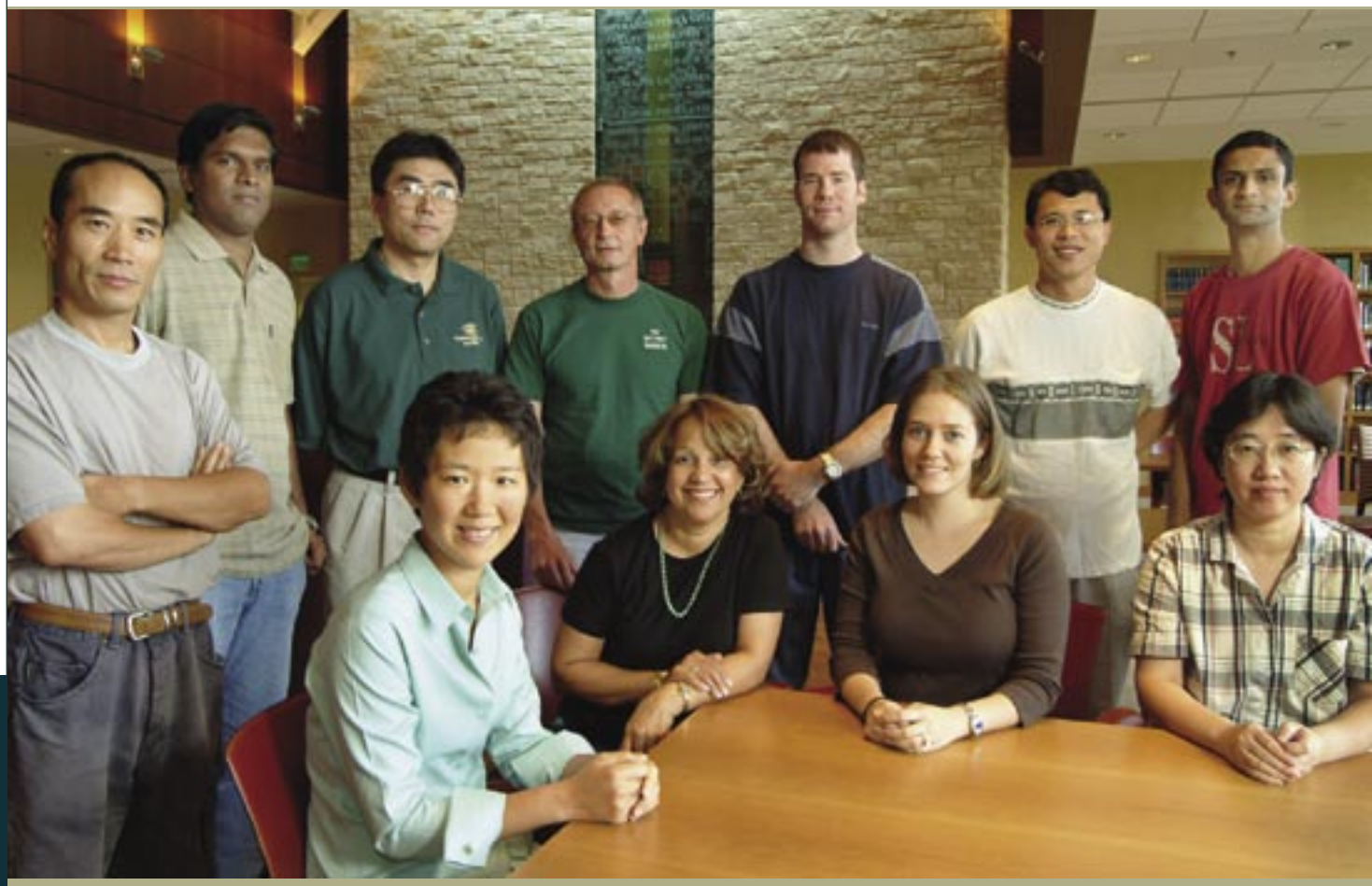
THE Stowers REPORT

NEWS AND INSIGHT FROM THE STOWERS INSTITUTE FOR MEDICAL RESEARCH



Rong Li (front row, far left) relocated her research program from Harvard University to the Stowers Institute in August. Joining her in Kansas City are, front row from left: Myra Sonnenbrot, Trisha Hoover, and Mei Xue. Back row from left: Manqui Deng, Sreekumar Ramachandran, Xiaogang Li, Pawel Szymanski, Brian Slaughter, Hongbin Li, and Praveen Suraneni. Read about the process of preparing for a new lab group on page 10.

FALL 2005

Jim and Virginia Stowers believe basic research of the highest quality will lead to practical solutions for human disease. This important research is a long-term process. It may seem slow for those awaiting breakthrough treatments for presently incurable illnesses, but it will, ultimately, point the way to better means of preserving health and preventing disease. Stowers Institute scientists pursue the dream of Jim and Virginia Stowers by dedicating their professional lives to basic research. The results of their innovative research appear regularly in the world's leading scientific journals.

