

UNIVERSITY OF
CALIFORNIA,
SAN FRANCISCO



UCSF Department of
Radiation Oncology

TEN YEAR REPORT
2015-2025

Together.
Innovate.
Impact.

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MESSAGE FROM THE CHAIR

Welcome to the Department of Radiation Oncology at the University of California, San Francisco, 10-year reflection. I have had the enormous privilege to lead an amazing group of individuals for now over a decade. In this time, the Department has grown enormously, achieved in every domain of our mission, and continues to elevate our academic trajectory and impact.

Radiation Oncology at its core exists to cure cancer in a healing and caring environment to support our patients and families and providers. We cover a wide breadth and depth of clinical and basic oncologic expertise across adult and pediatric cancers, including cutting edge medical physics and engineering capabilities and knowledge of radiobiology. What makes our UCSF department exemplary are the faculty and staff who strive to innovate and impact patient care. Our students and trainees are also a vital part of our culture of academia and teaching and together, help create a dynamic learning environment. We have grown substantively in our footprint both in San Francisco, and in the region, and look forward to further expansion with forefront technologies in particle therapy and research.

We have also faced several unprecedented health, cultural and societal upheavals in the past 10 years and ongoing pressures to change and adapt. Through a constructive and forward approach, we grew collectively as a department and in our leadership and honed the PRIDE values that unify our resilient character.

The absolute highlights of the past 10 years have been recruitment of incredible faculty and leaders who joined the department. We are in a time of unprecedented talent, academic accomplishments, grant funding success, and opportunity for impact. Most of this edition is presented with our faculty in mind—inviting them to highlight the extraordinary work they are engaged in, and the promise for the next 10 years.

I hope you'll enjoy this extraordinary and special edition of reflecting our department.

With gratitude,

Catherine Park, MD

Chair, Department of Radiation Oncology



Our Vision

Together. Innovate. Impact.

Milestones

Vision for Precision Cancer Medicine Building and Future Technologies

The Precision Medicine Cancer Building (PCMB) had a bold clinical and programmatic vision to provide the physical infrastructure for multidisciplinary cancer services across several disease sites. With patient centeredness at the core of its design, we mobilized our radiation oncology teams to envision forefront modalities that allowed our teams to more effectively treat and serve our patients and staff. Notable in this vision was an en-suite brachytherapy suite, MRI-simulation and Hyperthermia.

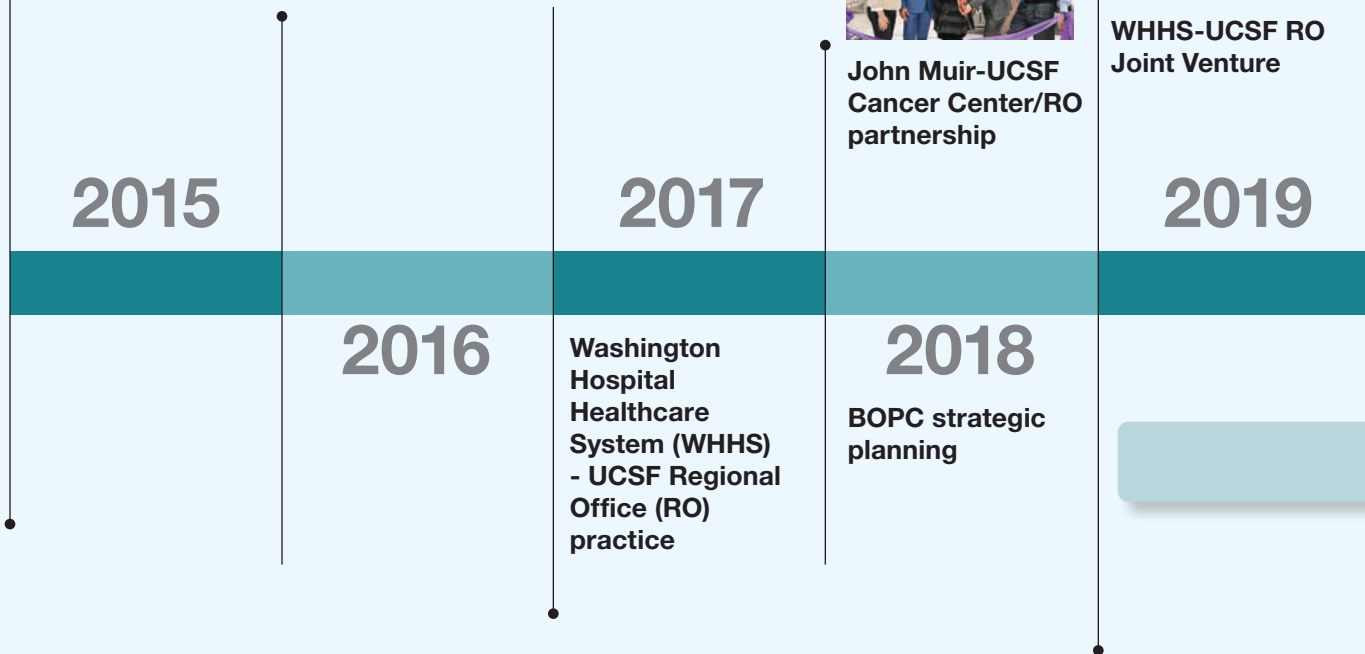


Precision Cancer Medicine Building (PCMB) opens



John Muir-UCSF Cancer Center/RO partnership

WHHS-UCSF RO Joint Venture



Faculty and leadership recruitment, development and expansion

VC-Radiobiology: Mary Helen Barcellos-Hoff
VC-Translational Research: Felix Feng
VC-Clinical Trials: Mary Feng
VC-Strategic advisor: Sue Yom
VC-Faculty Development: Jean Nakamura
VC-Education Program Directors: Steve Braunstein, Martina Descovich
Medical Directors: Alex Gottschalk, Steve Braunstein, Lauren Boreta

Quality Director: Nicolas Prionas
Director Clinical Informatics: Julian Hong
Clinical Chief of Physics: Emily Hirata
Associate Chair, Finance and Administration: Mounira Kenaani
Director of Operations: Nina Pitts
VC-Physics: Ke Sheng
Director of Dosimetry: Minsong Cao

Our Mission

Foster a collaborative, innovative environment that accelerates discovery and transforms patient outcomes.

Radiation Oncology Network Expansion

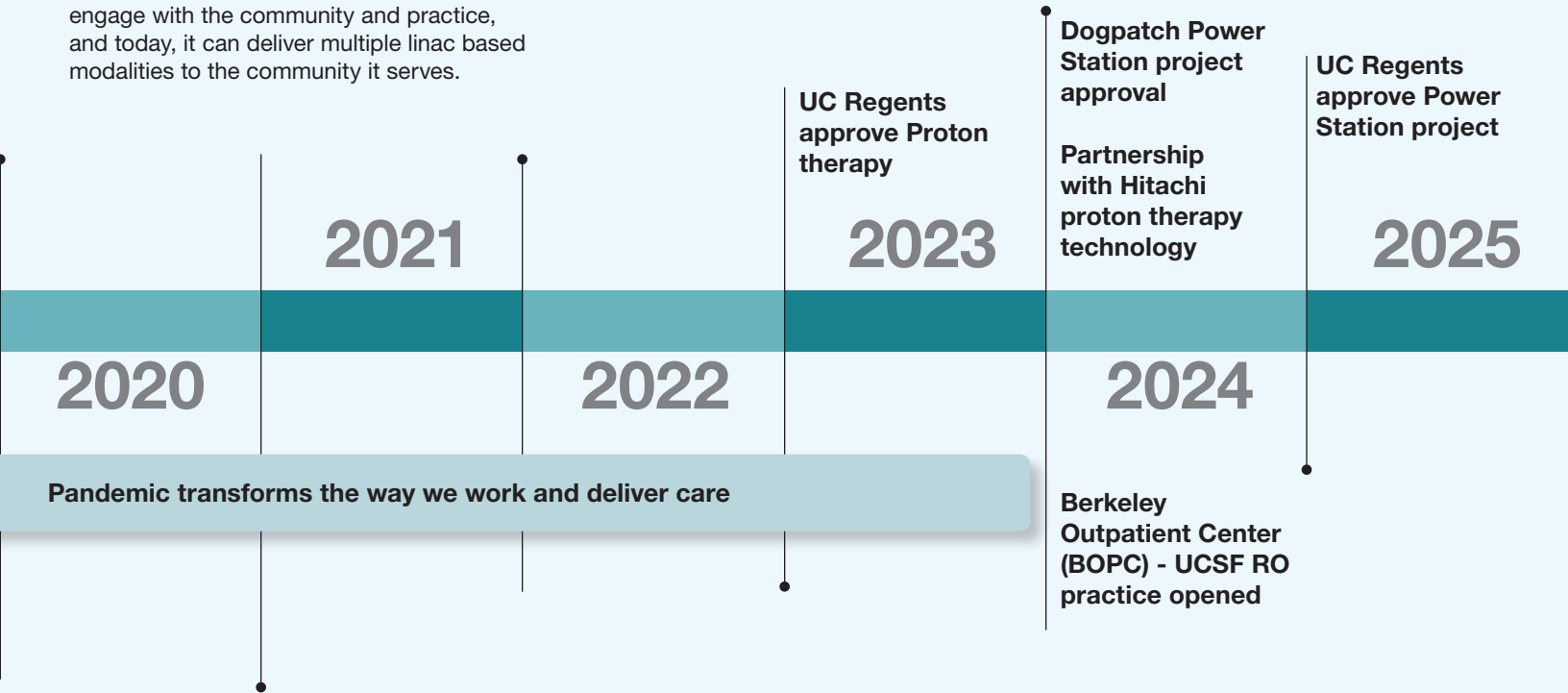
The past 10 years has also seen regional expansion of our radiation oncology network. We developed projects across the East Bay including a partnership with Washington Hospital in Fremont – creating our first joint venture. This facility was equipped with the latest Truebeam technology and advanced CT-simulation. We recruited physicians to engage with the community and practice, and today, it can deliver multiple linac based modalities to the community it serves.

New Partnerships

In 2022, we opened a state-of-the-art radiation oncology facility in the newly constructed Cancer Center, with 3 advanced Truebeam linear accelerators, advanced CT-sim capabilities, and room to equip further

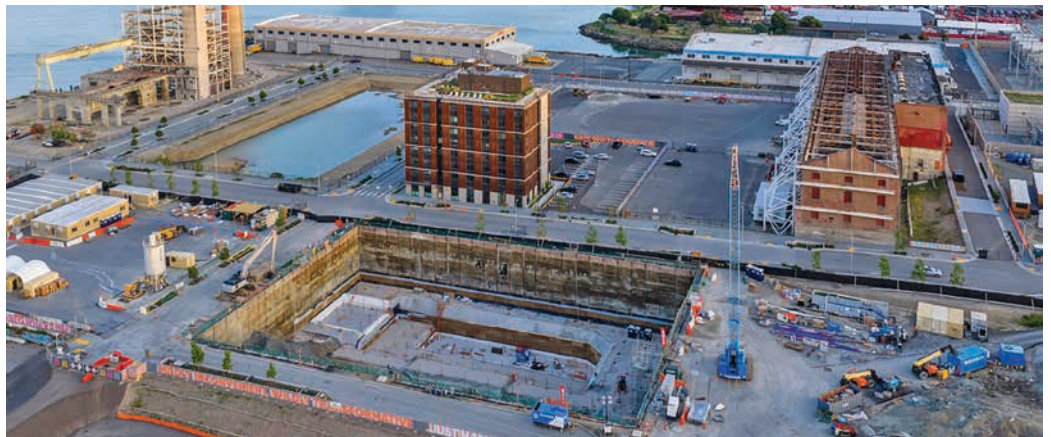


advanced modalities with growth. We also opened a new facility in Berkeley in December 2024, with a Halcyon linear accelerator. Today, we treat several disease sites at this center including breast, prostate, gastrointestinal, lung and bone cancers. These centers allow our patients to receive UCSF-care closer to their homes and with the quality of the UCSF-John Muir partnership.



Proton Therapy

UCSF has played an important role for developing and bringing forefront technologies to the Bay Area. Once such technology has its roots in the Bay Area at Lawrence Berkeley National Laboratory (LBNL), the first accelerator that enabled production of high energy particles including proton therapy. These were first used in the 1960's by UCSF faculty for treatment of resistant tumors. In the past 10 years, we have been hard at work acquiring proton therapy for UCSF and the region. We reached major milestones achieving UC Regents approval in 2024, receiving a major philanthropic gift and developing the key partnerships with FIFTH Space/Dogpatch Powerstation and Hitachi to realize our vision. Official groundbreaking occurred in the summer of 2025. This facility will house multidisciplinary programs and an incubator space (read more in the following pages).





Strategic Growth and Clinical Expansion

UCSF Proton Therapy Acquisition

The Dogpatch Power Station p3 project received approval by the UC Regents in 2024 followed by the official groundbreaking in July 2025. This major development is part of multi-purpose building to enhance innovation in life sciences: proton therapy, multidisciplinary clinics, and life sciences incubator.

The proton therapy center will add a powerful tool to UCSF Health's cancer program, offering highly precise, concentrated doses of radiation that directly target cancer cells while limiting damage to surrounding tissues. The precision enables oncologists to treat some of the most challenging cancers, including cancers of the brain, eye, lung, prostate and spine. It will also serve as a center of excellence, working to advance the technology through further research.

"Our vision to bring proton therapy to cancer patients at UCSF has taken years to reach realization," said [Catherine Park, MD](#), chair of UCSF Radiation Oncology, who has been working on the project since 2015. "Access to state-of-the-art proton therapy will allow us to advance the possibility of cure and reduce side effects."

Read Full UCSF Announcement on the Proton Therapy Center [UC Regents Approve UCSF Proton Therapy Center for Cancer Care](#)

Read SF Business Times News Story [UCSF Cancer Center ready to rise at Power Station — 'It will set the tone for everything that goes forward](#)

Left: Bird's-eye view of Power Station, Photo by Henrik Kam.

