Cancer Researchers Accelerate Pace of Discovery

> Cancer research today is immensely challenging, with researchers trying to unravel the mysteries to more than 200 different diseases.

“Cancer research has become sufficiently specialized and complex that no one researcher or lab can solve the problems of cancer on its own, said Peter Kuhn, Ph.D., Professor of Cell Biology at Scripps Research. “We need to collaborate with others in a variety of fields around the world.”

Kuhn wanted to be able to attach data—a note, a question, a word processing file, a presentation—to three-dimensional images and share them with others, in context.

In 2006, Kuhn read about Microsoft® Office SharePoint® Server 2007 and the Windows Vista® operating system and began to think that these software innovations might make his long-desired 3-D collaboration tool possible and affordable. He enlisted the help of InterKnowlogy, a Microsoft Gold Certified Partner.

InterKnowlogy created an application called the Collaborative Molecular Environment (CME), which allows researchers to annotate 3-D molecular images with any kind of document. The 3-D images and the

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**Scientist Profile, CONTINUED**

Three years ago, Joel was reviewing a paper on the neurodegenerative disease, Friedreich’s ataxia, which described the unusual DNA structure that is adopted by the gene mutation responsible for the disease.

“Dr. Gottesfeld’s work holds tremendous promise of real therapeutic benefit for Friedreich’s ataxia patients.”

— Ron Bartek, president of Friedreich's Ataxia Research Alliance (FARA)

“The article basically said, ‘Wouldn’t it be neat if we could find a small molecule that could fix this?’ said Joel. “I looked at this as both a challenge and a chance to make an impact.”

Since that day, Joel’s team has developed compounds that reactivate the gene responsible for Friedreich’s ataxia, offering hope for an effective treatment for this devastating and often deadly condition.

About one of every 20,000 to 50,000 people in the United States has Friedreich’s ataxia, yet few people know about it. It is caused by a genetic defect that prevents adequate production of the protein frataxin. In neuronal and muscle cells, frataxin is essential for proper functioning of mitochondria, the energy producers for cells. Low levels of the protein lead to degeneration of nerve tissue in the spinal cord and nerves controlling muscle movement in the arms and legs.

Specific symptoms, which typically first appear between the ages of five and 15, include trouble walking, reduced hand coordination, and slurred speech. The disease also typically leads to scoliosis, heart disease, and diabetes. Most Friedreich’s ataxia sufferers are eventually confined to a wheelchair and die as early adults due to associated heart disease.

“I've met the parents of many children affected with the disease and some of the patients and it would be just a dream to be able to help them,” said Joel. “The parents are so thankful for our research and discoveries—it inspires me to do more.”

“Dr. Gottesfeld’s work holds tremendous promise of real therapeutic benefit for Friedreich’s ataxia patients,” said Ron Bartek, president of Friedreich's Ataxia Research Alliance (FARA). “His recent discovery appears to be our only near-term prospect for significantly increasing transcription of the frataxin gene. FARA is pleased to have been able to support this important work.”

The HDAC inhibitor molecule that Joel and his colleagues developed for Friedreich’s ataxia has been licensed to the biotechnology firm, Repligen, and is currently in preclinical development.

Other Friedreich’s ataxia treatments under development are largely aimed at better treating symptoms of the disease, rather than grappling with the root cause of low frataxin production. Additional compounds that increase expression of frataxin protein have been developed, but are likely too toxic for therapeutic use. Gene therapies or stem cell treatments may eventually be available to increase frataxin production, but such options are probably many years off.

“Our small molecules offer a therapeutic approach to pursue in the near term,” said Joel. “I’m very optimistic.”

The class of molecules that Joel developed for Friedreich’s ataxia may also be useful in Huntington's disease, certain forms of muscular dystrophy, and spinal muscular atrophy—the number one genetic killer of children under the age of two, an inherited disease that destroys the nerves.

*continued on next page*
Seacoast National Bank — Making a Difference

Seacoast National Bank is deeply committed to supporting the markets in which it operates both through financial support as well as its employees volunteering their time to support local organizations.

