we are asking several questions to understand how O-GlcNAc regulates mitosis such as how is OGT targeted to specific structures at M phase as well as to specific substrates? What is the dynamics of O-GlcNAcylation throughout mitosis? What mitotic signaling pathways are regulated by O-GlcNAcylation? In order to ask these questions my laboratory uses a variety of techniques from cloning, western blotting, imaging, and mass spectroscopy.

Committees

Departmental

2011 Heartland Undergraduate Biochemistry Forum Committee
   KUMC

Eva Selfridge Dissertation Committee

Editorial Reviews

Ad hoc Reviewer - Journal of Biological Chemistry

Seminars Presented

November 17, 2011 - “Controlling Cell Growth and Development with Sugar!” Northwest Missouri State University, Department of Chemistry.

November 2, 2011 - “O-GlcNAc Signaling in Growth and Development,” University of Kansas, Protein-Structure Core

March 4, 2011 - “O-GlcNAcylation: A New Way to Regulate Mitosis,” Pittsburgh State University, Department of Chemistry.

Trainees

Nathan Bushue - IGPBS rotation student
Zhen Zhang - IGPBS rotation student
Anish Potnis - Summer Undergraduate
Melody Chambers - Summer Undergraduate
Nerves regulate function and structure of peripheral cells. Target cells in turn provide molecular signals that govern the quantity and type of innervation they receive. Our research examines this interplay between nerve and target and the factors that govern neuronal growth and degeneration. We are especially interested in how this relationship is affected by gonadal steroid hormones such as estrogen. Ongoing projects examine mechanisms and consequences of neuroplasticity in peripheral tissues including: reorganization of cardiac innervation following myocardial infarction, which may contribute to sudden cardiac death; estrogen-induced remodeling of innervation of the reproductive tract; mechanisms by which nerve projections are pruned under normal and pathophysiological conditions; and the role of estrogen in the etiology of female pain syndromes.

Committees

Departmental

Member, Graduate Student Advisory Committee

KUMC

Chair, cDNA Microarray Advisory Committee

Member, Laboratory Animal Resources Advisory Committee

Member, Research Committee, KUMC Research Institute

Chair, Research Institute Research Committee

Chair, Search Committee for Chair, Department of Microbiology, Molecular Genetics and Immunology

National

NIH - Ad Hoc Study Section service, Urologic and Kidney Development and Genitourinary Diseases; Molecular, Cellular, and Developmental Neuroscience; Neurological, Aging and Musculoskeletal Epidemiology; Brain Disorders and Clinical Neuroscience; and others.

Editorial and Grant Reviews

Editorial Board Member - Autonomic Neuroscience: Basic and Clinical

Peter G. Smith, Ph.D. (continued)


Grant Reviewer - Pennsylvania Department of Health, The Grant Workshop, Fonds zur Forderung der wissenschaftlichen Forschung (Austria Science Fund), Wellcome Trust, National Science Foundation, KUMC Center for Aging Research Review Committee, Feasibility Grants Competition, Claude Pepper Older Americans, Independence Center, Nathan Shock Center, & Alzheimer Disease Research Center, The Geriatrics Center, University of Michigan, KUMC School of Allied Health Research Committee, University of Calcutta School of Medicine, University of Vermont School of Medicine, Miami University, Oxford Ohio, KUMC Research Institute Lied Foundation, KUMRI Collaborative Research Grants (Chair), City University of New York, Oregon Health Sciences University, University of Missouri, Columbia

Seminars Presented


Academic Honors

North American Representative to the Executive Committee, International Society for Autonomic Neuroscience

Trainees

Tim Donohue - Graduate Student
Argenia Doss – Graduate Student
Eva Selfridge – Graduate Student
Aritra Battacherjee – Graduate Student
Gwenaelle Clarke – Postdoctoral Fellow
Our laboratory investigates specialized survival strategies used by the embryo as it grows within the uterus. Central to the embryo's survival is the formation of an organ derived from the embryo called the placenta. This organ gains access to the maternal blood supply and facilitates the delivery of nutrients to the fetus. We study how early stem cells develop into the placenta. We have learned that the placenta is built in response to cues present in the maternal environment; and diseases of pregnancy, such as pre eclampsia and intrauterine growth restriction, result when the embryo is not successful in its adaptations to the maternal environment. Inadequate in utero adaptive responses have potentially long-lasting impacts on adult health and disease.

Committees

KUMC

Member, Research Institute Technology Transfer Advisory Committee

Member, Dean's Basic Science Planning Committee

Member, High Throughput Genomics Facility Advisory Committee

Member, Advisory Committee for the Huron Changing for Excellence Project

Editorial and grant reviews

Board of Reviewing Editors, *Biology of Reproduction*

Honorary Editorial Board, *Reproductive Biology Insights*

Editorial Board, *Placenta*


Ad hoc Grant Reviews - National Science Foundation, United States Department of Agriculture, Medical Research Council of Canada, U54 Specialized Cooperative Centers Program in Reproduction and Infertility Research, (SCCPIR) – Pilot Project Grant Program, Albert
Michael J. Soares, Ph.D. (continued)

Einstein Medical Center, Border Biomedical Research Center, University of Texas-El Paso, Pennsylvania Department of Health, Swiss National Science Foundation

Seminars Presented

April 2011 - “Adaptations at the maternal-fetal interface,” Arkansas Children’s Nutrition Center, University of Arkansas School of Medicine.