The Rapid Rise in Patient Volume

Number of New Start Appointments

2016: **1,743**

2020: **2,932**

2025: **4,803**

• **175% Increase**

Number of Patient Appointments

2016: **30,634**

2020: **37,106**

2025: **51,933**

• **69.5% Increase**

ADVANCING CANCER CARE THROUGH CLINICAL INNOVATION AND COLLABORATION: CLINICAL SCIENCES, TRIALS AND PROGRAMS

Clinical trials are at the core of the research that leads to change in clinical practice. Many of our faculty are experienced trialists at the national cooperative group level and the department has continued to invest in our clinical trial infrastructure. Over the past decade, with the leadership of Dr. Mary Feng, we have expanded our impact in clinical trials at the cooperative group level, investigator-initiated studies and industry sponsored trials.

CLINICAL TRIAL HIGHLIGHTS AND BREAKTHROUGHS

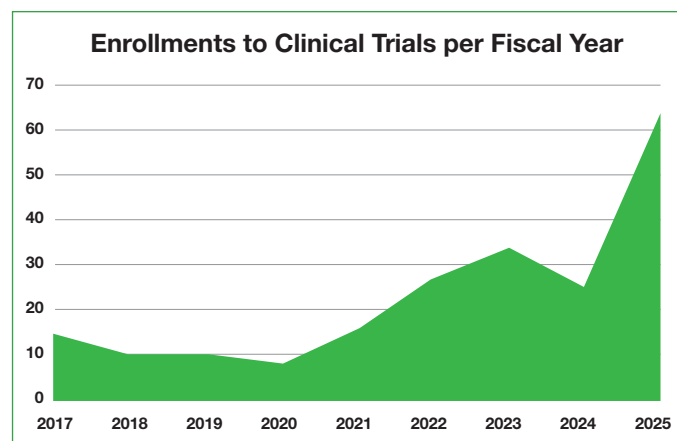
Mary Feng, Md, Professor and Vice Chair, Clinical Research



The clinical trials portfolio has grown substantially in the past 10 years. Initially, we started with large, national cooperative group trials, which typically compare a standard of care treatment with a new one. While these are important, potentially practice changing studies, only a few investigators can be involved in study design. Thus, we have made significant investments to develop the next generation

of clinical trialists, to lead the most important trials of the future. Currently, we have 7 investigator-initiated clinical trials developed by UCSF faculty, spanning the range from developing advanced MRI techniques to enhance radiation treatment planning, to assessing the effect of wearables in predicting and preventing severe radiation side effects, to innovative combinations

of radiation and immunotherapy. We have also developed partnerships with industry, to design and run the most innovative trials, including those testing radiopharmaceuticals. In the past 10 years, we have also increase clinical trial enrollment over 5-fold, to 100 patients in 2025.



ADVANCING CANCER CARE THROUGH CLINICAL INNOVATION AND COLLABORATION: CLINICAL SCIENCES, TRIALS AND PROGRAMS

SCIENTIFIC, CLINICAL IMPACT AND PROGRAM GROWTH AND REDEFINING DISEASE-SPECIFIC CARE

**Head and Neck - Sue Yom, MD, PhD, Professor and
Jason Chan, MD, Assistant Professor**



VISION AND IMPACT

Yom and Chan share a vision to redefine head and neck radiation oncology through precision, biology-guided, and

equitable care. They aim to individualize treatment intensity using molecular, functional, and imaging biomarkers while integrating novel systemic agents and advanced radiotherapy technologies to enhance both efficacy and quality of life. By embedding circulating tumor DNA (ctDNA) monitoring and real-time imaging feedback into clinical decision-making, UCSF seeks to lead the transformation from conventional, one-size-fits-all radiotherapy to a personalized and adaptive model of cancer care.

Under the leadership of Sue Yom, the UCSF Head and Neck Radiation Oncology program has rapidly matured into a national leader in translational science, clinical innovation, and patient-

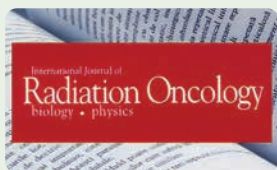
"What inspires us the most in this work is seeing patients overcome some of the most functionally challenging cancers, where cure is not enough unless quality of life and dignity are also preserved."

centered care. The collaboration between Drs. Yom and Chan has driven remarkable growth in the program's clinical trial portfolio, achieving key milestones in several domains:

1. **Therapeutic Innovation:** integrating radiotherapy with immunotherapy and targeted agents, including the combination of anti-PD-1 therapy with radiation for head and neck squamous cell carcinoma and vismodegib with radiotherapy for advanced basal cell carcinoma
2. **Improving Quality of Life after Therapy:** advancing strategies to mitigate treatment-related toxicity and preserve function by testing a superoxide dismutase mimetic to prevent mucositis, reducing dental, swallowing, and taste impairments, and characterizing oral microbiome changes after therapy. The program also leads national efforts in radiation dose de-escalation for human papillomavirus (HPV)-associated oropharyngeal and Epstein-Barr Virus (EBV)-positive nasopharyngeal carcinoma to optimize both cure and quality of life.
3. **Biomarker Discovery:** validating circulating tumor DNA-based assays, including viral, tumor-informed, and metagenomic platforms, to enable early disease detection, minimal residual disease monitoring, and real-time therapeutic adaptation.
4. **Health Equity Research:** investigating epidemiologic and sociodemographic factors that contribute to disparities in outcomes for head and neck cancer patients, with the goal of building more equitable models of cancer care.
5. **Technological Advancement:** establishing advanced radiotherapy modalities at UCSF, including stereotactic body radiotherapy (SBRT), high-dose-rate (HDR) brachytherapy, and MRI-guided adaptive radiation therapy, to deliver precision treatment safely and effectively for complex head and neck cases.

SPOTLIGHT: SUE S. YOM, MD, PHD, MAS, FASTRO, EDITOR-AND-CHIEF, RED JOURNAL

<https://www.astro.org/news-and-publications/journals/red-journal>



What sparked your interest in becoming the Editor-in-Chief of the Red Journal?

I started working for the Red Journal when I was a resident. I was a reviewer, associate editor, section editor, and deputy editor. I've never not been involved with the journal during my entire career, so it seemed natural to keep working there.

Please share any highlights from this role.

The Red Journal serves as an early incubator bringing forward the most creative and well executed research in radiation oncology and it's a great privilege to be part of creating the best science for our field. I also really love working with the ASTRO editorial staff and all of our editors, who are so brilliant and dedicated and have such great ideas all the time.

What is your vision for the Red Journal? Vision in this role for the Field?

The Red Journal is an important worldwide community and serves to unite radiation oncology under this large-scale scientific umbrella. My vision is to maintain that function whatever changes take place at the journal or in scientific publishing in general in the future. It is very important that the world radiation oncology community has a venue to promote radiation sciences and perspectives unique to the field.

Any other fun facts to share?

I am only the fourth editor of the journal. I am the first female editor of this journal and I believe I was the first female editor of any major radiation oncology journal.

ADVANCING CANCER CARE THROUGH CLINICAL INNOVATION AND COLLABORATION: CLINICAL SCIENCES, TRIALS AND PROGRAMS

CENTRAL NERVOUS SYSTEM (CNS) / GAMMA KNIFE

The UCSF CNS program is born of strong collaborations between neurosurgery, the Brain Tumor Center, and radiation oncology faculty. Our program includes Cyberknife and Gamma knife radiosurgery technologies that have offered advanced treatment for thousands of patients over the past three decades. Radiosurgery techniques afford patients effective non-invasive treatments that provide reduced toxicity with neurocognitive preservation in both adult and pediatric patients. Currently, over 500 patients are treated annually on the UCSF Gamma knife, leveraging expertise from our Radiation Oncology team and Neurosurgeons. We serve the larger Bay Area and an international patient population offering highly effective therapy for patients with benign or malignant disease, including primary and metastatic brain tumors, as well as vascular and functional pain indications.



Lead by **Steve Braunstein, MD, PhD**, the program encourages depth of expertise amongst the department's highly talented CNS-specialists to lead innovations in state-of-the-art care for patients, which includes translating new discoveries into clinical trials. Beyond our pipeline of investigator-initiated clinical trials, the team enrolls patients into a large portfolio of cooperative group trials from

NRG, COG, and Industry for our patients.

The launch of the UCSF Proton Therapy Center will have a major impact on the department's ability to offer patients with CNS and pediatric malignancies the most advanced and impactful radiation treatments, minimizing acute and late toxicities, and allowing patients and families to stay locally for radiation treatment while also having access to the full portfolio of advanced interdisciplinary clinical care at UCSF — including molecularly-targeted pharmacologic agents, theranostics, and immune and cellular therapies.



IN-PATIENT RADIATION ONCOLOGY PALLIATIVE SERVICES

Lauren Boreta, MD, Inaugural Director



PATIENT IMPACT

By combining innovative care models, collaborative programs, rigorous research, and patient-centered care, this service ensures UCSF patients with complex palliative needs receive highest quality radiation oncology care tailored to what matters most to them.

Radiation therapy plays an essential role in palliation of pain and alleviation of suffering of our cancer patients who commonly require hospitalization. Often confronted with the most difficult and complex issues, the Palliative Radiation Service has transformed from a patchwork system into a comprehensive program providing over 800 inpatient consultations annually. Key innovations include a co-rounding model that integrates multidisciplinary teams, has achieved measurable improvements in care continuity, streamlined recommendations, and physician satisfaction. In January 2025, the program expanded to include 3 dedicated radiation oncology attending physicians enhancing access and operational efficiency. Patients receive radiation treatments delivered with technical precision and deep humanity that manages symptoms while preserving quality of life and honoring individual goals.

This innovative model also integrates our educational mission with the chief resident now taking a dedicated role on the Palliative Oncology service as a cornerstone of trainee education.

"What inspires me most is witnessing the impact that thoughtful, coordinated oncologic care can have on patients and families during the most challenging moments. In these moments, in clinic or at the bedside, I am reminded of why we do this work- to preserve dignity, provide comfort, and quality of life. Being entrusted with these discussions and having tools to improve patients' remaining time is an extraordinary privilege."

ADVANCING CANCER CARE THROUGH CLINICAL INNOVATION AND COLLABORATION: CLINICAL SCIENCES, TRIALS AND PROGRAMS



VISION AND PATIENT IMPACT

"My vision is for our brachytherapy program to evolve into a world-renowned training center for MRI, CT, and ultrasound-guided brachytherapy, dedicated to the treatment and re-treatment of all cancers. I envision the program operating daily as an independent, primarily outpatient, department within the department of Radiation Oncology. The program will provide a safe and effective approach to dose escalation for cancer treatment and re-treatment, either as a standalone therapy or in combination with adjunctive modalities such as hyperthermia." – Emi Yoshida, MD, Brachytherapy Program Director

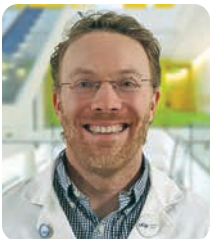
BRACHYTHERAPY

Brachytherapy is a highly specialized modality that delivers radiotherapy directly to internal body organs using radioactive seeds. This approach, shown to improve curability with less toxicity in specific cancers, requires a high degree of expertise and coordination between doctors, patients, anesthesiologists, nurses, physicists, dosimetrists and therapists.

Dr. Emi Yoshida leads initiatives to directly enhance patient care and outcomes. First, Non-Operating Room Anesthesia-NORA, a more specific anesthesia approach for brachytherapy procedures enhances access for patients. Second, MRI-guided brachytherapy enables more precise delineation of target volumes and improved protection of adjacent organs at risk. Dr. Yoshida collaborates closely with our medical physics team to develop MRI-based planning for brachytherapy patients and leads specialized anesthesia, nursing and therapy teams to implement MRI safety protocols for both patients and staff through all aspects of the workflow.



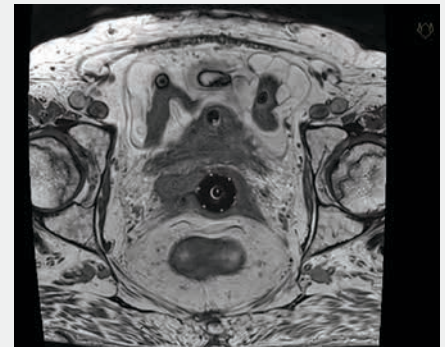
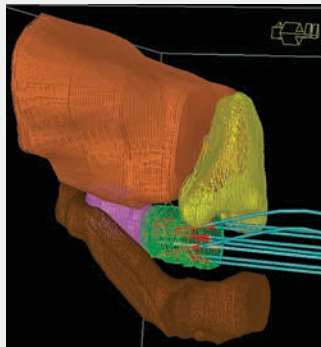
Top Left: Chow "Joe" Hsu, MD Professor and Emi Yoshida, MD, Brachytherapy Program Director. Above: Dr. Hsu in Brachytherapy suite.



**Adam Cunha, PhD –
Professor, Director of
the Graduate Program
in Medical Physics**



**Anthony Wong,
MD, PhD, Associate
Professor**



ADVANCING CANCER CARE THROUGH CLINICAL INNOVATION AND COLLABORATION: CLINICAL SCIENCES, TRIALS AND PROGRAMS

OCULAR

Kavita Mishra, MD, MPH, Professor and Director, UCSF Proton & Plaque Radiation Therapy Program for Ocular Tumors; Clinical Director, the Osher Center for Integrative Health (OCIH)



Ocular melanomas are rare and devastating diseases that can profoundly affect life expectancy, eye preservation, and vision. Over the past 17 years of directing this program, Kavita Mishra has been committed to having UCSF be an international leader in ocular oncology and advancing excellence in patient care — preserving sight, saving eyes, and improving quality of life for every individual served.

As the new UCSF Proton Center launches, Mishra envisions the ocular program will continue to grow as an international leader, defined by superior outcomes, innovation, and compassion. She also aims to expand our comprehensive, integrative oncology services — embracing a holistic, whole-person approach that addresses not only the disease itself but also the physical, emotional, and spiritual well-being of each patient.

