



About Fred Hutchinson Cancer Center



Fred Hutchinson Cancer Center unites individualized care and advanced research to provide the latest cancer treatment options while accelerating discoveries that prevent, treat and defeat cancer and infectious diseases worldwide.

Based in Seattle, Fred Hutch is an independent, nonprofit organization and the only National Cancer Institute–designated cancer center in Washington. We have earned a global reputation for our track record of discoveries in cancer, infectious disease and basic research, including important advances in bone marrow transplantation, immunotherapy, HIV/AIDS prevention, and COVID-19 vaccines. Fred Hutch operates eight clinical care sites that provide medical oncology, infusion, radiation, proton therapy and related services and has network affiliations with hospitals in four states. Fred Hutch also serves as UW Medicine’s cancer program.

“
We are delivering advances that reshape research, reset the standards in cancer care and prevention, and lead to healthier lives for people everywhere.
”

Thomas J. Lynch Jr., MD
President and Director
Raisbeck Endowed Chair

Leading-edge science, compassionate care

By connecting the best science being done anywhere with a world-class health system, Fred Hutch is accelerating breakthroughs to prevent and eliminate cancer and infectious disease.

Cancer research. Our work to prevent, diagnose, treat, and cure cancer could not be more urgent. We are on the path to revolutionizing cancer treatments and care.

Precision oncology. We’re uncovering a stunning range of variables that affect how tumors behave and finding new opportunities to precisely target cancers with personalized treatments.

Immunotherapy. Our first generation of engineered T cells is curing some patients with blood cancers. Now we’re building on this success to design T cells that are effective, enduring cures for all types of cancers.

Patient support. We’re charting new paths to enhance the patient experience, reduce the symptoms and stress of cancer, and support our patients and their families along every step of the journey.

Access for all. In our labs, clinics, and community, we’re addressing widespread and complex inequities in disease prevention, detection, treatment, and outcomes — not just for some people, but for everyone.

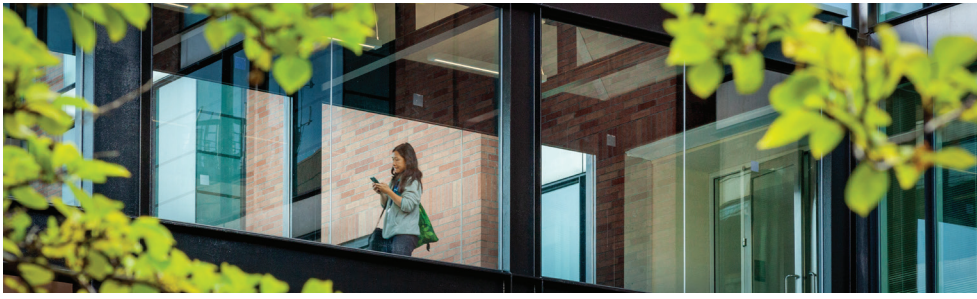
Data in action. We partner across sectors to create new methods that reveal insights in massive data sets and transform data into discoveries that improve early detection, personalize treatment, and save lives.

Infectious disease and vaccines. We are working in the laboratory, the clinic, and the cloud to find better ways to protect patients and communities from life-threatening viruses, including HIV and COVID-19.



Who was Fred Hutchinson?

Fred “Hutch” Hutchinson, a beloved Major League Baseball player and manager, died of cancer at age 45. His older brother, Dr. Bill Hutchinson, established a cancer center in his name as a living memorial.



From lab to clinic

Fred Hutch has a comprehensive approach, with research ranging from exploring the fundamental building blocks of life to combining clinical studies with patient care. We are also highly collaborative. Key collaborations include:

- **UW Medicine.** Our relationship allows for enhanced care coordination between a top-ranked cancer center and a leading integrated health system and accelerates the latest scientific breakthroughs in cancer and other life-threatening diseases.
- **The Fred Hutch/University of Washington/Seattle Children's Cancer Consortium.** Three powerhouse institutions serve as the Comprehensive Cancer Center for Washington, Wyoming, Alaska, Montana, and Idaho, with experts collaborating to develop and deliver the best care.
- **Uganda Cancer Institute/Hutchinson Center Cancer Alliance.** In East Africa, we are advancing research and training leaders in cancer care.



Fred Hutchinson Cancer Center is an independent organization that serves as UW Medicine's cancer program.

UW Medicine

Donor dollars in action

Generous supporters like you are critical to advancing prevention, detection, treatment, and cures.

We're proud that we lead independent research institutes in securing NIH funding, which is a testament to our scientific excellence. But your gift does what no other funding can do: It nurtures innovative ideas and accelerates research so new treatments move from the lab to patients faster. Your support:

- Funds high-risk studies with the potential for high reward.
- Jump-starts projects up to six times faster than research funded by federal grants alone.
- Attracts millions more in government and foundation dollars.

Our work has already led to cures for some cancers. Now we're looking beyond today's limits to deliver lifesaving research, life-affirming care, and healthier lives for every person in every community.

