Beyond 50

Fred Hutch Cancer Center

Advancing the Science of Cancer-Free Living

Opportunities to accelerate cancer prevention discoveries that ensure more people live healthier lives

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UW Medicine
UNIVERSITY of WASHINGTON

The Best Way to Treat Cancer Is to Prevent It Altogether

Pushing the boundaries of what's possible to reduce the impacts of cancer is fundamental to what we do at Fred Hutch Cancer Center. In fact, Fred Hutch was the first cancer center in the country to establish a research program dedicated to advancing cancer prevention.

For our scientists and clinicians, cancer prevention is large-scale, multidisciplinary research that examines drivers of cancer at the population level. It's detail-oriented work that seeks to translate those findings into guidance that benefits everyone. And it's highly collaborative work across labs within Fred Hutch and with teams at other cancer centers that spans a vast spectrum of pursuits:



Fred Hutch's cancer prevention research encompasses a wide range of initiatives, including assessing the impacts of diet.

- **Identifying cancer risk factors,** including genetic and environmental ones, so people can reduce and respond to them;
- **Refining screening methods** so we can detect cancer earlier when treatment can be more successful; and
- **Understanding the mechanisms of metastasis** so we can stop cancer from coming back.

For everyone else — our family, friends, neighbors, and ourselves — cancer prevention is evidence-based empowerment. It's the assurance that experts we've never met are looking out for our well-being. It's science-driven guidance for living healthier lives.

Today, those efforts are led largely by **Christopher Li, MD, PhD,** who is building upon the strong foundation established by previous leaders of our Public Health Sciences Division. With more powerful tools for mining and analyzing molecular and genetic data at scale, we are poised to provide even greater insights into an individual's cancer risk, empower them and their physicians to address it head-on, and ultimately offer them greater peace of mind.

You can help. Over the last five decades, federal funding and generous donor support have helped us build teams of visionary researchers with expertise in epidemiology, population health, and biostatistics, among others. And that support has empowered them to make discoveries that have reshaped how the public thinks about cancer prevention — and saved countless lives in the process.

As the Campaign for Fred Hutch accelerates the pace and scale of our innovation, we invite you to join us in helping to catalyze new, more precise prevention methods that will ensure more people can live cancer-free.



Christopher Li, MD, PhD

Fred Hutch
Senior Vice President and Director, Public Health Sciences Division

Professor

Helen G. Edson Endowed Chair for Breast Cancer Research

Fred Hutch/University of Washington/Seattle Children's Cancer Consortium
Assoc. Director, Population Sciences

UW Medicine
Research Associate Professor

Beyond 50

For more than 50 years, Fred Hutch has been looking beyond what's possible today to a new era of discovery. With your partnership, our Campaign for Fred Hutch is transforming the pace and scale of innovation so we can redefine cancer and infectious disease for generations to come.

Advancing the Greatest Good for the Greatest Number of People

Cancer prevention is largely rooted in probability: What are the chances that someone will get cancer, what method is most likely to reduce that risk, and what portion of the population could that method be most effective in protecting? Fred Hutch has made countless advances to benefit millions of people everywhere.

Rooting Out the Root Causes of Cancer



Dr. Denise Galloway has made immeasurable contributions to cancer prevention research.

In 1992, Fred Hutch microbiologist **Denise Galloway, PhD,** and her team showed that being infected with human papillomavirus, a common STI, increased the risk of precancerous changes in the cervix within three years.

That landmark discovery, and others, informed the development of the first vaccine to prevent cervical cancer in 2006, which has led to an astounding 80% drop in cervical precancers among women ages 20 to 24. Dr. Galloway continues to push the field forward. Now, as the scientific director of the Pathogen-Associated Malignancies Integrated Research Center, a professor, and the holder of the Paul Stephanus Memorial Endowed Chair, she leads a large collaborative team of scientists investigating other cancer-causing pathogens like Kaposi sarcoma-associated herpesvirus (Kaposi sarcoma) and Epstein-Barr virus (certain lymphomas and gastric cancers).

Discovering What Not to Do

While many breakthroughs in cancer prevention typically involve methods that work, sometimes it's just as important to identify methods that don't.