May 2011 - “Natural killer cells, hypoxia, and trophoblast invasion,” International Conference on the Female Reproductive Tract, Frauenchiemse, Germany.

August 2011 - “Adaptations at the maternal-fetal interface,” Department of Obstetrics and Gynecology, University of Texas Medical Branch, Galveston, TX.


October 2011 - “Pathways controlling uterine spiral artery remodeling,” Department of Anatomy-Physiology Seminar Series, Kansas State University, Manhattan, Kansas.

December 2011 - “Adaptations at the maternal-fetal interface,” Magee Womens Research Institute, Pittsburgh, PA.

Trainees

Damayanti Chakraborty – Graduate Student

Pengli Bu – Postdoctoral Fellow

Stephen J. Renaud – Postdoctoral Fellow

Lindsey N. Kent – Postdoctoral Fellow

Kaiyu Kubota – Postdoctoral Fellow
Katherine Swenson Fields, Ph.D., Research Associate Professor  
Department of Anatomy and Cell Biology  
Member, Center for Epigenetics & Stem Cell Biology

The research focus of our lab, shared with Dr. Timothy Fields, is centered on the Wnt signaling pathways that regulate stem cell differentiation and proliferative disease progression. We are currently studying the roles of the Wnts in human polycystic kidney disease. We have found that the cystic tubule epithelial cells from these patients have increased expression of the non-canonical Wnt, WNT5A, and have uncovered evidence that this Wnt acts to promote proliferation and cyst formation, thereby promoting disease progression. My current efforts are focused on directing this project to understand the stimulus that induces the upregulation of this Wnt in polycystic kidney disease, to identify the ensuing pro-proliferative signaling pathways that are triggered and to design, produce and validate specific Wnt signaling inhibitors for use as therapeutic interventions.

Meetings Attended


2011 – “Wnt5a, Which is Upregulated in ADPKD Cyst Epithelial Cells, Promotes Activating Phosphorylation of NFkB in vitro,” FASEB Summer Conference: Polycystic Kidney Disease, From Bench to Bedside, Saxtons River, VT.

Academic Honors

2011 – Research Institute Travel Award

Trainees

Sally Salah – Graduate Student
Russell H. Swerdlow, M.D., Professor
Departments of Neurology, Molecular & Integrative Physiology, Biochemistry & Molecular Biology
Director, Alzheimer's Disease Center
Director, Neurodegenerative Disease Program
Member, Center for Epigenetics and Stem Cell Biology

Dr. Russell Swerdlow is a physician-scientist at the University of Kansas. He has studied Alzheimer's disease for approximately 25 years and is recognized for his contributions to the Alzheimer's disease research field. He directs the NIH-funded University of Kansas Alzheimer's Disease Center, serves as an attending physician at the Kansas University Medical Center's Memory Disorders Clinic, directs the Kansas University Medical Center's Neurodegenerative Disorders Program, and is a Professor in the Departments of Neurology, Molecular and Integrative Physiology, and Biochemistry and Molecular Biology at the University of Kansas School of Medicine.

Dr. Swerdlow received his undergraduate and doctor of medicine degrees from New York University. He trained as a neurologist and Alzheimer's disease specialist at the University of Virginia, co-founded the University of Virginia's Memory Disorders Clinic, and participated in pivotal clinical trials for most FDA-approved Alzheimer's disease medications. Before leaving Virginia for Kansas in 2007, Dr. Swerdlow chaired the Alzheimer's Disease and Related Disorders Commission of the Commonwealth of Virginia. He is a recipient of an S. Weir Mitchell Award from the American Academy of Neurology, a Cotzias Award from the American Parkinson's Disease Foundation, and several grant awards from the National Institutes of Health. He has served as the Research Committee Chair of the CurePSP Foundation; is on the editorial board of several research journals including the Journal of Alzheimer's Disease; and frequently sits on NIH, Veteran's Administration, and non-profit research foundation study sections.

In addition to his clinical duties, Dr. Swerdlow studies brain energy metabolism and the role brain energy metabolism plays in Alzheimer's disease and other neurodegenerative diseases. He was the first to propose using ketone bodies to improve brain energy metabolism in Alzheimer's disease patients, presaging the development of this now-utilized Alzheimer's disease treatment approach. His laboratory is actively working on new ways to manipulate brain energy metabolism. The goal of this work is to create new and effective treatments that will hopefully help people with Alzheimer's disease.