Inside this issue . . .

VOLUME 8

Olivier Pourquié Named Hughes Investigator

The Howard Hughes Medical Institute (HHMI) has appointed its first-ever Stowers Institute researcher to the position of Hughes investigator. Olivier Pourquié, Ph.D., Investigator, was notified of the prestigious designation in March. HHMI will provide financial support for Dr. Pourquié's ongoing work at the Stowers Institute.

Dr. Pourquié was one of 43 scientists selected from among more than 300 nominees in the first national competition since 1999 for new HHMI appointees in basic biomedical research. HHMI investigators direct laboratories on the campuses of research-intensive universities, institutes, and hospitals throughout the United States.

"I am honored by this appointment," said Dr. Pourquié, who joined the Stowers Institute in 2002. "I have great respect for the work of HHMI investigators, and I look forward to joining their efforts to advance biomedical research."

Dr. Pourquié's appointment is especially significant for the Institute because HHMI investigators can transfer HHMI funding only to institutions with existing HHMI affiliations. New HHMI affiliations are established through periodic national competitions in which the organization invites selected institutions to nominate a member of the research staff for a HHMI appointment. Dr. Pourquié's success in the recent national competition makes the Stowers Institute an official Hughes affiliate, and it will allow other HHMI investigators to transfer to the Institute without sacrificing HHMI funding.

Two scientists holding HHMI appointments, Drs. Joan Conaway and Jerry Workman, were recruited to the Stowers Institute earlier, but it was not possible to transfer their HHMI appointments at that time.

HHMI aims to identify researchers who have the potential to make significant contributions to science. Since the early 1990s, investigators have been selected through rigorous national competitions. Once selected, they continue to be based at their home institutions, typically leading a research group of 10-25 technicians, postdoctoral associates, and graduate students. Successful nominees become HHMI employees and are supported by field staff dispersed across the country.

Dr. Pourquié has consistently and significantly contributed to the advancement of his field — the study of the segmentation clock in the presomitic mesoderm and the molecular signals regulating somite formation in vertebrate embryos. Within the first year of establishing his independent research program at the University of Marseille in 1997, Dr. Pourquié discovered the clock genes that control sequential formation of the segments of the body axis of vertebrates.

In addition to the attention drawn to Dr. Pourquié's research by his long list of publications in leading peer-reviewed journals such as *Science* and *Nature*, the editors of the Nature Publishing Group acknowledged his discovery of the clock genes as one of 24 landmarks in developmental biology over the past 100 years.

"All of us at the Stowers Institute are pleased that Dr. Pourquié was successful in the national competition for an appointment with HHMI," said William Neaves, Ph.D., President and CEO of the Stowers Institute. "The HHMI selection process has become the gold standard for highest quality biomedical research, and this latest recognition of Olivier's work brings satisfaction to him and his colleagues. It also demonstrates the success Jim and Virginia Stowers have achieved in creating an environment that enables the best scientists to do their best work."

Olivier Pourquié became the first Stowers researcher selected to join the Howard Hughes Medical Institute, which will support his ongoing work at the Stowers Institute.

"Dr. Pourquié's outstanding accomplishments at the University of Marseille motivated us to recruit him to the Stowers Institute," said Robb Krumlauf,

Stowers Researchers Demonstrate Role of Retinoic Acid in Bilateral Symmetry

Investigator Olivier Pourquié, Ph.D., in collaboration with Julien Vermot, Ph.D., a visiting postdoctoral fellow in his lab, has published findings that demonstrate a role for retinoic acid in coordinating left-right patterning and somitogenesis during embryonic development. The findings were published in the May 12, 2005 issue of the scientific journal *Nature*.

Although the body plan of most animals exhibits bilateral symmetry, little is known about the mechanisms that control the symmetrical arrangement of the left and right body sides during development. Dr. Pourquié's lab showed that blocking retinoic acid production in chicken embryos leads to a desynchronization of somite formation between the two sides of the embryo, resulting in a shortening of the left segmented region.

"Our data indicate that retinoic acid plays an important role in buffering the lateralizing influence of the left-right machinery on somitogenesis," said Dr. Pourquié. "This permits the synchronization of the development of the two embryonic sides."

This research holds significant promise for yielding insights that may improve understanding of conditions such as congenital scoliosis, a crippling disorder in children that is characterized by asymmetric development of the spine. Work such as that undertaken by Dr. Pourquié may eventually lead to interventions that could prevent the disabling curvature of the spine in children susceptible to this disease.

"Dr. Pourquié's lab has made substantial contributions to the advancement of the study of the segmentation clock in the presomitic mesoderm and the molecular signals regulating vertebrate segmentation," said Robb Krumlauf, Ph.D., Scientific Director. "We are just beginning to unravel the mysteries of bilateral symmetry in vertebrates, and I believe Dr. Pourquié's work will be very important in this field."

Olivier Pourquié and colleagues worked with chicken embryos to demonstrate a possible factor in human spinal deformities such as congenital scoliosis.