Based on information gathered from more than 162,000 Women's Health Initiative participants over eight years, **Marian Neuhouser, PhD, RD,** and her colleagues concluded definitively that multivitamins provide no cancer prevention benefits.



Today, Dr. Neuhouser is the head of the Cancer Prevention Program and a professor, and she continues to lead research into what can — and can't — lower risk. Discoveries like these help the public make better informed decisions about their health, steering them away from "easy-fixes" or products that offer a false sense of security and *toward* evidence-based options proven to provide real protection.

A History of Public Health Progress

Every cancer we prevent is a cancer that doesn't require treatment. That principle drives Fred Hutch's scientists and clinicians, inspiring them to pursue the most effective prevention methods for the greatest number of people.



Fred Hutch's Women's Health Initiative team has made tremendous strides for advancing cancer prevention.

Within a decade of opening our doors, our researchers began leading large, national studies that investigated the links between cancer and modifiable risk factors and that are still guiding clinical practice across the country.

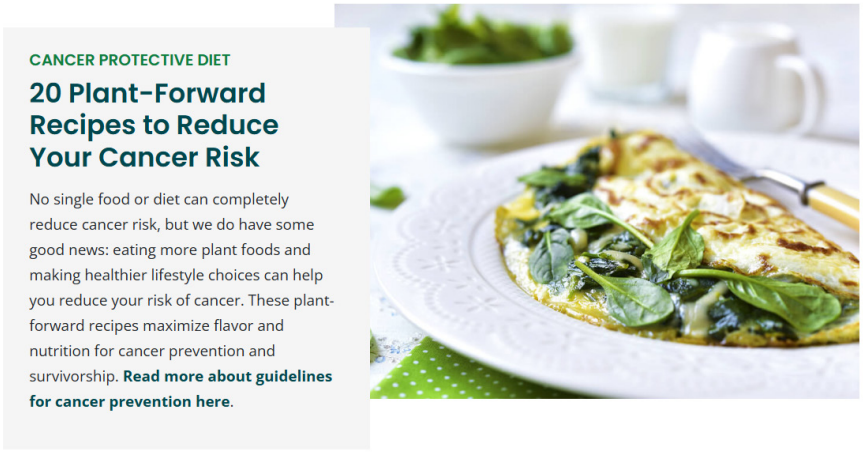
- **Carotene and Retinol Efficacy Trial (1985)**
  This large study of 18,000 participants definitively found that daily beta-carotene and retinyl palmitate supplements do not prevent lung cancer in those at high risk and could actually be harmful.
- **Women's Health Initiative (1991)**
  This observational study of more than 161,000 women has led to groundbreaking findings that have, among other things, helped reduce breast cancer prevalence by nearly 13,000 cases per year.

That pioneering work continues today. Thanks to a strong partnership between committed researchers and generous study participants, we're building on those early successes to advance the next generation of studies that ensure fewer people hear the words "You have cancer."

- **Early Detection Research Network (2000)**
  For more than 25 years, Fred Hutch has served as the coordinating center for this national effort to discover and validate new tools for detecting cancer earlier, when treatments can be more successful.
- **The Cancer Screening Research Network (2024)**
  CSRN is evaluating the dozens of new and complex technologies that screen for cancer, including multi-cancer detection assays. Fred Hutch researchers are designing the studies, training the nine organizations that carry them out, and analyzing the data they gather.

Writing the Menu for Managing Risk

We've known for decades that a diet high in fruits and vegetables and low in red meat and alcohol can significantly reduce your risk. During that same time, Fred Hutch researchers have led numerous studies to better define diets more likely to ward off cancer and to understand why those methods are effective.



Cook for Your Life provides diet-based guidance for cancer prevention.

We're also working to put those discoveries into practice. For nearly 20 years, epidemiologist and naturopathic physician **Heather Greenlee, ND, PhD, MPH,** has developed and distributed diet-based guidance for cancer prevention, from recipes and cooking videos to general nutrition and health information through the free online resource Cook for Your Life. Dr. Greenlee is the medical director of the Integrative Medicine Program at Fred Hutch and a professor at Fred Hutch and UW Medicine. Though primarily intended for cancer survivors, Cook for Your Life provides a wealth of resources that can help anyone manage their cancer risk.