By investing in this work, the program hopes to lessen the burden of disease and treatment, reduce side effects, and provide hope and healing throughout every stage of the cancer journey. Together, we can transform what it means to live with ocular cancer by advancing care, protecting vision, and empowering lives.

What inspires you about your job the most and why?

The patients. Every single one of them. From the 92-year-old grandfather who once welded in his garage, to the 46-year-old lawyer turned tech innovator, to the 16-year-old high schooler preparing for her prom — each has touched my heart and reminded me why this work matters so deeply.

It is an extraordinary privilege to walk beside my patients during some of the most vulnerable moments of their lives. A diagnosis of ocular cancer, a disease most people have never even heard of, can be terrifying and isolating. To be able to offer hope through life-saving and eye-preserving precision proton therapy is both inspiring and profoundly meaningful.



BREAST RADIATION ONCOLOGY PROGRAM

Nicolas Prionas, MD, PhD, Assistant Professor



The department remains a cornerstone in the UCSF Breast Oncology program, integrating closely with the interdisciplinary oncology team to provide care for patients in the region and those who come from afar. This includes patients enrolled in the I-SPY clinical trial, a platform trial that has helped usher in multiple novel therapeutics and supported a shift towards personalized medicine through neoadjuvant therapy.

Over the past decade, several advances in breast radiotherapy have been embraced by and pioneered in the department. Improved understanding of the biology of breast cancer has ushered in an era of hypo fractionation and ultra-hypo fractionation, providing more convenient and less toxic treatments for patients. This includes shortened treatment regimens for higher risk post-mastectomy patients after reconstruction. Improved clinicopathologic and genomic characterization of disease has allowed for de-escalation of therapy with extremely well-tolerated accelerated partial breast irradiation regimens and identification of populations where radiotherapy can be completely omitted safely.

As patients are surviving longer, the increasing role of re-irradiation emphasizes the importance of the department's hyperthermia program, the only such program in Northern California to Seattle/Tacoma region.

As the department has expanded the breast radiotherapy services provided and the volume of patients treated, high quality of care remains the priority. The department continues a strong presence in the community and the broader culture in breast oncology regionally, nationally, and internationally.



ADVANCING CANCER CARE THROUGH CLINICAL INNOVATION AND COLLABORATION: CLINICAL SCIENCES, TRIALS AND PROGRAMS

GASTROINTESTINAL CANCER (GI)

Alex Hotca-Cho, MD, Assistant Professor and Associate Clinical Director of the GI Clinic



The GI Radiation Oncology group at UCSF has grown substantially over the past 10 years. In 2016, Dr. Mary Feng, a national expert in this area, joined Dr. Mekhail Anwar and started a major initiative to modernize treatment and grow the patient base and clinical trial offerings, particularly for patients with liver and pancreatic cancers. In 2023, Dr. Will

C. Chen joined the group and in 2024, Dr. Alex Hotca-Cho was recruited from Mount Sinai in NYC, to continue to expand our clinical and research portfolios.

Alex Hotca-Cho focuses on improving outcomes for patients with gastrointestinal (GI) cancers through advances in radiation therapy, translational research, and multidisciplinary program development. Since joining UCSF in 2024, she has led several quality-improvement initiatives within the GI Radiation Oncology service, including implementing a standardized bladder-scan protocol to improve pelvic radiation reproducibility and developing a dedicated weekly GI chart rounds specifically designed to enhance multidisciplinary discussion around radiation planning. These rounds bring together interdisciplinary team members to collaboratively review complex cases, optimize treatment plans, and promote consistency across the team.

Hotca-Cho's clinical research centers on predicting and reducing treatment-related toxicities in GI cancers. She leads an investigator-initiated clinical study examining how pelvic chemoradiation affects the gut microbiome and how microbial signatures may predict toxicity and treatment response. In parallel, she is collaborating with radiology and physics colleagues on advanced MRI-based approaches to improve liver radiation therapy, resulting in multiple scientific manuscripts.

VISION AND PATIENT IMPACT

Hotca-Cho's vision is to develop a comprehensive GI radiation oncology program that integrates biological risk assessment, advanced imaging, and supportive care to deliver highly personalized treatment. By incorporating tools such as microbiome profiling, functional MRI, and structured rehabilitation, clinicians can better understand why individual patients respond differently to radiation and proactively reduce treatment-related toxicities.

A key component of this vision is expanding access to cutting-edge therapies by bringing the latest national clinical trials in GI radiation oncology to UCSF. These studies offer patients the most current evidence-based treatment strategies and accelerate our ability to refine radiation approaches for pancreatic, colorectal, and other GI cancers

This combined model, precision science paired with multidisciplinary and patient-centered care, has the potential to improve treatment effectiveness, enhance function and quality of life, and ensure equitable access to innovative therapies for all GI cancer patients.

"I am especially inspired by caring for patients with gastrointestinal (GI) cancers—supporting these patients through a vulnerable and deeply personal journey—and helping them maintain strength, dignity, and confidence—motivates me every day. I am also passionate about expanding the use of radiation therapy in GI cancers. Radiation is often underutilized despite its effectiveness and potential to preserve organ function. I am a strong advocate for increasing awareness of its benefits and developing more impactful radiation approaches."



ADVANCING CANCER CARE THROUGH CLINICAL INNOVATION AND COLLABORATION: CLINICAL SCIENCES, TRIALS AND PROGRAMS

GENITOURINARY CANCER5 (GU)

Steven Seyedin, MD, Assistant Professor, GU Clinical Director



The achievements in genitourinary (GU) cancer research by the department spans decades starting with Dr. Mack Roach in the 1990's who developed the initial formula estimating prostate cancer's spread to lymph nodes. He also led national trials examining the effect of irradiating lymph node basins prophylactically in men with high-risk

prostate cancer. He and colleagues revised the definition of prostate-specific antigen (PSA) failure after radiotherapy known as the Phoenix Criteria which is utilized to this day.

In 2016, Dr. Felix Feng joined UCSF to pioneer translational research in prostate cancer with a focus on metastatic disease. His team of scientists developed genomic biomarkers to predict treatment responses to radiation and hormone therapy. His reach extended nationally as leader of the NRG GU Cancer Committee and his research served as a pillar for the current UCSF Prostate Cancer SPORE Grant which funds translational research in prostate cancer at UCSF. Future directions with Steven Seyedin's research will expand the portfolio with a new focus on muscle invasive bladder cancer (MIBC). Seyedin's team developed an algorithm to estimate the risk of MIBC spreading to lymph nodes after neoadjuvant chemotherapy and understand which patients could benefit from more comprehensive radiotherapy. They also examined the ability of an assay detecting tumor DNA in the blood stream to predict failures after chemoradiotherapy. With a passion for clinical trials, Seyedin opened the PSMA-DC trial which combines stereotactic radiotherapy with radioligand therapy for stage 4 prostate cancer.

Vision and Patient Impact

Building upon past GU cancer translational research is an essential part of the department's future. Dr. Will S. Chen joined UCSF in 2025 and focuses on validating biomarkers by dissecting the layers of cells within the prostate cancer tumor environment down to the single cell. Dr. Jean-Philippe Coppé's laboratory has developed a High Throughput Kinase Activity Mapping (HT-KAM) system that when paired with computational algorithms interrogates thousands of pathways to predict response and identifies possible druggable pathways. Faculty are also collaborating with Dr. Mary Helen Barcellos-Hoff to investigate how transforming growth factor b (TGF-b) impacts the effectiveness of immunotherapy in bladder cancer. This body of translational research allows us to devise new approaches to overcoming treatment resistance and improve outcomes in prostate and bladder cancer.

IN MEMORIAM

In Memory of Felix Feng, MD, Vice Chair of translational research, Helen Diller Cancer Comprehensive Center (HDFCCC)

Inaugural Director of the Benioff Prostate Cancer Initiative

Initial Director of the first Genitourinary (GU) Specialized Programs of Research Excellence (SPORE)

By Melinda Krigel, UCSF



A prominent radiation oncologist, scientist, author and researcher, Felix Feng, MD, dedicated his life's work to genitourinary cancer care and research. As an expert in translational genomics and pre-clinical therapeutics for prostate cancer, Feng's research focused on the discovery of prognostic

and predictive biomarkers to advance precision cancer medicine, and novel therapeutic strategies to overcome treatment resistance for patients with aggressive prostate cancer.

Feng conducted numerous clinical trials evaluating new treatments and was co-principal investigator on one of the first biomarker-driven clinical trials for patients with metastatic prostate cancer. He was also the principal investigator for multiple research project grants from a variety of federal sources and foundations, including a multimillion-dollar SPORE grant from the National Cancer Institute for [UCSF's Prostate Cancer Program](#).

In addition to his transformative cancer research, Feng was also an expert radiation oncologist who co-led UCSF's prostate cancer program focused on the treatment of prostate cancer patients. He cared for patients with high-risk aggressive prostate cancers as well as oligometastatic disease. His innovative therapeutic approaches included intensity-modulated radiation therapy and stereotactic ablative radiotherapy. As an entrepreneur, he founded two companies aimed at individualizing cancer treatments for each patient.

See UCSF Tribute: [Felix Feng, Giant in the Field of Prostate Cancer, Dies at 48](#)

"I'm inspired by the groundbreaking research being done by my colleagues in immunology, computational biology, artificial intelligence, and radiation biology. Their discoveries provide me the opportunity to collaborate and create innovative clinical trials to offer late-stage GU cancer patients who have limited treatment options."

LEADERSHIP

Building and Developing Our Leadership Team

We are fortunate to have the individuals, talent and connections of our leaders and leadership team that has grown, learned to lead, work together and rely on each other over the years. We have faced many challenges, and with each, shown our grit, dedication, ability and service. The key administrative leaders that have helped shape and grow our department over 10 years include Mounira Kenaani, MBA, Associate Chair, Finance and Administration, and Nina Pitts, Operations Director. Together we have navigated the challenges of growth, expansion, the Covid 19 pandemic, challenges in our research funding environment and more.

LEADERS IN OUR CLINICAL, PHYSICS AND RADIOBIOLOGY FACULTY; ADMINISTRATIVE LEADERS



Dr. Catherine Park
Chair, Department of
Radiation Oncology



**Dr. Mary Helen
Barcellos Hoff**
VC, Radiobiology



Dr. Ke Sheng
VC, Medical Physics



Dr. Steve Braunstein
VC, Program Director



Dr. Alex Gottschalk
Medical Director-MZ



Dr. Lauren Boreta
Medical Director-PH



Dr. Emily Hirata
Clinical Chief of Physics



Dr. Jean Nakamura
VC, Faculty Development



Dr. Nicolas Prionas
Quality Director



Dr. Julian Hong
Clinical Informatics
Director



Dr. Sue Yom
VC, Strategy



Dr. Mary Feng
VC, Clinical Trials



Dr. Steven Seyedin
Medical Director-MB



Dr. Minsong Cao
Chief of Dosimetry



Eric Breedon
Executive Analyst



Mounira Kenaani
Associate Chair, Finance
and Administration

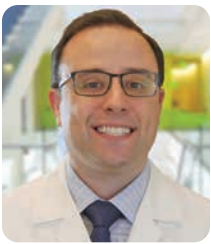


Nina Pitts
Operations Director

EDUCATION



Steve Braunstein, MD, PhD, professor and Vice Chair of Medical Education



Steve Braunstein, MD, serves as the Department Residency and Fellowship Training Program Director and a national leader in medical education. He has played a key role in national initiatives to improve resident recruitment, engagement, and professional development. UCSF Radiation Oncology trainees have consistently graduated from the training program with abundant clinical and research accomplishments and emerge as leaders in both academic and community settings. Most recently, Braunstein has been elected to serve as the President of the Association of Directors of Radiation Oncology Programs, a national professional society.

As Vice Chair of Education, Braunstein aims to further incorporate best practices in teaching for faculty to the benefit of trainees. His team seeks to provide our residents with an outstanding education and opportunity to thrive in fostering their clinical and research skillsets.

To continually engage faculty in trainee education, Braunstein hopes to provide forefront professional development opportunities in education practice, to lower barriers for teaching opportunities, and to ensure pathways for growth for faculty in education. From a curricular perspective, the modern practice of radiation oncology will leverage tools in artificial intelligence, big data, advanced imaging, and novel radiation therapeutics, all of which need to be well-incorporated into the current training content. The impact of these efforts will further elevate the department as a leader in trainee education

and yield exceptional graduates who will be paradigms of clinician educators and researchers, advancing knowledge and offering state-of-the-art clinical care for patients in their respective practices.

"I hope to cultivate outstanding engagement in the education mission of our department. I seek to engender a culture of scholarship in teaching, mentorship, and reflection whereby clinical faculty can embrace education as a significant component of their academic portfolio and ultimately receive recognition for their education accomplishments. For trainees, I aspire to set the baseline expectation for successful training to consistently move well beyond essential competency to excellence in clinical, educational and academic domains."



Lauren Boreta, MD
Associate Program Director



Harish Vasudevan, MD, PhD
Medical Student Clerkship Director

PHYSICS RESIDENCY

UCSF Therapy Medical Physics Residency

Katelyn Hasse, PhD, Director for Physics Residency

Dante Capaldi, PhD, Associate Director



Katelyn Hasse, program director of the UCSF Therapy Medical Physics Residency program focuses on ensuring clinical excellence for residents, while fostering the soft skills necessary for developing as leaders in the field of medical physics. The program endeavors to empower residents to take ownership of their learning and professional development, by incorporating reflection, case discussions, and clinical decision-making practice into the didactics. Residents integrate into the clinic from the start, and educators continuously update the curriculum to ensure alignment of the program with the rapidly evolving field.



Operationally, the UCSF Medical Physics Residency Program demonstrates stability and demand, through the maintenance of Commission on Accreditation of Medical Physics Education Programs (CAMPEP) accreditation and successful recruitment and graduation of two residents per year. Every graduate has secured employment and is well prepared for their board exams, a testament to our commitment to career readiness and clinical competence.

