

# 2007

## Research Annual Report



**Children's Mercy**  
HOSPITALS & CLINICS  
[www.childrensmc.org](http://www.childrensmc.org)

# Contents

Welcome .....	3
Expansion .....	4
Reaching Beyond Hospital Walls.....	6
2007 Research Highlights.....	8
Engineering Hope for Heart Defects	
Re-examining Diabetes Risks	
Individualizing Cancer Treatment	
Assessing Antihistamine Effectiveness	
Understanding Chronic Kidney Disease	
Awards and Honors.....	18
Endowed Chairs .....	30
Research Council .....	31
Areas of Clinical Research.....	32
Summer Scholars.....	33
Research Facts and Figures.....	34



**Randall L. O'Donnell, PhD**

President and  
Chief Executive Officer



**Gregory Kearns, PharmD, PhD**

Chair, Department of  
Medical Research

The Marion Merrell Dow/Missouri  
Endowed Chair in Pediatric Research

Associate Chairman,  
UMKC Department of Pediatrics

Dear Friends,

When discoveries from medical research migrate to the art and science of medicine, powerful progress comes to the quality of care for the patients of Children's Mercy Hospitals and Clinics. Our reputation for medical excellence annually attracts to our two hospitals and 35 clinics hundreds of thousands of patients and families for various diagnostic and treatment services from a remarkably talented staff of medical doctors, nurses, and clinicians. Although the devotion of our professionals to the care and treatment of our patients can be vividly seen by our families on a daily basis, less visible but equally important is the devotion of those professionals to the enterprises of research and education. The pages of this report will tell you of our progress there and will keep our research colleagues around the world informed as we bring well-deserved recognition to the professional leaders whose research activities bring new knowledge to the practice of good medicine.

At Children's Mercy, our collaborative approach to research brings together medical doctors, physician scientists, nurses, biomedical scientists, research technicians and postdoctoral fellows, all leaders in their fields, working as a team to advance the frontiers of medical science and the healing arts. A clinician treating a patient in one of our clinics may very well serve as a critical member of a team of research investigators seeking to discover scientific breakthroughs that could someday serve to benefit that patient and countless others challenged by the same condition. An MD scientist devoted to research in the laboratory may be called upon to offer expertise in consultation with a medical doctor in service at the bedside of a patient whose critical health conditions require insights from professionals working on research relevant to that patient's treatment.

The medical doctor treating a patient in the hospital or performing surgery in an operating room may also be of service as a medical educator. That doctor's students may be undergraduate medical school students, medical residents, fellows or peers learning state-of-the-art techniques empowered by research conducted in our laboratory or Children's Mercy's clinical setting. Our commitment to education plays a significant role in developing new talent to join in our research enterprise. The number of postdoctoral fellowship programs for physicians is expanding rapidly, and all of these require a research component. By offering outstanding opportunities in both education and research, Children's Mercy is becoming a global leader in preparing the next generation of innovators in pediatric medicine.

The fact that a majority of our doctors participate in the enterprises of research and education stimulates throughout our institution an appetite for new knowledge. In the process, research brings vital nutrients to the practice of good medicine and helps us recruit valuable professional talent—seasoned senior scientists and promising young investigators alike—to Kansas City to join our team. You will see that over the past year we have made promising progress in all of these endeavors.

Not only is that progress enabled by the sharp focus of our program, but also by our dedication to collaboration. At Children's Mercy Hospitals and Clinics, cross-disciplinary and well-integrated health care teams of professionals treat not just a disease, but the whole patient. Just as integrated, cross-disciplinary health care teams thrive on collaboration, so too does research. This collaboration is embedded in the DNA of our culture, which enhances the productivity of our partnership activities with other academic and pediatric health care institutions.

Scientific/research breakthroughs that lead to the cure or improved management of a disease rarely take place on the occasion of a single event in a laboratory or clinical setting. By its very nature, research is incremental, with progress achieved through meticulous steps disciplined by the totality of scientific knowledge and directed here, of course, by research leaders who provide focus, add talent, and exercise reasoned judgment. Through modern technology and through commitments to increased collaboration with other leading institutions of pediatric medicine throughout the nation, we are now taking these steps with greater precision and with an even greater intensity of focus.

During the past year, Children's Mercy Hospital has used its considerable strengths in genomics and clinical pharmacology to introduce Pharmacogenomics as a clinical service for our patients. By using a patient's DNA to obtain information about the activity of drug-metabolizing enzymes, drug transporters and receptors; and linking this information in some cases to measurements of drug levels in the blood; our pediatric clinical pharmacologists can individually tailor drug treatment regimens for specific patients that maximize their therapeutic potential and improve safety. Along with our partners associated with the Institute for Pediatric Innovation, we have exciting plans for expansion of this area of our research program in the future.

We could not close this letter without acknowledging with the deepest gratitude the remarkable generosity of our benefactors, institutional funders, and grant-making partners, all of whom have provided the financial resources necessary for us to carry out our research mission and report on the progressive developments of the previous year. We thank them for their support, and we thank you in advance for your engagement through absorbing the information on the pages of this report and through continuing to demonstrate your partnership with Children's Mercy Hospitals and Clinics into the future.

Sincerely,

**Randall L. O'Donnell, PhD**

**Gregory Kearns, PharmD, PhD**



## Expansion Provides Limitless Opportunities

**The long-range expansion plan unveiled by Children's Mercy in 2007 calls for more than tripling the amount of space dedicated to research in the next 15 years,** including a new, state-of-the-art laboratory that will house a novel, new program in pediatric personalized medicine.