They have certainly been a friend of Scripps Florida and a consistent community partner from the start. In 2004, in the midst of controversy and a series of public hearings on the location of Scripps Florida in Palm Beach County, the bank took a stand and supported Scripps Florida through a series of advertorials in local newspapers and billboards.

“We didn’t care what site Scripps was built on — we just wanted it built,” said Greg Leach, President of Palm Beach County for Seacoast National Bank.

“The support and generous contributions from Seacoast National Bank assist research that may lead to better health and an improved quality of life for millions,” said Barbara Suflas Noble, Director of External Affairs for Scripps Florida.

Seacoast National Bank was originally chartered in 1926 as Indian River County Bank in Sebastian. In the 81 years since, Seacoast has grown along Florida’s southeast coast and central regions to its current size of 44 offices in 14 counties, making it one of the largest independent banks headquartered in Florida. With assets totaling more than $2.5 billion, Seacoast ranks among the largest publicly traded community banks based in Florida.

“The Hudson family founded the bank 81 years ago with the requisite of our employees giving back to the community — this principle hasn’t changed,” said Leach.

“Taken together, thousands of patients could benefit from this class of molecules,” said Joel. Joel and his colleagues also have created a small molecule that blocks the replication of a wide variety of cancer cells, including cells derived from leukemia, prostate, pancreatic, cervical, colon, and bone cancers.

“The compound prevented any future growth of tumors in mice without obvious toxicity,” said Joel. “It looked like the compounds actually caused the existing tumors to stop growing.”

“These results are extremely exciting and could eventually lead to a new class of therapeutic agents directed against a broad spectrum of diseases,” said Peter Wright, Chairman of the Scripps Research Molecular Biology Department.

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A Special Gift

Many different types of people support The Scripps Research Institute, inspired by a desire to improve the science and medicine of the future and make a difference in the world we live in. Recently, Scripps Research welcomed a new group of donors — the student council of O.M. Roberts Elementary School in Lake Jackson, Texas.

The $100 check to The Scripps Research Institute arrived in the mail this summer, with a note that the student council had chosen the institute as one of its beneficiaries.

“The students had several choices about where to donate,” said Vicky Adams, a third grade teacher at the school who volunteers to advise the student council. “They voted for The Scripps Research Institute.”

According to Adams, the students chose Scripps Research because they felt disease research holds the opportunity to help all humanity. Many of the students could also relate to the issue personally.

Representatives from the school’s first through fourth grade classes participate in the student council (kindergarteners have to wait a year to join). The 2006–2007 student council had 22 members, who completed several fundraising projects during the academic year. Before leaving for summer vacation, council members voted to send a donation to Scripps Research, as well as nonprofit groups The Nature Conservancy and The Arc.

“I wanted to teach the kids about the importance of giving,” said Adams. “They were enthusiastic participants and I will definitely encourage the student council to make donations again.”

The group learned about Scripps Research through Charity Navigator, America’s largest independent nonprofit rating organization. Charity Navigator has awarded Scripps Research four stars, the group’s highest designation, for six years in a row.

Charitable IRA Rollover Available Through December 31

An attractive tax-saving opportunity is available through December 31, 2007 to those aged 70½ or older this year. It’s a temporary IRS law called the Pension Protection Act, and it allows individuals to make tax-free charitable gifts without any withdrawal penalties as long as the funds are transferred directly from an IRA account. There is no minimum amount.

This is significant for several reasons:

• It allows you to make a gift of your required minimum distributions and avoid paying taxes on it.
• If you are receiving Social Security benefits, you may be able to avoid a reduction in (or even elimination of) those benefits that can result from IRA distributions.
• It is an opportunity to remove assets from your taxable estate which are subject to “double-taxation” when they are passed on to your heirs.

The changes allow you to make better planning decisions, avoid taxes, and help support the scientists at The Scripps Research Institute in their quest for discoveries for treatments and cures to diseases.

For more information, please call Cheryl H. Dean, Esq., Planned Giving Counsel, at (858) 784-2380, or e-mail her at cdean@scripps.edu, or refer your accountant, attorney, or other professional advisor directly to her.
Bruce Beutler Awarded 2007 Balzan Prize

> Bruce Beutler, M.D., chair of the Genetics Department at the Scripps Research Institute, has been awarded the prestigious 2007 Balzan Prize for his work in innate immunity.