Uncovering the Drivers of Inherited Cancer

Most of the time, BRCA genes work to repair damage to our DNA, staving off sustained changes that can lead to cancer. However, the estimated 1 million people in the United States who live with an inherited BRCA mutation lack that defense, exposing them to a much higher lifetime chance of developing several cancers.

Since launching the GENTleMEN study in 2017, **Heather Cheng, MD, PhD,** has been working to better identify who might carry those mutations so they can pursue screening earlier. Dr. Cheng is clinical director for Cancer Genetics, director of the Prostate Cancer Genetics Clinic, and holder of the Marty Lazarus Weiden Family Endowed Chair at Fred Hutch. She is a professor at Fred Hutch and UW Medicine.



An inherited mutation in the BRCA2 gene is responsible for about 5% of all prostate cancer diagnoses, while also raising a person's chances of several other cancers, including breast and pancreatic. By offering free, web-based genetic testing to people with advanced prostate cancer, Dr. Cheng and her team have been able to gather data for both guiding those patients' treatment *and* determining if their cancer was driven by an inherited mutation. That information is vital for informing their family members' decisions about screening.

Identifying Whose Cancer Is More Likely to Recur



Because most cancer deaths are the result of metastasis, it's critical that we find new ways to identify and protect those at greatest risk. Led by **Cyrus Ghajar, PhD,** and Dr. Christopher Li, the Developing Understanding of the Environment of Disseminated Tumor Cells (DUET) study is focused on understanding why some breast cancer patients develop a recurrence and others do not by studying the root of metastasis: disseminated tumor cells.

Dr. Ghajar is a professor at Fred Hutch and holds the Peter S. Lefkarites Memorial Endowed Chair.

This nationwide clinical study aims to identify risk predictors and methods for intervention so that patients with breast cancer no longer have to look over their shoulders, wondering if and when their cancer will recur.

Equipping People to Reduce Modifiable Risks

One of the most effective methods for reducing cancer deaths is helping people change the behaviors most likely to increase risk. As many who have tried to quit smoking will tell you, it's not necessarily easy. But **Jonathan Bricker, PhD,** has an app for that. In fact, he has several.

Dr. Bricker leads Fred Hutch's Health and Behavioral Innovations in Technology Lab, is a professor, and holds the Endowed Chair in Cancer Prevention. He's also an affiliate professor at UW Medicine. And over the last two decades, Dr. Bricker has developed mobile apps like iCanQuit, which helps users build skills for handling cravings, emotions, and thoughts that can trigger smoking; and QuitBot, which uses artificial intelligence to offer tailored, evidence-based conversational support to people trying to quit.



Dr. Bricker's guidance for quitting smoking focuses on acceptance, not avoidance.

What makes the apps truly unique is that each was built on acceptance and commitment therapy, an approach that focuses on being open to feelings, cravings, and thoughts instead of trying to avoid them. Now, he's building on that success to provide similar support to those working to lose weight.

The Center of Prevention

Ask any cancer prevention researcher what sets Fred Hutch apart from other centers around the country, and without hesitation, they'll say the **Prevention Center.** Some even chose to work here, in part, because of the facility's unmatched resources.

Established in 2004, the Prevention Center includes everything our teams need to lead prevention-based research that requires participation from patients and non-patients alike. Want to compare the effects of high- and low-fat diets, looking for biomarkers that can be used to track cancer risk? The staff at the **Nutrition Lab** can administer a carefully controlled feeding study of dozens of volunteers and gather the pertinent data for analysis.

Need to track how a specific exercise program affects cancer progression? The **Exercise Research Center** is an expansive workout space staffed by exercise physiologists and stocked with aerobic and resistance machines and high-end cardiopulmonary exercise testing equipment.

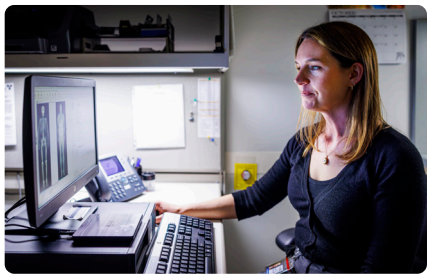




The Prevention Center is a powerful tool for recruiting new faculty.