Seminars Presented

2011 - “Bioenergetic Manipulation,” Department of Biochemistry and Molecular Biology, University of Kansas School of Medicine, Kansas City, KS

2011 - “Alzheimer’s Disease, Mitochondria, and Mitochondrial Medicine,” Clinical and Translational Seminar Series, Kansas University Medical Center, Kansas City, KS.

2011 - “The University of Kansas Alzheimer’s Disease Center,” Kansas University Medical Center Research Institute, Kansas City, Kansas.

2011 - “Aging, Alzheimer’s Disease and Mitochondria,” Landon Center on Aging Aging, Health, and Dementia Research Seminar Series, Kansas University Medical Center, Kansas City, Kansas.
Russell H. Sweardlow, M.D. (continued)

2011 - “Mitochondria in Alzheimer’s Disease,” University of Coimbra Center For Neuroscience and Cell Biology, Coimbra, Portugal.


2011 “Diagnosing Alzheimer’s Disease,” Southeast Kansas State Medical Society CME Meeting, Coffeyville, KS.

2011 “Diagnosing Alzheimer’s Disease,” Flint Hills Medical Society CME Meeting, Newman Regional Health Center, Emporia, KS.

2011 “Diagnosing Alzheimer’s Disease,” Via Christi Hospital CME Meeting, Pittsburg KS.

2011 “The Quest for Cures: Stem Cells and a Healthier Tomorrow,” MissouriCures, Kansas City, Missouri.

2011 “Cell Bioenergetics: A Potential AD Therapeutic Target?” Kansas City University of Medicine and Biosciences, Kansas City, Missouri.

2011 “Cell Bioenergetics: A Potential AD Therapeutic Target?” University of Missouri - Kansas City, Kansas City, Missouri.


Committees

Departmental

Chair, Neurology Faculty Development Committee

Member, Institute for Neurologic Disorders Internal Advisory Committee

Member, Institute for Neurologic Disorders Executive Committee

KUMC

Member, Institutional Animal Care and Use Committee

Member, Center Directors and Departmental Chairs Executive Committee

National

Member, Research Committee, CurePSP Foundation for PSP/CBD and Related Diseases, Baltimore, Maryland
Russell H. Swerdlow, M.D. (continued)

Editorial and grant reviews


Grant Reviewer - Alzheimer’s Association, Arkansas Science and Technology Authority Basic Research Program, High Q Foundation, Human Frontier Science Program, Strasbourg, France, NIH: Brain Disorders and Clinical Neurosciences (BDCN), NIH: NIEHS Special Emphasis Panel, NIH: Udall Centers ZNS1-SRB-M Review Group, NIH: ZRG1 CDIN study section, NIH: Neurological Sciences and Disorders B study section, NIH: ZNS1 SRB-E 25 study section, NIH: NHLBI Intramural Research Program Review, NIH: NOMD study section, NIH: CMAD study section; NIH: ZRG1 EMNR-Q (50), National Health and Medical Research Council (NHMRC) of Australia, Oregon Partnership for Alzheimer’s Research, Portuguese Science and Technology Foundation, Telethon Foundation (Italy), United States Civilian Research and Development Foundation for the Independent States of the Former Soviet Union, University of Arizona Alzheimer’s Disease Core Center Pilot Program, Veterans Affairs Merit Review Neurobiology D, Virginia Center on Aging Alzheimer’s and Related Diseases Research, Award Fund, Wellcome Trust (Great Britain)
Trainees

Eva Selfridge – Graduate Student
Karthik Chellamathu – High School Student
Lezi E - Graduate Student
Diana Silva - Graduate Student
J. Brantley Thrasher, M.D., F.A.C.S.  Professor and the William L. Valk Chair
Department of Urology
Member, Center for Reproductive Sciences

Dr. Thrasher's basic science research interest is in the area of prostate cancer and he is currently a co-investigator or consultant in NIH, Center for Disease Control, and Department of Defense funded research. His clinical research interests are in the area of prostate, bladder, and renal cancer, as well as reconstruction, and he serves as the principal investigator on numerous investigator initiated, industry funded, and institutionally funded protocols.

Committees

National

Member - AUA Board of Directors Male Health Task Force, AUA Board of Directors Urinary Reconstruction Steering Committee, AUA Board of Directors, American Board of Urology, Ultrasound Task Force, Residency Review Committee for Urology, American College of Radiology Expert Advisory Panel on Early Stage Cancer of the Prostate, EVC Leadership Advisory Group to Community Partnerships Initiative, Kansas State Budget Allocation Committee, Clinical Consultant, Scientific Committee for the Kansas IDeA Networks of Biomedical Research Excellence (K-INBRE)

Chairman, American College of Surgeons Metro Kansas City Committee on Applicants

Seminars Presented

September 16, 2011 – “Dual Antigen Target-Based Immunotherapy for Prostate Cancer Eliminates the Growth of Established Tumors in Mice,” 90th Annual Meeting, South Central Section Meeting, American Urological Association, San Antonio, TX

