Annual Research Report 2014

Advancing Health Through Research

UMKC
School of Medicine
The School of Medicine’s long-standing strengths in medical education are matched by an emerging strength in biomedical research programs that are responsive to medical conditions and needs in our community. More and more competent researchers in the SOM are engaged in top-notch basic and clinical research. Central among those researchers are our endowed chairs. At present, the School is supporting more than 20 endowed chairs and professors, a well-established research force greater than any other school in the system. The innovative and productive research has resulted in an overall increase in federal contracts and grants. Between 2003 and 2012, sponsored federal research has increased five times to more than $10 million annually.

While our faculty continue to provide excellent education for students in both classroom and clinical settings, the faculty are also actively engaged in scholarly activity and research. This is well demonstrated by the publication record outlined in this report. For the calendar year 2013, publications by our faculty are remarkable in both quality and quantity, with more than 600 manuscripts, book chapters, monographs, reviews, editorials and other works. A number of research articles have been noticeably published in prestigious journals with impact factor > 5.0. These achievements in timely publishing research results serve our overarching strategy to advance our knowledge in life science and diseases and enhance the visibility of our research programs.

The faculty in the School have been working hard to retain and expand our excellent research programs in several traditionally strong areas. These areas include:

- Brain and behavior research focuses on conditions including mental health, substance abuse, autism, Alzheimer’s disease and blindness.
- Chronic disease research focuses on health outcomes and quality improvement in areas such as heart disease, lung disease and diabetes.
- Injury research focuses on trauma, emergency medicine and infections.
- Women and children’s health research includes pregnancy outcomes and pediatric genomic medicine.
- Medical education research focuses on the implementation of innovative education curriculum.
- Biomedical and health informatics with a mission to boost translational research.

In addition to these, the School has a variety of other research projects that focus on ways to advance the health of our community. This includes meaningful research and presentation options for the School’s students and residents.

We hope you enjoy this research report that spotlights the School of Medicine’s advancements for the 2013-2014 year. We look forward to the advancements in research under the leadership of Dean Steven L. Kanter, M.D.

Sincerely,

John Q. Wang, M.D., Ph.D.
Acting Associate Dean for Research
Westport Anesthesia/Missouri Endowed Chair

Betty M. Drees, M.D., F.A.C.P.
Dean Emerita
Funding Proposals Submitted by the School of Medicine Faculty

Funding Proposals Awarded to the School of Medicine Faculty
School of Medicine Grant and Contract Expenditures

Grants and Contract Expenditures from the School & Affiliates*

*Affiliate expenditures self reported. 2014 numbers are not available at the time of publication.
Awards to Faculty in 2014

Allsworth, Jenifer  
UNIV OF MICHIGAN $8,083  
Progestosterone Contraceptives on Vaginal Microbiome  
Dr. Allsworth will provide epidemiological expertise and survey data for each of the samples processed. She will assist with data analysis and with manuscript/presentation development.

Ashraf, Muhammad Javed  
UNIV OF CA SAN FRANCISCO $347,138  
Decision Quality for Patients with Coronary Artery Disease.  
An NIH R01 subward with University of California at San Francisco to develop a patient-reported, disease-specific, comprehensive measure of decision quality that is feasible to implement for stable coronary artery disease to make sure the patients are well-informed about their options and are involved in the decision-making process as much as they wish to be, and have had their treatment preferences elicited and incorporated into the decision because currently no tool exists to assist cardiologists in determining whether they are guiding their patients to make high quality decisions.

Barnett, Angela L  
REACH HEALTHCARE FNDTN $25,000  
Sojourner Health Clinic  
Sojourner Health Clinic is a free health clinic established in October 2004 and run by medical students at the UMKC School of Medicine under the direction of Angela Barnett, M.D. Sojourner helps the adult homeless and medically indigent in Kansas City, Missouri, maintain their health and avoid expensive emergency room visits and hospital stays by providing routine safety-net medical services each Sunday from 11:30 a.m. to 3:30 p.m. in the multi-purpose room of the Grand Avenue Temple at 9th and Grand streets in downtown Kansas City, Missouri. This grant from REACH Healthcare Foundation will provide medications, program assistant wages, and attending physician stipend for a twelve-month period.