The common denominator across the Prevention Center is verifiable study data. Conducting studies there, with the support of detail-oriented staff, allows our researchers to avoid the guesswork inherent in asking participants to self-report diet and exercise habits. Ingredients and portions, weight and reps — each is precisely measured and logged, ensuring the most accurate study results possible.

Comprehensive Study Support



In addition to the Nutrition Lab and Exercise Research Center, the facility is also home to a clinic that supports cancer prevention studies. Researchers have access to rooms where they can interview study participants, obtain medical histories and biospecimens. The research clinic is one more tool that ensures Fred Hutch studies will produce results that the public can trust.



Researchers can conduct interviews with study participants at the research clinic.



Matthew VanDoren
Program Administrator
Prevention Center

"I have the opportunity to host a lot of tours of the Prevention Center for visiting faculty and new faculty candidates. Every single one of them comments on how impressive this facility is and how unique it is among our peers. We're able to participate in many trials that wouldn't be available to us otherwise."

Prevention Center By the Numbers

100+
Studies supported since its launch

15+
Studies that can be supported at any time

5,000+
People who have participated in studies

4,378
Square footage of the Exercise Research Center

The Age of Precision Prevention



Dr. Christopher Li is leading a new era in cancer prevention research at Fred Hutch.

By their very nature, cancer prevention strategies have traditionally taken a one-size-fits-most approach. Very few methods are guaranteed to work for everyone, so public health guidelines have focused on attempting to benefit the greatest number.

Screening schedules for breast, colorectal, and lung cancer — among others — are driven primarily by age. But cancer doesn't adhere to anyone's timetable. As a result, some people discover they have cancer years before they're eligible for a mammogram or colonoscopy and after their disease can be more effectively treated. Others who will never develop cancer may undergo years of unnecessary screenings, incurring costs and navigating worries for no reason.

For cancer prevention to truly live up to its promise, it must serve everyone, no matter how old they are, where they live, or what their background is. This is the future that Fred Hutch cancer prevention researchers are working toward.

Screenings and interventions tailored to individuals, based on not just their age, family history, and diet, but also on their genetic makeup and unique exposures. And access to those screenings and interventions that ensures everyone can benefit.

Today, the technology exists to make that possible. Fred Hutch researchers have the curiosity, commitment, and capability to make it a reality.

Your gift helps patients everywhere

For more than five decades, Fred Hutch has been defined by an unwavering belief in what's possible when people come together to fund research that transforms care.

Fred Hutch was among the nation's first federally designated cancer centers, and the discoveries made here continue to shape how cancer and infectious disease are treated across the country and beyond.

Unpacking Differences in Colorectal Cancer Rates

Colorectal cancer is the leading cause of cancer-related death in people under 50, and rates have risen steadily for the last decade. Yet incidence and survival rates vary significantly across racial and ethnic groups. Understanding why is critical to reducing those differences and improving outcomes for everyone.



Dr. Ulrike Peters is improving cancer prevention for everyone.

Ulrike Peters, PhD, MPH, and colleagues, including Dr. Christopher Li, launched the Translational Research Program in Colorectal Cancer Differences Across Populations in 2020 to answer those questions and close the gap. Dr. Peters is a professor, associate director of the Public Health Sciences Division, and holder of a Fred Hutch 40th Anniversary Endowed Chair. By partnering with a variety of health care systems and advisory boards that included patients of color and representatives from community-based organizations, the program recruited more than 1,000 participants across four ethnic and racial populations to donate tissue and tumor samples. Those invaluable specimens are now being used for molecular epidemiology studies.

Helping People Measure Their Personal Risk

National guidelines recommend that people of average risk for colorectal cancer begin regular screenings at age 45. But how does someone know if they're at average risk? Maybe they should actually begin screening earlier. Or maybe they can be spared the hassles and costs of unnecessary testing? MyGeneRisk attempts to provide people with the insight they need to make better-informed decisions.



