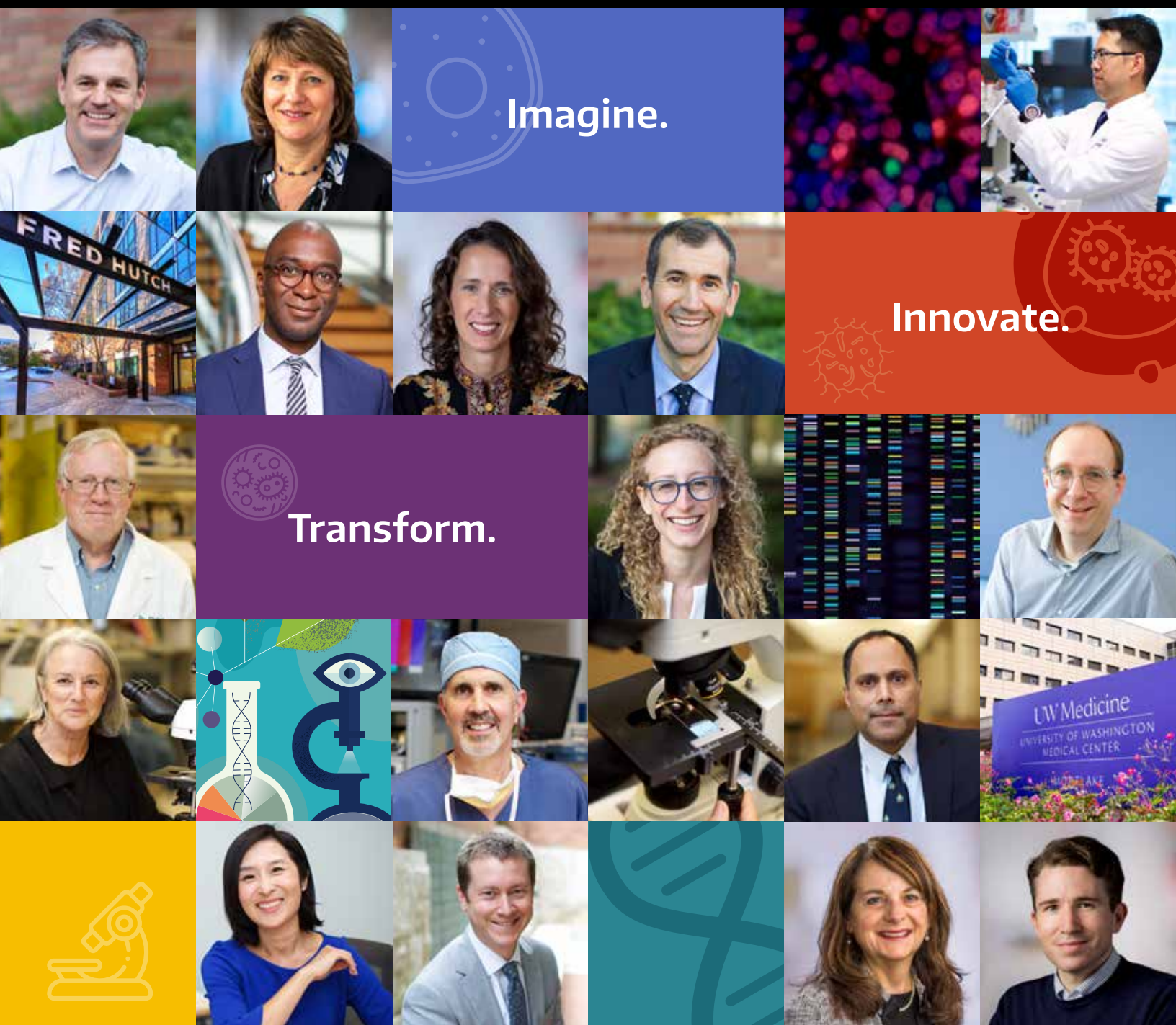


INSTITUTE FOR PROSTATE CANCER RESEARCH

Report to the Community 2021



Who we are

The Institute for Prostate Cancer Research is a collaborative effort between University of Washington Medicine and Fred Hutchinson Cancer Research Center.

OUR EXPERT TEAM OF SCIENTISTS AND CLINICIANS
WORK TO FULFILL OUR THREE-PART MISSION:

- Understanding prostate cancer to improve diagnosis and treatment
- Providing effective, individualized therapy for patients
- Extending and enhancing the quality of a patient’s life upon diagnosis

TO ACHIEVE THIS MISSION,
WE ARE COMMITTED TO:

- Studying potential preventive agents and strategies
- Developing new biomarkers for early diagnosis and therapy selection.
- Improving surgical, radiation and ablative techniques
- Exploring the biology of prostate cancer metastasis and resistance to treatment
- Understanding hereditary and acquired gene defects to develop better detection and therapy strategies
- Advancing targeted imaging technologies and integrating them with novel therapies
- Conducting innovative clinical trials to bring new discoveries to the bedside



Message from the Director



This Report to the Community provides an important update on our ongoing catalytic research in prostate cancer. The IPCR is a joint endeavor involving long-standing collaborations between researchers and physicians from the University of Washington and the Fred Hutchinson Cancer Research Center. Our mission is to prevent and cure prostate cancer while reducing the

side-effects of treatment and improving the quality of life of the men who have been diagnosed. Due to space constraints, we cannot include all of our avenues of investigation, but this edition will offer a window into some of our exciting and landscape-changing research in addition to introducing you to newly recruited faculty.

While many of our IPCR efforts receive federal funding through traditional research grants and contracts, much of what you will read in the following pages is substantially supported through generous philanthropy from prostate cancer patients, their families and our community. We certainly could not reach these new heights of research excellence without their support and generosity.

As we journey into the holiday season and the new year ahead, I want to take the opportunity to thank the entire IPCR team for their tireless work in not only prostate cancer clinical care and research, but also in health care delivery and a lifetime of discovery. Together, we are united in the words on the front cover of this report: to *imagine* novel approaches of investigation, to *innovate* and develop emerging frontiers of science, and to *transform* the landscape of prostate cancer care to make cure a reality. Thank you for your interest in our mission, and feel free to reach out to me directly at any time at dlin@uw.edu.

