2005

Research Annual Report 2004

Children's Mercy Hospital

The Power of Discovery

2004 Research Annual Report

Improving Care Through Innovation

Children's Mercy
HOSPITALS & CLINICS
How high is the sky?

For more information on our research program, please visit www.childrens-mercy.org/research

Dear Colleagues,

Just a few weeks before her death in 1933, Children's Mercy founder Katharine Berry Richardson, MD, wrote in a letter to a supporter: "Our work, yours and mine, is to hold Mercy Hospital to its very best and to somehow, some way get a research laboratory for children's diseases to work as though we were going to stay here forever, and to realize that what is best will live on in the hearts of others."

We can only wonder what Dr. Richardson would think today if she could see the state-of-the-art research laboratories and the pioneering studies which are so integral to the very mission of the "Mercy Hospital" which she founded more than a century ago. All of our researchers – physicians, scientists, nurses – share that inspiration to alleviate children's diseases, and their work in 2004 reflects great progress in that endeavor.

We began the year by opening the new Pediatric Research Center, which provides the most technologically advanced facilities for research in genetics, diabetes, allergy/immunology, newborn lung disease, kidney disease, and more. We ended the year with two of our scientists receiving a patent for a new method of identifying abnormalities in DNA that promises to revolutionize the diagnosis of genetically related diseases and make individualized treatment a reality. We hope you will take a few moments to review this annual report to learn more about those accomplishments and many others.

Dr. Richardson's vision of a research laboratory for children's diseases has come true in ways that she never could have imagined. But our researchers continue in the same spirit, working to discover new knowledge that will "live on in the hearts of others."

Sincerely,

Randall L. O'Donnell, PhD
President and CEO

Ralph Kauffman, MD
Chairman, Department of Medical Research
Marion Merrell Dow/Missouri Chair in Medical Research
Professor, Pediatrics and Pharmacology, UMKC

Kreamer Family Resource Center
Children's Mercy Hospital

Year in

Source of Sponsored Research Funds – 2004

Research Expenditures from Funding Sources

Review

How do fish breathe?
What makes planes fly?
Where do snowflakes come from?
How high is the sky?

For children, the power of discovery is driven by a sense of wonder, curiosity and innate desire to explore the unknown. Each new discovery illuminates their minds to a new truth and builds an ever-increasing knowledge of the world around them.

At Children's Mercy, the power of discovery is seen every day in the work of our researchers. Breakthroughs are the product of cumulative small steps – and each day we are adding to our knowledge base, moving toward our ultimate goal of improving the health and safety of all children.

"Although we are always on the lookout for 'lightning in a bottle,' most of the time new understanding of childhood diseases and development of new treatments is the result of methodical, creative research leading to an evolution of small discoveries that add up over time," says Ralph Kauffman, MD. "Many promising discoveries may appear like lightning in a bottle, but are truly the result of years and years of work."

Since the original research vision was set forth by our founder, Dr. Katharine Berry Richardson, Children's Mercy has progressed down the pathway of discovery, at times slowly, at other times at a breakneck pace. But our progress is undeniable.

2004 Areas of Research in Clinical Trials

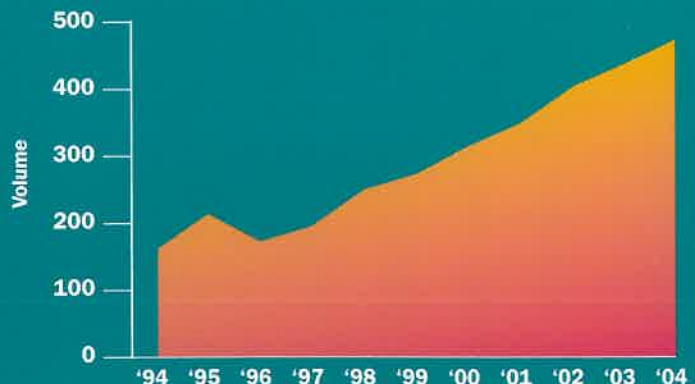
Allergy/Asthma
Anemia
Anti-Emetics
Arthritis
Attention Deficit Hyperactivity Disorder (ADHD)
Autism
Autoimmune Diseases
Behavioral Disorders
Birth & Congenital Defects
Blood Diseases
Bone Diseases
Bone Marrow Transplant
Brain and Cerebrovascular Disorders
Cardiovascular Diseases
Childhood Cancers
Childhood Development
Chronic Lung Disease of Newborn (CLD)
Cystic Fibrosis
Diabetes
Diagnostic Imaging
Diagnostic Kits
Dialysis
Eye Diseases
Fungal Diseases
Gastro Esophageal Reflux Disease (GERD)
Gastrointestinal Disease
Genetics, Human
Graft vs. Host Disease
Growth Failure
Hearing Loss

