2013
Year in Review

THE SCRIPPS
RESEARCH INSTITUTE

Accelerating Discoveries, Saving Lives
DEVELOPING A DRUG CANDIDATE THAT PROTECTS HEART CELLS DURING AND AFTER ATTACK

Using two different approaches to identify potential drug candidates from TSI’s Florida campuses were able to show in animal models that inhibiting a specific enzyme protects heart cells and surrounding tissue even better from damage from blood clots in the heart. The results were developed in the laboratory of Professor Philip Lederer at the University of Florida and Professor Anthony Massaro at the University of Miami. In a model of heart failure, the research was funded by the Naed and Thomas Evans Foundation.

UNCOVERING A NEW MECHANISM FOR CANCER FORMATION

Scuilla Florida scientists found that a large group of molecules called microRNA, known to control production of proteins in cells, may play a far more important role in memory formation than previously thought. The lead author is Biological Chemistry Miller (abbot), and now investigating whether high levels of miRNA inhibit memory processing and a tendency toward memory loss in the elderly. In another neuroscience research, the Mueller lab de-veloped a molecular signal that controls the development of the neocortex—a key brain region responsible for sensory perception, long-term memory, and a large proportion of the brain’s overall functional load. The work funded by NIH, CIBM, Doris Neu- roscience Center and the Skaggs Institute, is likely to aid research on autism, schizophrenia and other psychiatric conditions.

DEVELOPING A COMPOUND THAT DRAMATICALLY REDUCES JOINT INFLAMMATION

An experimental compound synthesized and re-tested in the lab by TSI’s school of medicine, they showed that the generic drug gabapentin—already widely prescribed for a variety of illnesses, including pain, epilepsy, and effective in the treatment of alcohol dependence. “We are excited to develop this medication shown to improve sleep and mood in people who are quitting or reducing their drinking,” said Associate Professor Matthew J. Mason (abbot). Professor is Family and co-director of the Pearson Cen- ter for Alcohol Research, the research funded by the National Institute on Alcoholism and Addiction Research at TSI. In other groundbreaking anti-inflammation work funded in part by the Pearson Center, a collaboration between the departments of health and computer science, identified a new class of tests for a novel antibiotic against which, proteinuria and proteinuria, and eventually in humans,” said William R. Bickel (abbot), who is an immunologist, author and member of the IAVI Neutralizing Antibody Center at TSI.

Illuminating a Key Drug Target for Diabetes

In a fruitful international collaboration, scientists determined and analyzed the detailed (4,5-diamino-structure of a key drug target for type 2 diabetes, the human glucagon receptor. The receptor fixed firmly on liver and muscle cells, helps regulate glucose levels in the bloodstream. “The structures offer a glimpse into the key of the piece of this puzzle,” said TSI Professor Raymond C. Stevens. “This will help us solve related receptor structures.”

In other diabetes research, a team led by the Balch lab created the first comprehensive roadways of the protein interactions that enable cells in the pancreas to produce, store and secrete the hormone insulin. The finding makes possible a deeper scientific understanding of the disease. The discovery, which is in insulin disorders such as type-2 diabetes.

DEMONSTRATING A PROMISING NEW STRATEGY TO TREAT MULTIPLE SCLEROSIS

Scientists identified a new approach to treat multiple sclerosis (MS). Unlike existing therapies that suppress the immune system, the compound—a Parkinson’s disease drug—draped in the body’s own antibodies—boost a population of progenitor cells that can in turn repair MS-damaged nerves. Thanks to these results, and are now considering how to design an initial clinical trial,” said TSI’s Daniel J. Lasker, whose co-authors on the study included TSI’s immunologist Brian Lawley and Peter C. G. Schulte, the Scripps Family Chair Professor at TSI. Funders of the work included the California Institute for Regenerative Medicine (CIRM) and Sagu Institute for Chemical Biology at TSI. In another development related to MS, researchers discovered at TSI’s Scripps Florida Center for Translational Medicine (CIRM) has produced promising clinical data, prompting Receptos, Inc., to announce Phase 3 clinical trials for the drug candidate.

