

**UT Southwestern**

Harold C. Simmons  
Comprehensive Cancer Center



Department of Radiation Oncology

# UT Southwestern Department of Radiation Oncology **At a Glance**



# Thank you for your visit to our department.

Spanning over 130,000 square feet, the Department of Radiation Oncology at UT Southwestern Medical Center is the largest individual facility of its kind in North Texas. We are the only National Cancer Institute-designated Comprehensive Cancer Center in North Texas and are one of only 56 NCI-designated comprehensive care centers in the nation. As such, we hold ourselves to the highest standards and are recognized for excellence in clinical care, scientific research, and educational programs.

A unique aspect of our clinic is that each major disease site has its own dedicated team of doctors, advanced practice providers, physicists, and residents, along with clinical staff and researchers, which allows our specialists to bring familiarity and expertise to each patient encounter. Our disease-oriented teams include **breast, central nervous system, gastrointestinal, genitourinary, gynecological, head and neck, lung, lymphoma, melanoma and sarcoma, and pediatrics.**

## OUR MISSION:

- *To deliver a radiation oncology care plan individualized to each patient's specific cancer and personal needs*
- *To discover and improve understanding, foster collaboration, and ultimately contribute to improving personalized clinical care*
- *To devise educational programs that fit the individual needs of the learner and develop professionals who see each patient as a unique person*

## MEDICAL PHYSICS & ENGINEERING

The Division of Medical Physics & Engineering has three primary areas of focus: clinical service, research and development, and education. Our internationally recognized physicists have a broad range of research interests, including:

- Cloud- and GPU-based high-performance computing in medical physics and imaging
- 3D/4D and low-dose and dynamic cone-beam computed tomography
- Tumor-tracking and motion compensation in real time
- Artificial intelligence research

## MOLECULAR RADIATION BIOLOGY

The Section of Molecular Radiation Biology (MRB) has a steadfast mission: to execute a multidisciplinary program of research focused on understanding the molecular, cellular, and organismal responses to ionizing radiation exposure for the betterment of humankind and to educate and train scientists and clinicians in the disciplines of both radiation and cancer biology. Main research areas include:

- Radiation resistance and radiation sensitization
- DNA double-strand break repair
- Prognostic markers for therapeutic outcomes
- Metabolism
- Combining immune therapy with radiation for cancer therapy

# Clinical Highlights

The Department of Radiation Oncology has Top 25 national recognition from *U.S. News & World Report*, placing us among the country’s leading cancer treatment facilities. Each day, we treat approximately 200 patients and all stages of cancer.

**83**  
Faculty

**27**  
Clinical

**42**  
Physics

**14**  
MRB

## TREATMENTS

**304**  
HDR fractions delivered for FY23

**5,171**  
SBRT/SAbR treatments for FY23

**1,097**  
Gamma Knife treatments for FY23

**2,447**  
Adaptive treatments using Ethos for FY23

**1,876**  
Adaptive treatments using Unity for FY23

**13**  
External beam fractions on average per patient for FY23 (*national average is 28*)

## TECHNOLOGY

**18**  
Treatment machines

**4**  
Simulation machines

- Two Varian TrueBeams
- Two Varian VitalBeams
- Two Elekta Versa HDs
- Two Varian Ethos
- Two Varian Halcyon
- Accuray CyberKnife M6
- Two Elekta Gamma Knife Icons
- Xcision GammaPod
- Two Elekta Unity MR linacs
- RefleXion PET linac
- Xstrahl superficial unit
- Elekta Flexitron HDR afterloader
- Varian VariSource HDR brachytherapy suite
- Philips 1.5 Ingenia Ambition MR simulator
- Two Philips 16-slice Brilliance 4D CT simulators
- Nine Vision RT systems
- Varian Eclipse
- Elekta Monaco
- Eye plaque brachytherapy
- GammaTile (brain)
- Intravascular brachytherapy

# Education and Research Highlights

Our goal is to provide the best and most comprehensive clinical training to develop the next generation of medical practitioners and scientists. We also recognize the critical need for research — both basic and clinical — to advance our field and oncology in general. By combining superior patient care with innovative research in medical physics and molecular radiation biology, our department is committed to being at the forefront of cancer care. The size and continual growth of our department gives residents the opportunity to learn from a diverse patient population, participate in clinical innovation projects, and gain experience using cutting-edge technology.