September 15, 2011 – “Pharmacokinetic Data for Docetaxel in A Phase II Clinical Trial of Neoadjuvant Ketoconazole and Docetaxel Chemotherapy Prior to Radical Prostatectomy in High Risk Patients,” 90th Annual Meeting, South Central Section Meeting, American Urological Association, San Antonio, TX

September 15, 2011 – “Calcium Channel Blocker Modulates Androgen Receptor-Mediated Gene Expression and Induces Cytotoxicity in Prostate Cancer Cells,” 90th Annual Meeting, South Central Section Meeting, American Urological Association, San Antonio, TX

September 15, 2011 – “Herniation of Colon Between Abdominal Muscle Layers Presenting as Urinary Retention in Patients with Ileal Neobladder,” 90th Annual Meeting, South Central Section Meeting, American Urological Association, San Antonio, TX

April 19, 2011 – “Prostate Cancer: Know your Risk, Understand your Options,” Overland Park Convention Center, Kansas City, KS
J. Brantley Thrasher, M.D., F.A.C.S. (continued)


March 8, 2011 – “Radical Prostatectomy: Comparison of Open vs Robotic Approach,” Prostate Cancer Awareness in Kansas City, Ruth’s Chris Steakhouse, Kansas City, MO
The controlled expression of genes during development is of fundamental importance in the differentiation of eukaryotic cells. My research concerns the molecular basis of cellular differentiation using the developing kidney as a model. We are, in particular, interested in the role of a novel homeobox gene, called Cux-1, which functions as a transcriptional repressor of genes specifying terminal differentiation in multiple cell lineages. In the kidney, Cux-1 is expressed in early developmental stages, but is sharply down regulated when cells undergo terminal differentiation. Previous studies from my laboratory demonstrated that preventing the normal down regulation of Cux-1 in transgenic mice results in abnormal cell proliferation. We have determined that Cux-1 regulates the cell cycle during kidney development by repressing the gene encoding the cyclin kinase inhibitor, p27. Moreover, we have found that the ectopic expression of Cux-1 results in glomerulosclerosis. Additional studies from my laboratory have shown that Cux-1 is ectopically expressed in two different mouse models of polycystic kidney disease. Recent studies from my laboratory have revealed that Cux-1 is upregulated by Notch-1 and interacts with the corepressor TLE-4, suggesting that Cux-1 is an effector of the Notch signaling pathway. Our current studies are directed towards identifying the molecular mechanism by which Cux-1 regulates p27 expression, and determining the role of Cux-1 in polycystic kidney disease.

Committees

KUMC

Member, Ph.D. Thesis Committee for Naveen Neradugomma, Ram Kannan, Kyle Jansson; Executive Committee, Kidney Institute; Biomedical Fellowship Selection Committee; Peter T. Bohan Lecture Committee; IGPBS Curriculum Committee

Alternate Member, IACUC

Editorial and Grant Reviews


Trainees

Binu Paul – PhD Student
Karen Tamano – Post Doctoral Fellow
Jay L. Vivian, Ph.D., Assistant Professor
Department of Pathology and Laboratory Medicine
Member, Center for Epigenetics and Stem Cell Biology

My research uses the mouse as a genetic, stem cell, and developmental system to study signaling during embryonic development. My group also makes substantial use of mouse embryonic stem cells for genetic engineering and as a model for regulation of gene expression and early embryonic differentiation. My group is interested in understanding the signaling pathways and genetic hierarchies that regulate gene expression and stem cell self-renewal in embryonic stem cells. My work utilizes mutant and transgenic mouse models for our studies. We also use and generate human induced pluripotent stem cells to both model human disease including congenital developmental disorders, and as a source for cellular therapies for spinal cord injury.

Meetings Attended


July 2011 – “Nodal-related signaling functions in stem cell maintenance,” SDB Annual Meeting, Chicago IL.

Committees

KUMC

Member, 2011 Greenwald Symposium Planning Committee; Member, KUCC Shared Resource Committee; Member, Laboratory Animal Resource Center Advisory Committee; Member, Human Stem Cell Advisory Committee; Member, Ad Hoc Investigation Committee on Research Misconduct

Editorial and Grant Reviews

Ad hoc Reviewer, Molecular and Cellular Proteomics, Journal of Assisted Preproduction and Genetics, Journal Editorial service

Editorial Board Member - America Journal of Stem Cell Research, Cloning and Transgenesis

Seminars Presented

July 2011 – “Nodal signaling in stem cell maintenance,” Northwestern University, Children’s Memorial Hospital.

