SCRIPPS DISCOVERS

Accelerating Discoveries, Saving Lives

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INSTITUTE UPDATE

Scripps Research Institute Receives Grant to Screen Molecules for Possible New Drug Development

Dr. Hugh Rosen

The Scripps Research Institute has been awarded more than $80 million by the National Institutes of Health (NIH) to greatly expand the work of The Scripps Research Molecular Screening Center, further strengthening the collaborative efforts of teams of scientists at the La Jolla, California and Jupiter, Florida campuses. The six-year grant is the largest ever awarded to Scripps Research.

The Scripps Research Institute Molecular Screening Center will use Scripps Florida's high throughput robotics to screen discoveries made in laboratories in La Jolla and Jupiter, as well as other research institutions, against various biological targets. The goal is to uncover "proof-of-concept molecules" that could be useful in developing new treatments for a large number of human diseases.

The Scripps Research center is one of only four such large centers nationwide. Together with five smaller specialized centers, they comprise the Molecular Libraries Production Centers Network, a part of the NIH's strategic funding plan, the Roadmap Initiative.

"This is a tremendous accomplishment and validation of the quality of work of Scripps Research scientists in La Jolla and in Jupiter," said Scripps Research President Richard A. Lerner, M.D. "As we go forward, we will be able to leverage our expertise and our technology on both coasts to have the greatest impact on science and medicine worldwide."

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Inside:

Alex Bruner Joins Scripps Florida Philanthropy as Associate Vice President

> Bruner, who was executive director for the Palm Beach region of the American Committee for the Weizmann Institute of Science in Boca Raton, Florida, joined Scripps Florida in August.

"Alex Bruner is a great addition to our philanthropy effort in Florida," said Will Melton, vice president for philanthropy at Scripps Florida. "He not only knows our region extremely well, he has a strong background in science. He brings a high level of expertise and dedication with him to Scripps Florida."

Bruner received a bachelor's degree in chemical engineering from the University of Maryland and an MBA from Harvard University.

"I have been amazed by the quality of the science at Scripps Florida," Bruner said. "It is a great honor to be involved with an organization whose mission is to help improve the health and wellbeing of people around the world. My primary goal as

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Federal Grant, CONTINUED

Dr. Alan M. Krensky, director of the NIH Office of Portfolio Analysis and Strategic Initiatives, which oversees the Roadmap programs, said, "The Molecular Libraries program is the single largest investment of the Roadmap Initiative to date. It is a bold experiment to bring small molecule screening to academics. The impact on both interrogation of signaling pathways and the identification of lead compounds for drug development is expected to be transformative."

Scripps Research Professor Hugh Rosen, M.D., Ph.D., of the La Jolla campus and the principal investigator on the project, said, "As an institution, Scripps Research produces the highest quality science through the synergistic blending of biology and chemistry. We have a unified approach in California and Florida, the same discipline, the same set of high standards in an integrated data environment. This very significant grant recognizes that combination of talent and technology that has successfully led to the discovery of proof-of-concept chemical probes of defined mechanisms that work both in the test-tube and in vivo."

Professor Pat Griffin, chair of the Molecular Therapeutics Department and head of the Translational Research Institute at Scripps Florida, and the co-principal investigator, added, "We were one of ten institutions in the pilot phase of this project. Our accomplishments in La Jolla and Jupiter during that time have made us one of only four comprehensive centers in what is now the definitive phase.

While we may be on two coasts, our core commitment has always been to work together as a unified team to produce the best science possible."

In addition to Rosen and Griffin, other key contributors include William Roush, Scripps Research professor and executive director of Medicinal Chemistry at Scripps Florida; Peter Hodder, co-principal investigator and science director for lead compound identification at Scripps Florida; Edward Roberts, professor, Medicinal Chemistry, and Benjamin Cravatt, professor and chair of Chemical Physiology, both in La Jolla.

The new funding will have an impact on the ongoing research at Scripps Florida, according to Scripps Research President Lerner.

"A significant portion of this grant will be coming to Scripps Florida," Lerner said. "So there will be a need for new people to match the scope of the project. That's in addition to the ongoing recruitment underway at all levels as we contemplate the move into our three new buildings in early 2009."

