Fred Hutch is committed to ending cancer through exceptional science. Our researchers’ devotion to perfecting cancer treatments like bone marrow transplantation has saved thousands of lives, and it continues to be a defining feature of our immunotherapy program.

Thanks to your commitment to that same goal, our immunotherapy researchers have been able to reach new heights. The support you and your fellow guests generated at the Premier Chefs Dinner — a record-breaking gross total of more than $775,000 — is allowing these outstanding teams to pursue ever-safer cures for cancer patients.

In this report, we highlight some of the latest progress in the clinic where we are seeing the dividends of pairing your generosity with the dedication of our investigators. Even as you read these words, patients and their loved ones are benefiting from the visionary research you have supported. Thank you for your trust, enthusiasm and partnership.

**Cancer melting “like an ice cube”**

Among the many ongoing clinical trials generating excitement is one designed to test the safety and efficacy of using a patient’s own T-cells programmed to target certain chemotherapy-resistant leukemias and lymphomas. Led by Drs. Cameron Turtle, David Maloney and Stanley Riddell, the trial involves the most advanced T-cell therapy currently being tested in humans, and one our researchers believe offers unprecedented hope for curing cancer.

The treatment consists of a single dose of engineered T-cells — a tapioca pearl-like pellet of cells — that, once infused, serves as a living therapy that can grow stronger inside the patient. Results in the initial patients appear extremely encouraging: all patients have responded, and none has experienced the kind of severe side effects commonly associated with chemotherapy and radiation. One patient said he could feel the bulging tumors in his neck melt away “like an ice cube” hour by hour after his T-cell infusion. Drs. Turtle, Maloney and Riddell expect to treat nine patients in the trial’s first phase and up to 45 additional patients over the next year in the trial’s second phase.

**Guarding against relapse, and more**

Although blood stem cell transplantation currently offers the best chance of a cure for patients with certain leukemias, many of those individuals still face a high risk of their disease returning. Philanthropic support has helped Drs. Merav Bar, Aude Chapuis and Phil Greenberg apply the power of engineered T-cells to solving this problem.
The researchers are testing the safety of giving specialized T-cells, derived from the transplant donor, to patients with acute myeloid leukemia, chronic myeloid leukemia or myelodysplastic syndrome who have relapsed following their transplants or are at high risk for relapse. The therapeutic T-cells have been genetically engineered with receptors specially selected for their ability to trigger a strong immune response to a target molecule called WT1. WT1 is up to 1,000 times more abundant on the cancerous cells than on healthy versions of the same type of blood cell.

Leukemias aren’t the only cancers that display high levels of WT1, and preparations are already under way to apply this approach to lung and pancreatic cancers. The trial in lung cancer patients could begin by the middle of 2014. The trial for pancreatic cancer patients should begin by early 2015.

**Progress in sarcoma immunotherapy**

Dr. Seth Pollack has made significant progress in a clinical trial — made possible by private support — of a T-cell therapy for patients with advanced sarcomas. The treatment curtailed tumor growth in most of the six patients treated to date, and in some cases the tumors shrunk dramatically, indicating the immune system can gain the upper hand. But analyses suggest the need for more refinements to consistently produce permanent improvements for patients.

One of Dr. Pollack’s goals over the coming year is to explore how sarcoma cells evade the immune system so he can enhance the therapy’s effects. This work, along with a new trial of a possible T-cell booster, will be supported by a grant Dr. Pollack received from the National Cancer Institute thanks to progress made with the help of private support.

He is also developing a trial combining T-cell therapy with tumor-directed radiation. Recent studies suggest that targeted radiation therapy may make tumors more vulnerable to T-cell therapy. Dr. Pollack plans to submit this protocol soon in order to test this approach for sarcoma patients who received T-cell therapy on the previous protocol but then progressed.

**Melanoma TIL trial launched**

Drs. Sylvia Lee and Kim Margolin and their colleagues recently established a melanoma tumor infiltrating lymphocyte (TIL) program at Fred Hutch — the only one on the West Coast — and opened their first clinical trial late in the summer of 2013. The opportunity to offer patients this promising experimental treatment, which employs T-cells that have been isolated from the patient’s tumor and selected based on their ability to grow and attack the cancer, is a direct result of months of hard work by our researchers, all sustained by your generous support.

**In gratitude**

These are just the first steps in what our scientists anticipate will be a new and transformative cancer therapy. Fred Hutch researchers are already developing versions of these immune-based approaches that target many common and difficult-to-treat cancers, including lung cancer, some types of breast cancer, pediatric neuroblastoma, prostate cancer and pancreatic cancer. The potential to bring our immunotherapies to so many more patients in the near future is a truly revolutionary opportunity — one you helped put within reach through your support at the Premier Chefs Dinner. Thank you.

**Save the date**

Premier Chefs Dinner  
Sunday, May 18, 2014  
www.fredhutch.org/chefs