



---

## MEET THE SU2C DREAM TEAMS

### SU2C

---

#### Meet the SU2C Dream Teams

Last May you helped launch Stand Up To Cancer, a groundbreaking initiative funding translational cancer research with the aim of getting promising new therapies from the bench to the bedside – and doing it *fast*. (You can read more about translational research [here](#).) Thanks to your incredible generosity and support, SU2C has raised over \$100 million in the short twelve months since its launch. But this is only the beginning.

We're thrilled to announce that our [Scientific Advisory Committee](#) has selected its first round of grant recipients. SU2C's 2009 Dream Teams will bring together over 300 leading researchers, clinicians and patient advocates from institutions all over the world. Collectively, they represent some of the brightest minds working in the field today. And we think you'll find the science behind their projects as exciting and inspiring as we do.

#### The First Stand Up To Cancer Scientific Dream Teams

##### Bringing Epigenetic Therapy to the Forefront of Cancer Management

**Leader: Stephen Baylin, M.D., Deputy Director of the Sidney Kimmel Comprehensive Cancer Center**

**Co-Leader: Peter Jones, Ph.D., Distinguished Professor of Urology and Biochemistry & Molecular Biology, University of Southern California**

Epigenetic therapy is one of the most promising new areas of cancer research; this Dream Team hopes to finally bring it into clinical practice. Focusing on an array of cancers, the team will examine an epigenetic process known as DNA de-methylation, which inactivates or “silences” cancer stem cells. Then they'll develop a clinical trial to test the effects of a new drug that could effectively inhibit the epigenetic changes that lead to cancer.

“Your DNA is like a hard drive,” Jones said. “You’ve got all the information in it to read out and do everything you can do with it, but without packaging and without sufficient software you can’t instruct that DNA when to do X and when to do Y and Z. Cancers mutate the DNA and can thus corrupt the hard drive; but the package can also go wrong.”

---

Fortunately, the packaging is more reversible than trying to do something about an actual mutation. We can do things to bring that cell back into normal balance.”

### **Targeting the PI3K Pathway in Women’s Cancers**

**Leader: Lewis C. Cantley, Ph.D., Chief of the Division of Signal Transduction at Beth Israel Deaconess Medical Center**

**Co-Leaders: Charles Sawyers, M.D., Director of the Human Oncology and Pathogenesis Program at Memorial Sloan-Kettering Cancer Center, and Gordon B. Mills, M.D., Ph.D., Chair, Department of Systems Biology, University of Texas M. D. Anderson Cancer Center**

The PI3K pathway helps regulate cell survival and growth – but mutations in this pathway can trigger cancer. This Dream Team, run by the scientists who first discovered the pathway and determined its role in cancer development, will focus on three women’s cancers that all have the PI3K mutation: breast, ovarian and endometrial. Their goal is to find a way to predict which patients respond positively to PI3K inhibitors, accelerating the potential of personalized cancer treatment.

“An analogy I like to make is that if you have a problem with one of the electrical circuits in your house and you want to turn off the circuit breaker so you can fix it, and you don’t know the wiring diagram of your house, you would be going to the basement, flipping things off and then back to the third floor a dozen times or more before you get the right answer,” said Sawyers. “If you have a wiring diagram, which is what we have been working on for the last 20 years or so, then you can make an educated guess--this is the circuit breaker, this should work for this event. Then when the patient comes in, we can test them and if see a particular event, we can say, this is the drug for you.”

### **An Integrated Approach to Targeting Molecular Breast Cancer Molecular Subtypes and Their “Resistance” Phenotypes**

**Leaders: Joe Gray, Ph.D., Life Sciences Division Director, Lawrence Berkeley National Laboratory, and Dennis Slamon, M.D., Ph.D., Director of Clinical/Translational Research at UCLA's Jonsson Comprehensive Cancer Center**

This Dream Team’s goal is developing more effective, less toxic therapies for the three major breast cancer subtypes. Cancer cells can become resistant to treatment over time, learning how to “outsmart” the drugs and agents designed to kill them. This team will look at the driving mechanisms that lead to resistance in breast cancer, including the role of cancer stem cells, aiming to identify promising new drug combinations that can be validated in clinical trials.

“We are at a point today where technology has really enabled us to ask questions at a sophisticated level in ways we were never able to ask before—critical questions that we have had for a long time but couldn’t approach,” Slamon said. “Now we can begin to ask

---

what exactly is broken within a cell, what converts that normal cell to a malignant one? We can think now about how we might interfere with those pathways that cause cancer.”

### **Bioengineering and Clinical Applications of Circulating Tumor Cell Chip**

**Leader: Daniel Haber, M.D., Ph.D., Director of the Massachusetts General Hospital Cancer Center**

**Co-Leader: Mehmet Toner, Ph.D., Professor of Biomedical Engineering, Massachusetts General Hospital, Harvard Medical School**

Circulating tumor cells (CTCs) are cancer cells that have spread from the primary tumor to the bloodstream of patients with cancer. Though extraordinarily rare, they can provide priceless data on the fundamental mechanisms by which cancers spread. This Dream Team has developed an exciting approach to detecting and isolating CTCs; their CTC-Chip, the size of a business card, can capture up to 200 CTCs from a teaspoon of a patient’s blood. The next step is making the Chip more sensitive, then using it to monitor specific mutations in a wide range of cancers, predicting patient responsiveness to therapies.

“I think the excitement about bringing technology into a question like this is all of a sudden you can ask questions you could never ask before,” Harber said. “We all know that cancer spreads; it goes from the breast to the lungs, or from the colon to the liver, but you could never see that transit. You could never see the cells in the act of spreading, which is what we can do now. The very questions that you can ask, some very simple, some very profound, are all dependent on technology.”

### **Cutting Off the Fuel Supply: A New Approach to the Treatment of Pancreatic Cancer**

**Leaders: Craig Thompson, M.D., Director, Abramson Cancer Center at the University of Pennsylvania, and Daniel von Hoff, M.D., Senior Investigator and Physician in Chief at the Translational Research Genomics Institute (TGen)**

Pancreatic cancer remains one of the most deadly forms of the disease; over 90% of patients die within the first year of diagnosis. New research indicates that, as a result of mutations, most cancer cells thrive on a continuous supply of glucose in order to survive and spread, raising the possibility that cancer cells can be “starved to death” if deprived of this nutrient. This Dream Team will determine what nutrients pancreatic cancer requires to fuel growth and survival – helping scientists develop individualized treatments for the lethal disease.

“In the future, you can imagine that we can pull a new therapy off the shelf and if the patient has a particular profile match them up with that treatment, so that we cure their cancer,” said team member Chi Dang. “If they don’t match that profile, then we try something else. This is the challenge of cancer research. Not every cancer that comes

---

along, not even every pancreatic cancer, is going to be identical. We need to be smart enough to know the personality of the cancers and go after the uniqueness, the personality of that cancer.”