Warm regards,
Daniel W. Lin, MD
Professor
Department of Urology, University of Washington

Message from the Scientific Director

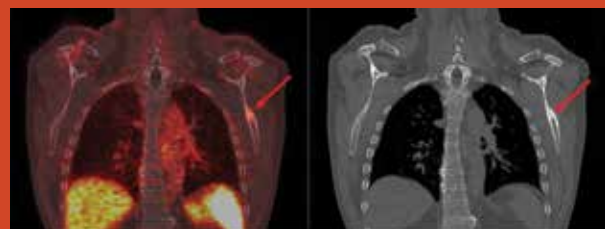
My role as scientific director gives me a front-row seat to view the progress made by the outstanding group of 42 physicians and researchers who comprise the IPCR. Notably, each of these individuals extends the reach of prostate cancer research through connections spanning more than 14 departments and divisions across the UW and Fred Hutch, bringing ideas from other disciplines such as computer science, mathematics, bioengineering and immunology into our field. The research and clinical teams led by IPCR investigators now comprise more than 200 trainees and staff.

Biomedicine continues to improve human health; the foundation is basic research. The IPCR supports work designed to understand how the prostate develops, how hormones such as testosterone regulate cell growth and survival, and how the immune system recognizes targets, including viruses such as Covid-19 and prostate cells that have transitioned into cancers. A key aspect of IPCR-supported work involves *translating new knowledge into clinical action* to improve the lives of patients with prostate cancer—ultimately driving prevention and cure.

Importantly, IPCR investigators are connected to national and international efforts designed to rapidly share knowledge and focus collaborative efforts on the challenges facing men with prostate cancer. The data, models, ideas and insights developed from Seattle-grown science have spurred many of the major advances that are now extending survival rates and reducing treatment side-effects. In this update, you will see how IPCR investigators are changing the treatment landscape through their research paired with your participation and generous support.

With gratitude,
Peter S. Nelson, MD
Professor
Human Biology Division, Fred Hutchinson Cancer Research Center





Locating

PROSTATE CANCER CELLS

—wherever they occur

Prostate cancer cells carry a unique protein on their surfaces known as Prostate-Specific Membrane Antigen, or PSMA. Recently scientists have discovered the existence of small molecules that can track and bind tightly to PSMA. When these molecules are labeled with a radioactive isotope, the tracers, as they are called, can make prostate cancer cells visible on PET scans.

At the Institute for Prostate Cancer Research, scientists have found PSMA PET scans offer extraordinarily high sensitivity and near pinpoint accuracy. “The PSMA PET scans are finding prostate cancer metastases that are less than 5 mm, which is nearly impossible for any other imaging technology,” says Dr. Evan Yu, MD. “With this innovative technology, we can better determine the extent of prostate cancer both at the time of initial diagnosis and throughout a patient’s journey living with and treating this cancer.”

Facing complicated decisions

Most men learn they have prostate cancer when high levels of prostate-specific antigen, or PSA, are found in their blood. When a biopsy is performed, doctors can examine the cancer cells and determine how aggressive they appear.

Some men undergo a variety of scans to see if the cancer has spread or if the capsule surrounding the prostate has been breached—a sign that the cancer may have escaped. Doctors also consider an individual’s PSA levels: The higher the PSA, the more cancer there is in the body and the more likely it has spread.

In some cases, men who have had their prostate removed or destroyed by radiation find their PSA levels have started to rise months or even years later. The cancer that doctors thought they had cured has metastasized elsewhere. Doctors know the disease is present but they don’t know where it is.

Molecular imaging transforms diagnostics and treatments

PSMA PET scans are a game-changing technology. “The scan uses a radioactive tag attached to a molecule to identify prostate cancer cells wherever they occur in the body,” says Dr. Delphine Chen, MD. “Once tagged, the clusters of cells appear as bright spots on the scan.”

Specific targeted treatments for patients can be created by using this technique to kill cancer cells, not just find them. Because the scan shows that the radioactive tracer accumulates in large amounts in prostate cancer cells, the same PSMA small molecule can be labeled with a different radioactive isotope that is beneficial for therapy.

“These therapy radioactive isotopes, when attached to a small molecule that binds to PSMA, will deliver nearly all of their energy to the prostate cancer cell,” says Dr. Yu. “The hope is that this kills the cancer cell or prevents it from growing. Follow-up scans tell us if the therapy worked.”

This new diagnostic and therapeutic technology, now being tested in a research study funded primarily by the Schultz Family Foundation and other IPCR donors, is opening the door to possibly changing high-risk prostate cancers—and even metastatic prostate cancers—into curable ones.



UPPER LEFT: DELPHINE CHEN, MD
INSET LEFT: PSMA SCAN
NEAR LEFT: EVAN YU, MD

UNCOVERING VITAL DATA ABOUT

Inherited Genetics



Uncovering information about rare gene mutations, learning more about families who have been impacted by cancer but for whom no obvious mutation is identified, and offering early-detection and screening trials are ways that scientists are advancing IPCR's role as a leading prostate cancer research center in the Pacific Northwest and around the world.

The GENTleMEN study

Launched in 2017, the GENTleMEN study, or GENetic Testing for Men with Metastatic Prostate Cancer, led by Dr. Heather Cheng, MD, PhD, offers free, innovative and web-based genetic testing to men with advanced prostate cancer to see if they have inherited genetic mutations linked to the disease. What began as a statewide effort has now expanded coast-to-coast.

As of June 2021, more than 600 men have participated in the GENTleMEN study. Of these, one in 10 found they had an inherited mutation—critical information that may cause them to rethink their treatment strategy. **The results also provide important information to biological family members who may carry the same cancer-risk genes.**

By removing the cost and logistical barriers to genetic testing, Dr. Cheng and her team hope to reach more underserved, rural and minority men. African American men are a particular risk group—more than twice as likely to die from prostate cancer than white men—so improving access is critical.

Genetics Specialty Clinic

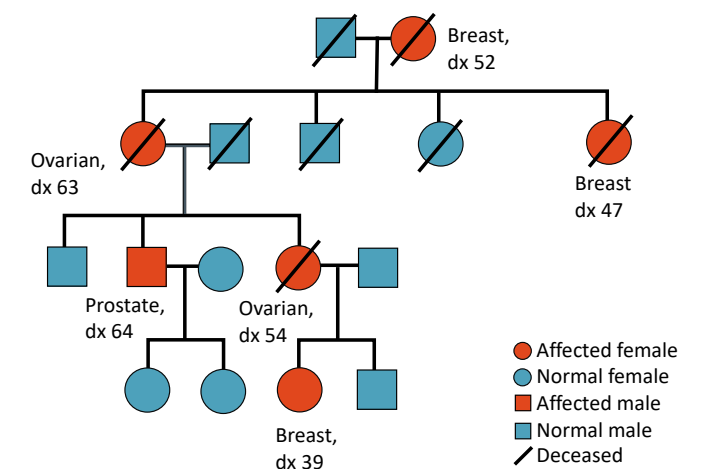
Men with metastatic prostate cancer are more likely to have an inherited and more aggressive form of cancer. The Prostate Cancer Genetics Specialty Clinic, which opened in 2016 under the leadership of Dr. Cheng, serves men with advanced prostate cancer or those who have a strong family history of prostate, breast, ovarian, pancreatic or other cancers.