By the numbers

3

Nobel Prizes earned for breakthrough research

8

clinical care sites

52

companies launched from our research

245

research faculty

370

physicians

430+

active clinical trials giving patients access to leading-edge treatments

5,700+

highly skilled scientists, providers, and staff working to prevent, diagnose, treat, and cure cancer and other diseases

35,000

donors supporting our work

53,000

patients treated annually

Using Adoptive Cellular Immunotherapy to Target Breast Cancer

Supported by The Judith A. Lese Breast Cancer Foundation

The Promise of T Cells

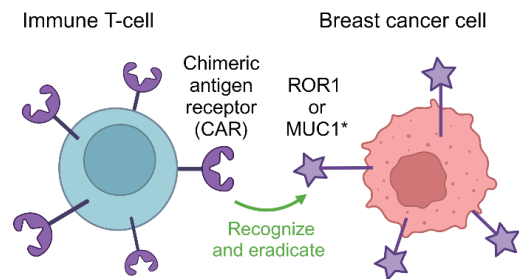
Adoptive cellular immunotherapy involves reprogramming a patient's own T cells to recognize and target their cancer. A patient's T cells are collected and genetically modified with a chimeric antigen receptor (CAR), which allows the T cells to recognize a specific protein on the surface of the cancer cells. CAR T-cell therapy has transformed outcomes for certain patients with lymphoma, leukemia, and multiple myeloma, and the goal is to extend that success to solid tumor cancers, including breast cancer.

Our Work

At the Fred Hutchinson Cancer Center, our research and clinical teams are studying two tumor proteins found on the outside of breast cancer cells, ROR1 and MUC1*. ROR1 is expressed selectively on triple negative breast cancers and some lung cancers, but not on normal, healthy tissues. A cleaved, or shortened, form of the Mucin protein, MUC1*, is present on all breast cancer subtypes (e.g., ER+, HER2+, and triple negative) and highly expressed in high-grade breast cancers. For these reasons, ROR1 and MUC1* are promising targets for CAR T-cell therapy.

One of the challenges of CAR T-cell therapy for breast cancer is understanding barriers in the tumor environment that may impede the CAR T cells from directly interacting with the breast cancer, which is necessary for tumor eradication.

The gift from The Judith A. Lese Breast Cancer Foundation has enabled Fred Hutch and UW Medicine colleagues Jennifer Specht, MD, a breast cancer specialist, and Cecilia Yeung, MD, an expert pathologist, to optimize tests to track interactions between CAR T cells and breast tumors in patients treated as part of their first-in-human Phase 1 ROR1 and MUC1* CAR T-cell trials.



Chimeric antigen receptors on the outside of a T cell (left) target the ROR1 or MUC1* proteins (purple stars) found on breast cancer cells (right). [Credit: Biorender.com]

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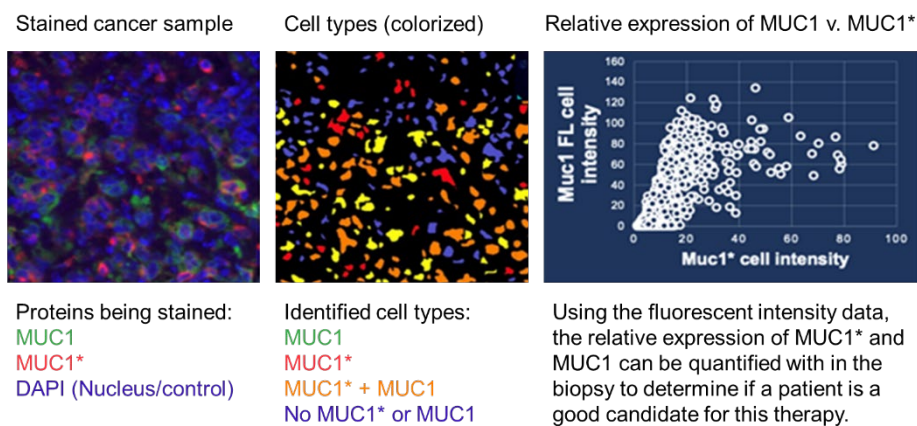
Fred Hutch is proud to raise funds that fuel the adult oncology program on behalf of both Fred Hutch and UW Medicine.

UW Medicine

Research Progress

Specifically, the foundation's funds support the development and optimization of an assay that detects CAR T cells. The WPRE qPCR assay involves a piece of DNA called WPRE which is used in the process of programming the CAR T cells. Detecting WPRE by a method called polymerase chain reaction (PCR) allows Drs. Specht and Yeung to measure the CAR T cells in a metastatic tumor biopsy. They successfully optimized this assay to test for presence of CAR T cells in the tumors of breast cancer patients treated with ROR1 and MUC1* CAR T cells. This assay will provide important insight into how CAR T-cell therapies interact with patients' breast tumors, and it will be a valuable tool for use with other solid tumors such as lung and pancreatic cancer.

Support from The Judith A. Lese Breast Cancer Foundation also made it possible to develop a new method to quantify the amount of MUC1* and ROR1 proteins on the outside of breast cancers. Results from the assay of expression of MUC1* (cleaved) and MUC1 (full-length) on breast cancer samples is shown in the figure



at left. Due to MUC1's large size, it may interfere with ability of CAR-T to find MUC1*, affecting a patients' response to therapy. This assay provides enhanced information on how much full-length versus cleaved MUC1 is present, allowing the team to better select breast cancer patients for therapy with MUC1* CAR T cells.

Meet the Researchers



Jennifer Specht, MD, is a board-certified medical oncologist who specializes in all stages of breast cancer with expertise in triple-negative breast cancer. At Fred Hutch, she sees patients in the Bezos Family Immunotherapy Clinic and leads the Phase 1 Breast Cancer Program. Her research interests include breast cancer genetics, immunotherapy, and the use of molecular imaging to better understand the biology of breast cancer. She holds the Jill D. Bennett Endowed Professorship in Breast Cancer at UW Medicine.



Cecilia Yeung, MD, is a clinical pathologist, professor, and medical director of Clinical Testing Labs at Fred Hutch and an associate professor in the Department of Laboratory Medicine and Pathology at UW Medicine. Her vision and expertise in molecular pathology has led to the pursuit of novel molecular diagnostic platforms and bioinformatics solutions aimed at faster, simpler, more accurate, and more cost-effective diagnostic tools.

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