## EDUCATION

**14 | 1**

Medical residents in training | Clinical adaptive fellow

**40**

Medical resident alumni

**8**

Medical physics residents in training

**35**

Medical physics resident alumni

## CLINICAL TRIALS

**1 of 32**

U.S. cancer research centers to be designated by the NCI as a National Clinical Trials Network Lead Academic Participating Site

**30**

Clinical trials actively accruing

**39**

Clinical trials in follow-up

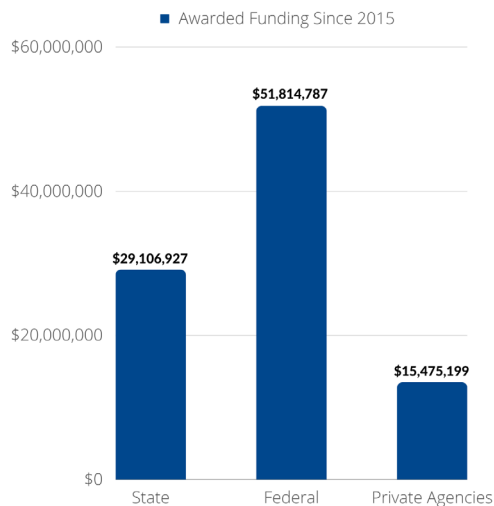
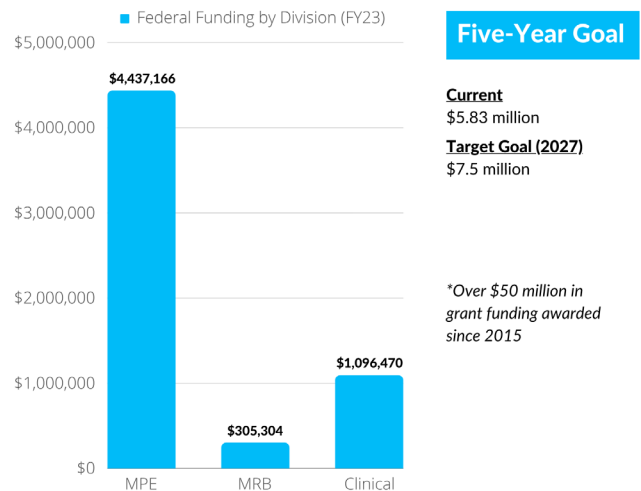
**120+**

Patients enrolled in therapeutic trials in FY23

**270+**

Clinical trials activated since 2004

## RESEARCH FUNDING





# PATIENT & FAMILY ADVISORY COUNCIL

The mission of the Department of Radiation Oncology's Patient & Family Advisory Council (PFAC) is to help ensure the highest level of patient care possible for our patients, to have a better understanding of the true patient experience, and to continue building a culture within the practice where every decision is made in the best interest of our patients and their families. By partnering together, we can turn our shared experiences into organizational initiatives for the betterment of our patients. The role of PFAC members includes:

- Identifying gaps in the patient experience
- Supporting patients and their families in becoming informed advocates for their care
- Initiating ideas for policies, programs, projects, and services within the patient care environment
- Providing ongoing opportunities to hear the voices, experiences, and perspectives of patients and their families
- Reviewing education materials, including website and acute care clinic marketing materials

In 2023, recommendations from the PFAC also included art curation and workflows within the Radiation Oncology treatment center. Patients provided insight into their experience with a real-time location system that they would use for improved quality and safety.

Members of the PFAC are former UT Southwestern Radiation Oncology patients who are one year post-treatment, caregivers, or family members. The members commit to a two-year term and attend quarterly meetings held in-person in one of the clinic's conference rooms.