(cont. on page 5)

Year in

Expenditures from NIH Awards

Publications and Presentations



Review

Here are some highlights you will find on the next few pages.

Patents and Licenses – Two Children's Mercy scientists received a United States patent for novel DNA probes that can identify chromosomal abnormalities that previously had been undetectable. In the past five years, our scientists have been awarded three patents, and our activity to patent, copyright and protect intellectual property continues to grow (see chart on page 33).

Publications and Presentations – The influence of Children's Mercy physicians and scientists continues to extend well beyond hospital walls. During 2004, our researchers published 159 papers in leading journals, authored chapters for 53 textbooks, and provided 237 presentations, posters and abstracts at national and international scientific meetings. (Visit our web site at www.childrens-mercy.org/research for a complete listing.)

Grants and Awards – For the fourth year in a row, external research funding grew, approaching $9 million, with Federal funding nearly $6 million. Children's Mercy researchers continue to attract National Institutes of Health (NIH) dollars and move up in rankings of children's hospitals receiving NIH funding. (Visit our web site at www.childrens-mercy.org/research for a complete listing.)

Partner Institutions – Children's Mercy scientists are partnering with institutions around the world to lead or collaborate on studies addressing a broad range of health issues including birth defects, childhood cancer, diabetes, kidney disease, genetics, pharmacology, and many others. Locally, our academic affiliation with the University of Missouri–Kansas City, and other partners of the Kansas City Area Life Sciences Institute, continues to open new doors and expand our reach well beyond Kansas City.

2004 Areas of Research in Clinical Trials (cont.)

Hemophilia
Hormonal Disorders
Hypertension
Immunology and Immune Disorders
Infectious Diseases
Kidney Disease
Language Acquisition & Development
Medical Informatics
Metabolic Diseases
Muscle Disorders
Neonatal Nutrition
Obesity
Organ Transplantation
Pain Management
Perinatal Cocaine Exposure
Pharmacogenetics
Pharmacokinetics
Pulmonary Diseases
Quality of Life (QoL)
Rehabilitation & Physical Therapy
Renal Transplantation
Safety, Childhood
Sedation
Seizure Disorders
Sepsis
Sickle Cell Disease
Skin Diseases
Trauma
Vaccines
Voiding Dysfunction

Creating Novel

DNA Probes

One of the most significant events for the research program at Children's Mercy occurred in December when Joan Knoll, PhD, director of Cytogenetics at Children's Mercy and associate professor of pediatrics, University of Missouri-Kansas City School of Medicine, and Peter Rogan, PhD, director of the Laboratory of Human Molecular Genetics at Children's Mercy and professor of pediatrics, University of Missouri-Kansas City School of Medicine, received a United States patent for novel DNA probes that can identify chromosomal abnormalities that heretofore have been undetectable. This will now make diagnosis of many gene-related diseases, such as certain cancers, more feasible and precise.

Joan Knoll, PhD and Peter Rogan, PhD

Using the human genome sequence, Dr. Knoll and Dr. Rogan developed a novel method for design and preparation of single-copy DNA probes that represents a major advance in a diagnostic technology known as fluorescence in situ hybridization (scFISH). This is significant because future applications of these probes extend well beyond scFISH.

Cancer and inherited genetic abnormalities are caused by alterations or defects in our body's chromosomes. But we've never been able to see all the genetic nuances of exactly how those chromosomes are different until now.

One measure of the progress of our research is the movement of innovative laboratory and bedside discoveries into the public sector for wider development and application. This process, much like the discovery process itself, can at times be quite tedious and may take years.

Research activities associated with this process of technology transfer are reflected in applications for patents, copyrights, and other methods of protecting intellectual property. Children's Mercy researchers and physician scientists remain active in advancing their research through this process to the greater benefit of all children *(see chart on page 33).*

Identifying

Birth Defects

What you don't know may harm you – or, more accurately, your unborn child.