Developed by Dr. Peters and **Li Hsu, PhD,** a Fred Hutch biostatistician, the free online tool allows users to upload raw genetic data from direct-to-consumer DNA testing services and answer questions about diet, exercise, and smoking habits. In return, they receive a personalized risk assessment for colorectal cancer, as well as recommendations for mitigating it.

MyGeneRisk is the product of tremendous foresight and years of collaboration. Nearly two decades ago, Dr. Peters recognized that answering population-level questions about colorectal cancer would require much larger data sets than any one study could gather. In 2009, she brought together colorectal cancer researchers from around the world to create the Genetics and Epidemiology of Colorectal Cancer Consortium. Since then, participating scientists have pooled resources and data from more than 70 studies and 130,000 patients to advance the collective's research, including development of MyGeneRisk.

Examining Unexpected Exposures

Most everyone is familiar with risk factors like air pollution and the sun's rays. But what about daylight and disruptions to our circadian rhythms?



Dr. Trang VoPham is identifying new cancer risk factors others hadn't considered.

Trang VoPham, PhD, MPH, MS, is studying how a person's environment, including where they live and a complex web of environmental factors, contributes to cancer risk — and how those effects can be mitigated. Through the Geospatial Exposome Lab, the epidemiologist and associate professor is developing environmental exposure models to better identify those populations at greater risk.

By combining detailed data on regional health outcomes, pesticide and herbicide use, wildfire smoke, and other forms of air pollution, Dr. VoPham's lab has built an interactive map of Washington state that provides neighborhood-level details on potential exposures and what residents can do to minimize their cancer risk.

Settling the Score With Prostate Cancer

We've known for decades that prostate cancer is highly heritable. And while a mutation in a single gene can increase a person's risk for prostate cancer, our research has found that certain combinations of *hundreds* of genetic factors and variants can have a much larger effect. **Burcu Darst, PhD,** is developing a tool to better identify and quantify those combinations to help more people make informed decisions about screening.



Using data gathered from nearly 200,000 patients with prostate cancer, the epidemiologist and associate professor is developing something called a polygenic risk score (PRS) that we can use to measure an individual's risk. Perhaps most important, though, it has the potential to even identify those people who are more likely to develop *aggressive* prostate cancer and therefore in greater need of earlier screening or treatment.

Data, Data, and More Data

Cancer prevention research has always been a numbers game: The strongest conclusions are based on the most robust data, gathered with the soundest study criteria.



Dr. Jingyi Jessica Li prioritizes collaboration.

That work relies on biostatisticians, and Fred Hutch has been home to a long line of experts in the field, beginning with **Ross Prentice, PhD,** who helped found our Public Health Sciences Division, and extending to **Garnet Anderson, PhD,** a professor and holder of a Fred Hutch 40th Anniversary Endowed Chair who has led the Women's Health Initiative for decades.

As our ability to gather more (and more) data on patients and a range of cancers increases, the need for rigorous study design that asks the most relevant questions for prevention breakthroughs is also increasing. **Jingyi Jessica Li, PhD,** head of the Biostatistics Program, professor, and Donald and Janet K. Guthrie Endowed Chair in Statistics, is building upon her predecessors' successes to ensure our teams can take full advantage of the data-rich environment we're living in now.

In particular, her team is helping researchers understand how much confidence to place in a result by developing tools to distinguish meaningful biological signals from false discoveries. In cancer prevention research, this approach can help prioritize promising leads for further study.



Drs. Garnet Anderson and Ross Prentice

Above all, her priority is collaboration. By working closely with scientists and clinicians on their research, her team is able to create innovative biostatistical solutions that can both serve a given study *and* be generally applicable for new data analysis approaches that we haven't considered yet.

"Biostatisticians cannot just work alone," Dr. Li says. "We need to collaborate with people who generated or collected the data to make sure we understand and can best support the process."

Breathing New Life Into Lung Cancer Screening

Cancer screening is only as good as a person's ability to access it.

Despite overwhelming evidence that lung cancer screening saves lives, just 20% of eligible adults in the United States have ever taken advantage of it, compared to roughly 70% of eligible women who have had a mammogram in the last two years. **Matthew Triplette, MD, MPH,** is on a mission to close that gap.