***For more information, visit our website by scanning the QR code:***





# The Future of Radiation Oncology

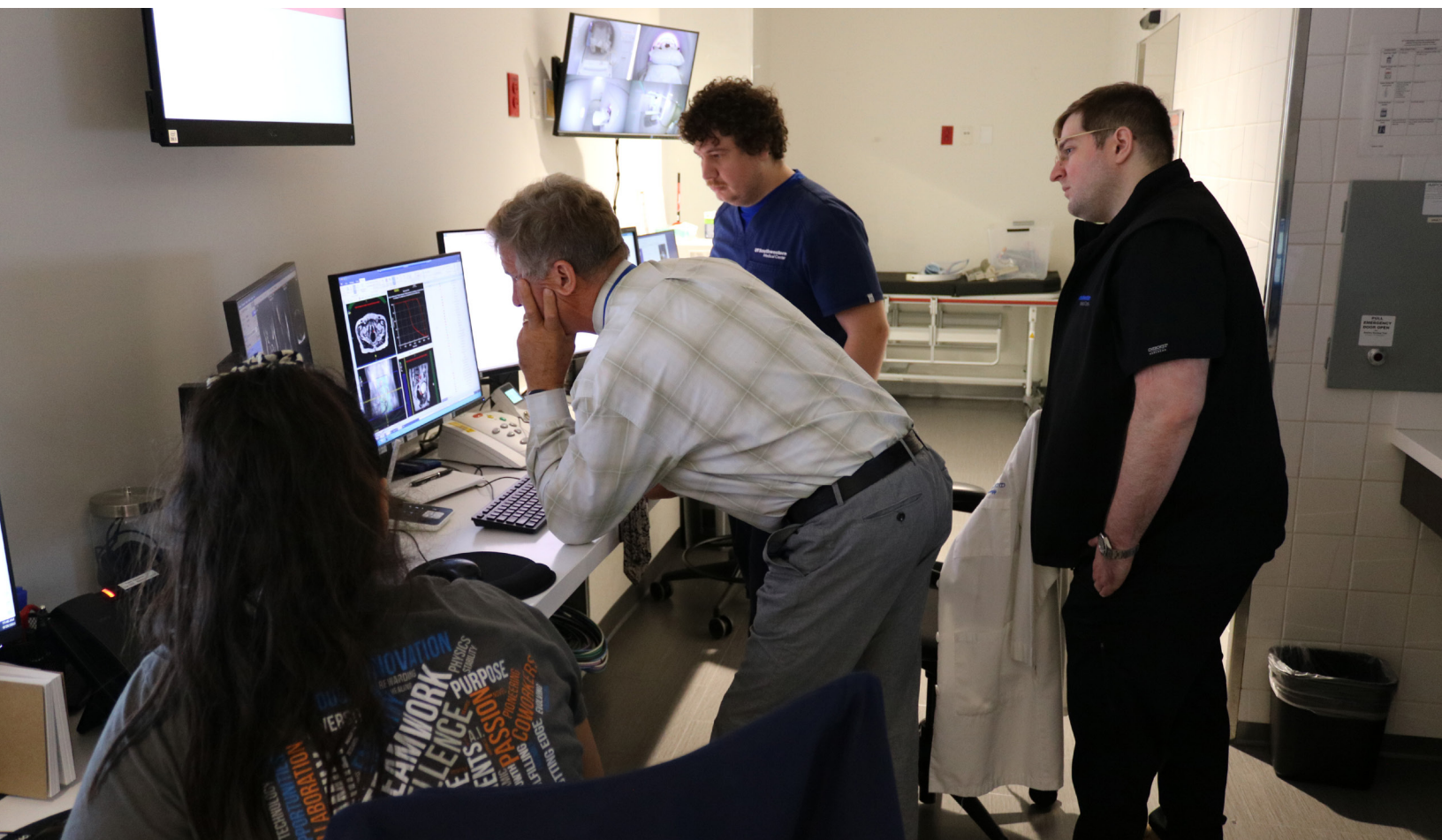
## ADAPTIVE THERAPY

The impact of adaptive therapy and personalized ultrafractionated stereotactic adaptive radiotherapy (PULSAR®) will depend on time more than any other variable. Basic requirements include ongoing functional information over time through repeated biopsies or from functional imaging, and time for meaningful biology to occur over weeks and months rather than hours or days. We can learn about a patient's biology through a number of different avenues. Biopsies have been the key to personalization — most biomarkers are derived from biopsies. We also know that imaging is significant in the future of personalization, specifically functional imaging.

Additionally, with our approach to tissue collection and analysis, based on a directive derived from functional biology, the hope is that someday each pulse will be a

different dose and more effective on the patient. For the next few years, going from a class therapy to a personalized therapy will cause angst, especially with each pulse being a different dose. To aid in this, initially we plan to collect patient-derived biomarkers and patient-specific features, store them in a data lake, collect outcomes data, and then model them retrospectively. Novel preclinical reinforcement learning through Sequential Multiple Assignment Randomized Trials (SMARTs) will be highly beneficial as well.

There is far more potential with adaptive therapy than we ever considered when we first went down this path. And that gives us plenty to improve on over the many exciting years to come.



### ARTIFICIAL INTELLIGENCE

Databases have been created to store vital information about how a patient with a certain diagnosis is or isn't progressing. We aim to learn along the way how fast and how much treatments change and whether or not we should consider alternatives. To that end, we expect artificial intelligence (AI) to have a big role. Not only will AI help us mine information from the patient through biopsies, bloodwork, and imaging — and analyze it to a form that can be more easily understood — but it will also help us understand if a patient is trending toward success or a problem if we do not change their course of treatment.