Chu, Xiangping  
AMERICAN HEART ASSOCIATION $143,000  
Acid-sensing ion channels contribute to zinc-induced neurotoxicity.  
This project is to study direct neurotoxic effects of acidosis, characterize and quantify the zinc-permeability of ASICs in mouse cortical neurons, and determine specific subunit configurations responsible for zinc permeability of ASICs. They also want to define the role of ASIC-mediated zinc entry in acidosis-mediated and ischemic neuronal injury.
Fu, Mingui
R21 NIH $415,250
Post-transcriptional Regulation of Cytokine Production
The tight regulation of inflammatory cytokines is critical since overproduction of the cytokines can contribute significantly to autoimmune disease. Dr. Fu and other groups suggest that MCPIP1 is a housekeeping factor to control inflammatory responses and immune homeostasis by controlling cytokine production in rest immune cells. And they hypothesize that MCPIP1 cooperates miRNAs to function as a housekeeper in rest immune cells and the signaling that activates immune cells disturbs the cooperation, leading to high levels of pro-inflammatory cytokine production.

Koulen, Peter
NIH $100,000
Administrative Supplement to Grant "Novel Mechanism of Action as Therapeutic Strategy for Optic Neuritis."
This research project is one supplement for a multidisciplinary research project that will focus on the development and characterization of a novel pharmacological intervention strategy that combines drugs to control structural and functional degeneration in autoimmune optic neuritis.

Qureshi, Nilofer
R01 NIH $860,700
Pivotal role of proteasomes in inflammation and tolerance
Septic shock is a major healthcare problem worldwide. The central hypothesis is that development of inflammation vs. tolerance in human monocytes/macrophages in response to LPS (lipopolysaccharide) is dictated by the profile of proteasomal proteases. This project is thus to 1) elucidate mechanisms of selective proteasomal subunit-dependent mediation of LPS-induced inflammation, 2) elucidate mechanisms by which selective proteasomal subunits contribute to LPS-induced tolerance, and 3) develop strategies to correct aberrant TLR responsiveness in human monocytes from septic shock patients. Those findings will ultimately contribute to development and implementation of therapeutic strategies to reduce morbidity and mortality of septic shock and possible other cytokine-mediated diseases.

Quick, Annette
BRIGHAM AND WOMENS HOSPITAL $101,991
Cardiovascular Inflammation Reduction Trial (CIRT)
An NIH National Heart, Lung, and Blood Institute subaward, CIRT represents a remarkable clinical and scientific opportunity to test directly the inflammatory hypothesis of atherosclerosis by evaluating whether or not low-dose methotrexate (LDM) will reduce rates of recurrent myocardial infarction, stroke, and cardiovascular death among stable post-myocardial infarction patients with type 2 diabetes or metabolic syndrome.
Salzman, Gary A  
AMERICAN LUNG ASSOCIATION $75,000  
**Asthma Clinical Research Centers (ACRC) Core Award**  
This is an Asthma Clinical Research Centers award that includes several projects: 1) smoking asthmatics cohort study, 2) long-acting beta agonist step down study, 3) effect of positive airway pressure on reducing airway reactivity in patients with asthma, and 4) effect of positive airway pressure on airways reactivity in asthma.

Spertus, John  
PATIENT CENTERED OUTCOMES RESEARCH INSTITUTE (PCORI) $1,715,650  
**Developing and Testing a Personalized, Evidence-based, Shared Decision-Making Tool for Stent Selection in PCI**  
Patients undergoing percutaneous coronary intervention (PCI) to open up blocked heart arteries have a choice to receive either drug eluting (DES) or bare metal stents (BMS) to keep the artery open. In order to help patients make correct decision, Dr. Spertus and his team create a shared decision making tool to identify the most important information and optimal presentation mode for the patients and their doctors about stent choice (Shared Decision Making) to increase PCI procedures performed each year in the US.

Wang, John Q  
R01 NIH $1,698,750  
**Metabotropic Glutamate Regulation of Amphetamine Action**  
The mitogen-activated protein kinase (MAPK)/extracellular signal-regulated kinase (ERK) is enriched in synaptic structures. Dr. Wang's group found that synaptic ERK directly binds to group 1 metabotropic glutamate receptors (mGluR1 and mGluR5) and phosphorylates mGluR5a at a cluster of serine sites in the C-terminal region. These findings for the first time provide direct evidence supporting a synaptic G protein-coupled receptor as a non-nuclear substrated of ERK. Proposed studies in this grant will then further characterize the relationship between mGluRs and ERK in brain cells.