Phase I of the expansion plan calls for one floor of research space in a new nine-story building to be constructed by 2011, with a second floor of shelled-in space for possible future expansion. In addition to serving as the home for the personalized medicine initiative, this new space will provide expanded wet laboratory space for new faculty investigators working within the program and also, the offices of the Department of Medical Research. Phase III of the plan includes two additional floors of research space, with the final plan expanding the hospital's total space dedicated to research from its current 44,800 square feet to more than 158,000 square feet by 2020.

"A research program runs on people, researchers who are attracted to Children's Mercy by the promise of what they can accomplish here," says Gregory Kearns, PharmD, PhD, Chairman of the Department of Medical Research and Associate Chairman of the Department of Pediatrics. "But you can't make that promise to them unless you can also offer them the state-of-the-art laboratories and facilities that this expansion plan will make possible for our program. This growth in space and resources will open up limitless new possibilities for expanding current programs, recruiting new physician and biomedical scientists and initiating the kind of new research endeavors that will enable Children's Mercy to be the leader in translating scientific discoveries into effective new avenues of pediatric care."



## Reaching Beyond Hospital Walls

**A research program is measured not only by the work taking place within its laboratories, but also how the representatives of that program extend their expertise “beyond the bench.”** And in Children’s Mercy’s case, that measure extends literally throughout the world.

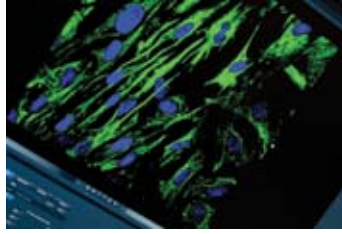
For example, Gregory Kearns, PharmD, PhD, Chairman of the Department of Medical Research at Children’s Mercy, who was selected to serve as the United States representative to the pediatric subcommittee of the Essential Medicines Committee of the World Health Organization (WHO). This subcommittee is developing a first-ever list of “essential pediatric medicines” for use throughout the world. Dr. Kearns also has been appointed to a permanent position on the overall Essential Medicines Committee.

WHO also has invited Dr. Kearns to serve as a pediatric clinical pharmacologist member on a new special task force which is looking at the drugs currently available to treat children with tuberculosis and will create a blueprint for the development of new, pediatric formulations of antituberculosis drugs that will be used to treat this disease worldwide. Dr. Kearns also serves on the U.S. Food and Drug Administration’s Clinical Pharmacology Advisory Committee, which is increasing its focus on testing new drugs specifically for use by children and developing new drugs designed for children’s unique needs.

Gregory Kearns, PharmD, PhD







## Engineering Hope for Heart Defects

**Each year about 40,000 infants are born in the United States with a heart defect.** While new technology and surgical innovations have made a tremendous difference in the outcome and quality of life of these young patients, the harsh reality remains that an infant born with heart disease often faces a future of repeated surgeries to replace an outgrown or a congenitally missing heart valve.

Richard Hopkins, MD, Director, Cardiac Surgery Research Laboratories Chief, Adult/Adolescent Congenital Cardiac Surgery and Professor of Surgery, University of Missouri-Kansas City School of Medicine, is developing a novel procedure that would enable the use of a patient's own cells to fashion a new, bioengineered heart valve. Because the valve would be comprised of living tissue derived from the child's own cells, it would grow and repair itself, and the child's immune system would accept the material as its own.

"The overall goal of the Cardiac Research Laboratory of the Ward Family Center for Congenital Heart Disease, as a translational research laboratory, is to make solid, safe solutions that improve the quality of life for our patients. It's a 'bench to bedside' approach we think will revolutionize heart valve replacement," says Dr. Hopkins.

Tissue engineering, as defined by Dr. Hopkins, involves applications to repair or replace structural tissues (for example, bone, cartilage, blood vessels, etc.) with cells combined with biological scaffolds that effectively function on the basis of their mechanical and biological properties. With numerous projects underway, including tissue-engineered heart valves and trachea, heart muscle replacement, cell biology and safety criteria of engineered tissues, as well as patient advocacy, the laboratory is focused on creating scientific methods that are safe, reproducible, that will enhance and ultimately, lengthen the lives of patients.

"At the end of the day, we're going to be successful in cardiac tissue engineering and also serve as advocates for our patients with the introduction of safe clinical innovations," Dr. Hopkins says.

Richard A. Hopkins, MD



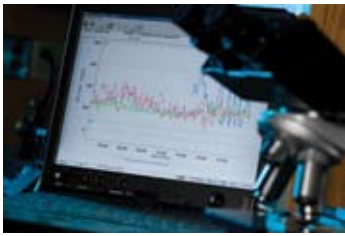
**It was across the pond in England, a year after finishing medical school at Duke University that Richard Hopkins, MD, learned about fresh cadaveric human valves being used as a conduit replacement for children born without heart valves.**

It was this experience that sparked his interest in tissue engineering, as approximately eight out of every 1,000 children are born with a congenital heart condition requiring heart valve replacement.

Upon returning to the states, Dr. Hopkins spent 10 years at Georgetown University studying how to make such human heart tissue better and more durable. From there, Dr. Hopkins spent 11 years at Brown University, continuing his studies on tissue engineering. In 2007, he joined the Cardiac Research Laboratory of Children's Mercy Hospital's Ward Family Center for Congenital Heart Disease.

Dr. Hopkins is a recognized leader in tissue engineering and has authored two books "Cardiac Reconstructions with Allograft Valves" and more recently, "Cardiac Reconstructions with Allograft Tissues."