The new grant is seen as validation of the vision and decision to expand Scripps Research into Florida, according to Lerner. "To have become a serious competitor for federal funding of biomedical research on such a large scale and in such a short period of time is recognition not only of the work of our scientists, but also of the wise investment by the people of Florida and Palm Beach County in building Scripps Florida in the first place," Lerner said.

The current initiative began in 2005 as a three-year pilot program, part of the National Institutes of Health Roadmap Initiative, a series of separate programs, many of which cross the traditional boundaries between the NIH's 27 institutes and centers. The Scripps Research pilot program, led by Hugh Rosen, received an initial grant of $10.4 million.

Scientists in the pilot projects have been using the Molecular Libraries Small Molecule Repository, a public collection of hundreds of thousands of chemically diverse small organic compounds that have the potential of interacting with various human proteins and other molecules involved in disease. The primary question is how—which compound will interact with which human target involved in which disease? Once the targets are identified, scientists can take the next step and work on finding ways to control or otherwise correct them.

"Since the pilot program started, our overall goals haven't changed —to discover and generate specific clinical tools that can help transform basic science into medicine," Griffin said.

"This funding will allow us to expand the discovery of targets that can be identified as new points for therapeutic intervention. Our hope is to speed up the translation of our work into medical solutions that will one day help to improve the lives of people who are ill."

Bruner, CONTINUED


Alex Bruner

associate vice president is to help inform the community about the incredible work being done at Scripps Florida, and to provide new opportunities for people in the community to become more involved with us in a meaningful way."

Bruner cited the recent National Institutes of Health grant of more than $80 million to The Scripps Research Institute, a significant portion of which will be used to expand the research done by Scripps Florida scientists, as evidence of the substantial impact the institute has already had on the area, as well as its huge potential for improving global health care.

Prior to the American Committee of the Weizmann Institute, where Bruner raised over $50 million in his nine years there, Bruner served as the North American director of Business Network Israel, which was a business development agency for Israeli technology companies, where he was responsible for U.S. and Canadian operations. He was concurrently a regional representative of BIRD, a $110 million fund established by the U.S. and Israeli governments to develop and finance joint research and development projects.

Prior to that, Bruner worked as a principal with Ernst & Young, managing a variety of marketing, strategy, and business development projects for major corporations, including Apple, Nortel, Xerox, Royal Bank, Bell, Okidata, and Fujitsu, as well as for federal and regional governments.

Scripps Research Team Reverses Huntington's Disease Symptoms in Mice

> Experimental Treatment is Being Readied for Further Testing.

There is no cure for Huntington's disease, or even treatments that can reverse or slow progression of the devastating movement deficits and cognitive dysfunction that occur with the condition. But, now, an agent developed by scientists at The Scripps Research Institute has shown dramatic therapeutic efficacy in experimental mice, and did so with minimal toxicity.

The inhibitor, HDACi 4b, dramatically improved the physical appearance and motor functioning of Huntington's disease transgenic mice, and retarded their loss of body weight and reduction of brain size.

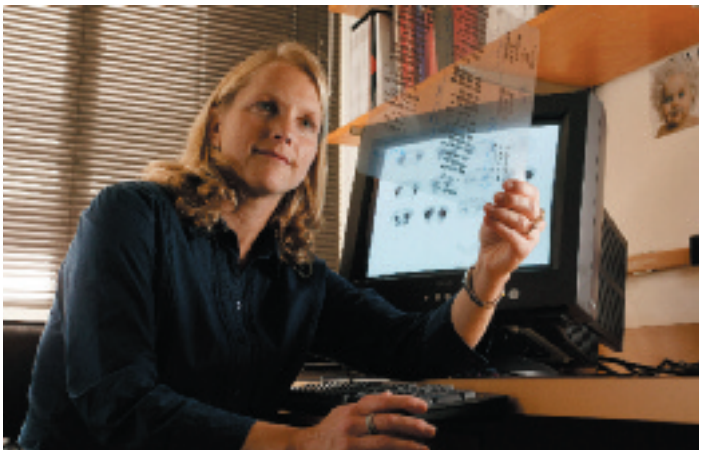
"The benefit seen was surprising, and immensely exciting, because it suggests this compound could form the basis of a truly relevant therapeutic treatment for Huntington's disease," says the study's lead author, Elizabeth A. Thomas, Ph.D., Assistant Professor in the Scripps Research Department of Molecular Biology. "The mice that were destined to develop Huntington's disease receiving the treatment did significantly better than the mice who didn't receive the drug."