At the clinic, patients receive genetic testing and then meet with Dr. Cheng and a genetic counselor about their family history, cancer treatment, tumor, and inherited genetic and genomic testing options. Knowing whether a patient has a genetic mutation that is inherited or in the cancer helps doctors choose the best treatment plan. It can also open doors for the patient to enter targeted clinical trials.

These online genetic services were instituted well before the pandemic, created as a way to improve outreach and service delivery. During the pandemic, they have provided a critical lifeline for patients living in rural areas or unable to meet in person.

Genetic insights

Some men who inherited BRCA2 mutations but are still cancer-free are taking the initiative to schedule consultations about their risk, seek screening strategies and get involved in clinical trials. Others have enrolled in PATROL, a study funded by the National Institutes of Health. PATROL is a tailored prostate cancer early-detection and screening clinical trial for men with inherited DNA repair mutations and who are at higher risk of prostate cancer. The study not only helps men with cancer and a genetic risk factor but in some cases assists their male and female relatives who also may be at risk.



LEFT: HEATHER CHENG, MD, PHD



Harnessing the body's immune

One of the most exciting advances in cancer treatment involves the remarkable progress in the field of immunotherapy, which harnesses the body's own immune system to fight cancer. Multiple immunotherapy drugs have been approved to treat various types of cancers; the FDA-approved treatment for advanced prostate cancer is sipuleucel-T.

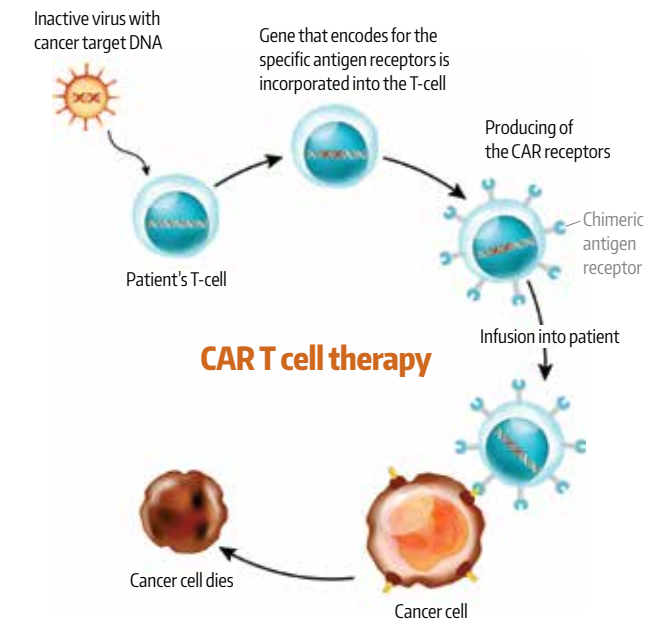
Dr. John Lee, MD, PhD, a board-certified oncologist, runs Lee Lab at the Fred Hutchinson Cancer Research Center where his team focuses their research on developing adoptive T cell immunotherapies for prostate cancer using a chimeric antigen receptor (CAR). These receptors program the body's T cells to identify the specific proteins on cancer cells that can be activated and then eradicated.

CAR T cell therapies combine exquisite specificity and tremendous potency. In the last few years, this approach has made a huge impact on treating various blood cancers such as leukemia and lymphoma.

Dr. Lee is currently working on taking a CAR T cell therapy directed at the protein L1CAM (developed by Seattle Children's to treat childhood neuroblastoma) and translating it to a clinical trial for men with neuroendocrine prostate cancer, a highly aggressive variant with few treatment options.

His lab has also engineered a novel CAR T cell therapy that targets the protein STEAP1, produced in most prostate cancers. CAR T cell therapy using STEAP1 is showing excellent promise in laboratory models, and researchers at the University of Washington and Fred Hutchinson are exploring next steps needed to evaluate the approach in clinical trials.

"A major barrier to the effectiveness of immunotherapy in prostate cancer is the tumor microenvironment," says Dr. Lee. "For example, how do the cancer cells interact with the surrounding tissue? We believe by converting the tumor