"I am passionate about the tissue engineering research we're doing—Children's Mercy is truly at the forefront of conducting this life changing research and that's exciting," says Dr. Hopkins.



## Re-examining Diabetes Risks

### High average glucose – or blood sugar – is the alleged culprit

causing much of the damage in the bodies of the millions of children diagnosed with diabetes.

But based on recent molecular biology studies, Mark Clements, MD PhD, Endocrinology, Assistant Professor of Pediatrics/Endocrinology, University of Missouri-Kansas City School of Medicine, theorizes that the focus on chronic hyperglycemia (high average blood sugar) may be wrong, or least wrong to a degree.

“It is possible that high blood sugar on average over a long period of time may not only fail to tell us the whole story, but may not be the most important thing in determining our risk for complications in diabetes,” says Dr. Clements. “The rise and fall of the glucose over the day may be the biggest factor, or at least an equally important one.”

Funded by a Katharine Berry Richardson (KBR) award, Dr. Clements is building something that doesn’t currently exist – an animal model to study the impact of glucose variability on chronic complications.

“We are building a model of glucose variability in the diabetic rat with the goal of creating different treatment groups that allow us to look at high glucoses on average versus glucose variability over many months and how they each impact the development of chronic complications,” says Dr. Clements.

This is all made possible thanks to new continuous glucose biosensor monitoring technology that allows researchers to see glucose fluctuations minute by minute.

Dr. Clements will also be looking at several additional outcomes including markers of oxidative stress in the blood of these animals, gene expression analysis of the white blood cells to look for markers of cardiovascular inflammation, and physiologic markers for cataract formation, proteinuria, hypertension, and tissue damage.

“As soon as we demonstrate the degree to which glucose variability plays a role in complications, we’ll then be able to look at various interventions in the oxidative stress response to see whether we can have an impact on the rate of complications,” says Dr. Clements.





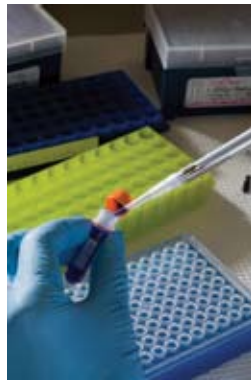
# Mark Clements, MD PhD

**In the process of completing his fellowship in Pediatric Endocrinology, Mark Clements, MD PhD, has not abandoned his first interest in basic science, as he has continued to stay involved through his research in diabetes.**

“I’m getting back to my roots I guess, and one of the many things I’m good at is taking a clinical problem and developing a way to study it at a basic science level or model level,” says Dr. Clements.

Dr. Clements is a graduate of the Medical Scientist Training Program at the Washington University in St. Louis School of Medicine. He also holds a doctorate degree in Neuroscience.

“I’m involved in science because I’m motivated to make a difference,” says Dr. Clements. “Our research may impact Type 1 and Type 2 diabetes, and Type 2 diabetes is one of the fastest growing health problems around the world. Anything we can do to make a difference in the health of these patients could have a huge effect, a huge impact.”



## Individualizing Cancer Treatment

**Despite the widespread use of cyclophosphamide** to treat a wide variety of cancers, relatively little is known about how it is metabolized in infants and children. Some of the complicated metabolic reactions of this drug cause tumor cells to die while others cause severe side effects. Because the relationship between development, genetic make-up and drug exposure remains largely unexplored, pediatricians may not be giving the best possible dose to their patients.

Understanding how cyclophosphamide is metabolized in children is the focus of a study directed by Andrea Gaedigk, MS, PhD, Clinical Pharmacology and Jignesh Dalal, MD, Bone Marrow Transplantation, experts in the fields of pharmacogenetics and pediatric oncology. It is supported by the Tom Keaveny Endowed Fund for Pediatric Cancer Research.

“The amount of enzymes that metabolize certain drugs varies considerably from person to person, which is mostly due to a person’s genetic make-up,” says Dr. Gaedigk. “An additional layer of complexity is that many of these drug-metabolizing enzymes ‘turn on’ at variable times after birth, usually during the first year of life. Choosing the right drug and the right dose in order to maximize benefits while limiting adverse effects remains a huge challenge, especially in our youngest patients.”

According to Dr. Gaedigk, there is still a big knowledge deficit about how drugs work in very, very young children that drives her inquiry into the variability of these enzymes.

“Children are not just little adults,” says Dr. Gaedigk. “This research will help give us a better understanding of how this drug should be dosed for children. Since it can make them very sick, every bit that we can reduce the amount they get and still receive the benefits will help.”

Andrea Gaedigk, MS, PhD



**Getting in on the ground floor of a revolutionary new field opened up a fascinating career path for Andrea Gaedigk, MS, PhD.**

While pursuing her doctorate in her native Germany, she had the opportunity to work with Michel Eichelbaum, MD, one of the early pioneers of pharmacogenetics.

“It was an emerging field at that time and very exciting,” says Dr. Gaedigk. “I had a chance to get in and I jumped on it.”

Dr Gaedigk’s major research interest is how genetic factors affect drug metabolism. She is involved in a number of studies spanning a variety of drugs, including codeine (pain medication), dextromethorphan (a component of cold medication) and warfarin (an anticoagulant).

Looking ahead, the promise that pharmacogenetics holds for the future seems even greater now than when she first entered the field.

“The ultimate goal is to get the right drug to the right person at the right dose,” says Dr. Gaedigk, who chairs the Basic Science Research Committee. “We’re generating tremendous amounts of data to help us know how to do that. The challenge is understanding what it all means.”