He shares the $827,000 prize with Jules Hoffman of the Academie des Sciences in Paris.

In announcing the award, the International Balzan Prize Foundation of Italy and Switzerland cited Beutler and Hoffman “for their discovery of the genetic mechanisms responsible for innate immunity. They have worked in close cooperation to develop a new vision of the molecular defense strategy deployed by animals across a wide evolutionary spectrum against infectious agents. Their work has led to very promising medical applications.”

Beutler has spearheaded the use of a technique called “forward genetics” to study genes used by the mammalian innate immune system to clear pathogens from the body.

The International Balzan Prize Foundation, established in 1957, promotes culture, science, and the most meritorious initiatives in the cause of humanity, peace, and brotherhood among peoples. It achieves its aim through the annual award of four prizes in two general fields. The first encompasses literature, the moral sciences, and the arts, while the second encompasses medicine and the physical, mathematical, and natural sciences. Just over 100 people have received the Balzan Prize since it was first presented, including such diverse and influential figures as Mother Teresa of Calcutta and Pope John XIII.

Jeremy Richter Chosen for Perkin Medical Scholarship

> Scripps Research fifth year graduate student Jeremy Richter has been chosen as this year’s Perkin Medal Scholarship recipient by the Chemical Industry Society.

Scripps Research was chosen as the recipient for the $5,000 scholarship by Dr. Herb Boyer who received this year’s prestigious Perkin Medal Award. Dr. Boyer is a former member of the Scripps Research Board of Trustees and the co-founder of Genentech. Jeremy received the award in Philadelphia on September 11 with Dr. Boyer.

Jeremy is a member of the laboratory of Dr. Phil Baran. “Jeremy is an absolute superstar,” says Assistant Professor Phil Baran. “He is the type of student that will never give up and is completely and utterly undeterred by failure. His creativity is unparalleled.”

Jeremy’s paper, “The Importance of Chemistry in Society” notes, “The discoveries that chemistry has enabled are too numerous to list, with a wide variety of sub-disciplines providing direct and lasting improvements in the quality of life for billions of people the world over. For instance, biochemists and bioorganic chemists have elucidated many fundamental biological interactions that govern life and bodily function, and they have made significant strides in understanding the causes and mechanisms of modern disease. Medicinal and process chemists have pushed the boundaries of drug discovery and development, generating numerous medicinal agents to treat significant medical disorders with unprecedented safety profiles.”

Joel has been with Scripps Research since 1978. He is most impressed by the collegial atmosphere here and the excellence of his colleagues.

Joel received his Ph.D. in Biochemistry from California Institute of Technology, his M.Sc. in Biochemistry from Oxford University, and his B.A. in Biochemistry from the University of California, Berkeley.

While serving as a postdoctoral student at Cambridge, Joel worked closely with the acclaimed Dr. Francis Crick, who discovered the structure of DNA in 1953. “It was intimidating at first, but I got to know him well,” said Joel. “He fostered open and free scientific discussions and was an inspiration to me.”

In his spare time, Joel serves as Associate Editor of the Journal of Biological Chemistry, one of the leading scientific journals. Prior to that, he was on the editorial board for a decade. “After my research on Friedreich’s ataxia, it is one of my most important and fulfilling endeavors,” said Joel.
Scripps Research Hosts Innovative Science Training Program for Breast Cancer Advocates

> The women and men involved with the grassroots National Breast Cancer Coalition Fund (NBCCF) are on a mission to end breast cancer through the power of action and advocacy.

In August, breast cancer survivors and advocates from across the country participated in the NBCCF’s innovative national science training program Project LEAD®/Stop Breast Cancer Now in Coronado, with some of the sessions held at The Scripps Research Institute.

NBCCF created the revolutionary Project LEAD in 1995 to prepare women and men to help change the way breast cancer research is done. NBCCF spearheaded a major increase in federal funding for breast cancer research that included, for the first time in federal cancer grant-making programs, consumer advocates as peers with scientists in the grant review process. LEAD advocates help design clinical trials and set research agenda for institutions and government agencies. Project LEAD has already trained 1,300 advocates to serve in these and other decision-making roles in their communities.