Ph.D., Scientific Director of the Stowers Institute. "Since joining us here in Kansas City nearly three years ago, he has continued to make groundbreaking discoveries. With additional support from HHMI, the Pourquié lab is poised to advance the field of somitogenesis even more rapidly."

About HHMI

The Howard Hughes Medical Institute is dedicated to discovering and disseminating new knowledge in the basic life sciences. HHMI grounds its research programs on the conviction that scientists of exceptional talent and imagination will make fundamental contributions of lasting scientific value and benefit to mankind when given the resources, time, and freedom to pursue challenging questions. The Institute prizes intellectual daring and seeks to preserve the autonomy of its scientists as they pursue their research.

A nonprofit medical research organization, HHMI was established in 1953 by the aviator-industrialist. The Institute, headquartered in Chevy Chase, Maryland, is one of the largest philanthropies in the world with an endowment of $12.8 billion at the close of its 2004 fiscal year. HHMI spent $573 million in support of biomedical research and $80 million for support of a variety of science education and other grants programs in fiscal 2004. For more information about HHMI, visit *www.hhmi.org*.

Institute Establishes First Named Chair

Joan Conaway has been named the first holder of the Helen Nelson Distinguished Chair, the Stowers Institute's first named chair.

The Stowers Institute's $2 billion endowment provides substantial support for Stowers researchers, but the establishment of donor-funded research chairs has long been part of Jim and Virginia Stowers' long-term vision for the Institute.

Many people have admired what Jim and Virginia Stowers created with their generous gifts to the Stowers Institute. Some also enjoy sufficient wealth to establish their own endowments to benefit innovative biomedical research. One option available to donors is establishing an endowed chair devoted to the research of an individual scientist at the Stowers Institute. The late Helen Nelson, a lifelong resident of Kansas City, exercised this option in a bequest intended to expand the research program of an outstanding investigator working at the institute founded by Jim and Virginia Stowers.

Although the support provided by the Stowers endowment enables investigators to sustain highly productive research programs, the best scientists can accomplish even more with additional laboratory funding. An endowed chair may represent only a fraction of the total research support available to an investigator each year, but it can make a significant difference in expanding a program and accelerating progress toward discoveries that point the way to better means of improving human health.

In June, the Stowers Institute announced its first named chair when the Greater Kansas City Community Foundation established The Helen Nelson Distinguished Chair. The Chair is supported by the Helen Nelson Medical Research Fund at the Community Foundation, an endowment made possible by a generous bequest from the late Helen Nelson, whose wish was to support groundbreaking research at the Stowers Institute.

Mrs. Nelson was a Kansas City businesswoman and philanthropist. Her interest in biomedical research stemmed from her son's battle with terminal cancer.

Joan Conaway, Ph.D., Investigator, was named the first holder of the Helen Nelson Distinguished Chair. The Chair carries an annual grant, currently $125,000 each year, to support research in the laboratory of the scientist at the Stowers Institute who is the named beneficiary. Dr. Conaway will hold the Chair for the duration of her appointment at the Stowers Institute.

"I feel honored to be the first recipient of the Helen Nelson Chair and will do my very best to honor Mrs. Nelson in turn by making the best possible use of the resources that she and the Greater Kansas City Community Foundation have provided for us," said Dr. Conaway. "Support from the Helen Nelson Chair will help us extend our proteomic studies of transcriptional regulatory complexes and explore in more detail the mechanisms by which they control the transcription program."

Dr. Conaway is an internationally acknowledged leader in research on the molecular mechanisms that regulate gene expression. Understanding how disease-causing genes are switched off and how disease-preventing genes are switched on represents a major thrust of research at the Stowers Institute. With the new funding from the Helen Nelson Chair, Dr. Conaway can expand her research staff and accelerate progress in this crucial area of molecular biology and biochemistry.

Dr. Conaway joined the Institute as an Investigator in 2001. Previously, she was an Associate Investigator of the Howard Hughes Medical Institute. She also served as interim head of the Program in Molecular and Cell Biology at the Oklahoma Medical Research Foundation in Oklahoma City. Dr. Conaway and her husband and collaborator Ronald Conaway became Kansas City's first elected members of the American Academy of Arts and Sciences in April 2002.

Dr. Conaway received an AB in chemistry from Bryn Mawr College. She earned a Ph.D. in cell biology from Stanford

University School of Medicine in 1987 and completed post-graduate training at the DNAX Research Institute of Molecular and Cellular Biology in Palo Alto, California.

"We are delighted that Dr. Conaway will be the holder of the Helen Nelson Distinguished Chair," said Robb Krumlauf, Ph.D., Scientific Director. "It signifies richly deserved recognition of Dr. Conaway's outstanding accomplishments in biomedical research, and the proceeds of Mrs Nelson's endowment will accelerate Joan's innovative studies of gene transcription."

"We are grateful to Mrs. Nelson and the Greater Kansas City Community Foundation for their generous support of the Stowers Institute," said William Neaves, Ph.D., President and CEO. "This is the Institute's first Distinguished Chair, and we hope there will be many more in the future."