## Assessing Antihistamine Effectiveness

**Antihistamines are the common remedy to combat the release of histamine in the body**, which is the cause of many allergy symptoms such as itching eyes and runny, watery nose. Allergies affect about 50 million American children, most of whom are treated with some form of antihistamine.

Without intervention using antihistamines, the termination of the histamine effects is dependent upon the activity of specific enzymes in the body that degrade histamine. The activity of these enzymes is now known to be under genetic control which may, in part, explain differences in severity of allergy symptoms between individuals.


To gain a better understanding of how genetics affects histamine breakdown, Bridgette Jones, MD, Allergy/Asthma/Immunology specialist and Assistant Professor of Pediatrics, University of Missouri-Kansas City School of Medicine, is investigating a new technique to assess histamine response in the skin called histamine iontophoresis with laser Doppler flowimetry. Her study is funded by a Katharine Berry Richardson (KBR) grant.

“We are performing this technique on a group of patients to discern if skin blood flow response to histamine iontophoresis as assessed via the laser Doppler technique could be a surrogate marker for altered histamine metabolism in relation to histamine pharmacogenetics,” says Dr. Jones. “It would be great if we could develop a screening tool that we could use clinically to look at patients and see who would benefit from antihistamines or more aggressive allergy therapies such as immunotherapy,”

Histamine iontophoresis with laser Doppler flowimetry uses a low electrical current to painlessly drive histamine into the skin and into the small blood vessels of the outer skin layer. A low-energy laser positioned over the skin can directly measure the response to the histamine as indicated by blood flow to the site. This technique delivers a fixed dose of histamine which can be measured in a dynamic and continuous fashion.

“A more standardized technique would be helpful clinically and allow us to better evaluate antihistamines in the future,” says Dr. Jones.



A portrait of Bridgette Jones, MD, a woman with dark hair, smiling and wearing a white lab coat. The lab coat has a name tag that reads "s.M.D. Bridgette Jones, MD Allergy Clinical". The background is a blurred office or clinical setting.

# Bridgette Jones, MD

**As an asthma/allergy specialist, Bridgette Jones, MD, was intrigued by patients who received standard therapy, but for some reason, didn't get better, no matter what medication they received.**

"Sometimes we would assume these patients were not taking their medications, but now we know that because of their genes, they may be unable to benefit from the medication like other patients," says Dr. Jones.

It was the impact of genetics on asthma and allergies that got Dr. Jones interested in pursuing a fellowship in clinical pharmacology.

"The study of pharmacogenetics will allow the opportunity to provide therapies for patients that would benefit them the most," says Dr. Jones. "Right now we put a patient on medicine for a period and then have them come back to see if it works. Applying pharmacogenetics, we might obtain a blood sample and determine which medication they would benefit most from and get them on the right therapy right away."



## Understanding Chronic Kidney Disease

**With more than 26 million Americans now suffering from chronic kidney disease**, researchers are urgently seeking to better understand the risk factors underlying this condition.

Children’s Mercy is one of the two clinical coordinating centers for the first nation-wide study of children with chronic kidney disease. Funded by the National Institutes of Health, a consortium comprised of 43 participating centers is looking at factors that influence the progression of kidney disease and its complications in children.

Under the direction of co-principal investigator Bradley A. Warady, MD, Section Chief of Nephrology and Associate Chair of Pediatrics, University of Missouri-Kansas City School of Medicine, the study is following a cohort of nearly 600 children through annual visits in which they are tracking cardiovascular health, growth and neurocognitive function.

“Most of the children we are following presented with mild to moderate kidney disease,” says Dr. Warady. “Some get worse, and others don’t. An important goal of the study is to try to determine the reasons behind the two different outcomes.”

The study is already yielding new information about the interaction of known risk factors and disease progression. It has also shown associations between a low glomerular filtration rate—the common measurement of kidney function—and complications of chronic kidney disease such as growth failure, anemia, high blood pressure and attention deficits.

According to Dr. Warady, the fact that a large number of the children had a low birth weight has been an unexpected finding. In addition, the study has revealed the frequent presence of masked hypertension—high blood pressure that is only detected at night through the use of 24-hour ambulatory blood pressure monitoring.

“If these kids were only evaluated during the day at an office visit, there would be no evidence of elevated blood pressure,” says Dr. Warady. “Our findings provide important evidence supporting the routine use of 24-hour blood pressure monitoring in all children with chronic kidney disease.”

**Bradley A. Warady, MD**





**Ever since he was a young boy, Bradley A. Warady, MD, has known what profession he wanted to pursue.** During a lengthy illness at age 9, his pediatrician became a role model for him.

“It wasn’t so much his knowledge, but it was his caring personality that impressed me,” says Dr. Warady, who serves as Director of Dialysis and Transplantation at Children’s Mercy as well as Associate Chair of Pediatrics at the University of Missouri—Kansas City School of Medicine. “I knew then that I wanted to be a pediatrician.”

That same spirit of compassion for patients helped to steer him toward Nephrology as a subspecialty when he was in medical school and during his residency. Not only was he intrigued by the evolution of care in the field, he saw an opportunity for a career that would allow a deeper level of interaction with patients.

“I enjoy the intellectual challenges of treating children who have kidney disease,” says Dr. Warady. “But more importantly, nephrology allows you to develop long-term personal relationships with patients and their families. That’s what has meant the most to me.”