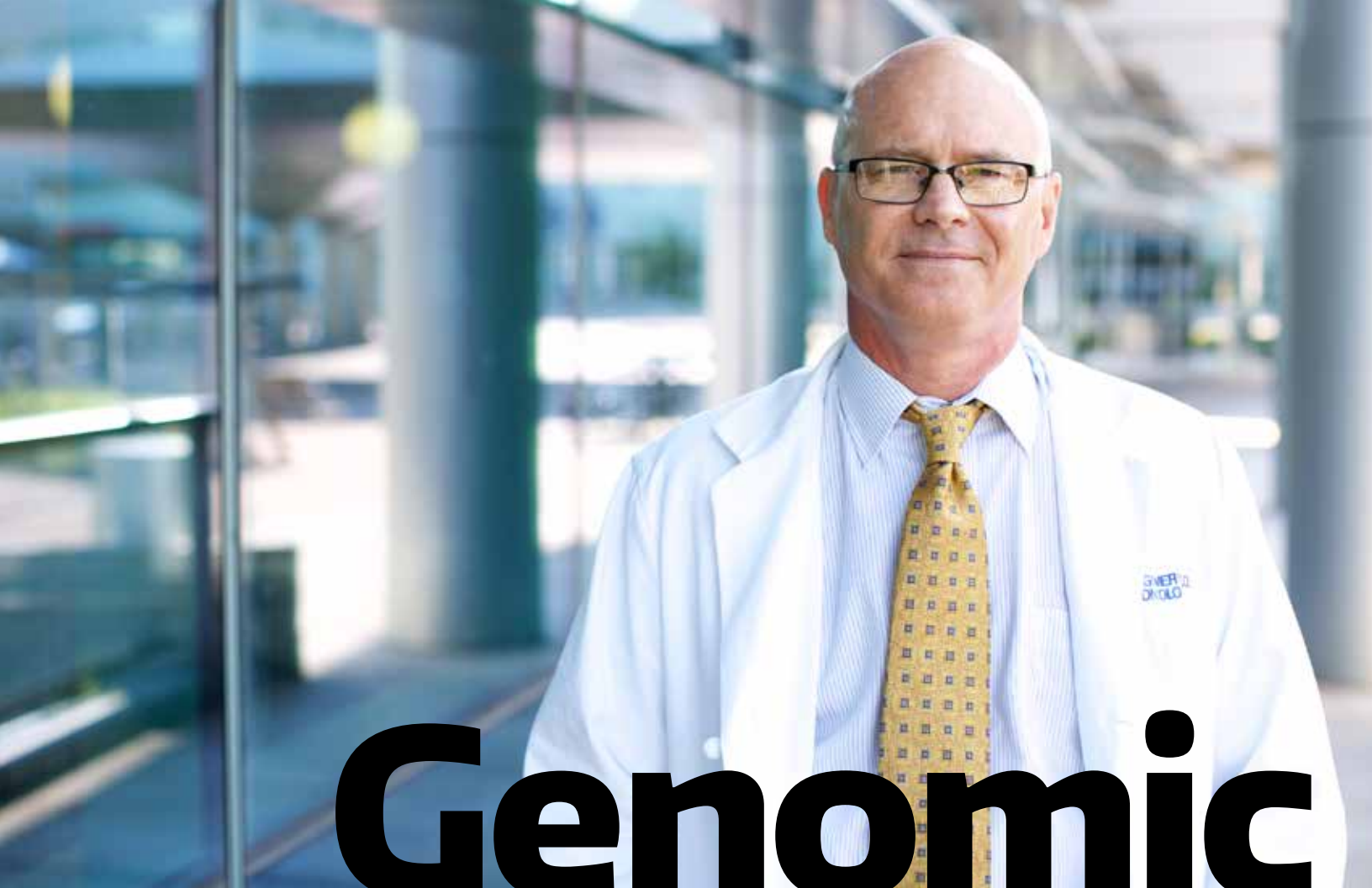


microenvironment from a cold hostile state to a hot welcoming state for cancer-fighting immune cells we can improve the success rate of immunotherapy in prostate cancer."

With this in mind, Dr. Lee and his team are assessing multiple parallel approaches through academic and industry collaborations which can be combined with CAR T cell therapy strategies. This includes testing novel molecules and proteins that modulate signaling in the tumor microenvironment to enable improved recruitment, survival and activity of CAR T cells in tumors.

system

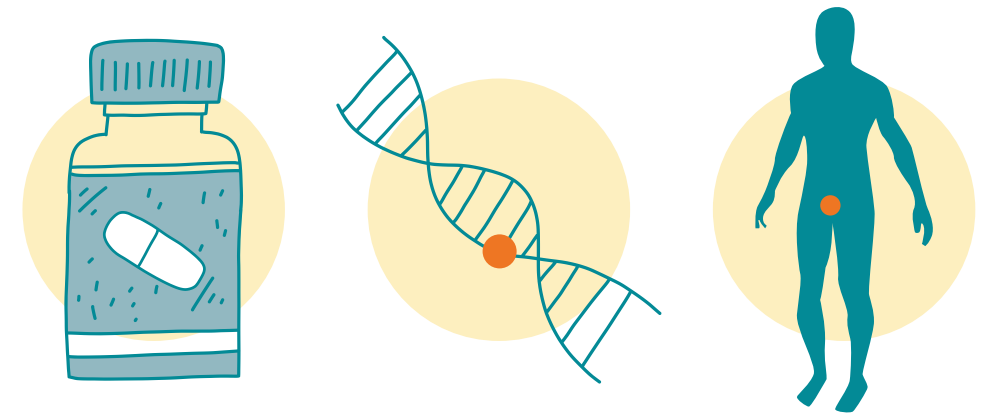
"As one of the few centers nationwide engaged at this level of research," says Dr. Lee, "we remain optimistic and excited about landscape-changing developments that are on the horizon for prostate cancer immunotherapy."



Genomic landscape

of metastatic prostate cancer

Is precision oncology—the use of genomic profiling of patient tumors at the point-of-care to inform treatment decisions—feasible for men with advanced prostate cancer? Dr. R. Bruce Montgomery, UW professor of medicine, along with a team of IPCR investigators, wanted to find out.



As part of a multi-institutional study, Dr. Montgomery examined whether this approach would enable more accurate and efficient treatment strategies for advanced prostate cancer patients.

“We developed protocols to obtain biopsies of metastatic tumors and used genome-wide DNA and RNA sequencing methods to identify mutations,” says Dr. Montgomery. Results from the study of the first 150 tumors, published in 2015 in the journal *Cell*, is by far the largest and most comprehensive analysis of advanced prostate cancers to date. The study, updated with clinical correlates in 2019, is widely considered one of the most influential papers on prostate oncology published in the last decade.

The team’s sequencing to identify mutations has provided many new insights which continue to provide dividends to researchers and patients today. For example, researchers learned that molecular drivers differ between patients—a significant finding because it means that not all men should receive the same treatment. In addition, deficient DNA repair processes, which occur in about 25 percent of the cases, can make the cancers respond exceptionally well to treatments that were already available to treat other cancers but were not commonly used in prostate cancer.

The study’s exciting results fast-tracked the initiation of phase 3 studies which led to rapid FDA approval of a class of agents known as “PARP inhibitors” for men with advanced prostate cancer. These findings have also driven the development of research at the University of Washington and Fred Hutchinson Cancer Center trying to improve on the advances already made. “Targeting these genes, such as BRCA2, has the greatest potential for changing therapy for men who have advanced prostate cancer” says Dr. Montgomery

Many laboratory and clinical studies which leverage these findings and led by IPCR investigators are underway at the University of Washington and Fred Hutchinson Cancer Center.

LEFT: R. BRUCE MONTGOMERY, MD



Advancing research TO IMPROVE PATIENT OUTCOMES

Established more than 30 years ago, the Genitourinary Cancer Biorepository is an internationally recognized resource helping fuel a new generation of targeted diagnostics and therapies and increasing our understanding of the biology of prostate cancer.

Within its walls are more than 50,000 tissue samples from about 6,000 patients, providing IPCR investigators, University of Washington researchers, and other academic and industry partners with the biospecimens they need to continue their work to eradicate prostate cancer. Few centers in the world have collected as many tissue samples; even fewer have acquired metastatic tissue for analysis and pre-clinical studies.