Linheng Li Awarded NIH Grant

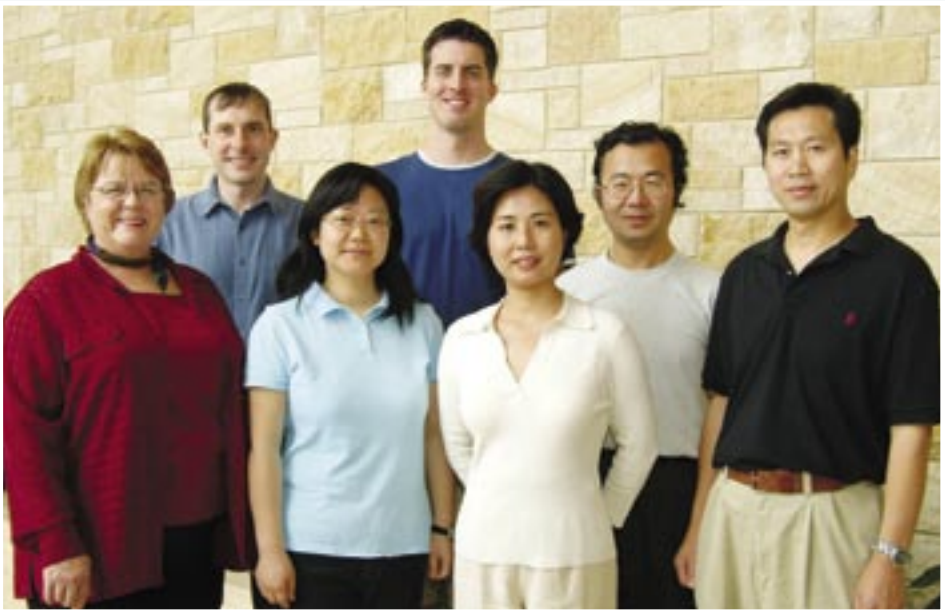
Linheng Li, Ph.D., Assistant Investigator, has been awarded a National Institutes of Health grant by the National Diabetes and Digestive and Kidney Diseases Advisory Council. The grant of approximately $1 million will be awarded over three years to support Dr. Li's work in identifying intestinal stem cells (ISCs) and the ISC niche components.

This grant follows the demonstration by Linheng Li's lab of the role of BMP signaling in regulating proliferation of intestinal stem cells, work in which they uncovered the molecular mechanism underlying juvenile polyposis syndrome (JPS). Dr. Li's lab showed that this precancerous condition in mice can be caused by knocking-out a single gene encoding a bone morphogenetic protein receptor, *Bmpr1a*.

During analyses of the *Bmpr1a* mutant mice, Dr. Li and his team have identified molecular markers that are expressed in ISCs. They plan to use these molecular markers to isolate ISCs by laser-activated cell-sorting technology and test whether the candidate cells can regenerate the intestinal system using a transplantation assay. Identification of ISCs will be the first step in using these cells for regeneration purpose and will facilitate further studies of how organ-specific stem cells are regulated in the body.

"Dr. Li's progress in offering a better understanding of intestine stem cell development has been striking," said Robb Krumlauf, Ph.D., Scientific Director. "NIH grant support is welcome recognition for this important work, and I am confident that the Linheng Li lab will continue to lead the way in this area of study."

Earlier this year, the Scientific Advisory Board of the Stowers Institute unanimously recommended that Dr. Li be promoted to Associate Investigator effective January 1, 2006. This recommendation followed a comprehensive external review by a panel of international leaders in the field of stem cell biology of Dr. Li's research findings since joining the Stowers Institute as an Assistant Investigator in 2000. In addition to his work with intestinal stem cells, Dr. Li was credited by the review panel with his discovery in 2003 of the long-sought niche for bone marrow stem cells.



The National Institutes of Health have awarded Linheng Li's team a grant in support of their work in identifying intestinal stem cells (ISCs) and the ISC niche components. The lab team includes, back row from left: Justin Grindley, Jason Ross, Jiwang Zhang, and Linheng Li. Front row from left: Donna di Natale, Tong Yin, and CiCi He. Not pictured: William Li, Dawn Rupp, David Scoville, Laurie Shannon, and Wenjia Wang.

Paul Trainor Awarded 2005 Hudson Prize

Paul Trainor, Ph.D., Assistant Investigator at the Stowers Institute for Medical Research, was named the winner of the 2005 Hudson Prize at a ceremony on May 21.

The Hudson Prize, which carries a grant of $50,000, was created by the Texas-based H.R. and Evelyn Hudson Foundation to recognize and encourage excellence in basic biomedical research at the Stowers Institute.

"Receiving the Hudson Prize was a great honor and a tribute to the hard work performed by everyone in the lab," said Dr. Trainor. "The spirit of the award is very much in keeping with the vision of Mr. and Mrs. Stowers as it allows us an opportunity to pursue risky but innovative and imaginative research projects. We are using the award in mutagenesis projects to identify genes that are essential for normal head and facial development. We believe this will further our understanding of craniofacial anomalies, which constitute up to one-third of all congenital human birth defects."