*A new study led by Brad Warady, MD could help doctors better understand the progression of chronic kidney disease in patients like Lucas Moad.*

## KREAMER RESEARCH EXCELLENCE AWARD

### **Andrea Gaedigk, PhD**

Clinical Pharmacology

The Kreamer Research Excellence Award is presented each year to a member of the Children’s Mercy staff whose work shows evidence of continuing excellence in research impacting pediatric health care. The award provides \$5,000 to be spent at the recipient’s discretion on his or her research projects. Nominees for this award must have been full-time active members of the medical/dental or research staff of Children’s Mercy for at least five years; must hold the academic rank of Associate Professor or above at the University of Missouri – Kansas City; must perform research that has an impact on improving health care for children; must have their research published in peer-reviewed journals; and must show evidence of continuing excellence in research. The Department of Medical Research solicits nominations and asks selected reviewers to vote for an awardee.





Andrea Gaedigk, MS, PhD

## JOHN AND MARION KREAMER RESEARCH EXCELLENCE AWARD

- 2006 Susan Abdel-Rahman, PharmD
- 2005 Denise Dowd, MD
- 2004 George Gittes, MD
- 2003 Jill Jacobson, MD
- 2002 Gregory Kearns, PharmD, PhD
- 2001 J. Steven Leeder, PharmD, PhD
- 2000 Wayne Moore, MD
- 1999 William Truog, MD
- 1998 Bradley Warady, MD
- 1997 Uri Alon, MD
- 1996 Stanley Hellerstein, MD
- 1995 Robert Hall, MD
- 1994 Jay Portnoy, MD
- 1993 Donald Thibeault, MD

## PAUL HENSON IMMUNOLOGY RESEARCH AWARD

### Tarak Srivastava, MD

Nephrology

Assistant Professor of Pediatrics, UMKC School of Medicine

This award is presented yearly to a Children’s Mercy researcher to further promising, ongoing research in pediatric immunology. Dr. Srivastava is studying the role of the toll-like receptor part of the innate immune system in the damage done to special kidney cells called podocytes in children with minimal change disease, a relatively common childhood kidney disease.