A world leader in tissue acquisition

Taking scientific discoveries made in the lab or clinic and transforming them into new treatments and therapies requires high-quality patient tissue samples of all types and at all stages of the disease. Tissue samples are obtained from clinics, operating rooms and the rapid-response autopsy program.

After acquisition, each specimen is thoroughly evaluated by a pathologist, carefully processed by an acquisition team, and then stored in sub-freezing conditions until needed. Clinical information is abstracted, pertinent data entered into a secure database, and when required, derivatives like RNA and DNA are isolated.

“Our biospecimens have been shared with numerous investigators at academic centers as well as pharma and biotech companies throughout the world at minimal cost” says Dr. Colm Morrissey, PhD. Several of the major treatment advances in the field that have extended the survival of men with advanced prostate cancer were fueled by samples from our Genitourinary Cancer Biorepository.”

Evaluating new therapies for advanced treatment

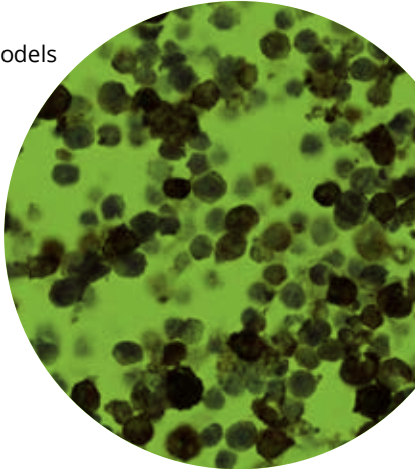
To evaluate and test new therapies for advanced prostate cancer treatment, the biorepository has established and characterized more than 40 different xenografts over the past two decades. This time-intensive process involves taking tumor tissue from a patient and implanting it into another species, in this case, mice, for research purposes. The tissue is maintained *in vivo* and is constantly being propagated. Developing a xenograft takes about a year and has a 10-to-20 percent success rate.

“It’s important to continue collecting biospecimens that represent the disease present in patients today as new treatment-resistant tumors are different. These tumors employ new mechanisms to support their growth, and understanding these new mechanisms will help us to develop new effective treatments,” says Dr. Eva Corey, PhD, who together with Dr. Morrissey co-directs the GU Cancer Research Laboratory.

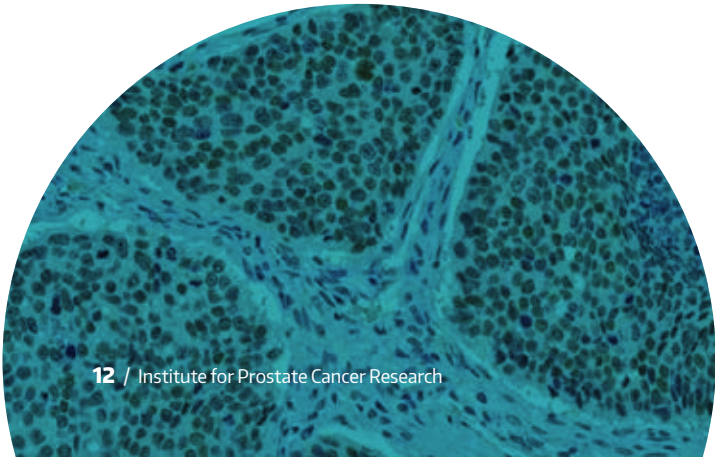
Patient-derived xenografts, known as PDXs, are at the cornerstone of prostate cancer research. They more faithfully reflect potential clinical responses to cancer therapies because they retain key

features of a patient’s tumor such as its tissue architecture, genomic signature and tumor heterogeneity. Each of the models is different in type and behavior, allowing researchers to develop more personalized therapies.

“These clinically relevant preclinical models have the potential to rapidly advance drug development efforts,” says Dr. Corey. “They are critical to increasing our understanding of the biology of this malignancy.”



UPPER LEFT: EVA COREY, PHD
UPPER RIGHT: COLM MORRISSEY, PHD



MANAGING early stage PROSTATE CANCER

One of the most important considerations in prostate cancer research is to distinguish cancers that appear low-risk but become aggressive later from those that remain low-risk. Men with aggressive cancers can often benefit from immediate or radical treatment while those with “indolent” or seemingly inactive cancers usually don’t need the same aggressive approach.

Enter PASS, or Prostate Active Surveillance Study, launched in 2007 and led by IPCR Director Dr. Daniel Lin, MD. The project, initially funded by the Canary Foundation, a nonprofit organization dedicated to early cancer detection, was designed to discover new tests, and improve existing ones, that distinguish between aggressive and indolent cancers. The team partnered with the National Cancer Institute’s Early Detection Research Network for project coordination and data management, further enhancing its international stature through a variety of collaborative research efforts made possible through federal funding and industry partnerships.

Far-reaching implications

“The importance of PASS lies in its potential to answer questions about managing early-stage prostate cancer,” says Dr. Lin. “These might include better identifying prognostic markers of cancer aggressiveness; improving risk stratification and risk prediction models; using comparative economics analysis to reduce a patient’s financial burden; and providing patients with a higher quality of life.”

Canary PASS is the largest surveillance cohort in the world with an associated robust biospecimen bank. More than 2,000 men have enrolled to date, with the median length of participation about 7 years. Participants are men with clinically localized prostate cancer who are on active surveillance and have agreed to donate their blood, urine and tissue specimens over time.

An additional grant received recently from the National Cancer Institute allows the PASS cohort to continue as a prostate cancer epidemiology cohort, enabling researchers to collect follow-up data on existing participants while enrolling new ones. The funds also support a high-quality database and biospecimen repository—a rich resource which will be used to uncover new insights about prostate cancer and active surveillance.

“Research conducted by our PASS team will have wide-reaching implications,” said Dr. Lin. “We hope to translate this data into more personalized clinical management and improve patient outcomes.”



DANIEL W. LIN, MD

INTERNATIONAL COLLABORATION

The DOD Synergy Study

When treating prostate cancer, the usual regimen is to provide drugs sequentially rather than in combination. Unfortunately, this traditional approach often leads to drug resistance.

A new research project underway at IPCR that is both international and collaborative in scope is systematically working to identify drug combinations that can be used to eradicate metastatic prostate cancer tumors. The IPCR team was recently awarded a three-year \$1.5 million grant, out of a total grant of nearly \$3 million, from the U.S. Department of Defense for what became known as the DOD Synergy Study.