The source of Huntington's disease is a mutated gene caused by a trinucleotide repeat expansion—a sequence of three DNA bases (CAG) repeated multiple times. The protein this gene produces is misfolded and cannot function correctly. For reasons not well understood, this series of events causes widespread changes in the transcription of hundreds of genes throughout the brain, leading to issues ranging from jerky and random movements to impaired thinking and perception.

In mice whose genome has been modified to contain a mutant human Huntington's disease gene, such symptoms develop when the mice are about three months old. In the new study, the researchers administered HDACi 4b to such mice after symptoms first appeared, adding the agent to the drinking water when the mice were four months of age. This is reminiscent of the human condition where patients are often diagnosed after symptom presentation.

HDACi 4b is among a class of agents called histone deacetylase (HDAC) inhibitors, which are known to help control gene transcription. While other agents in this class have been tested on models of Huntington's disease with some beneficial results, previous compounds were ultimately too toxic for use as a treatment.

In the new study, the Scripps Research scientists modified an HDAC inhibitor that was already commercially available. HDACi 4b's development was spearheaded by Scripps Research Professor Joel Gottesfeld, Ph.D., who in 2006



Dr. Elizabeth Thomas

created and published a small library of HDAC compounds he believed would be specific for brain disorders caused by triple repeats. Several patent applications related to these compounds have been exclusively licensed to Repligen Corporation in Waltham, Massachusetts, which is conducting further testing and development.

HDAC inhibitors work by removing the barrier that a mutant protein can place on gene transcription. If a gene can't be "read," it can't be transcribed in order to produce its protein. This process occurs in the chromatin, which is the complex of genes and proteins that make up the chromosomes. The main proteins in chromatin are the histones, which act like spools around which DNA can wind itself into the chromosomes in order to fit within the cell's nucleus.

In order for transcription to occur, the chromatin needs to "relax" and open up so that the gene can be available. This relaxation occurs when chemicals known as acetyl groups attach to the histones — a reaction called acetylation. When chromatin is condensed, unavailable for transcription, the histones are said to be "de-acetylated" by enzymes called de-acetylases. HDAC inhibitors stop the acetyl groups from being removed from histones, causing the chromatin to open up for transcription.

In the new study, HDACi 4b was tested on Huntington's disease mice for its ability to ward off motor deficits and neurodegeneration in treated mice, as well as for its toxicity. "The agent proved to be therapeutically superior, as well as less toxic than other HDAC inhibitors that had been tested for Huntington's disease," Thomas says.

The researchers also found, using gene microarrays, that their agent substantially altered gene expression in the brain. The scientists looked at the top genes that were altered in the brain's striatum, which is where many of the Huntington's

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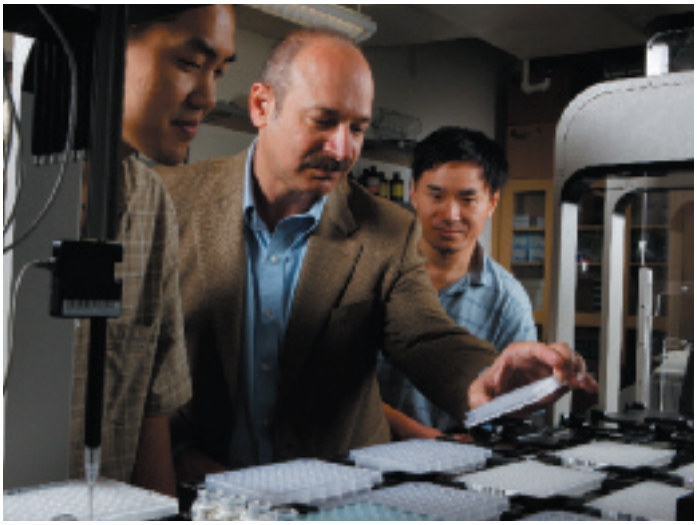
Team Led by Scripps Research Scientists Finds Gene Critical to Normal Hearing