Dr. Trainor's research focuses on understanding the interactions during embryogenesis that control normal cranial and facial development. Currently, his lab is investigating the role played by the cranial mesoderm in influencing the identity and migration of cranial neural crest cells though a combination of lineage tracing, cell transplantation, and cDNA library screening experiments.

Additionally, Dr. Trainor's team investigates the potential of neural crest stem cells to generate cartilage, bone, and connective tissue as a possible avenue for craniofacial repair. Under the right conditions, stem cell transplantations may be able to significantly improve the prognosis of affected individuals.

"We are grateful to the Trustees of the Hudson Foundation for creating this prize to accelerate the pace of laboratory research in an area of basic biomedical science that holds great promise for humankind," said William Neaves, Ph.D., President and CEO. "The funds provided by the Hudson Prize will enable Dr. Trainor to pursue his research more aggressively. The Stowers Institute is pleased and honored to be the recipient of this annual award from the Hudson Foundation."

Dr. Trainor joined the Stowers Institute in 2001 from the National Institute for Medical Research in Mill Hill in London, England. He holds a Ph.D. in developmental biology from Children's Medical Research Institute at the University of Sydney, Australia. In addition to his primary appointment at the Stowers Institute, Dr. Trainor currently holds an academic appointment as an Assistant Professor in the Department of Anatomy & Cell Biology at The University of Kansas School of Medicine.

About the Hudson Foundation

The Hudson Foundation was established in 1991 to further the Hudsons' lifelong interest in supporting education, medical research, children's issues and the arts. M.R. Hudson was the founder of Hudson Oil Co. and later Fisca Oil Co.

Paul Trainor was awarded the 2005 Hudson Prize, a $50,000 grant in support of his work. He is pictured here at the Hudson Prize Award Dinner between Institute founders Jim Stowers Jr. and Virginia Stowers.

Janet Rossant Appointed to Scientific Advisory Board

Internationally renowned researcher Janet Rossant, Ph.D., has been appointed to the Institute's Scientific Advisory Board (SAB). Members of the SAB work closely with William Neaves, Ph.D., President and CEO and Robb Krumlauf, Ph.D., Scientific Director, to ensure that the Institute meets its objective of conducting basic research of the highest quality by identifying candidates who meet the most rigorous scientific standards.

Dr. Rossant is Chief of Research at the Hospital for Sick Children in Toronto. She is also a University Professor at the University of Toronto, and Professor in the Department of Molecular and Medical Genetics and the Department of Obstetrics/Gynecology at the University of Toronto.

Dr. Rossant's contributions to the analysis of mammalian development extend over twenty-five years. She was the first to establish the fates of some of the earliest cells in the mouse embryo, classic work that still resonates in the developmental biology field today. Her main contributions revolve around "lineage determination" in the developing embryo — how it happens that genetically identical cells adopt entirely different cell fates during development. This line of research is fundamentally important to understanding numerous birth defects that entail perturbations of normal developmental processes.

Her current research centers on understanding the genetic control of normal and abnormal development in the early mouse embryo using both cellular and genetic manipulation techniques. She is also involved in stem cell research and is known for her discovery of a novel placental stem cell type, the trophoblast stem cell. She serves as Deputy Director of the Canadian Stem Cell Network. She also directs the Centre for Modelling Human Disease in Toronto, an inter-institutional research program that is undertaking genome-wide mutagenesis in mice to develop new mouse models of human disease.

Dr. Rossant's pioneering research accomplishments have earned her many honors, including the FASEB Award of Excellence, the Killam Prize for Health Sciences, and the Robert L. Noble Prize from the National Cancer Institute of Canada. Dr. Rossant, who trained at the Universities of Cambridge and Oxford in the United Kingdom, was elected to the Royal Society of London in recognition of her discoveries in the regulation of early development. She is also a Fellow of the Royal Society of Canada and a Distinguished Investigator of the Canadian Institutes of Health Research. More than any other scientist, Dr. Rossant has been responsible for establishing the University of Toronto and affiliated research institutes as a world leader in mammalian developmental biology and genetics.

Internationally renowned researcher Janet Rossant has become the sixth member of the Institute's Scientific Advisory Board.