Dr. Peter Nelson leads the team in collaboration with researchers from the University of Washington, Johns Hopkins University in Baltimore, and Monash University in Melbourne, Australia. Each of the three institutions holds a diverse collection of tumor tissue that will be used to inform their work. With all three teams pooling resources and expertise and sharing their data across borders, IPCR hopes to dramatically improve treatment options for prostate cancer patients worldwide.

Seeking effective drug combinations

Very few patients with tumors that have spread, or metastasized, are cured of the disease, and most research to date has been directed toward identifying new treatments. But studies conducted by IPCR and others have shown that the genetic features in one patient’s prostate cancer may be very different from those in another. This is important because those differences can predict whether a particular therapy is likely to work for a specific patient.

By using patient tumor specimens grown in mice (known as Patient Derived Xenografts or PDXs), researchers hope to systematically identify the most effective combinations of drugs to use. “The strategy of developing new drugs, or combinations

of drugs, appears most fruitful when we use multiple laboratory models that actually reflect the many differences we see in human patients,” says Dr. Nelson.

Using PDXs can speed up the drug development process while ensuring that results found in a lab will accurately reflect a patient’s experience. Sophisticated advances in PDX models enable them to retain key cancer features, such as 3D growth, the presence of blood vessels, and certain molecular features including mutations, structural genomic events and gene expression.

Sharing resources and knowledge

In the past, researchers have encountered roadblocks when trying to test combinations of drugs. There might be intellectual property issues if the drugs were developed by different companies, for example, or the overall process of proving the safety and efficacy in human clinical trials might take years. Simply testing the possible combinations of drugs is an enormous undertaking.

To make these challenges more manageable, each of the three institutions will test about 50 drug combinations over three years. Any combinations that look promising will be analyzed further and shared with the other partners. The most effective combinations will be used to inform and guide future human clinical trials. As a way to maximize the effectiveness of future treatments, researchers also hope to identify biomarkers that can be used to predict tumor response.

“We look forward to this international collaboration where our pooled data and efforts will help patients around the globe,” says Dr. Nelson.



SPORE GRANT

enables two decades of research

In 2001, the Institute for Prostate Cancer Research was awarded a prestigious SPORE grant, one of the most sought-after funding mechanisms available from the National Cancer Institute (NCI) at the National Institutes of Health. It is one of only eight SPORE (Specialized Program of Research Excellence) grants nationwide that focus on prostate cancer.

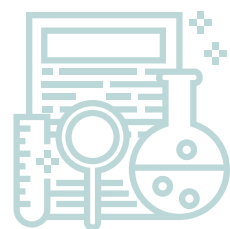
Since the initial SPORE grant was awarded from the NCI two decades ago, it has undergone continuous evolution to translate new ideas into clinical care—and has successfully competed for renewed NIH support every five years. The Pacific Northwest SPORE team represents an international collaboration of top scientists with the University of Washington, Fred Hutchinson Cancer Research Center, University of British Columbia, and Oregon Health and Sciences University.

The Pacific Northwest SPORE grant is composed of four projects. They are:

- 1. Molecular predictors of prostate cancer progression and mortality.** Currently, it is impossible to differentiate between an indolent, or slow-growing, form of prostate cancer and a more aggressive one. The recent discovery that men with metastatic prostate cancer have a higher prevalence of inherited gene mutations has led to increased genetic testing—both for the patients and their male first-degree relatives (father, brothers and sons). This project focuses on men with certain inherited mutations and their family members who themselves are at high risk for aggressive prostate cancer. Both groups will be enrolled in an early-detection clinical study which will use established as well as new minimally invasive biomarkers to improve the standard of care for this high-risk group.
- 2. Targeting emergent vulnerabilities in androgen receptor-inactive prostate cancer.** One way to slow down or stop the growth of prostate cancer cells is to use androgen receptor inhibitors. But researchers have discovered that the widespread use of new, more potent androgen receptor-targeting drugs has increased the frequency of virulent and untreatable prostate cancer. Very little is known about androgen-independent tumors and there are no effective treatments. This project concentrates on better understanding these types of tumors and developing a clinical trial to test drugs aimed at prolonging the lives of men with these lethal prostate cancers.

- 3. Oncofetal glycosaminoglycans as molecular targets in prostate cancer.** Prostate cancer cells are difficult to identify using standard radiology techniques. Researchers have known for decades that glycosaminoglycans such as chondroitin sulfate (CS)—which can trigger an immune response in cancer cells—exist in prostate cancer but using CS as a therapeutic target is difficult because it does not bind easily with antibodies. Realizing this challenge, our researchers have developed a cross-disciplinary CS-targeting strategy based on engineered recombinant proteins. This technology will allow us to target prostate cancer cells for diagnostic and therapeutic applications, increasing our ability to deliver treatments directly to the affected cells.

- 4. Therapeutic strategies targeting DNA damage repair.** Over the years, researchers have observed widely divergent responses to conventional and experimental treatments for metastatic prostate cancer. Some therapies have produced exceptional results while others allow the disease to progress unabated. This suggests it might be possible to identify and exploit the underlying biological mechanisms that account for diverse treatment results and prioritize those known to be more beneficial. Since a substantial percentage of tumors harbors defects in DNA repair genes, researchers will explore whether specific aberrations in genes can predict which drugs will produce more meaningful results. Our team will identify these resistance mechanisms and establish associations between genomic defects and the depth and duration of clinical responses. We'll also evaluate combinations of drugs targeting DNA repair pathways.



Meet Professor LI XIN

Dr. Li Xin, PhD, joined the IPCR team in 2018 after relocating his laboratory from Baylor College of Medicine in Houston. He holds the Pritt Family Endowed Chair in prostate cancer research at the University of Washington, where his research focuses on the molecular and cellular mechanisms involved in prostate cancer initiation and progression. He received his PhD in 2001 from Shanghai Institute of Biochemistry and Cellular Biology at the Chinese Academy of Sciences, and was awarded a post-doctoral fellowship at the University of California, Los Angeles.

Why did you decide to join the University of Washington?

I moved to Seattle for three reasons. First, the UW provides an unparalleled research environment. Its multidisciplinary initiatives offer many opportunities to apply novel technologies to traditional questions. Second, SPORE or Specialized Program of Research Excellence, a program funded by the National Institutes of Health, is very strongly supported here and provides a pathway to conduct collaborative and innovative research with top research institutions in Oregon and British Columbia. Lastly, Seattle is a beautiful city.

What is the focus of your research lab?