Trainees

Jessica Copeland – Graduate Student

Katherine Burgess – Postdoctoral Fellow
The Harrington Laboratory for Molecular Orthopedics, which is primarily supported by NIH grants and the Mary Alice and Paul R. Harrington, M.D. Distinguished Professorship Endowment, was established in 2005. The laboratory is well equipped for conducting research involving biochemistry, cell biology, and molecular biology of skeletal tissues. Our major research interests are to study the regulatory mechanisms by which pluripotent mesenchymal stem cells differentiate into osteoblasts (bone-forming cells) or chondrocytes (cartilage-forming cells) and investigate the role of specific signaling pathways in bone/cartilage regeneration and diseases. Currently, research in our laboratory is focused on the following projects: (1) the role of bone sialoprotein (BSP) in osteoblast differentiation and bone regeneration, (2) molecular regulation of chondrocyte differentiation and articular cartilage regeneration, and (3) pathogenetic mechanisms and novel therapeutics for osteoarthritis.

Meetings Attended


March 31, 2011 – “Nfat1 is a critical transcription factor for regulating the function of adult articular chondrocytes,” 33rd Annual Student Research Forum, KUMC

May 5, 2011 – “Transcription factor Nfat1 and posttraumatic osteoarthritis in mice,” 2011 KU Medical Center Resident Research Day

September 16, 2011 – “Nfat1 deficiency is a risk factor for the development of posttraumatic osteoarthritis,” 2011 Annual Meeting of Kansas Orthopedic Society, Kansas City, KS

Committees

Departmental

Member, Research Committee

KUMC

Member, Institutional Animal Care and Use Committee (IACUC)

International

Board Director, International Association for Biological and Medical Research (IABMR)

Editorial Board, Scientific World Journal
Jinxi Wang, M.D., Ph.D. (continued)

Editorial and Grant Reviews

Abstract Reviewer, 2012 Annual Meeting of the Orthopedic Research Society (ORS, USA)

Reviewer, *Calcified Tissue International*

Editorial Board, *International Journal of Clinical and Experimental Medicine*

Grant Reviewer, NIH Skeletal Biology Structure and Regeneration (SBSR) Study Section

Seminars Presented

March 25, 2011 – “Transcription factor NFAT1 Deficiency and osteoarthritis,” Rush University Medical Center, Chicago, IL

September 23, 2011 – “The role of Wnt and BMP signaling pathways in bone sialoprotein-mediated osteogenesis,” Stowers Institute for Medical Research, Kansas City, MO

November 30, 2011 – “Mechanisms of bone sialoprotein-specific osteogenic action,” School of Dentistry, University of Missouri, Kansas City, MO

Academic Honors

The Mary A. & Paul R. Harrington, MD, Distinguished Professorship in Molecular Orthopedics
Carl P. Weiner, M.D., M.B.A, Associate Director, Institute for Reproductive Health and Regenerative Medicine
Director, Center for Developmental Origins of Health and Adult Disease
K.E. Krantz Professor and Chair
Department of Obstetrics and Gynecology

Dr. Weiner's laboratory investigative interests focus on the regulation of uterine quiescence during pregnancy, impact of chronic fetal hypoxia, and the discovery, interpretation, and application of biomarkers for reproductive pathology. His laboratory has multiple firsts in the application of proteomics, genomics and transcriptomics to reproductive science. Dr. Weiner is a strong advocate of the strategic linking of clinical and basic research, and is the founder and President of Perinet Inc., a biomedical development company created to facilitate the development of his laboratory's findings.

Meetings Attended

February 2011 - “Role of Amniotic Fluid Nitric Oxide (NO) and Total Antioxidant Capacity (TAC) on Cervical Incompetence (CI).” Society for Maternal Fetal Medicine, San Francisco, CA.

February 2011 - “Molecular Assessment of the Myometrium During Preterm (PTL) and Term Labor (TL) Using Gene Expression and Biological Pathway Analysis,” Society for Maternal Fetal Medicine, San Francisco, CA.


Committees

KUMC

Member - Executive Committee, Executive Vice Chancellor’s Advisory Committee, BIRCWH Internal Advisory Committee, Medical Executive Committee, University of Kansas Physicians Inc. Board of Directors

Departmental

Member, Obstetrics and Gynecology Education Committee

National

Member, Blue Cross Blue Shield of Kansas City Medical Advisory Committee

Editorial and Grant Reviews

Carl P. Weiner, M.D., M.B.A., (continued)


Section Editor, *Prenatal and Neonatal Medicine,* Section Editor for Pharmacology and Anesthesia

Associate Editor, *Fetal and Maternal Medicine Review*

Editorial Board, *Fetal Diagnosis and Therapy*

**Seminars Presented**

June 26-30, 2011 - “Prediction of Preterm Birth from Second Trimester Maternal Plasma Samples,” 10th World Congress in Fetal Medicine, Malta.

June 26-30, 2011 - “Chronic Fetal Hypoxia and Brain Injury: The fall of Dogma,” 10th World Congress in Fetal Medicine,” Malta.

September 30, 2011 - “Chronic Fetal Hypoxia and Brain Injury: The fall of Dogma,” Sun Yat-sen University School of Medicine, Guanzhou, China.