J. Steven Leeder, PharmD, PhD, section chief of Developmental Pharmacology and Experimental Therapeutics at Children's Mercy, the Marion Merrell Dow Endowed Chair in Pediatric Pharmacogenomics, and professor of pediatrics and pharmacology, University of Missouri-Kansas City School of Medicine, is collaborating with Allan Mitchell, MD, a pediatrician and epidemiologist heading the Slone Epidemiology Center at Boston University, in a Federally funded research program to investigate drug-induced birth defects.

J. Steven Leeder, PharmD, PhD

"Seizures. Asthma. Depression. There are many disorders for which a woman may need to take medication throughout pregnancy, and most can do so safely," says Dr. Leeder. "However, even a medication that causes one birth defect in 1,000 exposures can be troublesome if millions of people take the medication, especially medications like acetaminophen that women may take before they know they are pregnant."

The goal is to identify the genetic factors that place a mother and her baby at particularly high risk for a drug-induced birth defect and to help physicians choose the right medication for their pregnant patients. A program with a more "genomic" focus has been submitted for five more years of funding.

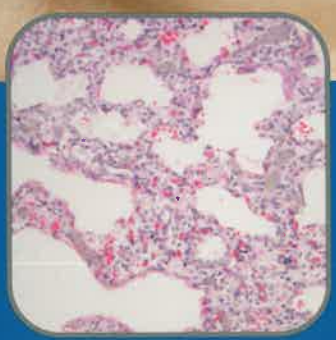
Within the

evolutionary nature of discovery, one discovery builds upon another. Collaboration with other researchers locally, nationally, and internationally ensures that the work of Children's Mercy researchers benefits other children and institutions, while at the same time advancing the work of our own scientists.

These partnerships and collaborations take many forms. Locally, Children's Mercy is an active participant in the Kansas City Area Life Sciences Institute, a consortium of biomedical research institutions in the Kansas City region.

Researchers at Children's Mercy Hospital also participate in a number of national and international collaborative research efforts which facilitate the sharing of expertise and provide a clinically and statistically appropriate patient population for the study of new therapeutics and treatments for disease.

Understanding



CLD

Propelling research into chronic lung disease of premature infants to the next level is the goal of Ikechukwu Ekekezie, MD, neonatologist and medical director of the Donald W. Thibeault Neonatal Laboratories at Children's Mercy.

Dr. Ekekezie, associate professor of pediatrics at the University of Missouri-Kansas City School of Medicine, has just completed work on a five-year NIH grant (Inflammation, Matrix Disruption and Chronic Lung Disease) that created a better understanding of the mechanisms of this disease that has grown in prevalence as the survival rate of premature infants has increased.

That study examined the disruption of the basement membrane and extracellular matrix by metalloproteinases (MMP) in chronic lung disease. In addition, the research examined the effects of inhaled nitric oxide and corticosteroid therapy on MMP activity in chronic lung disease.

"Through my research and collaboration with other investigators, the goal is identification and testing of potential new therapies for infants to prevent or treat chronic lung disease," Dr. Ekekezie says.

Ikechukwu Ekekezie, MD

For Ikechukwu Ekekezie, MD,

the good news/bad news of neonatology has provided him a foothold as a world-class researcher.

The good news: fewer premature babies are dying. The bad news: the cases of chronic lung disease among those surviving babies is on the rise; and some of the therapies we use can be as harmful as they are helpful.

This keeps Dr. Ekekezie challenged and motivated to help these most vulnerable children.

Dr. Ekekezie joined Children's Mercy and UMKC in 1994 as a fellow in neonatal-perinatal medicine. He received his medical education at the University of Ibadan, Nigeria, and trained in England before coming to the United States.

Since joining Children's Mercy, he and his associates have received more than $2.5 million in extramural grants.

Improving Sickle

Cell Care

The loss of a dear friend to sickle cell disease served as inspiration for Efe Iyamu, PhD, Hematology/Oncology researcher at Children's Mercy and assistant professor of pediatrics, University of Missouri-Kansas City School of Medicine, to find a better treatment for this devastating disease.