CAPTURING THE MOST DESIRED PROTEIN YET OF KEY AIDS PROGRESSION

A team determined the first atomic-level structure of a key part of the AIDS virus—long considered one of the most difficult targets in structural biology and of great value for medical science. “The structure of the entire complex of virus does not provide insights about how the virus infect cell,” said Jan A. van Den Akker, the Human is Professor of Structural Biology and chair of the Department of Biophysical Structural and Computational Biology at TSI. The TSI laboratory of Andrew Ward (left) and Bridge Crook at the University of Florida also involved in the work, and supported by the National Institute of Health’s National Inter- national AIDS Vaccine Initiative (IAV).
FROM THE PRESIDENT

I am pleased to report that The Scripps Research Institute (TSRI) has made many remarkable research advances in 2013, highlighted in the pages that follow. We are committed to innovative science that leads to longer, healthier lives and to graduate education that will enable our students, the next generation of scientists, to make important discoveries.

Philanthropic funding is vital to this important work. With decreasing federal commitment, individuals, foundations and corporations are moving to fill the gaps - gaps that include supporting high-risk, high-return research, advancing emerging fields and speeding the application of research to patients in need.

Among the year's gifts was a generous $2 million contribution from John Moores, former chair of TSRI's Board of Trustees, to fund development of a revolutionary new field test for Onchocerciasis, or river blindness, a parasitic infection that affects tens of millions of people in tropical regions. We are also deeply grateful to Rich and Helen DeVos, who renewed their support of the graduate program at Scripps Florida by pledging $1.25 million for attracting, enriching and retaining outstanding PhD students.

Your gifts to TSRI support world-class research and education. Our faculty are at the top of their fields, as their numerous honors attest. In 2013, Phil Baran was one of only a handful of scientists selected as a MacArthur Fellow; Ardem Patapoutian was chosen for the highly competitive Howard Hughes Medical Institute Investigator award; Donna Blackmond was elected to the National Academy of Engineering; Peter Shultz won the Belgian Chemistry for the Future Solvay Prize; and Scott Hansen received a National Institutes of Health (NIH) New Innovator Award, to name just a few.

Our investigators also continue to successfully compete for major federal grants. In 2013, these included a $29 million renewal of a grant led by Professor Eric Topol at the Scripps Translational Science Institute to research genomics, wireless technology and bioinformatics for individualized medicine. In addition, a Scripps Florida team led by Professor Paul Robbins was awarded $10.6 million from the NIH to decipher the root causes of human aging.

With the continued backing of our friends and partners, we look forward to another exciting year in 2014. On the California campus, we are launching a powerful new Titan Krios cryo-electron microscope to provide our scientists with advanced three-dimensional imaging and analysis capabilities. In Florida, we begin celebrations marking the 10th anniversary of that campus—I am proud that, in a single decade, Scripps Florida has grown from an idea to a thriving center of research and education with deep roots as a community partner.

Thank you for your support and contributions, whatever the amount. Your participation is vital to the success of our endeavors to advance knowledge and improve human health.

Michael A. Marletta, PhD
President and CEO
Cecil H. and Ida M. Green Chair in Chemistry
The Scripps Research Institute

FINANCIAL HIGHLIGHTS

The Scripps Research Institute (TSRI) serves humanity by creating basic knowledge in the biosciences, applying breakthroughs in research to the advancement of medicine and drug discovery, and educating and training the next generation of scientists.

Grants and contracts provide funding for a significant portion of the institute’s research activities; this revenue is derived primarily from the National Institutes of Health and other federal agencies. In addition, gifts from individuals and private foundations provide an important source of funding.

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Thank you for helping us reach $9.3 million in philanthropy revenue in FY 2013! Your gifts help support TSRI’s life-saving research.