October 3, 2011 - “Chronic Fetal Hypoxia and Brain Injury: The fall of Dogma,” Jiaotong University School of Medicine, Xian, China.

**Academic Awards**

September 9-23, 2011 - Visiting Professor, Hue Medical College, Hue Vietnam

**Trainees**

Clifford Mason – Postdoctoral Fellow

Zheng Wang – Postdoctoral Fellow
**Mark L. Weiss, Ph.D.** Professor  
Department of Anatomy and Physiology – Kansas State University  
Adjunct Professor, KUMC, Dept. of Physiology  
Associate member, KUCC  
Associate Director, Terry C. Johnson Center for Basic Cancer Research  
Founding Fellow, Midwest Institute for Comparative Stem Cell Biology  
Center for Epigenetics & Stem Cell Biology

Weiss’ research focus is on stem cell biotechnology. His lab successfully produced various stem cell lines such as rat embryonic stem cells and cells derived from umbilical cord or other tissues with the intent of using this technology to advance cellular therapy and regenerative medicine. His lab investigates promising cellular therapeutics for regenerative medicine. For example, mesenchymal stromal cells have been tested in a variety of rodent preclinical disease models including neurodegenerative diseases such as Parkinson’s disease, heart disease such as myocardial infarction, and cancer. Based upon the immune properties of Wharton’s jelly derived mesenchymal stromal cells, Weiss’ lab is testing them for treating graft versus host disease.

In addition, the Weiss lab focuses upon the mechanisms of pluripotency in rat embryonic stem cells. Weiss’ lab is producing new rat models of human disease using gene targeting in rat embryonic stem cells.

**Meetings Attended**

ISSCR, Toronto, Ontario  
Greenwald Symposium, Kansas City, KS

**Committees**

**KSU**

Member, CVM College Graduate Advisory Committee  
Member, CVM College Research Committee  
Member, CVM Biosecurity Committee

**Other**

Member, Kansas Citizens for Science Committee  
Scientific Advisory Board Member, Parent’s Guide to Cord Blood Foundation

**Editorial and Grant Reviews**

Grant Reviewer, Maryland Stem Cell Research Review Committee  
Editorial Board, *The Open Stem Cell Journal*, Recent Patents on Regenerative Medicine
Mark L. Weiss, Ph.D. (continued)

Seminars Presented

February 2011 - “Use of Wharton’s jelly-derived mesenchymal stromal cells for GVHD – a review,” University of Kansas, Dept. of Anatomy

September 2011 – “Progress using induced pluripotent cells for neurological disease,” Northeast Kansas Parkinson’s Association, Topeka, KS

September 2011 – “Science Café, The Promise of Stem Cells,” Manhattan, KS

Trainees

Jason Orr – Undergraduate Student
Kristin Whiteside – Undergraduate Student
Joseph R. Smith – Undergraduate Student
Phuoc Bui – Undergraduate Student
Elizabeth Trevino – Undergraduate Student
Benjamin Ryba-White – Undergraduate Student
Katrina Fox – DVM
John Hirt – DVM
Yelica Lopez – DVM
Zongning (Adam) Miao – Postdoctoral Student
Pavan Rajanahalli – Postdoctoral Student
Michael W. Wolfe, Ph.D.  Associate Professor
Department of Molecular and Integrative Physiology
Member, Center for the Developmental Origins of Health & Adult Disease

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

Meetings Attended

September 22-23, 2011 – 8th Annual Gilbert S. Greenwald Symposium

Committees

Departmental

Member and Co-Director of the Physiology Graduate Student Advisory Committee

KUMC

Member - dissertation committees (Physiology, Pathology), Graduate Council, SOM IGPBS admissions committee, SOM Elections committee, IACUC, IACUC programmatic sub-committee, research misconduct inquiry committee, Nominations Committee, Society for the Study of Reproduction

Chair, By Laws Committee, Society for the Study of Reproduction

Chair, 8th Annual Gilbert S. Greenwald Symposium on Reproduction

Editorial and grant reviews

Editorial Board, Journal of Endocrinology
Thomas M. Yankee, Pharm.D., Ph.D., Associate Professor
Department of Microbiology, Molecular Genetics, and Immunology
Member, Center for Epigenetics and Stem Cell Biology

T cell homeostasis is critical for maintaining the balance between immune competency, autoimmunity, and malignancy. To maintain a steady state number of T cells, we need to continuously produce new T cells to offset the number of T cells that die or differentiate. Our research is focused on the signaling pathways that regulate T cell development and activation. In particular, we study an adaptor protein called Gads and seek to understand the biochemical and biological functions of Gads.

Gads consists of an N-terminal SH3 domain, an SH2 domain, a linker region, and a C-terminal SH3 domain. The SH2 and C-terminal SH3 domains bind LAT and SLP-76, respectively. The formation of the LAT/Gads/SLP-76 complex is required for TCR-mediated calcium mobilization. Whether Gads regulates other signaling pathways is currently unknown. In addition, the functions of the N-terminal SH3 domain and the linker region are unclear. Gads can also be phosphorylated, but the biological function of this phosphorylation is unclear.