VISION AND IMPACT

Hasse's envisions cultivating the next generation of medical physics leaders equipped with the clinical judgement and experience, scientific background, and communication skills necessary to implement technological advancements in cancer care. By training leaders to navigate the complex clinical and academic environment, the program can ensure that novel techniques are translated into clinical practice reliably and effectively, and that all patients receive the safest and highest standards of personalized care.

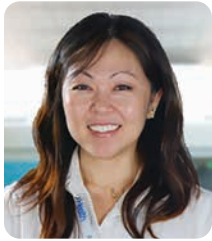
"I am inspired by seeing how each of our learners bridges the gap from physics to clinical medicine, and transitions from a trainee to an independent, highly competent medical physicist. It is immensely rewarding to see our graduated residents go on to become future leaders, educators, and scientists who contribute meaningfully to cancer care. The future is bright!"

ADVANCEMENTS IN QUALITY

Quality Directs our Clinical priorities

Emily Hirata, PhD, Associate Professor Division of Physics, Clinical Chief of Physics, Department of Radiation Oncology

Nicolas Prionas, MD, PhD, Assistant Professor; Associate Director of Quality



The last decade has been defined by a concerted effort to establish a quality improvement and learning-focused environment built on patient safety and data-driven excellence. Collaborative leadership and teamwork have yielded foundational and key milestones:



1. Safety culture and Accreditation excellence. Full American College of Radiology accreditations in across all campuses over a decade.

2. Successful transition to Aria OIS in 2022 empowered a data-focused

approach to operational improvements in workflow and patient safety.

3. Digital Infrastructure for Quality Improvement – Pioneered digital reporting infrastructure with in-house QI Dashboards by Alon Witztum, PhD, associate

professor in the Division of Physics. This infrastructure leverages direct querying of OIS data, providing near real time performance evaluation and enabling more rapid Plan-Do-Study-Act cycles for continuous operational improvements.

4. Complex program Expansion and Innovation – opening of the clinical practice for Berkeley Outpatient Center (BOPC) and Cyberknife intracranial (Stereotactic RadioSurgery) SRS

VISION AND PATIENT IMPACT

Quality program leaders Emily Hirata and Nicolas Prionas aim to transform the Quality Program into a proactive and predictive safety model by using analytics to anticipate and mitigate risk in advance.

This involves additional digital reporting infrastructure and evaluating methods for predicting bottlenecks in the clinical workflow. The impact on patients will be multi-faceted: fewer delays, enhanced safety and superior patient experience. In the next five years, the foundational work completed in the prior 5 years will imprint a culture of continuous improvement in quality and safety, where the data infrastructure and automation enable department-wide participation in process improvements to ensure the highest quality care for our patients.

“What inspires me is the ability to leverage objective data and technical rigor to directly safeguard and improve the human experience of our cancer patients. Everything we do in our field matters, whether it is doing a chart check, machine QA, running multiple trials to develop the optimal plan, or meeting with colleagues to brainstorm solutions and plan for new projects and programs. My goal is to appreciate each moment we have together and to use our collective energy and brilliance to improve the lives of our patients and community.”

– Emily Hirata, PhD

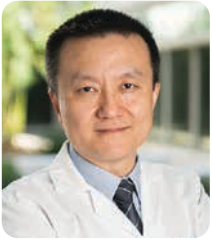
“Quality and safety are ubiquitous to our practice and directly impact our patients’ experience and the day-to-day experience of our team. I am equally inspired by the satisfaction our patients express when our team works together to seamlessly assist them through the treatment journey as I am by the camaraderie that the team experiences through the process. It is a privilege to work with a world-class Radiation Oncology team and incredibly satisfying to build systems that optimize the quality of their work for the benefit of our patients.”

– Nicolas Prionas, MD, PhD

DOSIMETRY

Dosimetry

Minsong Cao, PhD, Professor, Director of Dosimetry, Division of Physics



Dosimetry is the creation of a unique arrangement of beams (treatment plan) that personalize cancer radiotherapy to maximize cure and minimize side effects.

Treatment planning and dosimetry form the cornerstone of modern

radiation oncology, serving as the critical link between the clinical treatment prescription and the precise and safe delivery of the intended radiation therapy. With continual advancements in imaging, computational modeling, and delivery technologies, treatment planning has become increasingly sophisticated, demanding multidisciplinary expertise and substantial computational resources.

Over the past several years, the dosimetry team's research has focused on data-centered workflow and practice management. One major milestone is the development of a departmental data dashboard that unifies information flow across the entire treatment pathway from patient simulation to radiation delivery. This system integrates and streamlines workflows among clinicians, dosimetrists, medical physicists, and radiation therapists and enables data-driven resource allocation, enhancing departmental efficiency, productivity, and patient throughput.

Building on this foundation, the next major focus is automation. We have developed a suite of planning script tools that improve efficiency while reducing human error and inter-planner variability. This ongoing research aims to enhance treatment plan quality through artificial intelligence (AI).

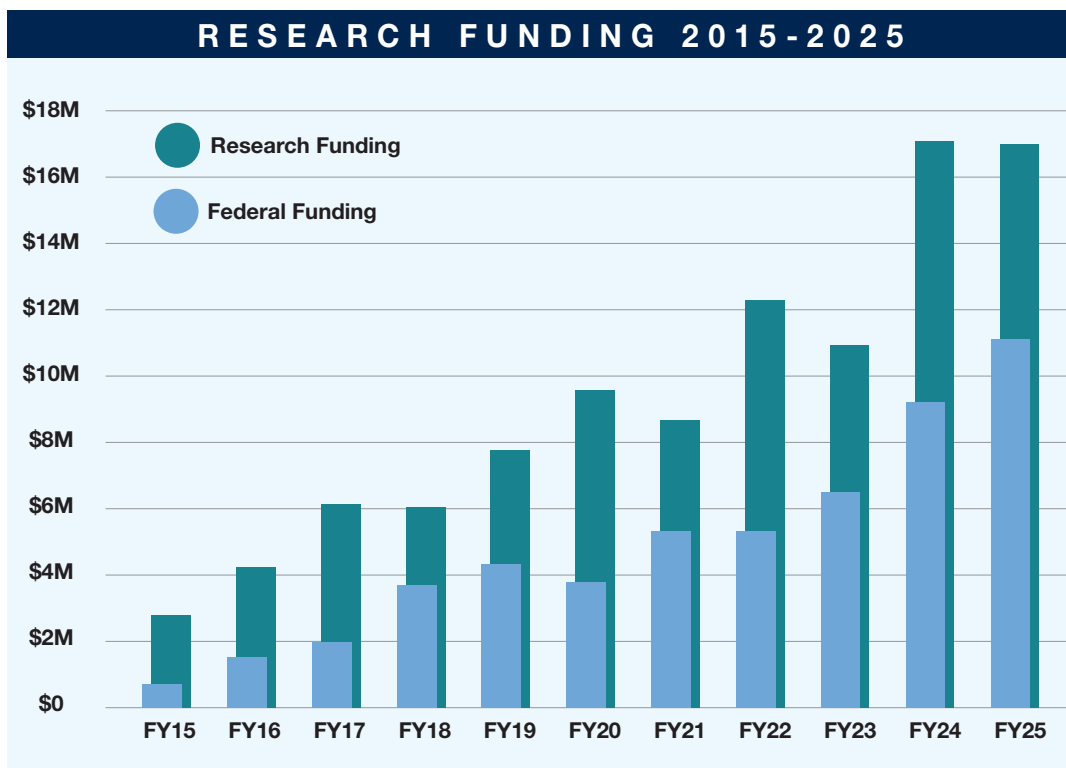
"The most inspiring aspect of my work is the personalized medicine approach at the heart of radiation treatment planning. Every patient presents a unique challenge, i.e. each with distinct anatomy, tumor characteristics, and clinical history which require us to design a fully customized treatment plan that maximizes therapeutic effectiveness while minimizing risks to healthy tissues. This process transforms each case into an intellectually engaging and deeply meaningful endeavor, where science, technology, and compassion converge to improve patient outcomes."

"Equally fulfilling is my role in training and mentoring the next generation of radiation oncologists, medical physicists, and dosimetrists here at UCSF. Guiding trainees as they develop the knowledge, technical skills, and professional judgment to advance the field brings tremendous satisfaction and adds another profound layer of purpose to my work."



Recruitment and Scientific Programs

Being part of the vibrant UCSF ethos of innovation and impactful science, the department was able to successfully recruit new energy and talent into our ranks. In the landscape of academic centers, we believed UCSF plays an important part in investing in the valuable role of physician scientists and embarked on a vision to enhance our impact through recruitment. We adopted a strategic and collaborative approach to recruitment, appointing new faculty whose expertise strengthened key programs and fostered scientific communities. We have built outstanding teams through recruitment and leadership across strategic domains. All researchers participate in translation by understanding the language at the bench and making observations from clinical experience. The following highlights our programs from the basic and translational research.



Research funding is an important metric for the productivity of our faculty and students. Active funding has increased showing a >5X's increase over the past 10 years. UCSF Radiation Oncology was in the top 5 of NIH funded academic departments in the U.S. in 2024.

Learn about the Cutting-edge Research by Our Faculty

ENGINEERING INNOVATION APPLIED TO CANCER MEDICINE

MEKHAIL ANWAR, MD, PHD, PROFESSOR



Mekhail Anwar's goal is to solve a fundamental and persistent challenge in cancer – identifying where every tumor cells is and how, once found, can be targeted for cure. To fill this unmet need, Anwar develops imaging and biosensing tools using microfabricated sensors, custom molecularly-targeted imaging agents, and novel nanoparticles – built on a platform of computer chip technology – that essentially place the physician inside the patient, allowing the clinician to see and understand cancer with new level of insight. He believes this knowledge will open the door to a new frontier of precision, personalized medicine.

Anwar received the prestigious ARPA-H award to image cancer at the single cell level in patients, ushering in an era of personalized, precision, cancer surgery. Anwar's clinical focus is on treating challenging cancers like pancreas and liver tumors using targeted radiotherapy and radiosurgery.

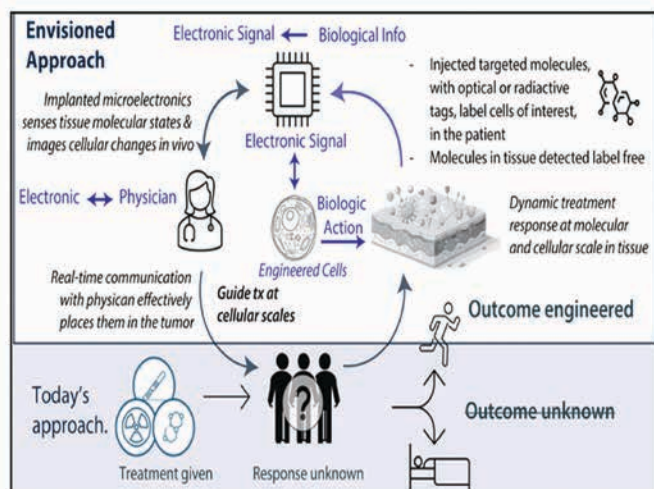
His work positions UCSF as a global leader in integrating chip-scale engineering with oncology, reshaping how cancer is detected, monitored, and treated – building a foundation for further collaboration across medicine, engineering, and computational biology.

BY THE NUMBERS

- Grants up to \$20M for research portfolio across NIH, ARPA-H, and DOD
- 10+ U.S. patents in implantable and intraoperative technologies
- 80+ publications at the interface of oncology and engineering

Read UCSF Article on Anwar's [ARPA-H Award Powerful New Mini Microscope Will Enable Precision Cancer Surgery](#)

Follow Anwar's Work on [UCSF Profiles](#)



UCSF MENINGIOMA PROGRAM: CUTTING EDGE SCIENCE

DAVID RALEIGH, MD, PHD, PROFESSOR



David Raleigh is the inaugural Director of the UCSF Translational Meningioma Program, which is comprised of clinical care, caregiver and survivorship programs, and a robust research enterprise consisting of basic and clinical investigations. David's lab first developed and validated a biomarker platform that enables much higher level individualization

of treatment options for patients with meningioma. Translational science is the engine for clinical trials and basic science establishing UCSF as the physical hub of the nation's first comprehensive meningioma program. The program provides comprehensive care for patients with the most common primary intracranial tumor organized around principles of clinical excellence, scientific discovery, multidisciplinary collaboration, and education.

As a physician-scientist, Raleigh and his lab focus on understanding genomic, biochemical, and cellular drivers of brain tumor heterogeneity and evolution. The lab integrates human samples with evolutionarily diverse preclinical models to understand brain tumor biology and develop new biomarkers and new treatments for patients. Raleigh is the Michael McDermott, MD, Endowed Professor, the Wolfe Family Endowed Professor of Meningioma Research, and as a practicing physician, he uses radiotherapy and radiosurgery to treat patients with meningiomas and other central nervous system tumors. Read UCSF Article featuring David Raleigh's research [Can Gene Expression Predict if a Brain Tumor Is Likely to Grow Back?](#)

"As a brain tumor doctor, I get to meet people and help them during a very scary and important part of their life. These interactions are humbling and inspiring, and they motivate me to improve clinical paradigms through basic, translational, and clinical research."

BY THE NUMBERS

- \$25M in competitive and philanthropic research funding
- 5+ Clinical Trials testing new therapies for meningiomas
- 50+ Trainees mentored into careers in medicine, science, and industry
- 300+ Publications advancing knowledge in brain tumor biology
- 1 Vision: to make UCSF the global leader in meningioma care and discovery

Follow Raleigh's Work on [UCSF Profiles](#)

NEUROFIBROMATOSIS & NERVOUS SYSTEM TUMORS



Harish Vasudevan, MD, PhD, is an Assistant Professor and a Gilbert Family Foundation Grantee, as well as a recipient of the Department of Defense NFRP Synergy Award. His work is deeply rooted in collaboration within the UCSF Neurofibromatosis community, where he partners with an exceptional team of scientists and clinicians. Dr. Vasudevan

emphasizes that this collective effort is essential to driving progress, united by a shared belief in their ability to build a better world through continued research and innovation.