Stowers Institute Scientific Advisory Board

Douglas A. Melton, Ph.D.*, **	Thomas Dudley Cabot Professor in the Natural Sciences at the Department of Molecular and Cellular Biology of Harvard University, and Co-director of Harvard's Stem Cell Institute and Center for Genomics Research.	Harvard University
Michael Levine, Ph.D.	Director of the Center for Integrative Genomics and F. Williams Professor of Genetics in the Department of Molecular and Cell Biology	University of California-Berkeley
Susan L. Lindquist, Ph.D.**	Member of the Whitehead Institute and Professor of Biology	Massachusetts Institute of Technology
Eric N. Olson, Ph.D.	Chair of the Department of Molecular Biology, Director of the Hamon Center for Basic Research in Cancer, Robert A. Welch Distinguished Chair in Basic Cancer Research, and Annie and Willie Nelson Professor in Stem Cell Research	University of Texas Southwestern Medical Center
Charles J. Sherr, M.D., Ph.D.**	Herrick Foundation Chairman of the Department of Genetics and Tumor Cell Biology	St. Jude Children's Research Hospital

*Chair of the Stowers Institute Scientific Advisory Board
**Howard Hughes Medical Institute Investigator

Student Researchers Spend the Summer at Stowers

A leisurely summer by the pool might be enough for some college students, but not for the aspiring scientists who spent their summer break as participants in the Institute's Stowers Scholars program.

Six students, selected from among 75 applicants, spent eight weeks in a state-of-the-art research environment, pursuing research projects of their own design. Students worked closely with Stowers scientists and got a taste of life as basic biomedical researchers.

"It was invigorating to know that I was encouraged to be a contributing member of the lab," said Emily Abdoler, a senior at William Jewell College. "My team allowed me a voice and helped me hone the skills to speak it."

In addition to learning the basics of laboratory research, Stowers Scholars came to understand the importance of experiencing failure as well as success.

"There are times when, no matter how meticulously planned and executed, an experiment doesn't work the way you had anticipated," said Cara Rachals, a senior at The University of Kansas. "Instead of becoming frustrated, you have to enjoy the challenge of pinpointing exactly what must be changed or modified."

The Institute hopes to encourage more students to pursue careers in basic research by exposing them to the field prior to graduating.

"All of us at the Stowers Institute understand the importance of basic research," said Abby Freeman, Vice President for Administration, who oversees the program. "The Stowers Scholars program allows us to share our enthusiasm with students and to encourage bright minds to consider a career in this important work."

Additional information about the Stowers Scholars program and applications are available at *www.stowers-institute.org/ScientistsSought/training/scholarsprogram.asp*.

Six college students were selected from among 75 applicants for the 2005 Summer Scholars program. Front row from left: Cara Rachals, Jessica Leonardi. Back row from left: Emily Hoffman, Mathew Basel, Emily Abdoler, Ashley Ihde-Baker.

Stowers Scholars 2005 Projects

Student Scholar	School and Project
Emily Abdoler *Ron Yu Lab*	William Jewell College *Elucidation of the Neuronal Circuitry Involved in Olfaction Using BAC Technology*
Ashley-Idhe Baker *Susan Abmayr Lab*	William Jewell College *Ced-12 PiggyBack Element Hop Screen* *Deficiency Screen of Microarry Data of Genes Specific to FCM*
Mathew Basel *Cytometry Lab*	Kansas State University *Determination of FACA Induced Cell Death*
Emily Hoffman *Sue Jaspersen Lab*	Washington University in St. Louis *Classification and Phylogenetic Analysis of the Novel Protein YOR154W in the Budding Yeast* Saccaromyces cerevisiae
Jessica Leonardi *Peter Baumann Lab*	Texas A&M University *Chromosome Circularization as a Mode of Survival in* Schizosaccaromyces pombe. *How Does it Happen and How are Circular Chromosomes Maintained?*
Cara Rachals *Scott Hawley Lab*	University of Kansas *Structure of Nod*

Modeling Human Health

The use of animal models is an essential element of basic biomedical research. Stowers scientists rely on a number of animal models including mice, snakes, lizards, frogs, fish, fruit flies, sea slugs, and yeast to provide insights into the mysteries of human health.

"Animal models are essential to the work we do at the Institute," said Robb Krumlauf, Ph.D., Scientific Director. "Unlike humans, these model species can be grown rapidly and their genes mutated at will. By studying the consequences of intentional mutations, we can determine the function of normal genes and make inferences about the causes of human disease. The use of animal models is a critical tool of basic biomedical research."

Some animal models have obvious lessons to teach us about human health — snakes, for example, are the ideal subjects to learn about the formation of the spine since their skeletons are virtually *all* spine. Other animal models are bit more puzzling. Many wonder what a fruit fly, or *Drosophila*, could possibly teach us about human health, but it has proven to be the ideal subject for Scott Hawley, Ph.D., Investigator, and his research group.

"*Drosophila* is an ideal model for the study of chromosome behavior and structure during meiosis for several reasons. First, both the small number of chromosomes and the availability of large numbers of mutant strains make doing complex genetic experiments possible. Such is not the case in most other organisms. Second, many of the processes that occur during female meiosis in *Drosophila* tightly parallel those that take place in human oocytes. Third, the large and active community that works on fly meiosis and fly oogenesis creates an exciting and synergistic environment in which to do science. All of us are greatly enriched by both our colleagues' newest findings and the excitement and energy that pervades this group of scientists."

Different animal models offer different opportunities to learn about human health, and the Institute has established state-of-the art facilities to accommodate research with a wide range of animal models that may call for specialized lighting, air filtration, room temperature, or any number of other factors.