The biological functions of Gads can be divided into two areas: T cell development and T cell activation. T cell development is an ordered series of stages that culminates in the generation of a diverse T cell repertoire with limited ability to recognize self-antigens. Gads is required for the two stages of T cell development that correspond to the stages at which the two chains of the T cell receptor are generated. Defects in these stages can lead to immune deficiency or autoimmune disease. The second area of interest is T cell activation. Although Gads appears to have the same biochemical function in CD4+ T cells and CD8+ T cells, the biological effects of Gads-deficiency are different in these populations. CD4+ T cells fail to survive without Gads while CD8+ T cells are only mildly impaired without Gads. Using an infection model, we showed that Gads is required for optimal expansion of CD8+ T cells, but not for the differentiation of CD8+ T cells into effector or memory cells.

Meetings Attended


April 29 – May 1, 2011 – “Identification and characterization of novel B cell subsets in pediatric tonsil tissue,” Annual American Society of Pediatric Otolaryngology, Chicago, IL.

Committees

KUMC

Member, Academic Committee, Students Promotions Subcommittee
Vice-Chair, University of Kansas Medical Center Research Committee
Chair, University of Kansas Medical Center Research Committee
Alternate scientific member, IACUC
Thomas M. Yankee, Pharm.D., Ph.D. (continued)

Departmental

Member, Graduate Affairs Committee

Member, Promotion and Tenure Committee

Editorial and Grant Reviews

Grant Reviewer, Study Section, Italian Ministry of Health

Grant Reviewer, Study Section, Norman Hackerman Advanced Research Program

Trainees

Elizabeth Zhang - Graduate Student

Julie Mitchell - Graduate Student

Ashraf Hassaballa - Postdoctoral Fellow
Renal tubule transport of salts, minerals and water Paracellular transport, and the role of tight junction proteins Disorders of mineral metabolism (calcium and magnesium)

**Claudins and paracellular transport**

A current focus of the laboratory is to understand the molecular and structural basis of paracellular epithelial transport and its regulation. Paracellular transport refers to transport *in between* cells. It is now well-recognized that paracellular transport is a major route for vectorial transport of solutes and water. The rate-limiting step in paracellular transport (the paracellular "barrier") is constituted by the tight junction, which is the most apical of the intercellular junctions. Tight junctions consist of large complexes of multiple different proteins. The claudins are a novel family of tight junction proteins that are postulated to form paracellular ion channels. If correct, claudins would likely be structurally and biophysically different from any known ion channels. There are at least 20 different claudin isoforms, raising the exciting possibility that isoform-specific expression may be responsible for the variability in paracellular permeability properties of different epithelial tissues. Investigation of claudin physiology promises to reveal novel insights into the pathogenesis of clinical renal diseases associated with disturbances of the paracellular barrier, such as oliguric acute tubular necrosis, ischemic allograft dysfunction, and certain forms of salt-sensitive hypertension, including pseudohypoaldosteronism, Type II (Gordon's syndrome). We are currently actively investigating the function of these proteins by overexpressing them in cell culture monolayers and performing electrophysiological and tracer flux measurements in Ussing chambers, and by site-directed mutagenesis of key residues in the putative pore-lining region.

**WNK kinases and renal tubule NaCl reabsorption**

WNK1 and WNK4 are serine-threonine kinases that regulate transcellular and possibly paracellular salt transport in the distal renal tubule. Mutations in these kinases cause pseudohypoaldosteronism, Type II (PHAII), which is characterized by salt-sensitive hypertension with hyperkalemia. WNKs seem to have broad regulatory roles in the distal tubule epithelium, but the mechanism underlying the pathogenesis of PHAII is still incompletely understood. We are currently exploring the substrates of WNK4 phosphorylation. In collaboration with Dr. Alicia McDonough in the Department of Cell and Neurobiology, we are investigating the role of angiotensin II and reactive oxygen species in the regulation of a key downstream effector of WNK kinases, the thiazide-sensitive NaCl cotransporter, NCC.

**Meetings Attended**


**Committees**

National

Member, American Society of Nephrology Nominating Committee
Alan S. L. Yu, M.B., B.Chir. (continued)

Member, NIGMS Protein Structure Initiative Biology Network Steering Committee

Member, USC Internal Medicine Resident Research Proposals Review

Member, Advisory Committee, USC Clinical and Translational Science Institute (CTSI), Center for Human Studies

Editorial and Grant Reviews

Section Editor, Current Opinion in Nephrology and Hypertension

Editorial Board, American Journal of Physiology: Renal Physiology

Editorial Evaluation Board, Faculty of 1000 Medicine

Editorial Board, Journal of Biological Chemistry

Editorial Board, Frontiers in Renal and Epithelial Physiology

External Grant Reviewer, Wellcome Trust Programme Grants (UK)

External Referee Grant Review Panel, National Kidney Research Fund (UK)

Grant Reviewer, NIH Cellular and Molecular Biology of the Kidney Study Section

Seminars Presented


March 8, 2011 – “Ion pores in epithelial tight junctions: Molecular basis of selectivity,” Research Seminar, University of Chicago Committee in Neurobiology, Chicago IL.