> Mutations Cause Deafness, But Condition May Be Treatable

Researchers at The Scripps Research Institute have discovered a new gene they say is essential for both hearing and balance in mice and humans. They found that a mutation in this gene causes a form of deafness that has nothing to do with structural proteins in the inner ear—commonly altered in hereditary deafness. On the contrary, the mutation affects an enzyme with a known catalytic function, which gives hints as to how the problem might be preventable with novel drug therapy.



Dr. Bruce Beutler

The new gene, which the scientists labeled *COMT2*, is a sister to the well-known *COMT* (catechol-O-methyl transferase) gene. Both of these genes encode proteins that degrade catecholamines, key neurotransmitters such as dopamine and norepinephrine, to keep them from accumulating and harming cells that have receptors for them. Defects in the *COMT* gene within the brain have already been linked to development of schizophrenia.

The study began when it was observed that certain mice carried a mutation that caused deafness and balance problems. The team of scientists used a technique known as "positional cloning" to find the defective gene, which is highly expressed in the hair cells of the inner ear of mice. The study was then carried forward to reveal that some deaf people have mutations affecting the equivalent human gene.

"We think it is possible that when *COMT2* is defective, catecholamines accumulate around the hair cells, which are specialized to interpret sound energy and generate signals to be processed by the brain," says Bruce Beutler, M.D., chair of the Scripps Research Department of Genetics, who led the study with Ulrich Mueller, Ph.D., professor in the Scripps Research Department of Cell Biology.

"The catecholamines may then overexcite and damage or kill the hair cells. This is a wholly unexpected finding."

"Previously, we only knew that structural defects of the hair cells could cause deafness. We were surprised to find that an enzyme for catecholamine inactivation is also required for hair cells to survive."

He adds that while the researchers suspect that defects in *COMT2* cause only a small percentage of human deafness—mutations in the gene were only found in only about two percent of 192 deaf patients in the study—Beutler says that this discovery may lead to new understanding about the role that catecholamines play in other forms of deafness and perhaps in other disorders.

The researchers made their discoveries using forward genetics, a field the Beutler group has pioneered, especially in its search for genes involved in immune function. Using this technique, the scientists induce genetic mutations at random with chemicals and look for phenotypic (observable physical or behavioral) changes. In this case, the mice became hyperactive and ran in circles, which is typical of loss of hearing, Beutler says. The scientists then bred the offspring and followed the phenotype across generations in order to map the mutation causing the behavior.

The gene the scientists eventually found encoded a protein that was 35 percent identical in amino acid structure to *COMT,* which performed the same function of degrading dopamine, the researchers say.

"In forward genetics, you let the organism tell you what is wrong," Beutler says, "and we are seeing things none of us would have imagined before."

He adds that because *COMT2* mutations probably do not directly cause structural problems within the inner ear, it may one day be possible to treat related deafness with specific therapy that restores catecholamine degradation or prevents catecholamine signaling in the inner ear.

The study was funded by grants from the National Institute of Deafness and other Communicative Disorders, the Skaggs Institute for Chemical Biology, and National Institute of Health grants.

Holly Cline:

Innovative Approaches to the Study of Developmental Neurological Disorders

For centuries scientists and philosophers have wondered how the brain develops so that we can think, respond to events in our world and carry on a conversation. Most studies on brain development are indirect because it is difficult to make direct observations of the generation of new cells in the brain and the establishment of brain connections. Recent technological advances allow scientists to observe directly the growth of cells in the brain and how they respond to changes in the environment. These direct observations can give us key information on brain development, under healthy and disease conditions – new Scripps Research Professor Holly Cline is taking advantage of these technological advances in pioneering ways.