The use of animal models is essential for biomedical research. Thanks to the work of a large and dedicated team, the high quality of the Institute's animal care program was recently recognized by an international council.

Regulating Animal Care

The standard for care of research animals is extremely high. The Institute must monitor and regulate all aspects of animal care ranging from lighting conditions to cage cleaning and air circulation. To ensure highest quality animal care, the Institute has established an Institutional Animal Care and Use Committee (IACUC), an oversight committee appointed by the President and CEO of the Institute and approved by the Department of Health and Human Services to oversee the use of animals in research and to guarantee that all research activities involving animals are conducted in compliance with federal, state, and Institute rules and regulations. The committee establishes procedures and standards for review of all animal research in order to foster high ethical standards in the conduct of research and to assure that uniform criteria are applied to research involving animals.

"Biomedical research requires accurate and reproducible results from experimental data," said Heather Marshall, Ph.D., Director of Laboratory Animal Services. "When research involves the use of animals, reliable results can be attained only through the highest quality of animal care and use programs. If our animals are unhappy, the research data will be compromised."

Surpassing Expectations

At regular intervals, The Council on Accreditation of the Association for Assessment and Accreditation of Laboratory Animal Care (AAALAC International) visits the Institute to review the animal care programs.

This spring, AAALAC International visited the Institute for its three-year reaccreditation inspection. The AAALAC International site-visit team evaluated protocols related to the care of research animals, inspected the facilities, and interviewed staff to determine if the Stowers Institute qualified for continuing Full Accreditation.

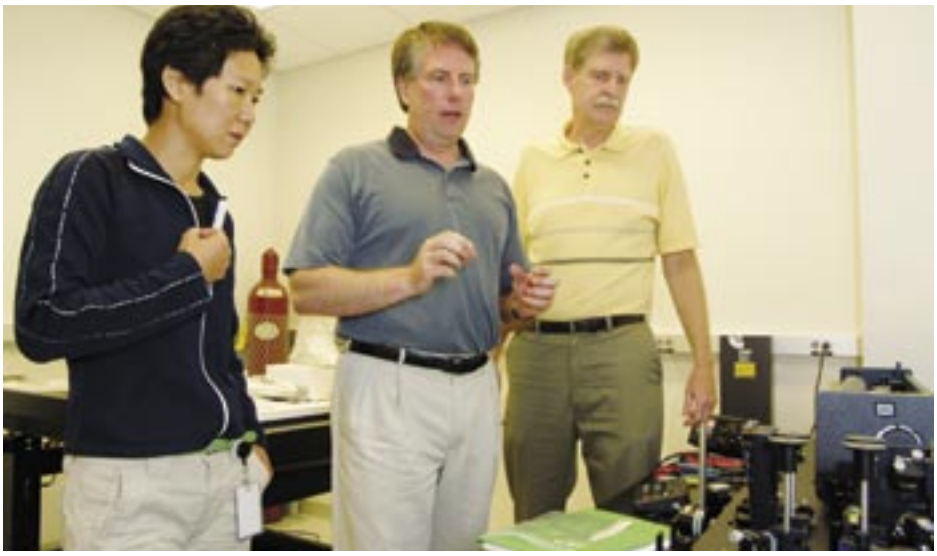
Thanks to the dedicated work of Dr. Marshall and the entire staff of Laboratory Animal Services, the report from the AAALAC site-visit team lauded the Stowers animal care program and endorsed continuing full accreditation with no deficiencies noted.

"The Council commends you and the staff for providing and maintaining an exemplary program of laboratory animal care and use," read the letter from AAALAC International. "Especially noteworthy were the high level of knowledgeable and dedicated Institutional Animal Care and Use Committee (IACUC); the flawless IACUC administrative support; and the level of expertise and leadership provided by Dr. Heather Marshall [and her colleagues]."

"AAALAC accreditation not only tells us we're doing our job right," said Dr. Marshall, "but it also tells the world that the Stowers Institute is dedicated to maintaining a superior level of animal care and use."

"It takes a special team to run a successful animal care program — these are people who care for the animals seven days a week, 365 days a year," said William Neaves, Ph.D., President and CEO. "The Institute is extremely fortunate to have a wonderful team of dedicated individuals who make our animal care program second to none. Their exemplary effort makes it possible for the Stowers Institute to fulfill its mission of conducting biomedical research of the highest quality."

A Lab is Born



Dozens of Institute members work together to prepare for the arrival of a new research team. From left: Rong Li discusses a piece of equipment for her new lab with Tim Geary and Kris Kramer.

The process of recruiting principal investigators (PIs) to the Institute is a rigorous one. Once identified and approved by William Neaves, Ph.D., President and CEO and Robb Krumlauf, Ph.D., Scientific Director, PIs must be also be unanimously approved by the Institute's six-member Scientific Advisory Board.