Dr. Triplette is the medical director for the Lung Screening Program and Living Tobacco-Free Services at Fred Hutch and an associate professor at Fred Hutch and UW Medicine. Over the last decade, he's led several studies to explore the reasons people don't get screened — including the stigma associated with smoking and lack of access to facilities that provide screening — as well as what makes a program more effective. Today, he's interested in rolling up his sleeves and working to help implement those programs, particularly for those at highest risk, like LGBTQ folks and American Indian and Alaska Native communities.

The Mark of Success

How do you judge a cancer prevention strategy? In many cases, with biomarkers.

The word has several meanings in cancer research. In cancer *prevention*, it typically refers to compounds we can measure in individuals' blood or urine. Not everyone metabolizes nutrients the same way, so before we can determine the effect of, say, a low-fat diet on any given person's cancer risk, we have to be able to measure what parts of that diet their body is using.

Dr. Neuhouser and **Johanna Lampe, PhD, RD,** professor emeritus, have worked for years to identify these biomarkers to equip their colleagues to understand how well a proposed prevention method will work. "You can't go around taking liver biopsies from everybody every other day," Dr. Lampe says. "It's been a real creative exercise to come up with things you can measure that accurately conveys response."



UW Medicine

Fred Hutch is an independent, nonprofit organization that also serves as the cancer program for UW Medicine. Fred Hutch is proud to raise funds that fuel the adult oncology program on behalf of both organizations.

Join Us

Fred Hutch's innovative researchers are pushing the boundaries of what's possible in cancer prevention to help more people live longer, healthier lives. With a gift to support any of the areas below, you can accelerate the pace of those discoveries, empowering our teams to go even further in revealing the drivers of cancer, diagnose it earlier, and prevent it from coming back.

Training the next generation of cancer prevention researchers – $400,000

Postdoctoral fellows power discoveries while getting valuable research experience. But the uncertain future of science funding is putting a generation of promising scientists at risk. Your support can ensure these trainees can contribute to Fred Hutch research and continue on their path within science.

Launch a pilot project – $150,000

Fred Hutch scientists are brimming with ideas that could lead to the next breakthrough. Today, it's more important than ever to develop strong proof-of-concept data required to win the shrinking number of grants. Your investment can launch the study of an original idea that would not otherwise get off the ground.

Launch a collaborative pilot project – $300,000

Breakthroughs in cancer prevention research often require close collaboration between labs specializing in different disciplines. Your investment will allow two teams to combine their unique perspectives in pursuing the answer to a question with potential to identify or reduce cancer risk.

Expand the Computational Biology Fund – Gifts of all sizes

Cancer prevention research sits at the intersection of math and biology, where analyzing big data sets can help us explore previously unanswered questions about cancer risk. Gifts of any size to support the Herbold Computational Biology Program — where much of this work takes place — can help fuel the next breakthroughs that will provide the public invaluable guidance for healthy living.

Endow a chair in cancer prevention research – $2 million

Fred Hutch faculty are building on decades of cancer prevention research, powering progress to help people live healthier lives. By establishing an endowed chair in cancer prevention research, you will link your legacy to our future and ensure a succession of researchers have funding in perpetuity.

Name a cancer prevention research space – $100,000 to $2 million

Donors giving $100,000 or more have the opportunity to be recognized with a named space used by our cancer prevention researchers, whether in the Prevention Center or elsewhere. This physical reminder of your commitment will inspire investigators for decades to come.

We also welcome the opportunity to discuss how you can advance cancer prevention by directly supporting any of the following:

- *Breakthroughs in understanding cancer recurrence at the **Center for Metastatic Research eXcellence***
- *Nutrition-based support through **Cook For Your Life***
- *Smoking cessation research at the **Health and Behavioral Innovations in Technology Lab***

Cancer Prevention Is a Team Effort

Uncovering the causes of cancer and developing innovative ways to stop them takes teamwork — between researchers from different disciplines and between Fred Hutch and you.

We know our donors have unique motivations for giving to areas of research that are most meaningful to them. Whatever inspires you to support Fred Hutch, we welcome the opportunity to discuss how your generosity can meet your goals while advancing cancer prevention breakthroughs.



Fred Hutch Cancer Center

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