Tarak Srivastava, MD





## **PAUL HENSON PEDIATRIC IMMUNOLOGY AWARD**

2006 Susan Abdel-Rahman, PharmD

2005 Lanny Rosenwasser, MD

2004 Wayne Moore, MD

2003 Wayne Moore, MD

2002 Wayne Moore, MD

2001 Wayne Moore, MD

2000 Jill Jacobson, MD

1999 Jill Jacobson, MD

1998 Jill Jacobson, MD

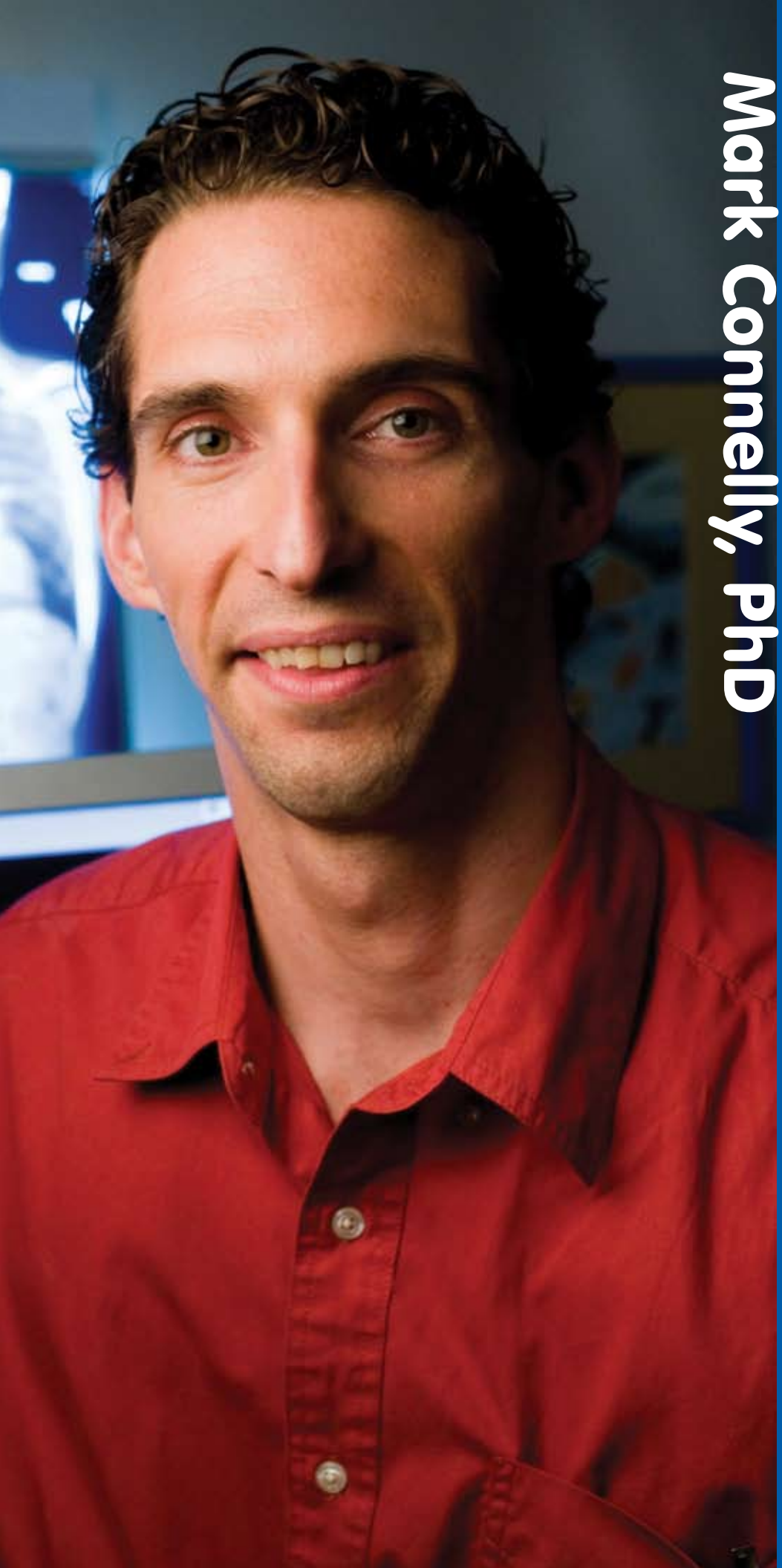
## THE CROSS FOUNDATION CLINICAL SCHOLAR AWARD IN BEHAVIORAL MEDICINE

### **Mark Connelly, PhD**

Pain Management and Developmental Medicine & Behavioral Sciences  
Assistant Professor of Pediatrics, UMKC School of Medicine

The Cross Foundation Clinical Scholar Award in Behavioral Medicine was established to provide competitive, intramural grants to promising Children's Mercy researchers seeking to launch or expand their research in behavioral medicine, including psychiatry, developmental medicine, and outcome-based research. Dr. Connelly received support for his project to study whether the use of integrative methods of pain management in children prior to scoliosis surgery reduces pain and improves recovery during hospitalization, as well as how it affects pain and functioning after discharge .





**Mark Connelly, PhD**

## TOM KEAVENY ENDOWED FUND FOR PEDIATRIC CANCER RESEARCH

### **Andrea Gaedigk, PhD**

Clinical Pharmacology

### **Jignesh Dalal, MD**

Bone Marrow Transplantation

Assistant Professor of Pediatrics, UMKC School of Medicine

The Tom Keaveny Endowed Fund for Pediatric Cancer Research supports peer-reviewed research of faculty or professional staff which expands knowledge of the treatment and care of children with cancer. Dr. Dalal and Dr. Gaedigk were given the award to support their work on better understanding how the body metabolizes Cyclophosphamide, a common cancer drug, with the ultimate goal of better individualizing and maximizing cancer treatment while minimizing the immediate and long-term toxic effects of chemotherapy.



Jignesh Dalal, MD



Andrea Gaedigk, PhD

## WILLIAM RANDOLPH HEARST ENDOWMENT



**Mark Connelly, MD**

Pain Management and Developmental  
Medicine & Behavioral Sciences  
Assistant Professor of Pediatrics, UMKC School  
of Medicine



**Ben Pieters, DO**

Anesthesiology  
Assistant Professor of Pediatric Anesthesiology,  
UMKC School of Medicine

Each spring and fall, an internal competition is held for the Katharine Berry Richardson (KBR) awards. Among the proposals submitted for the competition, the two top-rated projects are designated the William Randolph Hearst Endowment Fund awardees and receive a portion of their support from this fund. Dr. Connelly was honored for his work on empirical evaluation of self-report pain scales as indicators of treatment response following surgery. Dr. Pieters was awarded for his study of early administration of fresh frozen plasma to reduce blood loss during surgery for craniosynostosis.





## **WILLIAM RANDOLPH HEARST ENDOWMENT**

2006 Roger Gaedigk, PhD  
Chengpeng Bi, PhD  
Heather Newkirk, PhD

2005 Chetanbabu Patel, MD  
Kathleen Neville, MD, MS

2004 Mary Moffatt, MD  
Heather Newkirk, PhD

## RESEARCH DAYS AWARDS

As part of the hospital's ongoing commitment to pediatric research and education, each year Children's Mercy hosts Research Days presentations by residents and fellows. A panel of judges confers Research Days awards on the presenters of the best papers.



**Erik Mikkelsen, MD**

Faculty Mentors: Ken Wible, MD and Rangaraj Selvarangan, PhD

*Cerebrospinal Fluid Characteristics of Enterovirus Reverse Transcriptase-PCR Positive vs. Negative Specimens*



**Christina Peacock, MD**

Faculty Mentor: Felix Okah, MD

*Trends in Overweight/Obesity and Excessive Weight Gain for BMI Among Pregnant Teenagers*



**Mukta Sharma, MD**

Faculty Mentor: Alan Gamis, MD

*Uniform Approach Better Defines Natural History of Transient Myeloproliferative Disorder (TMD) In Down Syndrome (DS) Neonates: Outcomes From Children's Oncology Group (COG) Study A2971*



**Sean Sweeney, DO**

Faculty Mentor: Howard Kilbride, MD

*Hypercarbia May Be More Predictive Than Supplemental O<sub>2</sub> at 36 Weeks' Postmenstrual Age for Later Pulmonary Morbidity in Preterm Infants*





## SARAH MORRISON STUDENT RESEARCH AWARDS

The Sarah Morrison Student Research Awards are presented by the University of Missouri-Kansas City School of Medicine to medical students who pursue basic or clinical research under the guidance of faculty mentors.