CURRENT RESEARCH

- Research Focus: NF1 & NF2 tumor biology, Ras signaling & growth factor pathways
- Technical Innovation: Mouse genetic tools, single-cell biology, novel diagnostics
- Translation: Multiple patents; technologies licensed to commercial entities

BY THE NUMBERS

- 60+ peer-reviewed publications in journals such as Nature Genetics, Nature Medicine, Cancer Discovery, Developmental Cell, Cell Reports, and PNAS
- \$8.5M+ in research funding as PI or co-PI
- 50+ mentees trained, from high school students to faculty
- 30+ invited national & international talks (ASTRO, SNO, AACR, etc.)
- 15+ major awards, including RSNA Roentgen Award, SNO Young Investigator Award, Department of Defense New Investigator Award, Department of Defense Synergy Award, and Francis Collins Scholar Award

RESEARCH HIGHLIGHTS

- Vasudevan Lab – vasudevanlab.ucsf.edu

Follow Harish Vasudevan's Work on [UCSF Profiles](#)



MENINGIOMA RESEARCH



Will C. Chen, MD, is an Assistant Professor specializing in Meningioma Research and Radiation Oncology. His work focuses on advancing innovative, evidence-based approaches to improve outcomes for patients with brain tumors. Dr. Chen's research has been featured in Nature Medicine (2024), reflecting his commitment to translating scientific

discovery into meaningful clinical impact. He is also actively involved in NRG clinical trials, helping shape the future of precision radiation therapy through collaborative, practice-changing research.

CURRENT RESEARCH

Active Programs and Trials

- BEAM – Biomarker Evaluation in All Meningiomas – a prospective registry enabling longitudinal molecular characterization across all meningioma patients
- LWM – Living With Meningioma – a prospective longitudinal quality of life study for meningioma survivorship, centering the patient experience
- SRS-AIM – A pilot prospective trial testing hypofractionated radiosurgery as adjuvant treatment for intermediate-risk meningioma patients

BY THE NUMBERS

- \$1M+ in NIH, ASCO, UCSF, and foundation research funding
- 8+ competitive research awards recognizing innovation in radiation oncology and brain tumor research
- 60+ peer-reviewed publications in leading oncology, neuroscience, and radiation oncology journals
- 1 patented biomarker platform and 1 investigator-initiated clinical trial advancing precision treatment for meningioma
- Recipient of a K99/R00 - NCI Pathway to Independence Award: \$325,512 over 2 years total, then transitions upon attaining an independent lab, to \$249,000 per year x3 years, in the R00 component

RESEARCH HIGHLIGHTS

- Scholarly publications – [Google Scholar](#)

Follow William C. Chen's Work on [UCSF Profiles](#)



GLIOMA TARGETS



John Liu, MD, PhD, is an Assistant Professor of Radiation Oncology and Neurological Surgery whose research focuses on advancing new therapeutic strategies for glioblastoma. As a recipient of the Sontag Distinguished Scientist Award, Dr. Liu is leading innovative work to better understand how tumor and immune cells interact within the brain

tumor environment. His research uniquely explores how gene disruption can reprogram these cellular interactions, opening new possibilities for next-generation glioblastoma therapeutics and more effective treatment approaches for patients facing this devastating disease.

CURRENT RESEARCH

- Core platform: Tumor in vivo perturb-seq – CRISPR screens + single-cell RNA-seq
- Innovation: Engineered CRISPR machines for epigenetic control of brain tumors
- Partnerships: UCSF Neurosurgery, UC Berkeley & Stanford engineers

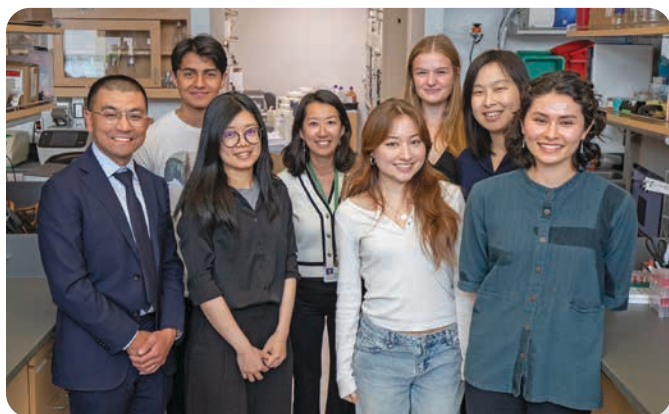
BY THE NUMBERS

- 40+ peer-reviewed publications in Science, Nature Genetics, Genome Biology, Neuro-Oncology, and more
- \$5M+ research portfolio across NIH, Sontag Foundation, V Foundation, and more
- 15+ awards including ASCO Conquer Cancer–Sontag YIA, ASTRO Basic/Translational Award, RSN Roentgen Award, SNO Merit Award, and UCSF Catalyst Award
- 20+ mentees spanning undergraduates, graduate students, residents, and postdoctoral fellows
- 20+ invited talks at national and international conferences

RESEARCH HIGHLIGHTS

- Liu Lab – liulab.ucsf.edu
- UCSF Neurosurgery announcement: [Sontag Distinguished Scientist Award](#)

Follow John Liu's Work on [UCSF Profiles](#)



DNA REPAIR AND CANCER IMMUNOLOGY



Nam Woo Cho, MD, PhD is an Assistant Professor, member researcher at the Parker Institute for Cancer Immunotherapy and UCSF ImmunoX cited 2,200+. Radiation oncologist and cancer biologist, whose lab established in 2023, integrates expertise in DNA repair (Greenberg lab, Penn) and cancer immunology (Spitzer lab, UCSF) to develop radiation-guided

cancer immunotherapy. His program aims to place cancer and immune cell behavior change in response to therapy — then leverage those mechanisms to design next-generation treatments. The lab's central vision transforms radiotherapy from a cytotoxic tool into a spatially and temporally programmable platform for precision immuno-oncology.

CURRENT RESEARCH

Landmark Publications

- Cell, 2014 - Interchromosomal homology searches drive directional ALT telomere movement and synapsis
- Nature, 2016 - Break-induced telomere synthesis underlies alternative telomere maintenance
- Nat Struct Mol Biol, 2013 - Acetylation limits 53BP1 association with damaged chromatin to promote homologous recombination

Active Translational Programs

- Rad-Gene Switch - Radiation-controlled gene expression platform — uses existing radiotherapy infrastructure to turn therapeutic genes on or off only within the irradiated field, enabling in-patient programming of cell therapies with minimal off-tumor effects
- SBRT Immunity - Interrogating how stereotactic body radiotherapy alters T cell-tumor interactions and the immune microenvironment, using novel mouse and human models with high-parameter single-cell profiling
- Immune Engineering- Modular framework for radiation-guided immune cell engineering — expanding the gene-switch platform across multiple cell types and therapeutic circuits for solid tumors where current cell therapies fail due to toxicity and poor localization

BY THE NUMBERS

- \$2.5M+ in competitive research funding from the American Cancer Society, The V Foundation, UCSF Parker Institute, ImmunoX, RAP, and NIH-supported training awards
- 10+ national and institutional honors, including the Society for Immunotherapy of Cancer Young Investigator Award, ACS Clinician Scientist Development Grant, and the V Scholar Award
- 10+ peer-reviewed publications in leading journals including Cell, Nature, Nature Medicine, Nature Communications, and Cancer Immunology Research
- 10+ graduate students, residents, postdoctoral fellows, research associates, and junior faculty mentored
- 1 physician-scientist laboratory advancing next-generation cancer immunotherapy through innovative radiation-immunology research

Cho Lab <https://cholab.ucsf.edu/>

CUTTING-EDGE RESEARCH BY OUR FACULTY

AI AND COMPUTATIONAL ONCOLOGY



Julian Hong, MD, MS, is an Associate Professor and serves as Head of AI at the Helen Diller Family Comprehensive Cancer Center. As a Weil Cancer Hub West Project Awardee, he is at the forefront of advancing innovative approaches to cancer care. Dr. Hong believes there is a powerful opportunity to lead in “data-directed care,” using

advanced data and technology to shape more precise, personalized treatments. His vision is to deliver a new generation of care—offering patients access to cutting-edge approaches they would be hard-pressed to find anywhere else.

CURRENT RESEARCH

- Active Trial: WATCH Trial – wearable ML algorithm for patient care
- Pipeline: Patient counseling AI – praised by advocate groups
- Infrastructure: Democratized departmental data via ARIA migration

BY THE NUMBERS

- \$10M+ in total research funding across NIH/NCI, PCORI, PCF, ASTRO, industry, and foundation awards
- 1 of the first prospective randomized trials deploying ML in routine radiation oncology care (SHIELD-RT)
- 90+ peer-reviewed publications, including JAMA, JAMA Oncology, JCO, Nature Cancer, Lancet Digital Health, and NEJM AI
- Multi-institutional leadership as PI or Co-PI on national collaborations with Stanford, UCSF, Duke, and the Weill Cancer Hub
- 10+ years pioneering clinical AI/ML applications in radiation oncology and population health
- Randomized clinical evidence showing reduced acute care utilization and healthcare costs using ML-directed interventions
- Multiple AI platforms validated across cancer types, including prostate, lung, GI, CNS, and palliative oncology

RESEARCH HIGHLIGHTS

- Weill Cancer Hub West and Project IMPACT - UCSF Announcement
- Hong Lab - honglab.ucsf.edu

Follow Julian Hong's Work on [UCSF Profiles](#)



PROSTATE CANCER GENOMICS



Will S. Chen, MD, is an Assistant Professor and physician-scientist specializing in prostate cancer genomics and radiation oncology. His research integrates clinical insight with cutting-edge genomic approaches to better understand disease progression and identify more precise treatment strategies. A recipient of the DoD Physician Research Award,

as well as PCF TACTICAL and Challenge Awards, Dr. Chen has been recognized for his innovative contributions to the field. As an ASCO Young Investigator, he is advancing efforts to translate genomic discoveries into more personalized and effective therapies for patients with prostate cancer.

"I strongly believe that the treatments we offer to our patients can be better tailored to their needs. I envision a future in which we can confidently recommend our patients with prostate cancer radiotherapy (+/- hormonal therapy / prostatectomy / neoadjuvant therapy) based on their upfront disease features."

CURRENT RESEARCH

- Prostate Cancer genomics, bioinformatics & prognostic biomarkers
- Clinical Interest: Oligometastatic prostate cancer & metastasis-directed radiotherapy
- Current Award: DoD Principal Investigator Award, active November 2025
- Utility of metastasis-directed radiotherapy in oligometastatic prostate cancer" - [JNCI Cancer Spectrum](#)

BY THE NUMBERS

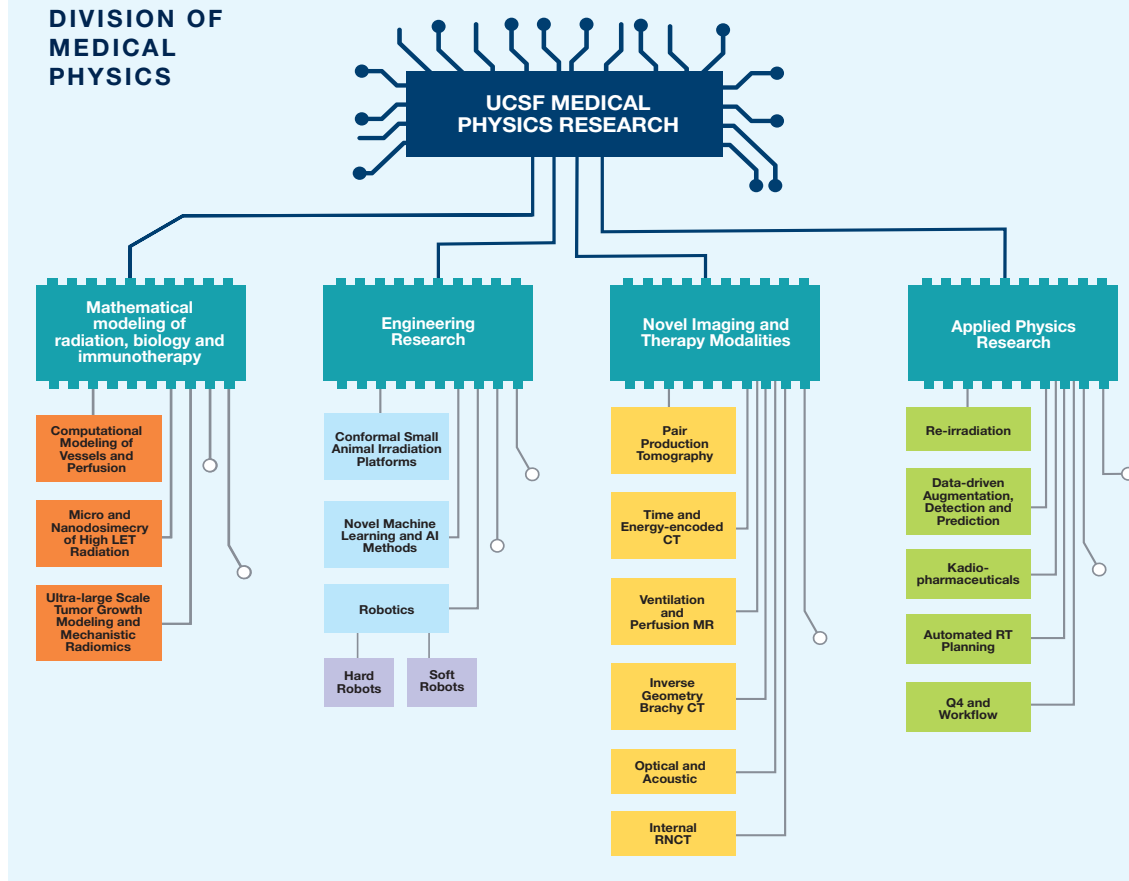
- \$2M+ in competitive research funding, including NIH, Department of Defense, Prostate Cancer Foundation, and ASCO-supported awards
- 10+ national research honors, including the NIH R01, Department of Defense Physician Research Award, Prostate Cancer Foundation Young Investigator Award, and ASTRO Basic Translational Award
- 25+ peer-reviewed publications in leading journals including Nature, Nature Biotechnology, Nature Methods, Nature Genetics, Cancer Discovery, and Clinical Cancer Research
- 5+ clinical and research trainees mentored in computational biology, cancer genomics, and radiation oncology
- Research program using spatial single-cell biology and artificial intelligence to develop precision biomarkers and targeted therapies for advanced prostate cancer

RESEARCH HIGHLIGHTS

Follow William S. Chen's Work on [Google Scholar](#)

PHYSICS DIVISION RESEARCH OVERVIEW

Over the past decade, the UCSF Division of Radiation Oncology Physics has built a globally recognized research program distinguished by its breadth, innovation, and translational impact. The division has led world-class investigations in micro- and nano-dosimetry (Bruce Faddegon and Jose Ramos-Mendez), advanced treatment planning and novel imaging systems (Ke Sheng and Qihui Lyu), and MR-guided radiotherapy (Jessica Scholey and Ke Sheng). More recently, the program has expanded into transformative areas such as artificial intelligence in radiotherapy (Hui Lin and Ke Sheng) and functional-sparing radiotherapy (Wensha Yang, Olivier Morin, and Donte Capaldi).