Xuan Zhang, Ph.D. Research Assistant Professor
Department of Surgery
Member, Center for Reproductive Sciences

My current research is focused on developing and investigating novel therapeutics for endocrine-related cancer, especially breast cancer. In collaboration other researchers, I am investigating the efficacy and mechanism of action of Withaferin A in breast cancer. Withaferin A is a steroidal lactone occurring in Withania somnifera that has shown cytotoxicity in a variety of tumor cell lines and in animal cancer models in vivo without any noticeable systemic toxicity. Elucidating its mechanism of action in breast cancer may lead to significant improvement in breast cancer chemo-prevention.

Meetings Attended


Seminars Presented


a. Manuscripts Published


Damjanov I (2011) (Editor) Histopathology Atlas, JAYPEE Brothers Medical Publishers,(P)Ltd, New Delhi, India,

Fan F and Damjanov I (2011) Cytopathology Review, JAYPEE Brothers Medical Publishers,(P)Ltd, New Delhi, India,


Xiong J, Armato MA, and Yankee TM. (2011) Immature single-positive CD8+ thymocytes represent the transition from Notch-dependent to Notch-independent T-cell development, Int. Immunol., 23: 55-64.


b. Manuscripts in Press


Mijal, R.S., Holzman, C.B., Rana, S., Karumanchi, S.A., Wang J, and Sikorskii, A. Mid pregnancy levels of angiogenic markers and pathways to preterm delivery. Accepted/ Published on-line 9/22/2011


Swerdlow RH. Does Mitochondrial DNA Play a Role in Parkinson’s Disease? A Review of Cybrid and other Supportive Evidence. Antiox Redox Signal.

Vidoni ED, Honea RA, Billinger SA, Swerdlow RH, and Burns JM. Cardiorespiratory Fitness is Associated with Atrophy in Alzheimer’s and Aging over Two Years. Neurobiol Aging.


Swerdlow RH. β-apptists and tauists, it’s time for a sermon from the book of biogenesis. J Neurochem.

Swerdlow RH and Jicha G. Alzheimer’s Disease: Can the exam predict the pathology? Neurology.


Kim J, Choi IY, Dong Y, Wang WT, Brooks WM, **Weiner CP**, and Lee P. Chronic fetal hypoxia leads to delayed axonal maturation in guinea pigs during development: a longitudinal Diffusion Tensor Imaging and T2 mapping study. Developmental Neuroscience

c. Abstracts


Ryals JM, Hassan BR, and **Christianson JA**. (2011) Vitamin D receptor is expressed by putative nociceptors innervating the distal colon of mouse. Dig Dis Week; Abstr. Su1697.


Rockwell, C.E., Fields, P.E., and Klaassen, C.D. IFNg production by restimulated Nrf2-null T cells can be modulated by presence of wild-type antigen-presenting cells, Society of Toxicology, 2011 Annual Meeting, Washington, D.C.


FUNDING/RESEARCH SUPPORT CY2011

Grant awards, direct and indirect, that were received during CY2011 for principle investigators in the IRHRM totaled $8,435,275.

D. Albertini:


U. Apte:


Juan A. Arroyo:


F. Behbod:


M.G. Butler:


Prader-Willi Syndrome Association (USA) – “RDCRN Fellowship Support to Study Rare Diseases Including Prader-Willi Syndrome,” 2010-2011. Principle Investigator: M.G. Butler. Total Costs: $50,000. (This competitive support arises from the NIH Rare Disease Grant (U54 RR 019478) to support research activity of a young investigator to engage in the study of rare diseases.)


N. Cheng:


J. Christianson:


Y. Dong:


K. Gustafson:


H.R. Hull:


R. Johnson:


Dev Karan:


S. L. Kieweg:


S.S. Kim:


A.J. Krieg:

M. Larson:

C.W. Mason:

R. Mijal:

A.J. Nangia:

University of Kansas research endowment –2007-present, Principle Investigator: A.K. Nangia. Total Costs: $150,000

W.B. Nothnick:

S. Paul:


K. R. Peterson:


Brian K. Petroff:


P. Prochasson:


K. F. Roby:


I. Saadi:

C. Slawson:


P.G. Smith:


M.J. Soares:


R. Swerdlow:


T. Fields:


J.B. Thrasher:


G. Vanden Heuvel:


J.L. Vivian:


J. Wang:


C.P. Weiner:


M.L. Weiss:


T. Yankee:


A.S.L. Yu:

