How does a scientist that studies the eye and another that studies the heart collaborate on research to study stroke? Dr. Jeff Goldberg and Dr. Michael Kapiloff discuss the genesis of this collaboration, which exemplifies the interdisciplinary spirit at the core of ISCI’s mission.

Dr. Kapiloff: The story is that Michael Kritzer, who is a MD/PhD student in my lab, met up with Yoni Hertz, who is a PhD student in Jeff’s lab. They had a series of conversations and said, ‘we want to collaborate.’ And so Jeff and I talked about the science. Is this possible? Could we start bridging a gap between our two fields? Realizing that we could start right away, we tag teamed, working around the clock to start key experiments and write a proposal for a NIH grant deadline, which was in two weeks...

Dr. Goldberg: On the scientific side, Mike had been studying for many years now signaling proteins inside of cells that are critical to how cells function, studying them mostly in heart cells. Meanwhile, we’d been interested in those same signaling pathways, but for neuroscience, to understand how neurons survive and the fundamental underlying causes of degenerative diseases and strokes in the eye and brain.

When our students Michael and Yoni came to us and said, ‘maybe there’s a crossover opportunity here,’ we realized that indeed it was highly likely that these molecules that Michael has been studying all these years may be highly relevant to the survival of neurons. In fact, we tested that idea in the two weeks before the grant was due, and saw some amazing preliminary results to suggest that we were on to something important. Our grant proposes to study survival signaling pathways to see how to make the neurons survive and function better after a stroke.

Dr. Kapiloff: If my student and his student hadn’t been across the hall from each other, they would not have talked, and if Jeff hadn’t been, literally, around the corner, I probably wouldn’t have said, ‘let’s discuss this possibility.’

Dr. Goldberg: We wouldn’t have even come to it. Both from the professors being right around the corner and even more importantly, having people working in different disciplines in the open lab environment of ISCI where they could rub elbows and chat with each other. It’s a whole new perspective: studying molecules that have only been studied in the heart, and a currently untreatable disease process that ruins people’s vision. It’s cross-fertilization, across disciplines, that will almost certainly turn out to be a shared biology across organ systems.

Dr. Kapiloff: Because neurons and heart muscle cells are both excitable, they do share a lot of biology. And in fact, to be able to use the technology of the two different systems, really allows things to go much faster than either one alone.

“The THERE ARE THINGS DR. GOLDBERG CAN DO IN THE EYE, THAT WE CAN’T DO AS EASILY IN THE HEART.”

Michael Kapiloff, MD, PhD
Dear Friends,

On our third anniversary, we at ISCI can be proud of our accomplishments. Our NIH funding, publications, FDA-approved clinical trials, scientific findings and membership have all grown substantially. But the achievement to be most proud of is how we are making ISCI’s vision a reality.

That vision, to translate stem cell research into therapies, collaborate across disciplines, and develop new ways to practice medicine, are in evidence throughout this publication.

It is gratifying to see ISCI’s achievements confirmed by leaders from other institutions. ISCI’s Scientific Advisory Board recently issued its first evaluation. The board found ISCI has “a strong... collaborative nature,” “translational research with a strong mechanistic underpinning,” and “one of the largest cohorts of stem cell patients” in the country.

What drives us to fulfill our vision? Patients. Many ISCI members run both a basic research lab and a busy clinical practice. It is this clinical practice that informs our scientific inquiry and gives a sense of urgency to discovering safe and effective treatments.

Dr. Joshua Hare
Director, ISCI

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from the BENCH AND BEDSIDE

H. Thomas Temple, MD, Professor of Orthopedics and Pathology and Director of The University of Miami Tissue Bank, is leading a major effort in ISCI’s musculoskeletal regeneration research.

Dr. Temple’s longstanding research interest is in creating bone substitutes to treat patients who have lost major segments of bone. This most frequently occurs due to trauma or bone loss due to cancers. Traumatic loss of bone has afflicted numerous soldiers in combat and victims of the Haitian earthquake. Dr. Temple, in collaboration with the ISCI stem cell team, envisions advancing the current approaches to bone substitutes—which currently include materials called micro-particulates and bio-ceramics—by adding stem cells to these biologic composites. This would greatly advance the bone substitutes by creating a true living composite in the laboratory that could be customized to people who have segmental bone loss. In essence, stem cells taken from the patients themselves could be used to make the microparticles or bioceramics become fully alive in a way that the patient’s body would not reject. The biocomposite would be expected to function much better and integrate into the patient more successfully than the composites alone. This project is truly interdisciplinary, involving physicians and scientists from orthopedics, ISCI, bioengineering and the Miami VA. In addition to enhancing the bone replacement materials, future goals are to create bioprosthetic joints that could be used for transplantation.

Dr. Temple’s team envisions that replacement knees, ankles, hips, and finger joints for patients with arthritis could be generated using bone grafts and stem cell composites. Dr. Temple anticipates major progress in this area over the next five years.

Bone Disease

H. Thomas Temple

Bone marrow transplantation is probably the first example of clinical stem cell research.” Says Krishna Komanduri, MD, Professor of Medicine, Microbiology and Immunology. As the director of the UM/Sylvester Stem Cell Transplant Program, Dr. Komanduri uses stem cell therapy to treat cancer patients in his daily practice. “We regenerate blood cells from transplanted stem cells obtained from the patient themselves, or from healthy donors, who may be family members or volunteer unrelated registry donors.”

For patients with high-risk or relapsed multiple myeloma, lymphoma and many subsets of leukemia, stem cell transplantation, performed by infusing donor grafts containing both stem cells and T cells following the administration of chemotherapy to the recipient with cancer, remains the standard of care. However, sometimes the same T cells that have helped rebuild the stem cell transplant patient’s immunity and attack the residual cancer may also turn on healthy tissue in the recipient. That phenomenon, called graft vs. host disease, is a primary area of interest for Dr. Komanduri. Work in his laboratory is aimed at trying to better understand how the immune system functions, in order to coax T cells into maintaining their beneficial immunologic functions, without attacking the host. Dr. Komanduri is working with other ISCI scientists to improve outcomes in cord blood transplantation, a promising alternative for patients lacking such donors. Dr. Komanduri’s expectation is that multidisciplinary research in stem cell biology, immunology and clinical transplantation will provide a brighter future for patients facing life-threatening cancers of the blood, lymphnodes and marrow.

Cancer

Krishna Komanduri

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Want to support ISCI’s mission, enroll in a clinical trial or learn more about our research? Log on to http://isci.med.miami.edu/ or call 305-243-9106
PHIL AND SUZI COHEN SUPPORT “MIAMI’S MEDICAL MIRACLE”

Four years ago, Suzi and Philip moved to SoBE from NYC. A serendipitous meeting at a Miami museum event formed the basis of a strong friendship among Suzi, Barbara Cohen and her daughter Lee Cohen Hare. And then, as Suzi says, “we both met Dr. Josh and just knew we had to find a way to be a part of this Miami Medical Miracle!” And, last year, Dr. Hare mentored the Cohens’ son, Tobias, who has received a distinguished full scholarship and stipend for an MD/PhD from the National Institutes of Health Medical Scientist Training Program specializing in infectious diseases.

“The University of Miami physicians are pioneers, a very special ‘in-crowd,’ who are leading us toward ‘the tomorrow’ in medical science. Dr. Hare’s advanced cardiac clinical research for ISCI is a tremendous benefit to the city. It will attract the best and brightest research physicians to Miami,” says Suzi.

Philip is a retired financial and accounting executive, former National President of Alpha Epsilon Pi Fraternity and Chairman Emeritus of its Fiscal Board of Trustees and currently serves as a member of the International Board of Hillel. The Cohens have established the Philip H. Cohen endowed Chair in Accounting at Yeshiva University, NYC, and the Philip H. and Susan Rudd Cohen Hillel Student Exemplar of Excellence Awards.

Suzi and Philip have joined ISCI’s Board of Visitors, a group of dedicated, philanthropic community leaders supporting the University of Miami’s stem cell research center. Their generous gift names the Philip H. and Suzi Rudd Cohen Cardiovascular Laboratory in honor of Dr. Hare.

PANEL OF SCIENTISTS FINDS ISCI LEADING CENTER FOR TRANSLATIONAL RESEARCH

After a careful review of its personnel and programs, a Scientific Advisory Board consisting of top researchers from around the world have given ISCI an extremely positive evaluation. The report states “the Interdisciplinary Stem Cell Institute (ISCI) at the University of Miami has achieved in very short time important targets.”

Led by Piero Anversa, MD, Professor of Anaesthesia and Professor of Medicine at the Brigham and Women’s Hospital and Director of the Center for Regenerative Medicine at Harvard Medical School, the board found ISCI to be a leader in clinical trials for stem cell therapy. “To the best of our knowledge,” states the report “this represents... the largest cohorts of patients injected with stem cells in the United States.” The board also cited translational medicine--research that is conducted from the lab to the clinic--as a strength.

In addition to Dr. Anversa, other members of the board are: Curt Civin, MD, Professor of Pediatrics, Director of the Center for Stem Cell Biology and Regenerative Medicine and Associate Dean for Research, University of Maryland; Armand Keating, MD, FRCP(C), Professor of Medicine, Epstein Chair in Cell Therapy and Transplantation, Director, Division of Hematology, Professor of Biomedical Engineering, University of Toronto; Jeffery D. Molkentin, PhD, Professor, Howard Hughes Medical Institute, Cincinnati Children’s Hospital Medical Center, Molecular Cardiovascular Biology; Benjamin Reubinoff, MD, PhD, Associate Professor of Obstetrics & Gynecology, Director, The Hadassah Human Embryonic Stem Cell Research Center, Sidney Swartz Chair in Human Embryonic Stem Cell Research, The Department of Gynecology and The Goldyne Savad Institute of Gene Therapy, Hadassah University Medical School, Jerusalem; Joseph Wu, MD, PhD, Assistant Professor, Department of Medicine and Department of Radiology, Stanford School of Medicine.
Translation is published by the Interdisciplinary Stem Cell Institute at the Miller School of Medicine.

Why call it Translation? Two reasons.
1. ISCI’s focus is translational research—taking basic scientific discoveries from the lab and “translating” them into clinical therapies for patients.
2. This publication aims to “translate” ISCI’s complex scientific work into language for the non-scientist.

If you do not wish to receive further fundraising communications from the University of Miami’s Medical Programs, please send your request in writing to the University of Miami Office of HIPAA Privacy and Security, P.O. Box 019132 (M-879), Miami, Florida 33101.

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The 5th Annual ISCI Symposium on Stem Cell Therapy and Biology

May 13, 2011
8:00 am to 5:30 pm
University of Miami Hospital
1400 NW 12 Avenue, First Floor
Miami, Florida 33136

The only South Florida meeting of physician-scientists, researchers, and policy and community leaders engaged in translational stem cell research. The faculty of this symposium comprise national and international thought leaders in the basic and translational science of regenerative medicine.

For more information, including registration, contact Sharifa Pettigrew at 305-243-1273 or spettigrew@med.miami.edu.

PROGRAM
Sensory Neural Regeneration
Ethics and Society
Translation

KEYNOTE SPEAKER
Piero Anversa, MD
Brigham and Women’s Hospital

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