My lab is interested in using the prostate as a tissue model to study the molecular and cellular mechanisms that regulate development, tissue homeostasis and carcinogenesis. Specifically, we're interested in understanding how prostate organ homeostasis is maintained and how the signaling regulating normal tissue homeostasis is altered and hijacked during prostate-related diseases, including both benign prostatic hyperplasia and prostate cancer.



How will this work translate to clinical use?

Understanding the basic biology of tissue homeostasis will enable us to better understand the mechanisms of disease initiation and progression. We have successfully applied our findings regarding how mouse prostate tissue homeostasis is maintained to better understand how human prostate tissue homeostasis is broken during aging and inflammation. I hope that future findings regarding basic biology from my lab will lead to new prognostic and therapeutic strategies.

How would you characterize the research undertaken at the UW and Fred Hutch?

The research programs here are comprehensive and complementary, offering many avenues for synergistic collaboration. The program is under strong leadership with weekly seminars and opportunities for internal funding, and the investigators and trainees are actively involved.

Collaborations between the UW and Fred Hutch make it easy for me to access resources in both places, as well as obtain data and materials from previous collaborative efforts. The environment is very collegial and collaborative; people are open and willing to share.



DR. YAW NYAME

Addressing health disparities in Washington state

Dr. Yaw Nyame, MD, the newest member of the Institute for Prostate Cancer Research, is a surgeon, researcher, educator and patient advocate with a specialty in urologic oncology and minimally invasive surgery. Among his research interests is the inequity in health care faced by Black men and men of African descent who are diagnosed with prostate cancer.

The statistics are alarming: Black men in the Pacific Northwest are 60 percent more likely to die of prostate cancer than men of other races or ethnicities. To better understand the barriers that Black men face in screening and treatment, Dr. Nyame was awarded a \$500,000 grant in 2020 from the CARES Foundation to study prostate cancer disparities in Black men in Washington state.

His multidisciplinary team, which includes a biostatistician, health economist and population scientists, is examining how social, economic, environmental and health issues can drive patient outcomes and how these factors can be exacerbated by systemic and institutional biases. His patient-centered study includes a larger percentage of Black men and other underrepresented populations in an effort to build community, drive innovative science and lead to better results for Black men with prostate cancer.

Dr. Nyame joined IPCR and the University of Washington's Urology faculty in 2020 after completing a two-year Society of Urologic Oncology fellowship. Before arriving in Seattle, he earned degrees from both medical school and business school at Northwestern University, following a master's in health services and administration from George Washington University in Washington, D.C.

"The best solutions to complex problems leverage the power of a team-based, patient-centered approach," says Dr. Nyame. "That means that patients, families, caregivers and the entire health care team need to work cooperatively, efficiently and effectively toward patient-focused solutions. We want to translate clinical and health services research into durable solutions against the racial inequities found in prostate cancer care and patient outcomes."

Navigating patient care

Born in Uganda and raised in Seattle, John Masembe has witnessed first-hand how race, socioeconomic status and education can impact a person's health and quality of life. As the newly hired patient navigator at Seattle Cancer Care Alliance, Masembe works with Black and African-descent cancer patients to improve their health outcomes by ensuring greater equity and reducing racial bias.

As part of his job, Masembe helps individuals navigate the health care system, acts as a middle man to strengthen the patient-provider relationship, and connects patients to services, such as lodging, transportation or financial assistance. Passionate about his work, Masembe points out he is proud to work in an organization that is open to change and more inclusive. "It's going to take time," he says, "but we are setting the foundation and putting a spotlight on systemic biases not just in cancer but in the delivery of all health care services. This program is going to change lives."



COMMUNITY SYMPOSIUM

offers an insider's perspective

Since 2014, the Institute for Prostate Cancer Research has hosted a popular half-day patient education event. In 2019, some 300 patients and family members attended on-site lectures and participated in activities including behind-the-scenes lab tours, exercise demonstrations and a hands-on session where they extracted DNA from strawberries. Although the symposium was canceled in 2020 because of the pandemic, it resurfaced in 2021 as a virtual event; more than 150 patients and family members participated. That day, top experts from multiple fields shared their scientific insights, discussed the latest approaches in technology and patient care, and reviewed the challenges and breakthroughs from IPCR's landmark research projects.



ABOVE PHOTO AND PHOTOS TOP RIGHT PROVIDED BY ROBERT HOOD / FRED HUTCH

Faculty

POPULATION SCIENCE AND TRANSLATIONAL RESEARCH



Ruth B. Etzioni
PhD
Professor



Taran S. Gujral
PhD
Assistant Professor



Gavin Ha
PhD
Assistant Professor



Marian L. Neuhouser
PhD, RD
Program Head



Jeannette M. Schenk
PhD, RD
Senior Staff Scientist



Janet L. Stanford
PhD
Professor Emeritus



Catherine M. Tangen
PhD
Professor



Valeri I. Vasioukhin
PhD
Professor

MEDICAL ONCOLOGY



Heather H. Cheng
MD, PhD
Associate Professor



Petros Grivas
MD, PhD
Associate Professor



Jessica Hawley
MD
Assistant Professor



Andrew C. Hsieh
MD
Associate Professor



John K. Lee
MD, PhD
Assistant Professor



R. Bruce Montgomery
MD
Professor



Elahe A. Mostaghel
MD, PhD
Associate Professor



Peter S. Nelson
MD
Professor



Michael T. Schweizer
MD
Associate Professor



Todd A. Yezefski
MD, MS
Assistant Professor



Evan Y. Yu
MD
Professor



Michael C. Haffner
MD, PhD
Assistant Professor



Colin C. Pritchard
MD, PhD
Associate Professor



Nicholas P. Reder
MD, MPH
Assistant Professor



Maria Tretiakova
MD, PhD
Associate Professor



Lawrence D. True
MD
Professor



Funda Vakar-Lopez
MD
Clinical Associate
Professor



Jonathan J. Chen
MD, PhD
Assistant Professor



Jay J. Liao
MD
Associate Professor



Emily S. Weg
MD
Assistant Professor



Jing Zeng
MD
Associate Professor



Delphine L. Chen
MD
Professor



Antonio Westphalen
MD
Professor



Stephen R. Plymate
MD
Professor

RADIATION ONCOLOGY



Jonathan J. Chen
MD, PhD
Assistant Professor



Jay J. Liao
MD
Associate Professor



Emily S. Weg
MD
Assistant Professor



Jing Zeng
MD
Associate Professor



Delphine L. Chen
MD
Professor



Antonio Westphalen
MD
Professor



Stephen R. Plymate
MD
Professor

ENDOCRINOLOGY & TRANSLATIONAL RESEARCH



Stephen R. Plymate
MD
Professor

UROLOGY



Eva Corey
PhD
Research Professor



Atreya Dash
MD
Associate Professor



William J. Ellis
MD
Professor



John Gore
MD, MS
Professor



Hung-Ming Lam
PhD
Research Associate
Professor



Paul H. Lange
MD
Professor and
Chair Emeritus



Daniel W. Lin
MD
Professor



Colm M. Morrissey
PhD
Research Associate
Professor



Yaw A. Nyame
MD, MS, MBA
Assistant Professor



Sarah P. Psutka
MD, MSc
Assistant Professor



Martine Roudier
MD
Research Pathologist



George Schade
MD
Assistant Professor



Jonathan L. Wright
MD, MS
Professor



Li Xin
PhD
Professor

In gratitude

Colin Powell (1937–2021)