Sensory experience is required for normal brain development. The goal of Holly's research is to determine the mechanisms by which sensory experience affects the development of brain structures and function. It involves studies that investigate which genes and proteins are required for enhanced neuronal activity, and could have relevance to a variety of developmental neurological disorders such as Fragile X Syndrome, Rett's Syndrome, autism spectrum disorders, and schizophrenia – which are the result of errors in the development of brain circuitry.

"Neuronal activity enhances development of the parts of the brain involved in that activity via a positive-feedback loop," Holly explains, "just as practicing a musical instrument enables musicians to perfect their performance."

"Sensory input can promote circuit development, so the brain is better equipped to process that information," she says. "This is a fundamental phenomenon in brain development, and also in brain plasticity – the way the brain changes in response to new experiences – and why sometimes it doesn't."

Holly came to Scripps Research from Cold Spring Harbor Laboratory where she was a Professor of Neuroscience for 14 years. She has brought 10 of her 14 international lab team members with her to Scripps Research. At Cold Spring Harbor, she made major contributions to the understanding of brain development and function.

She is particularly proud of her National Institutes of Health Director's Pioneer Award, which she received in 2005 to launch a large-scale project to understand the architecture, development, and plasticity of brain circuits. She was one of only 13 scientists to receive this annual award, which recognizes scientists who have far-ranging ideas that hold the potential to make truly extraordinary contributions in many fields of medical research.

The award supports the research of exceptionally creative scientists who take innovative approaches to major challenges in biomedical research. It is intended to give recipients the intellectual freedom to pursue groundbreaking new research with high potential impact that, due to their novelty, also have inherently high risks of failure. Holly received $2.5 million in direct costs for research, which she is still utilizing in her research here.

Dr. Holly Cline

Holly's approach is indeed unique – it involves using in vivo imaging methods to watch the brain develop. "We're essentially taking movies of cells in the brains of living animals," she says. "We know that certain genes and proteins are important for brain development. We can increase or decrease the expression of these genes in our quest to find potential drug targets."

"One of the main reasons I came to Scripps Research is its fantastic reputation for taking gene and protein level experience to the next level of therapeutics," says Holly. She has been impressed already in her short time here. "We seem to have an interactive and vibrant group of neuroscientists."

In one of her research projects at Cold Spring Harbor, Holly and her team demonstrated for the first time in living animals that insulin receptors in the brain can initiate signaling that regulates both the structure and function of neural circuits. The finding suggests a significant role for this class of receptors and perhaps for insulin, not only in brain development, but also in cognition and in pathological processes in which cognition is impaired, as in Alzheimer's disease, for example.

Holly received her Bachelor's degree from Bryn Mawr College, a small women's college, in 1977. After a few years as a technician at the Memorial Sloan-Kettering Cancer Center, Holly attended graduate school at the University of California, Berkeley, where she received her Ph.D. in 1985. Her thesis adviser, Gunther Stent, encouraged her interest in the plasticity of the visual system. She then went on to Yale University and Stanford University as a postdoctoral fellow, and later became as assistant professor at the University of Iowa.

Holly's daughter, Rose, is in her first semester at Georgia Tech University – she hopes to become an engineer.

"I'm driven by a basic curiosity," says Holly. "I am fascinated by events in brain development and want to understand them better."

The Donald E. and Delia B. Baxter Foundation:
Helping Minds Make a Difference for Mankind

A trained engineer, Dr. Donald Baxter revolutionized the medical world with the development of safe intravenous solutions by pioneering the commercial preparation of IV solutions – paving the way for widespread use in intravenous therapy.

During World War I, Dr. Baxter was in charge of tuberculosis wards in Paris for the American Red Cross. While serving as the Superintendent of Construction for the building of the Peking Union Medical College in the 1920's, he was shaken by his involvement in a devastating cholera epidemic in which many thousands of people died. For the most part, they succumbed from a massive loss of body fluids.

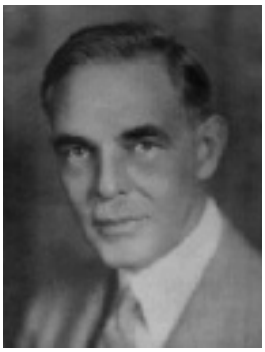
Dr. Baxter never forgot that experience, and later when he returned to his California home, he reflected on the baneful effect on patients that resulted when physicians tried to replace their lost fluids with injections of sugar and water solutions. Utilizing technology that he developed in a small facility in Glendale, California, he introduced the world's first commercially safe glass containers for the delivery of sterile IV solutions in 1929 through his pharmaceutical company, Don Baxter, Inc. Baxter International was founded in 1931 to manufacture intravenous solutions to distribute products manufactured by Don Baxter, Inc.

The Donald E. and Delia B. Baxter Foundation, nearing its 50th anniversary, was established by Delia Baxter in honor of her husband, Donald, in 1959. The investigators it funds embody Donald Baxter's pioneering spirit.

The Foundation is committed to helping prepare and support new investigators as they begin their careers at leading postgraduate private institutions on the west coast. By providing support for the critical early stage of career development, the foundation enables new scientists to develop preliminary data and build their research programs to the point where they can compete effectively for federal or other external funding. The foundation likes to fund researchers whose projects may lead to development of new therapies, diagnostic tools, and disease prevention.

The foundation also provides fellowships to graduate students at medical and scientific schools of higher learning in California.

The Baxter Foundation has generously provided over $1.3 million to Scripps Research and supported seven Scripps Research investigators over the past twelve years. They are Dr. Kerri Mowen; Dr. Mark Yeager, who is also a practicing cardiologist; Dr. Benjamin Cravatt, who is involved in research on the treatment of pain and neuropsychiatric disorders; Dr. Jeffery Kelly; Dr. Jamie Williamson, Dr. Geoffrey Chang, and Dr. Floyd Romesberg. The Foundation has also supported Scripps Research Kellogg School of Science and Technology graduate students Erin Anderson, Miller Tran, Elizabeth Culyba, Ronald Coleman, and Marin Gantner.


Dr. Donald Baxter

From its first modest $6,000 grant in 1960, the Foundation has grown to the point where it provided $1.3 million in funding last year. Aside from Scripps Research, the Baxter Foundation has provided support to Stanford University, the University of Southern California, and the University of Louisville, where Donald Baxter graduated from medical school in 1909.

One of the projects funded by the Baxter Foundation resulted in the first DNA Sequenator, a way to electronically read DNA by analyzing numerous DNA bases quickly through an automated process, which was only available manually and slowly at the time.

"We are quite proud of the innovative accomplishments our grantees have achieved and the careers we have helped to initiate," said Donald Haake, a grandson of Donald Baxter, and president of the Foundation. "The caliber and intelligence of the researchers we meet at Scripps and other institutions never ceases to amaze and astound us. We all feel humbled and honored to be able to help such wonderful minds in their quest to make a difference in the quality of life for all mankind."

Hunington's, CONTINUED

disease deficits show up, and found that 77 of the top 142 down-regulated genes and 39 of the top 80 up-regulated genes in the mice also showed expression changes in the caudate of human patients with Huntington's disease. When expression of 600-plus genes from three brain areas were examined, 85 to 94 percent of the genes, depending on the region, were partially normalized with HDACi 4b treatment, with one-third being completely restored to a normal status.

"We found that one drug can target expression of a several hundred genes in the brain and reverse the abnormalities caused by a single mutant protein," Thomas says. "This suggests that a treatment for Huntington's disease that targets a core pathogenic mechanism might be close at hand – closer than previously imagined."

The study was funded by grants from the National Institutes of Health and the Dr. Miriam and Sheldon G. Adelson Medical Research Foundation, and funding from Repligen Corporation.

Bruce Torbett Awarded Tenure

Bruce E. Torbett of the Department of Molecular and Experimental Medicine has been promoted to the rank of associate professor with tenure. Torbett (Ph.D., M.S.P.H., University of California, Los Angeles) joined Scripps Research in 1992 as a research fellow. He studies transcriptional regulation of myeloid development and function, develops and tests novel techniques for delivering genes to cells to provide protection against HIV or cancer, and also investigates how the structural changes in HIV protease contributes to biochemical functions that confer protease inhibitor resistance.