On the clinical research front, UCSF physicists have made significant contributions to studies on clinical outcomes (Manju Sharma), quality and safety (Emily Hirata, Evan Porter, and Alon Witzum), and technological implementation (Martina Descovich and Katelyn Hasse). Xiaoyu Liu has further enriched the division's research portfolio by introducing professional survey-based investigations, broadening the scope of our clinical research efforts.

MEDICAL PHYSICS



Ke Sheng, PhD, is Vice Chair of Medical Physics, Endowed Chair of Physics & Engineering in UCSF Radiation Oncology. A leader in advancing the role of physics in cancer care, Dr. Sheng's work focuses on developing innovative technologies to improve the precision and effectiveness of radiation therapy. His contributions have been recognized at the highest levels of

the field, including the AAPM Presidential Symposium, AAPM and ASTRO Fellowship. Through his research and leadership, he is helping to shape the future of radiation oncology by integrating engineering, physics, and clinical practice to deliver more precise and impactful cancer treatments.

CURRENT RESEARCH

- Core research: 4pi radiotherapy, Advanced X-ray imaging methods, Image-guided RT and Mathematical modeling of biology

- Innovation: Non-coplanar 4π radiotherapy, robotics & computational oncology
- Publications: Nature Biomedical Engineering, npj Biomedical Innovation, JAMA Oncology, Medical Image Analysis, and more

BY THE NUMBERS

- \$25M+ research portfolio from NIH and DOE
- \$ 15M+ mentored research grants from NIH
- 200+ peer-reviewed publications advancing radiotherapy Physics
- 11 issued patents
- 50+ trainees mentored
- 1 vision: safer, more precise radiotherapy for all patients

RESEARCH HIGHLIGHTS

<https://shenglab.ucsf.edu>

CUTTING-EDGE RESEARCH BY OUR FACULTY

PHYSICS DIVISION: A CLOSER LOOK AT IMAGING AND MAGNETIC RESONANCE IMAGING (MRI)

MR GUIDED RADIOTHERAPY



Wensha Yang, PhD, is a Professor in the Division of Physics and a medical physicist specializing in MR-guided and functional radiotherapy. Her research focuses on advancing imaging-driven approaches to enhance the precision and adaptability of radiation treatment. As an NIH-funded investigator, Dr. Yang has achieved a notable R01 award with a first

percentile score, reflecting the exceptional impact and rigor of her work. Through her innovations, she is helping to push the boundaries of personalized radiotherapy, integrating advanced imaging technologies to improve outcomes for cancer patients.

CURRENT RESEARCH

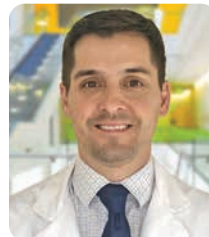
- Core Innovation: Multi-task MR sequence for simultaneous T1/T2/ mapping & motion Capture
- Clinical reach: Nearly 200 patients – personalized liver function maps & SBRT planning
- Next step: NIH R01 prospective trial enrollment expected 2026

“As a MR implementation researcher working in Radiation Oncology, what inspires me most is the direct translation of quantitative MR physics into measurable patient benefit, because every voxel we map, treat, or spare is a tangible step toward redefining the therapeutic index of radiation therapy, and proving that biology-guided precision medicine is not aspirational, but achievable today.”

BY THE NUMBERS: WENSHA YANG

- \$5M+ in competitive research funding from the NIH, Varian, and institutional grants advancing MRI-guided adaptive radiotherapy and artificial intelligence
- 10+ national honors, including AAPM Fellow, multiple BEST in Physics awards, and NIH-funded investigator awards
- 70+ peer-reviewed publications spanning Nature Materials, Cancer Cell, International Journal of Radiation Oncology • Biology • Physics, Medical Physics, and Physics in Medicine & Biology
- 30+ students, residents, postdoctoral fellows, physicists, and junior faculty mentored across medical physics and radiation oncology
- 4 NIH-funded research programs advancing MR-guided adaptive radiotherapy, AI-driven image analysis, and precision treatment for liver, pancreatic, and brain cancers

DATA SCIENCE AND IMAGING



Olivier Morin, PhD, is a Professor in the Division of Physics and Founder and Director of the MEDomics Lab at UCSF Radiation Oncology and Ci2. His work centers on harnessing large-scale data and advanced analytics to drive innovation in cancer care. As Principal Investigator of a \$3.6M NIH R01 award (2025–2030), Dr. Morin is leading efforts

to develop data-driven approaches that improve treatment precision and patient outcomes. An active leader in the field, he contributes to the AAPM Science Council and the MEDomics Consortium, helping to shape the future of medical physics through collaborative, data-enabled research.

CURRENT RESEARCH

Landmark Publications

- *Nature Cancer*, 2021 – AI Framework for pan-cancer prognostication
- *Nature Communications*, 2025 – Largest brain metastases atlas ever assembled
- *Radiology*, 2020 – Radiomics standardization contributions

Active Transitional Programs:

- WBRT PROTECT: NIH R01 - \$3.6M (2025-2030) - AI imaging models personalize whole brain radiotherapy, reducing dose to uninvolved brain by 20–100%
- TARGET AVM: 4D angiography with ferumoxytol-enhanced flow MRI for adaptive radiosurgery of large AVMs via the UCSF Gamma Knife program – Phase I trial planned.

BY THE NUMBERS

- \$4.0M+ NIH R01 for AI personalized brain radiotherapy (2026 to 2031)
- 150+ publications including *Nature Cancer*, *Nature Communications*, *Radiology*, and *npj Digital Medicine*
- 5 institutions, 3 countries in the MEDomics international data science consortium
- AAPM Science Council and Data Science voting member, WG SCALE Chair, SCAMP Vice Chair
- 1 vision: data science-driven precision radiotherapy for every patient
- 50+ students and trainees mentored across physics, data science, and oncology

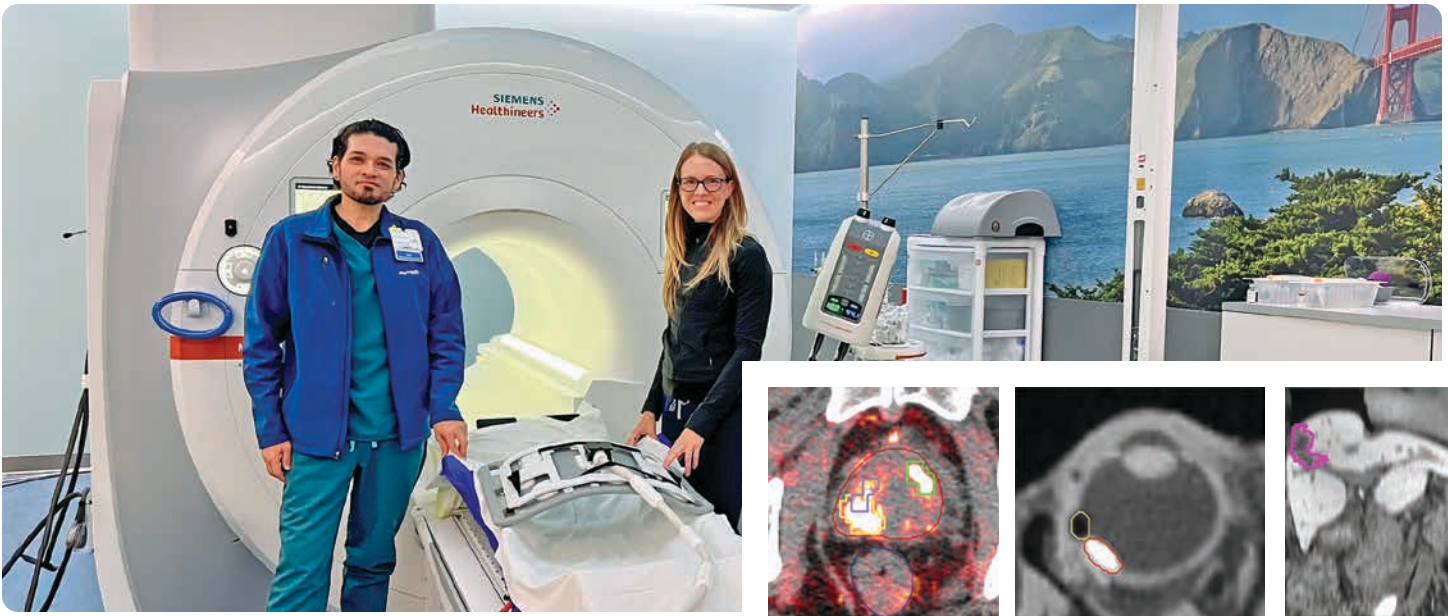
RESEARCH HIGHLIGHTS

- [UCSF Center for Intelligent Imaging profile](#)
- [MEDomics Consortium – medomics.ai](#)



CUTTING-EDGE RESEARCH BY OUR FACULTY

PHYSICS DIVISION: A CLOSER LOOK AT IMAGING AND MAGNETIC RESONANCE IMAGING (MRI)



MRI SIMULATION PROGRAM



Jess Scholey, PhD, is an Associate Professor and Physics Director of the MRI Simulation Program, as well as Physics Lead for the Proton Ocular Program. Her work focuses on advancing simulation-driven and precision imaging approaches to optimize radiation therapy, particularly in highly specialized treatment settings.

As Director of the PRIMR Program and a member of UCSF Ci2, Dr. Scholey plays a key role in integrating innovation, education, and translational research. Her leadership is helping to expand the frontiers of imaging and proton therapy, improving accuracy and outcomes in complex cancer care.

CLINICAL MR INNOVATIONS BY SITE

- Liver: Among the first centers to clinically implement respiratory-resolved 4D-MRI with compressed sensing – reducing scan time while capturing real-time organ motion for SBRT planning.
- Head & Neck: DWI sequences for tumor volume definition; exploring hypoxia and fibrosis mapping to protect patients during reirradiation.
- Prostate: Among the first to implement deep learning-based synthetic CT for MR-only treatment planning; DWI for dominant intraprostatic lesion targeting
- Ocular: Novel MR-only pipeline for visualizing intraocular tumors and tantalum markers used for real-time proton beam tracking.

BY THE NUMBERS

- \$800K+ in industry and institutional research funding supporting MRI-guided precision radiotherapy
- 3 active MRI innovation programs in synthetic CT, 4D MRI, and AI-guided treatment planning



Lisa Singer, MD, PhD, is Associate Professor in Radiation Oncology with clinical interests in breast cancer, lung cancer, and women's health. She also serves as Clinical Magnetic Resonance Imaging (MRI) Director and is board-certified in both radiation oncology and MRI safety.

- 35+ peer-reviewed publications in medical physics, MRI, and proton therapy
- 20+ trainees mentored in medical physics, biomedical engineering, and radiation oncology
- 1 vision: to make MRI the foundation for safer, smarter, and more personalized radiation therapy

RESEARCH HIGHLIGHTS

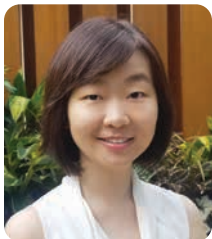
[UCSF Center for Intelligent Imaging profile](#)

[UCSF Radiation Oncology faculty profile](#)

"I am inspired by our multidisciplinary team of experts who come together to improve the lives of our patients. When we are introducing a new technique in our PRIMR program, we are combining the expertise of radiation oncologists, radiologists, therapy medical physicists, MRI physicists, MR safety experts, CT/MRI technologists, PhD students, vendor collaborators, and more."

PHYSICS DIVISION: A CLOSER LOOK AT COMPUTATION AND PREDICTIVE MODELS

CLINICALLY GROUNDED, MULTI-MODAL AI TO TRANSFORM CANCER CARE



Hui Lin, PhD, is an Assistant Professor in Radiation Oncology and the Division of Physics, and a core faculty member in the UC Berkeley– UCSF Bioengineering and Computational Precision Health program. Her research focuses on advancing computational and data-driven approaches to improve precision in cancer diagnosis and treatment.

Supported by funding from the NIH and Department of Defense, and as a contributor to the UCSF Brain Tumor SPORE, Dr. Lin is helping to drive innovation at the intersection of engineering, computation, and oncology. Her work has been recognized with the AAPM Best in Physics Award in 2024, highlighting her impactful contributions to the field.

CURRENT RESEARCH

- Flagship Models: Glioma foundation models & oncology-tuned LLMs connecting imaging to biology.
- Clinical Application: Tract-aware, personalized radiotherapy target volume design for GBM.
- Systems Biology: Graph neural networks & transformers modeling kinase signaling & drug resistance.

