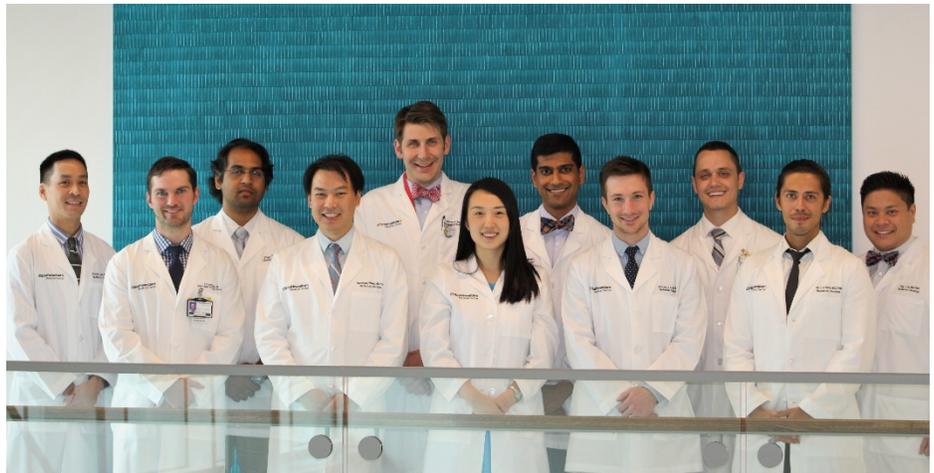


RADIATION ONCOLOGY MEDICAL RESIDENT PROGRAM



UTSouthwestern
Medical Center

2017

Residency Program Brochure

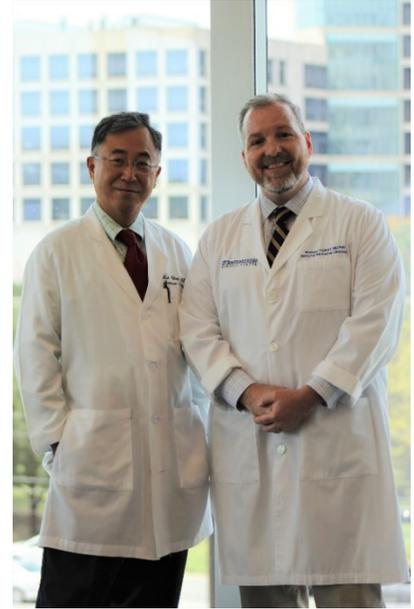
Radiation Oncology Medical Resident Program

MESSAGE FROM THE CHAIRMAN AND PROGRAM DIRECTOR

The Department of Radiation Oncology at UT Southwestern is a unique setting for residents to gain expertise in radiation oncology at a leading NCI-designated comprehensive cancer center and academic research institution. Advanced training in radiation oncology and related disciplines underlies our commitments to personalized patient care and research.

Throughout the four-year program, our residents work with leading experts—not only in radiation oncology, but also in molecular radiation biology and radiation physics. Our trainees have access to some of the most advanced patient care and research facilities in the world. Our growing program, which now consists of 14 residents, attracts top-achieving applicants who share our desire to learn, innovate, and transform the field of radiation oncology.

Our full range of technologies provides an opportunity unlike any other for trainees to become adept with treatments ranging from radiosurgery to sophisticated image-guided therapies and intraoperative brachytherapy. Our new facility, which opened in April of 2017, creates a unique environment where high-tech innovations are integrated into patient care.



Hak Choy, M.D., Chairman; Michael Folkert, M.D., Ph.D., Assistant Professor and Program Director

THE DEPARTMENT OF RADIATION ONCOLOGY

The Department of Radiation Oncology at UT Southwestern Medical Center is an integral part of the National Cancer Institute-designated Harold C. Simmons Comprehensive Cancer Center. With 20 radiation oncologists, the department treats an average of 200 patients each day at its two main clinics and dedicated radiosurgery suite—all on the university campus.

Our new three-story facility houses seven treatment bunkers containing some of the world's most advanced radiotherapy tools, as well as novel technology, such as real-time electronic displays, aimed at enhancing a personalized patient experience. The department's faculty



includes recognized leaders in stereotactic radiosurgery and combined chemoradiation with unique expertise in lung, head and neck, genitourinary, liver, pediatric, central nervous system, and other major cancers. In addition, the department's divisions of Molecular Radiation Biology and Medical Physics and Engineering provide highly interactive opportunities to introduce unique new technologies and cutting-edge translational research focused on improving cancer care.

UT SOUTHWESTERN

UT Southwestern, one of the premier medical centers in the nation, integrates pioneering scientific research with exceptional multidisciplinary clinical care and education on a unique medical school campus dedicated entirely to biomedical care and research. The institution's faculty has many distinguished members, including six who have been awarded Nobel Prizes since 1985, 22 members of the National Academy of Sciences—one of the highest honors attainable by an American scientist—and 18 members of the National Academy of Medicine.



Numbering more than 3,000, the UT Southwestern faculty are responsible for groundbreaking medical advances and are committed to translating basic science-driven research quickly into new clinical treatments. UT Southwestern physicians provide medical care for over 5,000 newly diagnosed cancer patients each year.