Efe Iyamu, PhD

Because sickle cell disease is an inherited condition, treatment has focused on multiple drug therapies to prevent the small blood vessel obstruction associated with sickle cell disease and reduce pain and complications.

Backed by a five-year, $720,000 grant from NIH, Dr. Iyamu is studying the efficacy of the combined use of multiple complementary drugs to reduce the dose of each drug without reducing its beneficial effects. Dr. Iyamu's study is unique in that it is using the isobologram technique in the rational design of combinations of therapeutic agents in sickle cell therapy. The research is being conducted in the new Sickle Cell Lab within the Hematology Research Laboratories at Children's Mercy Hospital.

Dr. Iyamu is studying the effectiveness of the combined use of novel anti-sickling drugs in the laboratory, with the goal of eventually extending this research to clinical trials with sickle cell patients.

Upon returning from semester break at Johann Wolfgang-Goethe University in Germany, Efe Iyamu, PhD, received some bad news – a dear friend had died suddenly from severe sickle cell disease.

This news was quite devastating and life-changing for Dr. Iyamu. With single-minded determination and a desire to make a difference, he devoted himself to finding a way to more effectively treat sickle cell disease.

Dr. Iyamu went on to receive his PhD in Biochemistry from Meharry Medical College in Nashville, Tenn., followed by a post-doctoral fellowship with the Children's Hospital of Philadelphia. Today, Dr. Iyamu is leading research that he hopes will lead to pharmacological interventions to improve the treatment of sickle cell disease.

Changing Tobacco

Behavior

As a neonatologist, Felix A. Okah, MD, MS, is concerned primarily with the health of premature infants, arguably the most vulnerable among us. It's not their own behavior that affects their health, but the behavior of those adults closest to them.

Dr. Okah's goal is to change some of that behavior, in Kansas City and around the world.

Long interested in the effects of smoking on unborn children, Dr. Okah is working with a $429,000, three-year grant from the National Cancer Institute of the National Institutes of Health. Collaborating with colleagues at the University of Missouri-Kansas City School of Medicine and the University of Minnesota, Dr. Okah's research is focused on providing counseling strategies and new pharmacological aids to the citizens of India and Indonesia, two countries where the use of tobacco continues to increase.

Dr. Okah hopes that by influencing behavior in adults, the environmental health of newborns and children will be improved.

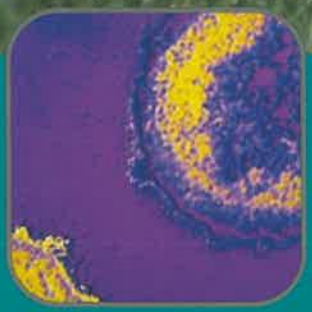
"We will be training health care professionals in those countries," Dr. Okah says. "It's time we move some of what we know in this country to other countries to help those children."

Felix Okah, MD, MS

***During his training** in pediatrics at Cook County Children's Hospital in Chicago, Felix Okah, MD, MS, saw first-hand the effects of inner-city life on children. He moved on to the University of Cincinnati where he worked on issues related specifically to the health of pregnant women, fetuses, and children. It was there he became interested in environmental health as it impacts the health of parents and children. Since coming to Children's Mercy in 2000, Dr. Okah has focused on smoking and its impact on children.*

Dr. Okah holds positions as attending neonatologist at Children's Mercy and associate professor of pediatrics with the University of Missouri-Kansas City School of Medicine, adjunct professor of psychology at the UMKC College of Arts and Sciences, and as a consultant epidemiologist in neonatal-perinatal health for the Kansas City Health Department.

Detecting Diabetes



Early

An autoimmune disease, diabetes silently destroys insulin-producing cells in a child's body for years. Eventually, the cells are almost all destroyed and the child is unable to produce insulin, causing the blood sugar to increase out of control and the disease to be detected.

Karen Kover, PhD, Endocrinology/Diabetes and assistant professor of pediatrics at the University of Missouri-Kansas City School of Medicine, is trying to find a way to detect the presence of diabetes before that happens so treatments designed to prevent destruction of insulin-producing cells can be started early.

Dr. Kover is studying the genetic signal to make insulin messenger RNA (mRNA) in blood. After discovering that insulin mRNA levels increased in a rat model of diabetes, she began studying levels in normal, diabetic and pre-diabetic children. The results showed that pre-diabetic children had significantly higher levels of insulin mRNA than those of healthy children.