Claudio Joazeiro Wins American Cancer Society Grant

Claudio Joazeiro, assistant professor in the Department of Cell Biology, has received an American Cancer Society Research Scholar Award for his studies on how a novel mitochondrial E3 ubiquitin ligase, MULAN, links mitochondria-to-nucleus signaling (via NF-kappaB) and mitochondrial dynamics

Board of Trustees Fund Graduate School Fellowships

In an exciting new program, the Scripps Research Board of Trustees is pleased to announce that it has raised $295,000 from its members for a new Leadership Fellows Fund. This fund is already supporting graduate students through stipends in Scripps Research's Kellogg School of Science and Technology.

Left to Right, Front Row: Alexander Kislukhin, Maria Bagonis, Candacia Greeman, Jun Yin, Katharine Duncan. Back Row: Andrew Ryan, Nathaniel Wang, Denis Malyshev, Igor Rupniewski, Will Gutekunst, Myles Dillon, Mark Schallenberger, Keary Engle, Paul Hernandez. Not Pictured: Brady Worrell

The promising new students awarded Leadership Fellows grants in their first year (listed with the university they graduated from) are:

Maria Bagonis	State University of New York Binghamton
Myles Dillon	University of California San Diego
Vera Goh	Johns Hopkins
Candacia Greeman	Bryn Mawr
Igor Rupniewski	University of California Berkeley
Nathaniel Wang	University of California Berkeley
Katherine Duncan	Amherst
Keary Engle	University of Michigan
Will Gutenkust	University of Oklahoma
Paul Hernandez	University of California Berkeley
Alexander Kislukhin	Russian Academy of Science
Denis Malyshev	Russian Academy of Science
Andrew Ryan	Carleton College
Mark Schallenberger	University of Montana
Brady Worrell	Purdue
Jun Yin	Indiana University

Partners

1 Scripps Research continued its Frontiers in Science lecture series for donors and friends in September at the Estancia La Jolla Hotel and Spa. At the event, Scripps Research's world-renowned chemist, Professor K.C. Nicolaou, provided an overview of his new book, *Molecules That Changed the World*, taking over 280 Scripps Research contributors and friends on a tour of some of the most fascinating discoveries in chemistry, biology and medicine over the last few centuries and their impact on society.

From the ancient times of the Egyptian and Greek civilizations, to modern times, tales like those of Aspirin®, penicillin, steroids and the pill, and Taxol® were told in a style that everyone could enjoy. Professor Nicolaou's beautifully designed, coffee table book was on display and for sale, and he signed numerous copies. Proceeds from the book support postdoctoral and graduate students at Scripps Research. Pictured at the reception is long-time supporter and Scripps Legacy Society member **Betty Brock**. (upper left photo)

2 The Summer Science Internship Programs provide an opportunity for high school science teachers and students in the Palm Beach County School District to spend six weeks in the summer working side-by-side with some of the nation's leading scientists. In an environment devoted exclusively to basic research, summer interns have had opportunities to work with Scripps Florida researchers in the fields of cancer biology, molecular therapeutics/drug discovery, infectious diseases, robotics, chemistry, informatics, and neuroscience. The fourteen 2008 summer interns are part of an expanding Scripps Florida program that started with seven interns in the summer of 2005. The program is generously supported by the William R. Kenan, Jr. Charitable Trust. Pictured here is high school senior **Olivia Tighe** in Dr. Charles Weissmann's Infectology lab with mentor **Dr. Sukhvir Mahal**. (bottom photo)

3 Visiting the construction site at Scripps Florida's new campus are Scripps Florida major philanthropist **Elizabeth Fago**, and her son, **Paul Walczak**, CEO of HQM, Inc. (right), along with vice president for philanthropy at Scripps Florida, **Will Melton**. The Fago/Walczak family are passionate supporters of aging and neurodegenerative disease research at Scripps Research. (upper right photo)

THE SCRIPPS RESEARCH INSTITUTE

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