PHOTO PROVIDED BY
UW DEVELOPMENT

Colin Powell, who died October 18, 2021, was a prostate cancer survivor, spokesman for prostate cancer prevention and keynote speaker at the 2013 IPCR Survivors Breakfast.

In 2003, while serving as U.S. Secretary of State, he underwent surgery to remove a cancerous prostate gland at Walter Reed Army Medical Center. From then on, he became a vocal supporter of prostate cancer awareness and devoted his time to the Prostate Conditions Education Council, which sponsors Prostate Cancer Awareness Week every September.

Powell often discussed his proactive approach to health and how it led to an early prostate cancer diagnosis. “When I started to reach the age when you worry about such things,” he said, “I religiously went to my annual physical for screenings and anything else they wanted to do. I knew as an African American I had a higher likelihood of getting prostate cancer than my white brothers.”

Along with sharing his own cancer story, Powell emphasized the importance of hope and optimism for survivors.

More recently, Powell was treated for multiple myeloma, the most common type of blood cancer impacting Black communities. Blood cancers such as multiple myeloma can put an individual at greater risk of contracting Covid-19 and, unfortunately, this is what ultimately led to his passing.

Colin Powell’s death is a great loss to the prostate cancer survivor community. We will forever be grateful for his advocacy for prostate cancer awareness and screening, and for his candor and participation at the 2013 IPCR Survivors Breakfast.

**We are very grateful to our community
for its philanthropic support. Our work would not
be possible without you.**

**To learn more about the Institute for Prostate Cancer Research or to make a gift,
please contact Dan Lin, MD, dlin@uw.edu; Mike Rubin, 206.667.5377, mrubin@fredhutch.org;
or the IPCR Program Coordinator, 206.667.5412, ipcruw@uw.edu.**

Together we will: An open letter

When I agreed to make a few comments for this annual report, I envisioned that many readers would immediately wonder “Lange Who?” And if that observation is true, I’m delighted. Effective leaders are mostly servants and deserve only a brief backward glance from spirited organizations focused on a vibrant present and a bright future.

But pride can accompany obscurity. So at an age that exceeds the biblical fourscore, I can alertly, nostalgically and energetically “leap for joy” at what the IPCR has become in more than 20 years.

My lifelong research partner Bob Vessella and I modestly started with a serum bank, involvement in the development of PSA, experience and high aspirations in animal model development and tissue acquisition, and a dream to assemble a multidisciplinary clinical and research team dedicated to the care and inquiry of prostate cancer.

Thanks to early and then rapidly increasing private funding from many, especially the Lucas Foundation, Michael Milken’s Prostate Cancer Foundation and government funding through competitive grants—and to the rich research environment in Seattle—many talented people embraced the dream. Gradually a well-functioning cooperative entity formed, involving both the University of Washington and Fred Hutchinson, and eventually called the Institute for Prostate Cancer Research.

Even the early participants are too many to list here, but I must include epidemiologist Janet Stanford, endocrinologist Steve Plymate and pathologist Larry True, former UW molecular biologist Lee Hood and his protégé Pete Nelson who is now our IPCR research leader, and urologist Bill Ellis who mentored current IPCR Director Dan Lin. This cadre quickly grew into an assembly now numbering more than 40 advanced-degree researchers and research-clinicians. Today, the IPCR is acknowledged as one of the top prostate cancer research groups in the nation.

If the IPCR’s research accomplishments were peaks in a mountain range, they would flood the eye. From a distance, some tower above the rest, and I feel compelled to mention a few: development of the LuCaP animal model series; rapid autopsy program with its tissue acquisition program; studies on the inheritance of prostate cancer; revelations on the molecular biology of prostate cancer, including the involvement

of breast cancer-like genes in prostate cancer; enactment of molecularly directed individualized care for advanced disease; and phenomenology of an “active surveillance” approach to early prostate cancer.

Possibly most important for me—and what might better be illustrated as a meadow rather than a peak—is that the IPCR is a paradigm for cooperation between high-powered research institutions and, more importantly, individuals. We are almost incomprehensibly collegial, supportive and interconnected — a characteristic that in high-level academic environments is rare and priceless.

Let me end as I’ve often done in the past: To assert that we will significantly control prostate cancer better within the foreseeable future. When I first started urology training, men with disseminated testicular cancer like Lance Armstrong usually succumbed to the disease within a month. A short decade or so later, Lance was able to take part in newly developed therapies and then got back on his competitive, albeit discredited, bike.

During that time, we knew that we were making great progress, but we didn’t realize that we were achieving a “mostly cured” triumph against that terrible cancer. When I see all that is happening in the IPCR, it feels to me that the same epoch-making progress towards a cure is now occurring in prostate cancer. That this milestone will happen in my lifetime remains an enduring dream.

Paul H. Lange MD, FACS
Founding Director, IPCR





**Institute for
Prostate Cancer
Research**

Institute for Prostate Cancer Research
Box 356510
Seattle, WA 98195-6510

ipcruw@uw.edu
www.washington.edu/urology/ipcr

THIS REPORT WAS PRODUCED BY UW CREATIVE COMMUNICATIONS FOR THE INSTITUTE FOR PROSTATE CANCER RESEARCH ©2021

PROJECT COORDINATION: AGNES GAWNE • EDITING: CIPALLA COMMUNICATIONS INC.

PHOTOGRAPHY: FISCHER WALLACE OF SWAE PHOTOGRAPHY (UNLESS OTHERWISE INDICATED)

DESIGN: JOHN LINSE & JO-ANN SIRE, UW CREATIVE COMMUNICATIONS