### Spenser Menees

University of Missouri-Kansas City  
School of Medicine

Faculty Mentor: Geetha Raghuveer, MD  
*Variation in Carotid Artery Intima –  
Media Thicknesses during the Cardiac  
Cycle*

### Joseph Le

University of Missouri-Kansas City  
School of Medicine

Faculty Mentor: Geetha Raghuveer, MD  
*Measuring the Vascular Age of Children  
with Familial Hypercholesterolemia and  
Mixed Dislipidemia*

*Dr. Geetha Raghuveer reviews research abstract information with Sarah Morrison Fellowship Award recipients Joseph Le (left) and Spencer Menees (right).*

## ENDOWED CHAIRS

### **The Marion Merrell Dow/Missouri Chair in Pediatric Clinical Pharmacology**

J. Steven Leeder, PharmD, PhD  
Est. 1995

### **The Joseph Boon Gregg/Missouri Chair in Pediatric Cardiac Surgery**

Gary Lofland, MD  
Est. 1997

### **The William R. Brown/Missouri Chair in Medical Genetics and Molecular Medicine**

Vacant  
Est. 1997

### **The Dee Lyons/Missouri Chair in Pediatric Immunology Research**

Lanny Rosenwasser, MD  
Est. 1998

### **The Thomas Holder/Keith Ashcraft Chair in Pediatric Surgical Research**

Vacant (pending)  
Est. 2000

### **The Sosland Chair in Neonatal Research**

William Truog, MD  
Est. 2001

### **The Marion Merrell Dow Chair in Pediatric Pharmacogenomics**

Vacant  
Est. 2002

### **Joyce C. Hall Distinguished Professor of Pediatrics**

Kevin Kelly, MD  
Est. 1967

### **The Katharine B. Richardson Chair in Pediatric Surgery**

George Whitfield Holcomb III, MD  
Est. 1973

### **The Jerry A. Smith Chair in Pediatrics**

Vacant  
Est. 1985

### **The Dr. Rex and Lillian Dively Chair in Pediatric Orthopedic Surgery**

Bradley Olney, MD  
Est. 1989

### **The Ernest L. Glasscock, MD, Chair in Pediatric Education and Research**

Stanley Hellerstein, MD  
Est. 1990

### **The Marion Merrell Dow/Missouri Chair in Pediatric Medical Research**

Gregory L. Kearns, PharmD, PhD  
Est. 1995

# RESEARCH COUNCIL MEMBERS

## **Randall L. O'Donnell, PhD**

President and CEO  
Research Council Chairman

## **Kim Brown**

Director, Audit and Advisory Services

## **V. Fred Burry, MD**

Executive Vice President  
Executive Medical Director  
Professor of Pediatrics, UMKC

## **Karen Cox, RN, PhD**

Executive Vice President,  
Co-Chief Operating Officer  
Assistant Dean for Clinical Partnerships, UMKC School of  
Nursing

## **Andrea Gaedigk, PhD**

Pediatric Pharmacology and Medical Toxicology

## **Joe Galeazzi**

Vice President, Medical Administration

## **Gregory L. Kearns, PharmD, PhD**

Department Chair, Medical Research  
The Marion Merrell Dow/Missouri Endowed Chair in  
Medical Research  
Professor, Pediatrics and Pharmacology, UMKC  
Chairman, Department of Medical Research

## **Kevin J. Kelly, MD**

Pediatrician-in-Chief  
The Joyce C. Hall Distinguished Professor of Pediatrics  
Professor and Chair, Department of Pediatrics  
Associate Dean, UMKC School of Medicine

## **Carol Kemper, RN, MSN, CPHQ**

Senior Director, Quality Management

## **Sandra Lawrence**

Executive Vice President  
Chief Financial Officer

## **Gary Pettett, MD**

Chairman, Institutional Review Board  
Director, Office of Research Integrity  
Associate Dean, Academic Affairs, UMKC  
School of Medicine  
Professor of Pediatrics, UMKC

## **Robin Rusconi, JD**

Director, Medical Research Administration

## **Vidya Sharma, MBBS**

Dermatology Section  
Professor of Pediatrics, UMKC School of  
Medicine

## **Jo Stueve**

Executive Vice President  
Co-Chief Operating Officer

## **Bradley Warady, MD**

Nephrology Section Chief  
Director of Dialysis and Transplantation  
Professor and Vice-Chair, Department of  
Pediatrics, UMKC

## **Terry Weathers**

Vice President of Finance/Controller

# AREAS OF CLINICAL RESEARCH

Acid Reflux Disease  
Adrenal Gland Disorders  
Allergies and Allergic Rhinitis  
Anemia  
Anti-Emetic Therapy  
Anti-Fungal Treatment  
Anti-microbial Stewardship Program  
Antigen Challenge Testing  
Asthma  
Attention Deficit Hyperactivity Disorder  
Autism  
Bioengineered Personal Heart Valves  
Bladder Disorder  
Bone Marrow Transplant  
Bronchiolitis  
Catheter Flow  
Childhood Cancers  
Chronic Abdominal Pain in Children  
Chronic Lung Disease  
Chronic Pain  
Coagulation Disorders  
Constitutional Delay of Growth & Puberty  
Cystic Fibrosis  
Cytogenetics  
Device Studies  
Diabetes Mellitus Types I & II  
Diagnostic Imaging  
Diagnostic Kits  
Dialysis  
Dietetics  
Digestive Disorder  
Drug Metabolism  
Dyspepsia  
Eczema  
Endocrinology  
Epilepsy  
Fecal Retention  
Gender Differences in Systemic Lupus  
Genetic Disease  
Genetics  
Genotyping  
Glaucoma  
Graft vs. Host Disease  
Growth Factors  
Growth Hormone Deficiency  
Gynecomastia  
Hemophilia  
Hepatitis  
Hormone Deficiency  
Hypertension  
Ideopathic Nephrotic Syndrome  
Immune Tolerance Induction  
Infectious Diseases  
Influenza  
Intra-Ocular Lens  
Iron Metabolism  
Irritable Bowel Syndrome  
Juvenile Rheumatoid Arthritis  
Lymphomas  
McCune Albright Syndrome  
Meningitis  
Metabolic Disorders  
Migraine  
Muscular Dystrophy  
Neonatal Nutrition  
Obesity  
Organ Transplantation  
Otitis Media  
Pain Treatment, Post Surgical  
Partial Liquid Ventilation  
Pharmacogenetics  
Pharmacokinetics  
Pneumonia  
Psychiatry and Behavioral Disorders  
Pulmonary Disease in Critical Care Patients and Newborns  
Pulmonary Hypertension in Newborns  
Quality of Life Scale  
Rehabilitation & Physical Therapy  
Renal Disease  
Renal Transplantation  
Respiratory Disease in Newborns  
Respiratory Tract Infections  
Sedation in Critical Care Patients  
Seizure Disorder  
Sepsis  
Sickle Cell Disease  
Skin and Soft Tissue Infections  
Tissue Engineering  
Turner Syndrome  
Ulcerative Colitis  
Visual Acuity