The 52 participants in the Coronado Project LEAD Institute represented 21 states, Canada and the U.K.; nine were from California. They spent an intense six days immersed in a curriculum that included lectures and study sessions on the microbiology of cancer, genetics, epidemiology of cancer, research design, and how to critically read the scientific literature.

Among the many new features of the course was a choice of advanced research topics, mentorship opportunities, and the field trip to Scripps Research to see and hear about significant research firsthand. Scripps Research faculty participating included Associate Professor Brunhilde Felding-Habermann, Ph.D., Professor Benjamin Cravat, Ph.D., and Assistant Professor Vaughn Smider, M.D., Ph.D.

Dr. Brunhilde Felding-Habermann’s laboratory seeks to advance the fight against breast cancer by defining molecular mechanisms that control tumor metastasis. “The Scripps Research seminar was a great success,” said Felding-Habermann. “The event not only raised the profile of Scripps Research among advocates, but it also gave my lab a big boost in motivation to hear what breast cancer survivors hope to see accomplished in breast cancer research.”

Scientist for the Summer

Summer is a season of possibilities, and some ambitious students and teachers on both coasts made the most of it this summer to get hands-on experience with biomedical science in a Scripps Research Institute lab. The Research Education Program in La Jolla, California, now in its 18th year, receives some four applications from local high school students for every position available. This year’s program hosted 21 students and two teachers from 17 San Diego high schools.

Scripps Florida’s summer internship program, modeled on the La Jolla program, is now in its third year. This summer, the Florida campus hosted nine students and three high school teachers, thanks to support from the William R. Kenan, Jr. Charitable Trust.

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Students from Glades Central Community High School in Belle Glade, Florida, look at their own DNA, isolated from cheek cells.
The Kenan Teacher and Student Fellowship has generously supported the Scripps Florida Education Outreach Program during its initial 2005 and 2006 calendar years. The hallmark for this funding has been the foundation of three K-12 education programs and the design of a permanent Scripps Florida exhibit for the South Florida Science Museum. Through this organization, they have been able to contribute to raising funds for the museum. “We realize that many more potential young scientists and their families in our community can be reached by supporting the South Florida Science Museum and it’s been exciting to be part of that endeavor,” said Scott. “Access to science related disciplines in our formative years helped fuel our desire to become research scientists. We really believe strongly in trying to give back and perhaps influencing the lives and careers of future scientists.” The South Florida Science Museum partners with Scripps Florida for “Science Saturdays,” with Museum staff working along side Scripps Scientists at the Museum, providing hands-on labs for high school students. The Busby’s are also two of many scientists who volunteer their time with Scripps Florida’s K-12 education/outreach middle and high school programs, in addition to other community non-profit organizations. Pictured here are Jennifer, Scott, and Christopher Busby.

Florida’s Science Saturday program — which gives high school students an opportunity to use modern biotechnology tools to isolate DNA and solve a “CSI”-type crime — is also catching on.

“Of the 20 public high schools in the Palm Beach County School District, 15 have had participants in one or more of our Saturday and Summer Intern education programs,” said Deborah Leach-Scampavia, education and outreach administrator. “Our goals are to educate students about the promise of bioscience, and to raise public awareness about the important ties that exist between biomedical research and human health.”

Financial support for California internships was provided by the Amgen Foundation, Biogen Idec Foundation, Diekman Fellowship, Ellen Browning Scripps Foundation, French/Masserini Charitable Trust (administered by Wells Fargo Bank), Hearst Foundation, and Valenzuela Charitable Trust.

“The entire summer has been intellectually stimulating . . . in a completely different way than in the classroom. It was more in depth and required more independence and thinking,” said Sherry Chen, one of the interns.
The Scripps Council of 100

The Scripps Council of 100 consists of individuals, couples, and representatives of corporations or foundations that contribute $100,000 annually or make a single contribution of $1 million or more to The Scripps Research Institute.

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