"I'm cautiously optimistic that some day, we can run a simple test on a high risk child to determine if she is silently developing diabetes, and hopefully give her a drug that will stop the progression of the disease before frank diabetes occurs," Dr. Kover says.

Karen Kover, PhD

Karen Kover, PhD, *grew up loving science. When the other kids were playing with toys, she had a microscope.*

Her love of science stuck with her, even after she obtained her undergraduate degree in education from Southwest Missouri State University. Not long after graduation, a friend encouraged her to give up teaching and become a research assistant in his lab. In 1981, she moved to Kansas City to work with Wayne Moore, MD, PhD, the section chief of Endocrinology at Children's Mercy.

In 1990, Dr. Kover obtained her PhD in cellular and molecular biology at the University of Kansas. She continues to work with Dr. Moore and has focused her research on childhood diabetes for more than 20 years.

Identifying

BPD Risks

Infants born prematurely often develop respiratory distress and are at great risk for a variety of lung problems, including progressive respiratory failure and death. Mechanical ventilation and supplemental high oxygen given to these patients can result in further lung tissue injury and Bronchopulmonary Dysplasia (BPD).

Difficulty identifying the risk factors for BPD has delayed the diagnosis and prevention of this life-threatening illness. But Dong Xu, MD, Neonatology Research Laboratory at Children's Mercy Hospitals and Clinics, and assistant professor at the University of Missouri-Kansas City School of Medicine, is hopeful a new approach, borrowed from his previous experience in cardiovascular research, will yield positive results.

Dr. Xu is employing proteomic technology to analyze the protein profiles of tracheal aspirate fluid from infants with and without BPD. His goal is to identify potential biomarkers and risk factors of BPD which will help physicians better understand the causes of this serious chronic disease.

"We know so little about this disease," says Dr. Xu. "Proteomic technology has the potential to assist in early diagnosis, prevention, and even treatment of BPD."

Dong Xu, MD

After receiving his medical degree from Shandong University, China, Dong Xu, MD, found himself drawn to the research aspect of medicine. During graduate study at the School of Medicine of Peking University in China, his interest was further focused on research in vascular cell biology.

Dr. Xu came to the United States 15 years ago. While studying in the cardiovascular branch at the Howard Hughes Medical Institute in Dallas, Texas, he developed an interest in heart disease and lung injury.

Dr. Xu has been a research scientist at Children's Mercy Hospital since 2002. His research interests include vascular cell biology, atherosclerosis, hypertension, oxidative stress and diseases. He has also authored 20 publications.

Analyzing Heart

Defects

Occasionally, infants are born with heart abnormalities, called conotruncal defects, that severely limit the flow of blood to the lungs. For reasons not well understood, these defects occur at a rate three to five times the national average in the Kansas City region.

James O'Brien, MD, a Children's Mercy cardiovascular surgeon and assistant professor of surgery at the University of Missouri-Kansas City School of Medicine, is trying to determine on a molecular level exactly what causes conotruncal defects.

Dr. O'Brien is comparing tissue samples from children with different types of conotruncal defects to analyze differences in the activity of genes controlling heart and blood vessel formation. His hope is to find out which children have lesser or greater potential to grow lung vessels, which is necessary to fix the heart defect after surgical correction.

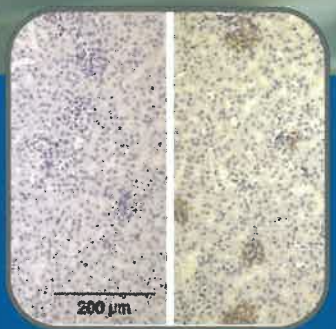
"If we can identify the different subtypes of children who are going to do well after surgery and those who are not, we can tailor different treatments to them," Dr. O'Brien says. "Perhaps one day, if we know a certain child doesn't have the ability to grow lung vessels, we can give her a growth factor to help her do so."

James O'Brien, MD

***James O'Brien, MD,** grew up on the East Coast, but he knew Kansas City was where he wanted to be when he heard about an opening at Children's Mercy. The hospital's clinical volumes and opportunities for research were a perfect fit for his interests in congenital heart defects.*

Dr. O'Brien received his undergraduate degree from the University of Connecticut and completed his residency and fellowship in cardiothoracic surgery at Thomas Jefferson University Hospital in Philadelphia. He obtained his fellowship in congenital heart surgery at Children's Hospital of Philadelphia.