BY THE NUMBERS

- \$7M+ in NIH, Department of Defense, and institutional research funding supporting AI-driven precision oncology
- 3 major research programs integrating large language models, multimodal imaging, and clinical AI for personalized cancer treatment
- 25+ peer-reviewed publications spanning AI, medical imaging, natural language processing, and radiation oncology
- 25+ trainees mentored in computational oncology, medical physics, and data science
- 1 vision: to bring trustworthy artificial intelligence into every stage of cancer diagnosis, treatment planning, and outcome prediction

“Our vision is an AI decision layer for oncology that couples foundation models with biological networks and real-world clinical context to anticipate progression, personalize radiotherapy, and preempt resistance. Over the next few years, we will validate our AI-driven tract-aware RT planning in feasibility clinical trials, extend the multi-modality foundation models beyond GBM to head-and-neck and GI cancers, and integrate tools into clinical workflows, improving tumor control, sparing normal tissue, and advancing equitable access to truly personalized cancer care.”

RADIATION PHYSICS AND COMPUTATION



Qihui Lyu, PhD, is an Assistant Professor in Residence in Radiation Oncology and the Division of Physics, and a core faculty member in the UC Berkeley– UCSF Bioengineering and Computational Precision Health program. Her research focuses on developing advanced imaging technologies to improve the precision and effectiveness of cancer diagnosis and

treatment. Dr. Lyu’s work on P2T imaging has been published in Nature Biomedical Engineering, highlighting its impact in the field. A recipient of the AAPM Young Investigator Award (1st Place), she is advancing innovative imaging approaches that enable more accurate, data-driven cancer care.

CURRENT RESEARCH:

- P2T Imaging – Pair production tomography – a novel high-energy X-ray imaging technique published in Nature Biomedical Engineering that maps where radiation interactions occur in the body, with potential as an in-vivo dosimetry surrogate
- Treatment planning – Optimization algorithms for flexible radiotherapy delivery – dynamic collimator and gantry-couch rotation, multi-isocenter optimization, and dual-layer MLC techniques
- FLASH & BNCT – Hardware and software design for ultra-high-dose-rate (FLASH) radiotherapy; modeling and system design for boron neutron capture therapy in difficult-to-treat cancers
- CT reconstruction – Advanced iterative and deep learning-based reconstruction for CT and dual-energy CT, improving image quality and material decomposition accuracy for clinical use

BY THE NUMBERS: LYU LAB

- 5+ computational platforms developed for VMAT optimization, FLASH radiotherapy, CT reconstruction, proton therapy, and robotic radiotherapy
- 30+ peer-reviewed publications in Nature Biomedical Engineering, Medical Physics, and Physics in Medicine & Biology
- 15+ trainees mentored in medical physics, bioengineering, and computational precision health
- 1 vision: to accelerate safer, faster, and more personalized radiation therapy through computational innovation and artificial intelligence

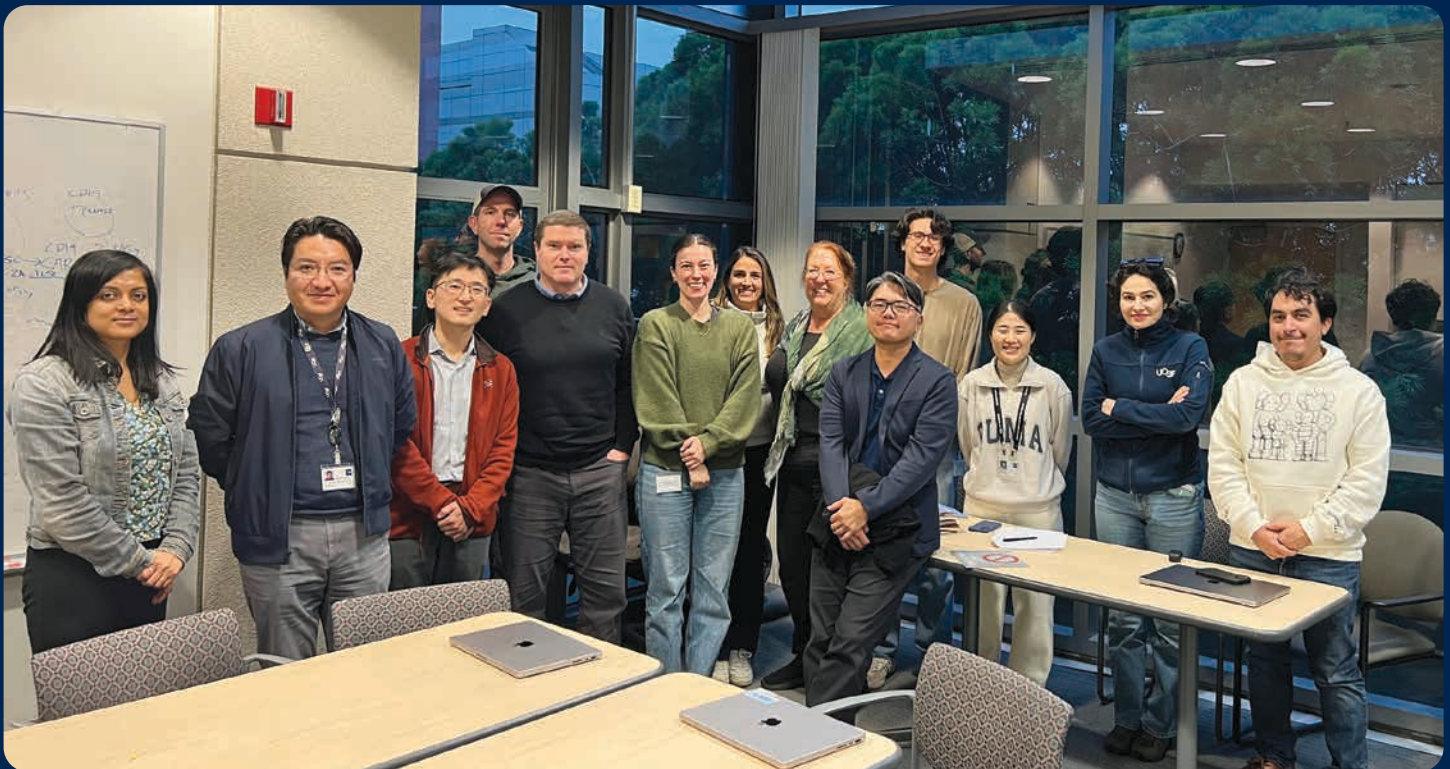
RESEARCH HIGHLIGHTS

- [Lyu Lab](#)
- [Research Overview](#)

DIVISION OF RADIOBIOLOGY

The Division of Radiobiology has experienced significant growth over the past decade, securing substantial research funding across three strategic areas aligned with the cancer center: cancer immunology, high-throughput omics, and novel therapeutic strategies. James Lee, MD, and Nam Woo Cho, MD, PhD, lead innovative immunology projects focused on liver metastases and immunotherapy correlates. Paolo Betancur, PhD, applies chromatin regulation expertise to immune cell phenotypes, while Jean-Philippe Coppé, PhD, has built a widely-utilized kinase assay platform studying therapy resistance and cancer progression. Mary Helen Barcellos-Hoff's lab integrates TGF β biology with DNA repair and immune response, yielding promising biomarkers and a new radiopharmaceutical.

The division actively fosters interdisciplinary collaboration through faculty recruitment, cross-departmental partnerships, and engagement with programs such as ImmunoX. Emerging initiatives include keloid treatment research with dermatology and strengthened head and neck cancer collaborations. Under the leadership vision of Dr. Barcellos-Hoff, vice chair of Research, radiobiology's future hinges on deep integration with biology and physics—bolstered by the recruitment of Ke Sheng, PhD, as Chief of Physics. Key priorities include immersing research faculty in clinical discussions, developing umbrella funding initiatives targeting specific clinical problems, and cultivating community through collaborative “proof-of-concept” wins that build momentum for larger research endeavors.



OUR RADIOBIOLOGY FACULTY

2019 Paola Betancur | 2022 James Lee | 2022 Nam Woo Cho | 2023 Jean Phillipp-Coppé

DIVISION OF RADIOBIOLOGY

RESEARCH



Mary Helen Barcellos-Hoff, PhD, is a Professor, Vice Chair for Research, and Director of Radiation Biology. An internationally recognized leader in the field, her work focuses on the biological mechanisms underlying radiation response, with a particular emphasis on TGF β biology. With more than 21,000 citations, Dr. Barcellos-Hoff has made

foundational contributions to understanding how radiation affects tissues and cancer development, also supported by the Department of Energy and NASA. She is a cancer biologist studying how TGF β – activated by ionizing radiation – governs DNA repair, tumor microenvironment remodeling, and immune suppression. Her lab demonstrated that TGF β is essential for the canonical DNA damage response and showed that TGF β inhibition combined with radiotherapy increases tumor control in breast, brain, and lung cancer preclinical models. Translational work has produced validated biomarkers predicting responses to genotoxic therapy across cancer types.

CURRENT RESEARCH

Landmark Publications

- *Nature Review Cancer*, 2025
- TGF β paradox in HPV-driven cancer and DNA damage response
- *Semin Cancer Biology*, 2022
- The radiobiology of TGF β
- *Nature Cancer Review*, 2005
- Radiation and the Microenvironment – tumorigenesis and therapy

Active Translational Programs

- TGF β + RT: TGF β inhibition combined with radiotherapy to enhance tumor control and overcome immune suppression – preclinical validation across breast, brain, and lung cancer models
- β Alt Biomarker: Validated TGF β /alternative end-joining gene expression signature (β Alt score) predicting patient response to genotoxic cancer therapy across tumor types
- FLASH & HNSCC: Collaborator on FLASH radiotherapy feasibility trial; HPV+ head and neck cancer TGF β -DNA repair axis studies targeting PARP inhibitor sensitivity

BY THE NUMBERS

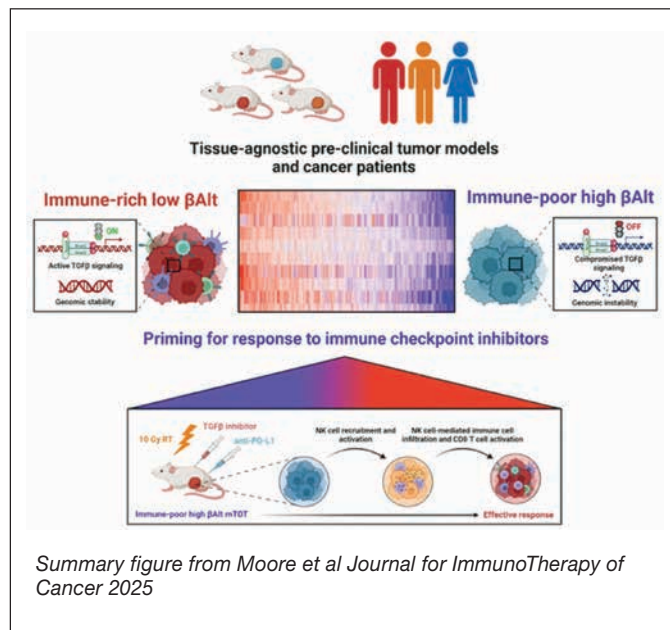
- 179+ publications in radiation biology, microenvironment, and systems biology
- Foundational contributions to TGF β biology and its role in radiation response
- Dozens of trainees now leading programs in radiobiology and oncology

- Developed the β Alt biomarker linking DNA repair, TGF β signaling, and immune response
- 1 mission: Convert radiotherapy into a biologically informed therapy to improve patient outcomes

[Barcellos-Hoff Lab](#)

[UCSF Profiles](#)

UCSF News Story [Here's How to Prime Tumors to Be Defeated by Cancer Immunotherapy](#)



CUTTING-EDGE RESEARCH BY OUR FACULTY

DIVISION OF RADIOBIOLOGY

IMMUNOTHERAPY



James Lee, MD, is an Assistant Professor, physician scientist and medical oncologist specializing in melanoma and cancer immunotherapy.

“Immunology’s evolution and logic of adaptation inspires me daily. As a physician-scientist, I enjoy caring for patients with advanced cutaneous cancers in the clinic and bring urgent

questions back to the lab; at the bench, we test ideas that can return to the ward. I also get to teach and discover science in parallel, where lively exchanges with colleagues and trainees sharpen my understanding and fuel creative leaps. In the end, turning curiosity, science, and mentorship into better immunotherapies for patients is the most motivating part of my job.”

CURRENT RESEARCH

Landmark Publications

- *Science Immunology*, 2020 – Regulatory T cell control of systemic immunity and immunotherapy response in liver metastasis
- *Clin Cancer*, 2022 – The liver-immunity nexus and cancer immunotherapy
- *Cell Mol Immunology*, 2022 – Tissue-specific Tregs in cancer metastasis: opportunities for precision immunotherapy

Active Translational Programs

- Liver Tolerance: Spatial multiomic profiling of the tolerogenic liver metastatic tumor-stromal interface using AI-assisted, spatially-resolved single-cell transcriptomics — to decode organ-specific immunosuppressive circuits driving checkpoint inhibitor resistance
- Biomarkers: Developing noninvasive immune biomarkers from peripheral blood that accurately reflect systemic antitumor immunity during checkpoint inhibitor therapy — capturing immune dynamics invisible to current reactive lab tests and imaging
- RT + Immunotherapy: Investigating neoadjuvant checkpoint inhibitor therapy combined with metastatic-site radiotherapy or surgical metastasectomy to overcome liver-induced immune tolerance and generate durable systemic antitumor responses in stage IV disease

BY THE NUMBERS

- \$1.8M+ in competitive research funding secured
- Parker Institute for Cancer Immunotherapy Bridge Fellow Award (\$600K, 2021-2024) DOD Melanoma Team Science Award (Lead PI, ~\$1M, 2023-2026)
- 3X NIH Clinical Research Loan Repayment Awards (2017, 2022, 2025).
- A.P. Giannini Foundation Postdoctoral Fellowship
- 15+ peer-reviewed publications including *Nature Medicine* and *Blood*

[Jamesleelab.ucsf.edu](https://jamesleelab.ucsf.edu) | [UCSF Profiles](#)

MONTE CARLO SIMULATION



Jose Ramos-Méndez, MS, PhD, is an Assistant Professor, in the department's Physics & Radiobiology Division — Computational and Monte Carlo

TOPAS / TOPAS-nBio • Monte Carlo simulation • 60+ countries adopted • DABR certified

Internationally recognized researcher in

Monte Carlo methods for radiation therapy, Ramos-Méndez leads the development of TOPAS and TOPAS-nBio — open simulation frameworks now used by thousands of researchers across more than 60 countries — enabling multiscale modeling from ionization of DNA up to whole-patient dose distributions. His research bridges fundamental radiation physics and chemistry with clinical applications in ion therapy, FLASH, radiopharmaceuticals, and radiobiological modeling.