## SUMMER SCHOLARS 2007

Through the Summer Scholars program, Children's Mercy provides college students with experience in pediatric research. During the summer of 2007, 10 scholars worked with researchers on various projects. We are glad to provide these students an opportunity to explore their interest in research careers.

### **The 2007 Summer Scholars were:**

Dan Aubin, University of Missouri-Rolla

Kelli Baalman, Rockhurst University

Jacob Brown, Creighton University

James Bush, Kansas State University

Bonnie Carsten, Evangel University

Amy Hamilton, University of Miami  
(Florida)

Nathan Johnson, Evangel University

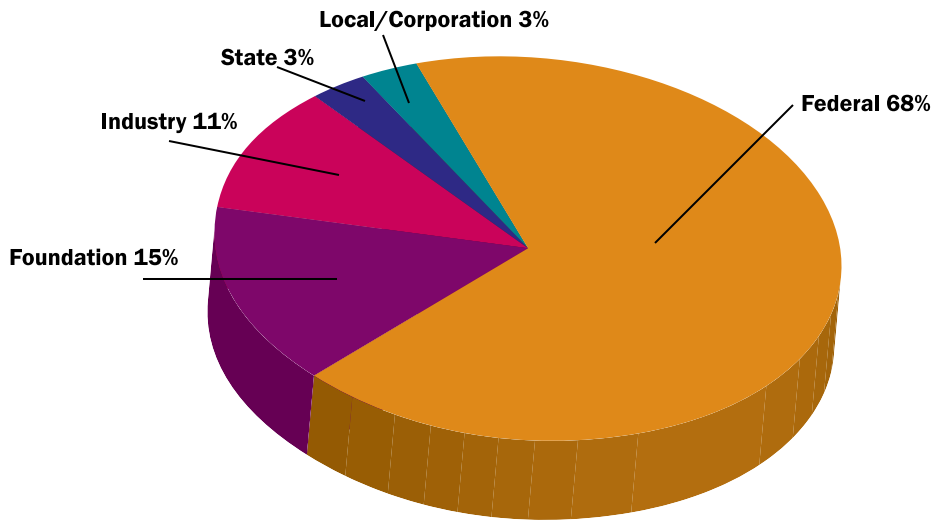
Katherine Klockau, University of Kansas

Alyssa N. Morse, Washburn University

Joseph Pacheco, Northwest Missouri  
State University

# RESEARCH FACTS AND FIGURES

## SOURCE OF SPONSORED RESEARCH FUNDS - 2007



## RESEARCH EXPENDITURES FROM EXTERNAL FUNDING

	<b>2007</b>
Federal	5,304,104
Foundation	1,189,002
Industry	825,420
State	234,543
Local/Corporation	234,202
<b>Total</b>	<b>\$7,787,271</b>

## PUBLICATIONS AND PRESENTATIONS

Number of presentations/posters	192
Number of publications	266
<b>Total for 2007</b>	<b>458</b>

Visit our Web site at [www.childrensmercy.org/research](http://www.childrensmercy.org/research) for additional information and complete listings of publications and presentations.

# INVESTIGATIONAL REVIEW BOARD

Our vision for creating a healthier future for all children encompasses the health, safety and general welfare of every child we see at Children's Mercy. As we approach research with a view for improving and advancing care for all children, we are always respectful of the patient's and family's present needs and wishes.

To ensure that the safety and welfare of children are always at the forefront, all research studies involving the participation of children are reviewed, approved and monitored by our multidisciplinary Pediatric Institutional Review Board (IRB). In 2007, the IRB approved 199 new studies and conducted 1,011 actions pertaining to ongoing studies and other research related activities.

Additional protection of patient privacy rights also is afforded by the Office for Research Integrity (ORI), which serves as the primary office on matters relating to the protection of human research subjects, education for the responsible conduct of research, research misconduct, laboratory animal welfare, radiation, and bio-safety in research. The ORI functions to promote and assure the ethical conduct of research in conformance with federal regulations and institutional policies.

	<b>CY2007</b>
<b>New Projects</b>	<b>199</b>
<b>Continuing Oversight</b>	<b>1,011</b>
<b>Total Reviews</b>	<b>1,210</b>



**Children's Mercy**  
**HOSPITALS & CLINICS**  
[www.childrensmercy.org](http://www.childrensmercy.org)

**Medical Research**

2401 Gillham Road

Kansas City, MO 64108

(816) 234-3961

[www.childrensmercy.org/research](http://www.childrensmercy.org/research)

In Academic Affiliation with the University of  
Missouri-Kansas City School of Medicine.

AA/EOE