Wilson, Susan  
REACH HEALTHCARE FOUNDATION $26,400  
**Sojourner Health Clinic**  
Sojourner Health Clinic is a free health clinic established in October 2004 and run by medical students at the UMKC School of Medicine under the direction of Angela Barnett, M.D. Sojourner helps the adult homeless and medically indigent in Kansas City, Missouri, maintain their health and avoid expensive emergency room visits and hospital stays by providing routine safety-net medical services each Sunday from 11:30 a.m. to 3:30 p.m. in the multi-purpose room of the Grand Avenue Temple at 9th and Grand streets in downtown Kansas City, Missouri. This grant from REACH Healthcare Foundation will provide medications, program assistant wages, and attending physician stipend for a twelve-month period.
## Publications by Departments

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<td>673</td>
<td>651</td>
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Publications


Allsworth JE, Secura GM, Zhao Q, Madden T, Peipert JF (2013) The impact of emotional, physical, and sexual...


Berg SF, Paulsen OG, Carter BS (2013) Why were they in such a hurry to see her die? Am J Hospice Palliat Med 30(4):406-408.


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Fieldston ES, Zaniletti I, Hall M, Colvin JD, Gottlieb L, Macy ML, Alpern ER, Morse RB, Hain PD, Sills MR,


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Khan S. QuantaMD. (2013) Good Samaritan Laws: When Are You Covered?


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Lantos JD, Jackson MA (2013) Vaccine mandates are justifiable because we are all in this together. Am J Bioeth 13(9):1-2.


Poli F, Overeem S, Lammers GJ, Plazzi G, Lecendreux M, Bassetti CL, Dauvilliers Y, Keene D, Khatami R, Li Y,


Rebenitsch RL, Binder N, Jani A, Bonham AJ, Pikey K, Miller AL, Gosch K, Daugherty SL, Rathore S, Peterson...


Pharmacol 53:857-865.
Shaffer TD (2013) GME Reform, Family Medicine Vol. 11, Accepted – Published
Shaffer TD (2013) Planning for Transition, Family Medicine Vol. 11, pp 182-183, Accepted-Published.


Williams JB, Alexander KP, Morin JF, Langlois Y, Noisieux N, Perrault LP, Smolderen K, Arnold SV, Eisenberg...


2014 Health Sciences Student Research Summit

**BA/MD Students**

Jacob Voelkel, MS 4, won the School of Medicine’s first prize for BA/MD students with his poster on “FGF and Notch Signaling Hierarchy in Sensory Neurogenesis.”

Jeet Mehta, MS 5, won second place with a presentation on “Comparison of Echocardiographic Methods to Cardiac Magnetic Resonance Imaging in Survivors of Pediatric Cancer.”

Keliang Xiao, MS 4, received third place for the presentation of “Do Outcomes of Surgical Treatment for Achalasia Depend on the Manometric Subtype?”

Apurva Bhatt, MS 4, and Peter Lazarz, MS 2, tied for third with a poster on “An Evaluation of the Control of Diabetes at the Sojourner Free Health Clinic.”

**School of Medicine Graduate Students**

Timothy Fendler, MD, received first place for “Provider Variability and Characteristics Associated with Bivalirudin Use for Bleeding Avoidance in Percutaneous Coronary Intervention after Implementation of a Decision Support Tool.”

Anna Grodzinksky, MD, received second place for “Relationship Between Prescription of Diabetes Friendly Beta-Blockers and Glucose Control after an Acute Myocardial Infarction.”
2014 Sarah Morrison Student Research Winners

The School of Medicine’s Office of Research Administration recently presented six Sarah Morrison Student Research awards for April 2014. The awards are given to students in the School’s medical doctorate and graduate programs each October and April.