Devising FSGS



Strategies

The most common cause of acquired kidney disease in children is Focal Segmental Glomerulosclerosis (FSGS). FSGS leads to progressive kidney damage resulting in kidney failure, which ultimately requires dialysis and kidney transplantation.

Tarak Srivastava, MD, MBBS, Children's Mercy nephrologist and assistant professor of pediatrics at the University of Missouri-Kansas City School of Medicine, is currently conducting research to help devise therapeutic strategies to treat children with FSGS and to decrease the number of patients advancing to kidney failure.

Tarak Srivastava, MD, MBBS

Dr. Srivastava is studying specialized filtering cells in the kidney called podocytes, which are damaged in FSGS. Several important proteins, one of which is podoplanin, have been identified in podocytes. Dr. Srivastava is studying how these proteins change when podocytes are damaged and how this relates to kidney damage that occurs in FSGS.

After studying these proteins, the next step is to learn how to use the information to decrease the child's risk of kidney failure and to design treatments and strategies to help children with FSGS.

"The ultimate goal is to devise a therapy to keep kidneys from being damaged and prevent kidney failure," says Dr. Srivastava.

Born in Calcutta, India, Tarak Srivastava, MD, MBBS, became interested in medicine and attended Bombay University, where he received his medical degree in pediatrics.

Dr. Srivastava completed his residency in pediatrics at BJ Wadia Hospital for Children, the largest children's hospital in Asia. During his medical training, his mentor rooted his interest in pediatric nephrology.

After receiving the International Society of Nephrology Clinical Fellowship Award, Dr. Srivastava began his fellowship in pediatric nephrology at Sydney Children's Hospital. In 1997, he came to Children's Mercy Hospital to complete his fellowship in nephrology. He has been actively involved in both clinical and laboratory research and has published 21 articles and 29 abstracts.

Measuring Drug

Response

Developmental and genetic factors play important roles in the action and metabolism of drugs in children. But Carrie Vyhlidal, PhD, Pediatric Pharmacology and Medical Toxicology fellow at Children's Mercy, is trying to take that one step further.

"There has been a lot of work done in pharmacogenetics here, but we don't have a complete understanding of the mechanisms of how drugs interact with the body," says Dr. Vyhlidal. "If we can understand the mechanisms, we can better predict the effectiveness of a drug before it is given."

Specifically, Dr. Vyhlidal has been using an information theory model to study the pregnane X receptor (PXR), an important mediator of the drug response, to better understand not only the drug metabolizing enzymes, but the factors that regulate the expression of those enzymes.

"Information based theory models, such as the one for PXR, are a genomic approach that will allow us to better understand how the body responds to a drug after it is given," says Dr. Vyhlidal. "Ultimately, it will help us use the drugs we have better."

Carrie Vyhlidal, PhD

***Children's Mercy** is committed to recruiting and retaining leaders in pediatric research. And we are equally dedicated to enhancing the training of the best and brightest scientific minds who can help us continue our forward progress.*

One way this is accomplished is through research fellow opportunities, such as the work being done by Carrie Vyhlidal, PhD. Our research fellows play a vital role in our research program while they advance their own careers.

In addition, our highly competitive summer scholar program, coordinated by Charles Barnes, PhD, attracts top undergraduate students throughout the country to gain experience in pediatric research. This past year, the hospital was host to 10 students who performed research in genetics, pharmacology, endocrinology, and asthma/allergy laboratories under the tutelage of senior researchers.

Assuring Patient

Safety

One look at the news headlines reveals the importance of ensuring the safety of medications long before they become approved for public use. Nowhere is that more true than with children. That is one reason Children's Mercy provides a dedicated Research Pharmacy to support all research studies involving pharmaceuticals.

It is only within the past decade that many pharmaceuticals and over-the-counter medications were ever tested for use with children. Today, Children's Mercy researchers are involved in more than 60 studies to evaluate the safety and efficacy of pharmaceuticals for children.