LANDMARK PUBLICATIONS

- TOPAS-nBio: an extension to the TOPAS simulation toolkit for the cellular and sub-cellular radiobiology, *Radiation Research*, 2019
- Monte Carlo simulation of chemistry following radiolysis with TOPAS-nBio, *Phys Med Biol*, 2018
- The TOPAS tool for particle simulation: a Monte Carlo platform for physics, biology and clinical research, *Physica Medica*, 2020

KEY RESEARCH PLATFORMS

- Multiscale MC: Monte Carlo simulation framework spanning molecular to whole-patient
- Clinical Bridge: Translated advanced track-structure simulations into efficient clinical-research workflows
- Novel Modalities: Applied computational models to emerging radiotherapy modalities — ion-beam therapy, ultra-high dose-rate FLASH irradiation, radiopharmaceuticals, and microbeam techniques (*Phys Med Biol* 2024; *Sci Rep* 2024)

BY THE NUMBERS

- Co-investigator on \$5M+ in NIH-funded collaborative research supporting particle therapy and radiation biology
- Co-leads the development of TOPAS and TOPAS-nBio, enabling researchers worldwide to model radiation effects from the molecular to cellular and patient scale
- 15+ graduate students, postdoctoral fellows, and residents mentored across the U.S., Latin America, and Europe

[UCSF Profiles](#)

DIVISION OF RADIOBIOLOGY

TRANSLATIONAL CANCER BIOLOGY AND TUMOR MICROENVIRONMENT RESEARCH



Jean-Philippe Coppé, PhD is an Associate Professor, member of the Helen Diller Family Comprehensive Cancer Center and Breast Oncology Program. Coppé is a molecular and cell biologist with expertise in cancer, aging, and therapeutic resistance. Coppe pioneered the HT-KAM (kinase activity mapping) platform and co-discovered the senescence-associated secretory

phenotype (SASP)—a foundational concept linking aging biology to cancer progression and immune evasion. His lab maps the phospho-activity dependencies of therapy-resistant tumors to reveal actionable vulnerabilities and develops computational tools to predict and overcome resistance. He integrates kinome mapping, mechanisms of therapy resistance, and the biology of senescence and aging to uncover actionable vulnerabilities in cancer, supported by NIH R01 funding.

CURRENT RESEARCH

Key Research Achievements

HT-KAM

Developed High Throughput Kinase Activity Mapping — a transformative platform detecting kinase enzyme activity and signaling network invisible to conventional methods, with broad applications across cancer and life sciences (Cancer Res 2018; Nat Cell Biol 2010)

Resistance

Identified druggable mechanisms of targeted therapy resistance in colorectal cancer, breast cancer, melanoma, and leukemia —

leveraging HT-KAM to map phospho-catalytic dependencies in patient-representative tumor models (Nat Cancer 2023; Science 2021; JCI 2023; Mol Cancer 2024; Commun Med 2025)

SASP / Aging

Co-discovered the SASP — showing that senescent cells chronically secrete inflammatory factors that dampen immunosurveillance and promote tumor progression, linking an aging hallmark to poor cancer therapy outcomes (PLoS Biol 2008; Annu Rev Pathol 2010; Nat Commun 2018; JCI Insight 2019)

Translational research impact

Mapping kinome profiles and phospho-signaling networks moves beyond genomic and transcriptomic approaches to capture the functional states of in tumors and peripheral immune cells — these kinase states, shaped by oncogenic drivers and host immune baseline, determine therapeutic responsiveness, resistance, and durability and can be developed to novel therapeutic opportunities

BY THE NUMBERS

- 20+ years advancing translational cancer biology and tumor microenvironment research
- \$25M+ in research funding from NIH, DoD, and foundation sponsors
- 40+ peer-reviewed publications in cancer biology, aging, and therapy resistance
- Pioneer of senescence-associated secretory phenotype (SASP) biology and phospho-signaling circuits in cancer

[UCSF Profiles](#)

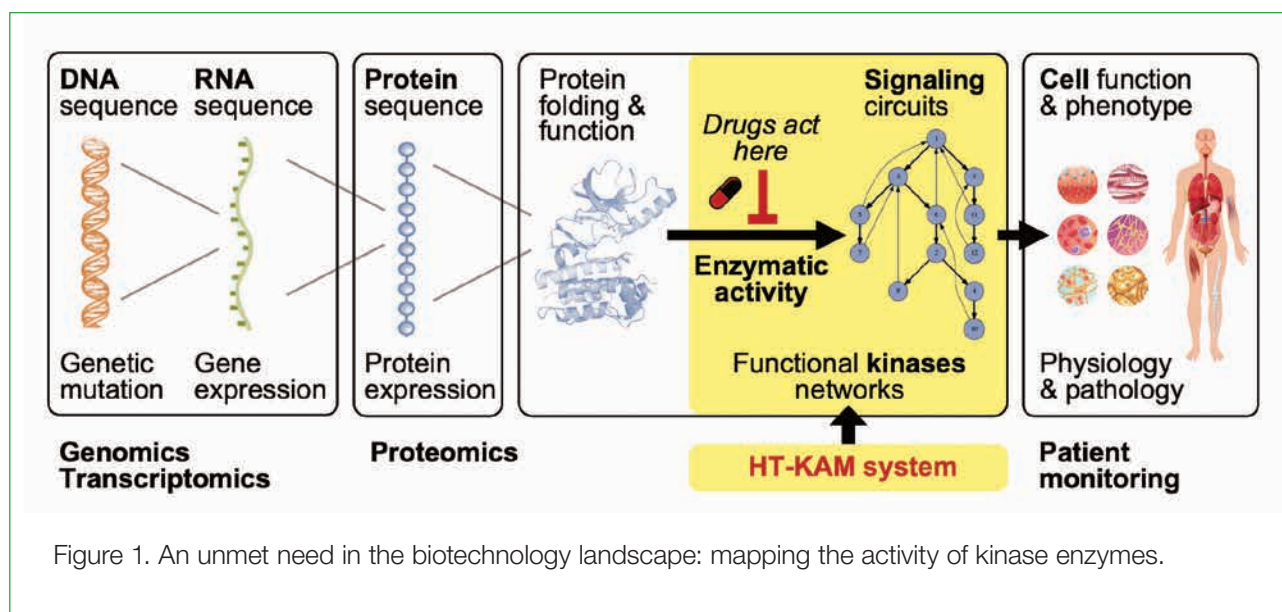


Figure 1. An unmet need in the biotechnology landscape: mapping the activity of kinase enzymes.

OPERATIONS



CLINICAL OPERATIONS

Nina Pitts, Director of Clinical Operations



Nina Pitts, director of Clinical Operations, believes the next era of the department will be one of growth. Pitts sees the department furthering its journey in care coordination, with the addition and development of nurse coordinators who can help patients navigate across their cancer care at UCSF as well as the addition of new Advance Practice

Providers (APPs). The administrative access team, which includes scheduling, front desk and authorization team members, will continue to strive for the most streamlined, patient centered approach to scheduling. The Radiation Therapy, Physics, Dosimetry and Physician teams will partner together to create the highest quality of care as well as partnering to develop and add new services for our patients.

I'm so excited to see the department grow, both in size and depth. I think the team is poised to meet the challenges of an ever-changing environment and I am incredibly proud to see so much creativity and reliance in the team.

BUSINESS AND FINANCE PERSPECTIVE

Mounira Kenaani, MBA, Associate Chair, Finance and Administration



Reflecting on the last decade in the Department of Radiation Oncology during Dr. Catherine Park's tenure, Mounira Kenaani, Associate Chair, Finance and Administration, has witnessed its significant transition, growth, recruitment, and renewal. Early on, the department faced challenges such as frequent departures of clinical faculty, a limited number of research faculty, and constrained departmental resources. These challenges impacted both faculty recruitment, retention and the department's future trajectory.

Over the past 10 years, the department has stabilized and steadily grown its clinical, research and physics faculty and strengthened its financial position to support the department's short-term priorities and future growth.

By adopting year-over-year efficiencies, restructuring at-risk areas—including clinical trials, adopting shared staffing model—and making strategic investments, the department has significantly expanded its academic research grant portfolio. Notably, federal funding increased from \$775K in 2015 to \$11.1M in 2025, while overall research funding grew from \$2.8M in 2015 to an impressive \$17M in 2025.

A key focus of Mounira Kenaani's leadership has been creating financial sustainability to recruit and retain talented clinical and research faculty. By collaborating with the Health System, School of Medicine and other colleagues, the department successfully revamped the clinical funding model for clinical and physics faculty and retained top tier graduating research residents. This transformation has positioned the department to continue advancing its missions in clinical care, education, and research.

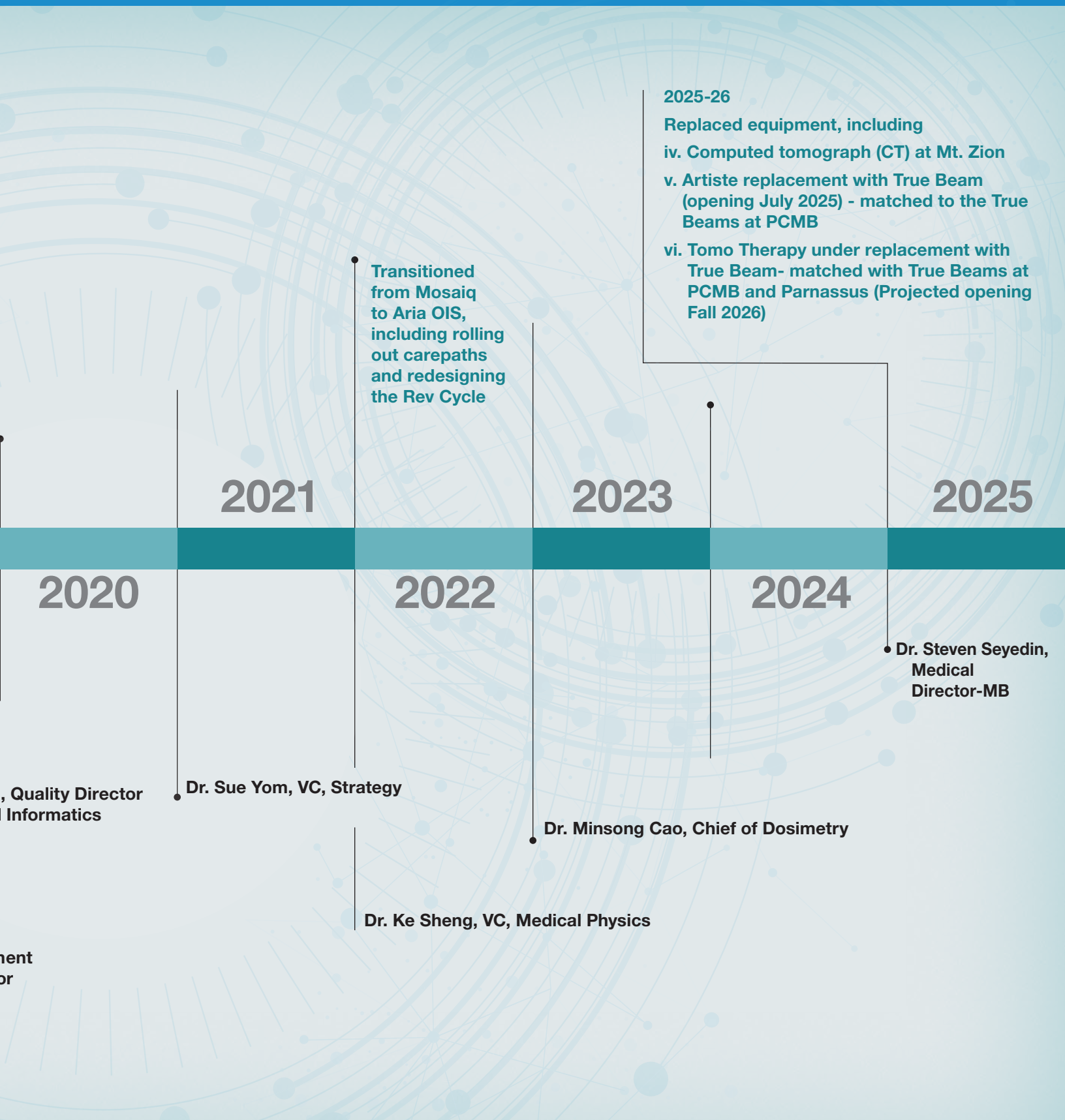
The work I do is rooted in advancing and supporting the department's core missions: clinical care, education, and research. My goal is to remove bureaucratic barriers so clinicians can dedicate their energy to patient care. Persistent challenges such as inefficiencies in clinic structures, lack of support, and non-competitive compensation remain a focus for improvement. By addressing these issues and identifying innovative solutions, we aim to foster a supportive environment for faculty, ultimately enhancing patient care and outcomes.

Operations and Finance

Highlights, Milestones and Successes

Milestones







UCSF Precision Cancer Medicine Building
1825 Fourth St., First Floor, Room L1101 San Francisco, CA 94158

UCSF Department of Radiation Oncology
505 Parnassus Ave

UCSF Radiation Oncology at Mount Zion
1600 Divisadero St Basement Level

<https://radonc.ucsf.edu>