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 for radiation oncology in North Texas. We are the only National Cancer Institute-designated Comprehensive Cancer Center in North Texas and one of only 52 NCI-designated comprehensive care centers in the nation. As such, we hold ourselves to the highest of 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, APPs, 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 will create professionals who see each patient as a unique person

MEDICAL PHYSICS & ENGINEERING

The Division of Medical Physics and 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 Molecular Radiation Biology (MRB) section 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 with all stages of cancer.

79
Faculty

25
Clinical

36
Physics

18
MRB

280
HDR fractions delivered for FY22

1,024
Gamma Knife treatments for FY22

1,784
Adaptive treatments using Unity since inception in September 2021 (*through October 2022*)

4,722
SBRT/SAbR treatments for FY22

2,000
Adaptive treatments using Ethos since inception in June 2021 (*through October 2022*)

13
External beam fractions on average per patient for FY22 (*national average is 28*)

18
Treatment 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-linac
- RefleXion PET linac
- Xstrahl superficial unit
- Operating room Varian VariSource iX HDR afterloader
- Varian VariSource HDR brachytherapy suite
- Philips 1.5 Ingenia Ambition MR simulator
- Two Philips 16-slice Brilliance 4D CT simulators
- Six Vision RT systems
- Varian Eclipse
- Elekta Monaco

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-linac
• RefleXion PET linac
• Xstrahl superficial unit
• Operating room Varian VariSource iX HDR afterloader
• Varian VariSource HDR brachytherapy suite
• Philips 1.5 Ingenia Ambition MR simulator
• Two Philips 16-slice Brilliance 4D CT simulators
• Six Vision RT systems
• Varian Eclipse
• Elekta Monaco
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 & Research Highlights**

**EDUCATION**

14
Medical residents in training

36
Medical resident alumni

8
Medical physics residents in training

31
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

51
Clinical trials actively accruing

49
Clinical trials in follow-up

174
Patients enrolled in FY22

270
Clinical trials activated since 2004

**RESEARCH FUNDING**

- **Federal Funding by Division**
- **5-Year Goal**
  - **2022**
    - $5 million
  - **Current**
    - $5.2 million
  - **2027**
    - $7.5 million

*Over $65 million in grant funding awarded since 2015*
In the Department of Radiation Oncology we are committed to fostering a sense of belonging among team members so they are able to proudly bring their whole selves to work without having to sacrifice meaningful aspects of their identity. Through these unique and valuable life experiences, we aim to provide culturally competent care to a diverse patient population, while striving to optimize diversity, equity, and inclusion amongst our residents, staff, and faculty.

In January 2022, Asal Rahimi, M.D., M.S., Associate Professor and Chief of Breast Radiation Oncology Service, was elected as the department’s Associate Vice Chair of Diversity, Equity, and Inclusion. Dr. Rahimi formed a committee within the department that includes Chika Nwachukwu, M.D., Ph.D., Assistant Professor and part of both our breast and gynecologic teams, and Nina Sanford, M.D., Assistant Professor and Chief of Gastrointestinal Radiation Oncology Service, as well as 25 radiation oncology staff members. The team’s focus is to develop competencies around diversity, equity, and inclusion, which include professional development, recruitment efforts, and other engagement opportunities.
The Future of Radiation Oncology

ADAPTIVE THERAPY
The impact of adaptive therapy and Personalized Ultra-Fractionated Stereotactic Adaptive Radiotherapy (PULSAR™) will depend on time more than any other variable. Basic requirements include ongoing functional information over time through repeated biopsy or from functional imaging and time for meaningful biology to occur 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 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 next many exciting years.
ARTIFICIAL INTELLIGENCE
Databases have been created in which we will be able 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, blood work, 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 on a trend to success or a problem if we do not change their course of treatment.

GRANT-FUNDED PRECLINICAL FACILITY
We are currently in the design 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. Partnering with outside institutions and other departments at UT Southwestern, our vision is to offer a state-of-the-art facility for collaborative SMART trials. Project completion is estimated for FY24.

REGIONAL EXPANSION
UT Southwestern currently has facilities located in Frisco, Richardson/Plano, Park Cities, Fort Worth, Las Colinas, and, most recently, RedBird in Dallas. Radiation oncology services hope 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.
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
Patient Information: utswmed.org/rad-onc