Cheryl Ricke, PharmD and Holly Amos

"This research is very important," says Cheryl Ricke, PharmD, investigational drug pharmacist. "We play a vital role in assuring patient safety. We are part of the checks and balances system."

In addition to dispensing research medications, Dr. Ricke and Holly Amos, clinical research assistant, aid primary investigators and study coordinators with setting up treatment protocols and study procedures, training staff, securing proper drug storage and dispensing, providing monitoring and accountability of utilization, and coordinating audits and monitoring with outside sponsors and agencies.

Children's Mercy made a major investment in research infrastructure as laboratories completed moving into the new Pediatric Research Center in early 2004. The new center is a strong foundation on which to continue building.

In addition to providing researchers with world-class laboratories, Children's Mercy has invested in developing the organizational structure, resources, support systems, and special expertise that are vital to sustaining a thriving research program.

Two groups of specialized research professionals, the Investigational Drug Pharmacists and Clinical Research Coordinators, are featured in this report. Each plays a critical role in conducting clinical studies by ensuring patient rights are protected, all regulatory requirements are met, study medications are accurately administered, and study protocols are carefully followed.

Maintaining

Compliance

The process of research is a journey on the path to discovery. Armed with the study protocol as a road map, the research coordinator is the quintessential navigator within the world of clinical research.

Children's Mercy assigns a research coordinator to every study. More than 40 research coordinators are employed throughout the hospital to conduct clinical research in multiple specialty areas.

"Research coordinators are involved in virtually every aspect of the study from the beginning until its completion," says Gina Stanke, RN, research coordinator.

The role of the research coordinator mirrors that of the extended practice nurse, only with a focus on research in the context of clinical care. Following a detailed research protocol, coordinators play an indispensable role in developing the budget, preparing the research application, identifying potential research participants and carefully conducting the research procedures.

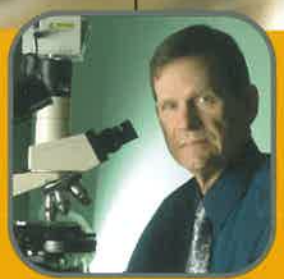
"The research coordinator is essential to the successful conduct of clinical research and literally determines the success or failure of a study," says Bruce Steinert, PhD, director of Clinical Trials Administration.

Gina Stanke, RN

Research Infrastructure

- *Office of Research Grants and Administration*
- *Institutional Review Board*
- *Office of Research Integrity*
- *Investigational Drug Pharmacy*
- *Clinical Research Coordinators*
- *Clinical Research Unit*
- *Bioinformatics & Research Computing*
- *Internet II*
- *Statistical Support and Education*
- *Pediatric Research Center*
  - *Microarray System*
  - *DNA Sequencers*
  - *Proteomics*
  - *Specialized Microscopy*
  - *Tissue/Cell Culture*

Honoring



Wayne V. Moore, MD, PhD
Paul Henson Pediatric Immunology Research Award

Mary Moffatt, MD
William Randolph Hearst Endowment

Heather Newkirk, PhD
William Randolph Hearst Endowment

Excellence

Kreamer Research Excellence Award

George Gittes, MD, director of Surgical Research, the Thomas Holder/Keith W. Ashcraft Chair in Pediatric Surgical Research at Children's Mercy, and associate professor of surgery at the University of Missouri-Kansas City School of Medicine, was named the 2004 recipient of the Kreamer Research Excellence Award. Dr. Gittes has been a member of the Children's Mercy medical staff for five years. His research focuses on identifying various signaling mechanisms in the developing pancreas, with a goal of curing various endocrine abnormalities related to the pancreas, including diabetes.

Dr. Gittes has authored more than 180 publications in peer-reviewed journals, with 40 of them published since his arrival at Children's Mercy. He is currently the principal investigator on two NIH grants and a grant from the Juvenile Diabetes Research Foundation. He also serves as president of the Society of University Surgeons, the premier academic surgical organization in the world. He received his medical degree from Harvard Medical School, completed his surgical residency at the University of California in San Francisco and his fellowship in pediatric surgery at Children's Mercy.

The Kreamer Research Excellence Award was established in 1993 in honor of John and Marion Kreamer to recognize a Children's Mercy researcher whose work has had an impact on improving health care for children.