But it's when the Institute begins preparing for the arrival of a new PI that the vast work begins. The process involves dozens of Institute members who work together to ensure that each new lab is ready for efficient and productive research in time for the new PI's arrival in Kansas City.

A Process of Preparation

Tim Geary, Director of Research Operations, initiates the planning process by visiting the researcher's current lab.

"On-site visits allow me to learn about each researcher's science, equipment requirements, and work flow. I evaluate what works well for their projects so we can create a workspace of optimal efficiency for them at Stowers."

With that information, Mr. Geary begins configuring the Stowers lab space. Although all of the Institute's laboratories were constructed to approximately 90 percent completion when the Institute was built, each lab undergoes adjustments to make the space suitable for its lab team.

That may mean raising or lowering lab benches, modifying shelving units, running specialized utilities into the lab, or even constructing specialty rooms to accommodate specific equipment or animal models.

Kris Kramer, Director of Facilities, and Neil Krahn, Manager of Plant Engineering and Maintenance, oversee these physical preparations in the lab, which are completed by the Stowers maintenance team and, as needed, outside contractors. The process of lab construction can last a few weeks or a few months, depending on the scope of the work.

"We are totally driven by science," says Mr. Kramer. "Every lab needs some modification, because our goal is to create the ideal work space for each research team."

Throughout the process, new PIs visit the Institute several times to conduct "walk-throughs" and to monitor the prog-

ress and ensure that renovations are unfolding according to his or her needs.

Stocking Up for Success

While one team works to prepare the physical space of the laboratory, another works to equip the lab with the necessary materials. The process of purchasing all of the required items for a lab is extensive. Hundreds of items ranging from simple test tubes to sophisticated instrumentation must be purchased. But, before anything is ordered, the team surveys the available options and makes numerous comparisons to ensure that each item will best suit the needs of the lab group.

It's not just the laboratory that must be readied for the new team. Stowers researchers collaborate with scientists in the Institute's research support facilities and with the directors of technology centers such as Bioinformatics, Imaging, and Proteomics. Prior to the arrival of a new PI, each research support facility assesses the specific research needs of that person's lab program. Additional equipment may be purchased and new technology may be acquired to ensure that the facility is prepared to meet the unique needs of a new research team.

Building a Team

Meanwhile, work to staff the new lab team begins. Established investigators generally bring several members of their research team with them to the Institute. In most cases, they also hire additional researchers to round out their team. New PIs who are establishing their own research group for the first time must hire an entire lab team.

In either case, the Institute's staffing department, led by Abby Freeman, Vice President for Administration, leads the search for qualified team members.

"Each situation is different," said Ms. Freeman. "For an established investigator, we begin by looking at the members of the existing research team who will be relocating to Kansas City to determine where there are unmet needs. Some teams may need technicians. Others have lab openings that require graduate students or postdoctoral researchers."

Job openings are posted to the Institute's Web site, and major colleges and universities are notified of the opportunities. Institute job postings frequently generate a flood of resumes.

"Our hiring process is extremely competitive," said Ms. Freeman. "One of the key qualifications we require is a very strong academic background. Candidates with rigorous academic preparation can contribute more effectively to the Institute's research programs."

The staffing department oversees the recruitment and hiring process for all candidates. Members of this department post openings, conduct interviews, collect and review letters of recommendation, and check references. The most competitive applicants are referred for interviews to the incoming PI, who ultimately decides which candidates will join his or her team. Upon selection of a candidate, the staffing department also ensures that legal status for employment has been met and assists with housing and transition to Kansas City.

Finishing Touches

When the laboratory is completed and the research team is assembled, there is only one thing left to do — move in. But even that is a big job. Mr. Kramer oversees the process of moving in to the new Stowers lab. For an established investigator, that may mean coordinating a fleet of semi-trucks (sometimes refrigerated) as they move expensive and fragile equipment from the East or West Coast to Kansas City. It is only after the equipment and the lab team have arrived and settled in to the Institute that the work of the Stowers team is done.

The whole process generally takes six to eight months, and usually costs between $500,000 and $1 million. "The process of establishing a new lab entails a tremendous amount of work — both for those of us at the Institute and for the new PIs," said Mr. Geary. "The decisions that must be made, both large and small, are seemingly endless. But the end result is an environment that allows Stowers researchers to do their best work. And that really is why all of us are here in the first place."

One Lab's Story

Rong Li, Ph.D., Investigator, accepted an offer to join the Stowers Institute in November 2004. The last of her equipment and team members arrived in Kansas City in August 2005. In the months between, Dr. Li worked closely with the Stowers team to prepare her new state-of-the-art laboratory.

Although the decision to move her lab from Harvard Medical School to the Stowers Institute was a big one, Dr. Li is confident it was the right move for her.

"The Stowers Institute offers lots of funding for innovative work, great facilities, wonderful colleagues, strong and smart leadership, and very supportive staff," she said. "The Stowers team made the moving process totally easy. Everyone was enormously helpful in every aspect."

For more information about Dr. Li's work, visit *www.stowers-institute.org/labs/RongLiLab.asp*.

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