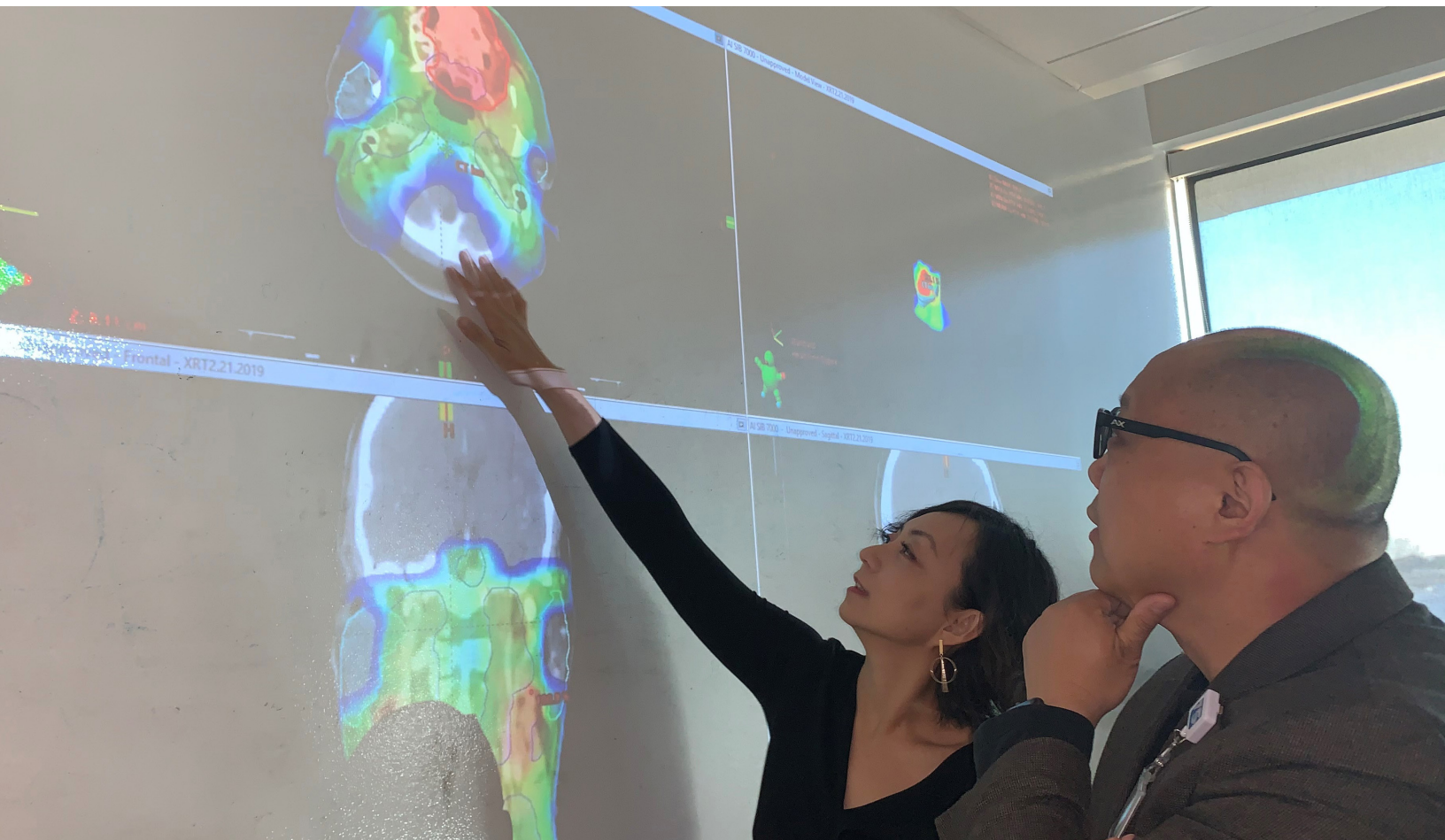
### GRANT-FUNDED PRECLINICAL FACILITY

We are currently in the construction phase for the grant-funded Moncrief preclinical facility, which is being modified to accommodate research labs,

animal-handling facilities, research imaging, and research image-guided radiotherapy linacs. Our vision is to offer a state-of-the-art facility for collaborative SMART trials through a partnership with outside institutions and other departments at UT Southwestern. Project completion is estimated for FY24.

### REGIONAL EXPANSION

UT Southwestern currently has facilities in recently, far south Dallas at RedBird, Frisco, Richardson/Plano, Park Cities, Fort Worth, and Las Colinas. Radiation Oncology services hopes to join in the near future, and we are currently in the proposal phase to launch those efforts in Fort Worth. We hope to replicate the same level of care offered at our main campus for the Fort Worth population, expanding patient access and supporting the continued growth of the area.





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UT Southwestern is an Affirmative Action/Equal Opportunity Employer. Women, minorities, veterans, and individuals with disabilities are encouraged to apply.

UT Southwestern is a diverse family, including many cultures and perspectives, which strengthens our ability to reach our full human potential. We celebrate individuality as we deliver excellence in health care, education, and research.

***Location:***

2280 Inwood Road  
Dallas, Texas 75390

***For more information, visit our websites:***

**Education:** [utsouthwestern.edu/radonc](https://utsouthwestern.edu/radonc)

**Patient Information:** [utswmed.org/rad-onc](https://utswmed.org/rad-onc)