George Gittes, MD
Kreamer Research Excellence Award

Henson Award

The Paul Henson Pediatric Immunology Research Award is presented yearly to a Children's Mercy researcher to further promising ongoing research in pediatric immunology. The 2004 Henson Award recipient was Wayne V. Moore, MD, PhD, Endocrinology/Diabetes section chief at Children's Mercy.

William Randolph Hearst Endowment

The top-rated project in the hospital's internal competitive grants program each spring and fall is supported by the William Randolph Hearst Endowment at Children's Mercy. The 2004 William Randolph Hearst designees were Mary Moffatt, MD and Heather Newkirk, PhD.

Investigational Review Board

Making Progress While Protecting Our Children

As our research program continues to grow, our institutional commitment to the health, welfare, and safety of our patients remains steadfast.

Simply put: The children come first. All research at Children's Mercy is conducted with the best interests of children in mind, from start to finish.

To ensure that the safety and welfare of children is always at the forefront, all research studies involving the participation of children are reviewed, approved, and monitored by our multi-disciplinary Pediatric Institutional Review Board (IRB). In 2004, the IRB approved 157 new studies and conducted 895 oversight actions pertaining to ongoing studies.

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.

	CY00	CY01	CY02	CY03	CY04
New Projects	148	116	140	133	157
Continuing Oversight	609	714	726	988	895
Total Reviews	757	830	866	1121	1052

Innovations Lead to Patents, Licenses

Inventor(s)	Year	Name of Invention	Status
Portnoy, Jay, MD	1999	Medical Action System	U.S. Patent #5,984,684, issued 11/16/99
Jacobson, Jill D., MD	2000	Hormone Antagonists in Diabetes Treatment	Patent pending; filed 01/26/01
Rogan, Peter K., PhD Knoll, Joan H.M., PhD	2000	Single-copy Genomic Probes for Hybridization	U.S. Patent #6,828,097, issued 12/07/04; Continuation pending.
Cox, Karen, RN, PhD Santos, Susan, PhD Simon, Steve, PhD	2001	Data Trends Analysis	Patent pending; Licensed to Akcia, Inc., 05/13/2003
Rogan, Peter K., PhD Knoll, Joan H.M., PhD	2002	Subtelomeric DNA Probes	Patent pending; filed 07/02/03
Jacobson, Jill D., MD	2002	Prevention of Graft vs. Host Disease Using GnRH Antagonists	Patent pending; filed 05/30/02
Slaughter, Andrew	2002	HL7 Parser Software	Copyright issued 10/10/03, 3 Licenses issued in 2003
Jacobson, Jill D., MD	2002	Effective Hormonal Mechanism to Reduce Blood Brain Barrier Permeability	Patent pending; filed 07/19/02
Hubble, Christopher, MD	2003	Pediatric Values Inventory	Disclosure filed 06/12/03; appropriate means of protection being determined
White, Robert, PhD	2003	Human Retinal Dystrophin Transgene	Patent pending; filed 07/16/04
Lofland, Gary, MD & CV Staff	2003	CMH Heart Center Clinical Application Software	Disclosure 01/06/04; patent application being prepared
Rogan, Peter K., PhD Knoll, Joan H.M., PhD	2004	Computational Selection of Probes for Localizing Chromosome Breakpoints	Patent pending; filed 03/26/04

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Hospital Overview

Children's Mercy Hospital

- Pediatric subspecialty clinics
- Inpatient and outpatient surgery
- 241 inpatient beds
- Area's only Level I Pediatric Trauma Center
- Level IV neonatal intensive care unit
- Pediatric intensive care unit
- Neonatal and pediatric critical care transport services
- Liver, kidney, and bone marrow transplant programs

Children's Mercy South

- Pediatric subspecialty clinics
- Outpatient surgery
- 54 beds (in 50 rooms) on two new inpatient units
- Radiology
- Laboratory
- Urgent Care Center

Children's Mercy Northland

- Pediatric subspecialty clinics
- Urgent Care Center
- Radiology
- Laboratory

Other

- Children's Mercy Home Care is the region's only pediatric home care provider
- Our three primary care clinics offer routine medical care for tens of thousands of children and teens in the Kansas City metropolitan area
- 24 outreach clinics in 12 cities throughout Missouri and Kansas extend the reach of our services to children throughout the region

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Randall L. O'Donnell, PhD, President and CEO

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