The latest research award recipients and their mentors include:

Gautam Anand, MS 4 / Geetha Raghuveer, M.B.B.S./M.P.H., Associate Professor of pediatrics;

Vijit Chouhan, MS 4 / Akin Cil, M.D., Associate Professor of orthopaedic surgery;

William Enochs, MS 5 / Emily Hillman, M.D., Assistant Professor of emergency medicine;

Chelsea Shapland, MS 4 / Mike Wacker, Ph.D., Assistant Professor of basic medical science;

Kartik Sreepada, MS 3 / Salvatore Stella, Ph.D., Assistant Professor of basic medical science;

Janet Ross, MS Bioinformatics / Lakshmi Vekitachalam, Ph.D., Assistant Professor of biomedical and health informatics.
# 2014 Research Advisory Committee

**Committee Members:**

<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
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<tbody>
<tr>
<td>Julie Banderas, PharmD, BCPS</td>
<td>UMKC SOM</td>
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<tr>
<td>Tim Dellenbaugh, MD</td>
<td>UMKC SOM</td>
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<tr>
<td>Betty Drees, MD</td>
<td>Dean Emerita, UMKC SOM</td>
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<td>Lawrence Dreyfus, PhD</td>
<td>Office of Research and Economic Development</td>
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<tr>
<td>Steve Leeder, PharmD, PhD</td>
<td>CMH and UMKC SOM</td>
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<tr>
<td>John D. Yeast</td>
<td>Saint Luke’s Hospital</td>
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<td>Nilofer Qureshi, PhD</td>
<td>UMKC SOM</td>
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<tr>
<td>Travis Solomon, MD, PhD</td>
<td>UMKC SOM</td>
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<td>John Wang, PhD</td>
<td>UMKC SOM</td>
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<tr>
<td>Jakob Waterborg, PhD</td>
<td>UMKC School of Biological Science</td>
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<tr>
<td>Karen Williams, PhD</td>
<td>UMKC SOM</td>
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## List of Research Institutes and Centers

1. Shock Trauma Research Center
2. Vision Research Center
3. Center for Health Insights (August 2014)
### List of Endowed Chairs

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<thead>
<tr>
<th>Chair</th>
<th>Chair Holder</th>
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<tbody>
<tr>
<td>Ralph R. Coffey Chair in Surgery</td>
<td>Mark Friedell, MD</td>
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<tr>
<td>Rex L. Diveley Prof. and Chair in Orthopedic Surgery</td>
<td>Mark Bernhardt, MD</td>
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<tr>
<td>Edward H. Hashinger Distinguished Professor in Medicine</td>
<td>Jill Moormeier, MD, MPH</td>
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<tr>
<td>Franklin D. Dickson Professorship in Orthopedic Surgery</td>
<td>Akin Cil, MD</td>
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<tr>
<td>Merle and Muriel Hicklin Chair in Medicine</td>
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<td>Margaret Suzanne Neal Chair in Orthopedic Surgery</td>
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<tr>
<td>Felix and Carmen Sabates Chair in Vision Research</td>
<td>Peter Koulen, PhD</td>
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<tr>
<td>William T. and Marjorie Sirridge Professor in Medical Humanities</td>
<td>Lynda Payne, PhD</td>
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<tr>
<td>Marion Merrell Dow Chair in Pediatric Research</td>
<td>Greg L. Kearns, PharmD, PhD</td>
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<tr>
<td>Joseph Boon Gregg Chair in Cardiac Surgery</td>
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<tr>
<td>William R. Brown Chair in Genetics &amp; Molecular Med</td>
<td>Shui Qing Ye, MD, PhD</td>
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<tr>
<td>Dee Lyons Chair in Pediatric Genomic Medicine</td>
<td>Stephen Kingsmore, B.Sc., M.B., Ch.B., B.A.O.</td>
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<tr>
<td>Daniel Lauer MD Chair in Metabolism and Cascular Disease Research</td>
<td>John Spertus, MD</td>
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<tr>
<td>Chair in Cardiovascular Clinical Research at MAHI</td>
<td>David J. Cohen, MD, MSc</td>
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<td>Chair in Emergency Medicine</td>
<td>Gary M. Gaddis, MD, PhD</td>
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<td>Edward T. Matheny Jr Chair in Neuroscience</td>
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<td>Arthur W. Robinson MD Chair in Internal Medicine</td>
<td>Donald R. Campbell, MD</td>
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<td>Westport Anesthesia Chair in Anesthesiology Research</td>
<td>John Q. Wang, MD, PhD</td>
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<td>Paul Koontz Chair in Breast Disease</td>
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<tr>
<td>Vijay Babu Rayudu Endowed Chair of Patient Safety</td>
<td>Peter Almenoff, MD</td>
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<tr>
<td>Sosland Foundation Chair in Trauma Research</td>
<td>Charles W. Van Way, MD</td>
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<tr>
<td>Victor and Caroline Schutte Chair in Medical Leadership/Women’s Health</td>
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Contact us

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