RESIDENCY EXPERIENCE

DIVERSE PATIENT POPULATION

UT Southwestern is a partner with the 460-bed William P. Clements Jr. University Hospital; the new, unique Parkland Memorial Hospital, a public hospital serving residents of Dallas County; and Children's Medical Center of Dallas—all located on UT Southwestern's large biomedical university campus. As a result, our physicians and residents see an amazingly diverse patient population, with a wide variety of ethnic backgrounds, health problems, and rare disease presentations that are seldom seen at smaller institutions. Residents in our program are exposed to care for a broad range of malignant and benign diseases, and become familiar with radiation treatments ranging from the common to the rare, complicated advanced-stage disease presentations.



COMPREHENSIVE TECHNOLOGY

Few centers offer the diversity of radiation treatment technologies that marks UT Southwestern. Our advanced tools and treatments include:

Therapeutic Systems

- Megavoltage Range Linear Accelerators
 - Two Varian TrueBeams™
 - Two Varian VitalBeams™
 - Varian Trilogy®
 - Two Varian 2100Cs
 - Two Elekta Versa HDs™
 - Elekta Agility™
 - Accuray CyberKnife® M6™
- Elekta Gamma Knife® Icon™
- Xstrahl superficial unit (orthovoltage/superficial X-rays)
- Two Varian VariSource™ iX HDR brachytherapy afterloaders

Motion Management Systems

- Three Vision RT systems
- Two ABC systems



Robert Timmerman, M.D., Professor and Vice Chair, and Faith Zhang, M.D., Ph.D., PGY2 resident at CyberKnife®

Treatment Planning Systems

- Varian Eclipse™
- Accuray Precision™
- Elekta GammaPlan®
- Varian VariSeed™

Imaging Systems

- Two Philips 16-slice Brilliance large-bore 4-D CT simulators
- Brainlab Airo® compact CT-simulator on wheels
- GE mobile C-arm
- Philips mobile X-ray system
- SonoSite ultrasound system
- GE ultrasound system

Brachytherapy Techniques

- Plaque brachytherapy for intraocular tumors
- Intraoperative radiation therapy
- Endoluminal brachytherapy for esophagus, lung, and rectum
- Interstitial brachytherapy for prostate, cervical cancer, brain, and liver
- Endocavitary treatment for gynecologic Malignancies

RESEARCH

As a world-class research center, UT Southwestern places a strong emphasis on scholarly research as an important part of the residency experience. Residents are free to pursue scientific investigation anywhere within the institute and are mentored by leading scientists. Residents spend up to a year on research, which can involve basic or translational laboratory-based science, physics, or clinical research or professional training, and often receive additional departmental support as needed. We also support the 18-month Holman Research Pathway for qualified applicants.

Our program is very active in clinical research—enrolling approximately 300 patients in therapeutic trials annually—with innovative departmental and institutional Cancer Center trials as well as active participation and leadership in NRG/RTOG, Alliance, GOG, and other cooperative groups.



Dat Vo, M.D., Ph.D., PGY4 resident and Dan Ishihara, M.D., Ph.D., PGY5 resident

There are currently 27 active investigator-initiated trials managed within Radiation Oncology, many of which have been developed with resident involvement. Five of these are large multi-institutional trials in which UT Southwestern Radiation Oncology is the lead PI and center.

Molecular Radiation Biology

The Division of Molecular Radiation Biology is a powerhouse of scientific research related specifically to understanding the effects of radiation from the molecular to organismal level, research to better discern the consequences of radiation exposure, develop new targets and agents for cancer therapy, and reduce the deleterious effects of radiation exposure. This division, with 23 faculty members and 13 postdoctoral researchers, is one of the largest of its kind in the country, organized around 14 funded laboratories. Investigators are funded by the National Cancer Institute, the Department of Defense, NASA, and the Cancer Prevention and Research Institute of Texas, as well as public and private companies and endowments.

The laboratory directors and key areas of focus include:

- Todd Aguilera, M.D., Ph.D., cancer immunology and immune privilege in the tumor microenvironment
- Prasanna Alluri, M.D., Ph.D., mechanisms of treatment resistance in breast cancer
- Asaithamby Aroumougame, Ph.D., replication stress, radiation-mediated DNA damage response signaling
- Sandeep Burma, Ph.D., gliomagenesis and glioblastoma radiation resistance mechanisms
- Benjamin Chen, Ph.D., DNA-PKcs in DNA damage repair and cellular signaling
- David Chen, Ph.D., DNA-PKcs in double-strand break repair and DNA repair pathway choice
- Anthony Davis, Ph.D., aberrant DNA repair and signaling in tumorigenesis
- Raquibul Hannan, M.D., Ph.D., immunotherapy and mechanisms of stereotactic body radiation therapy abscopal effect
- Puneeth Iyengar, M.D., Ph.D., cancer cachexia and immune cachexia regulation
- Aaron Laine, M.D., immune cachexia regulation and cancer therapeutic resistance
- Guo-Min Li, Ph.D., mechanism of mismatch repair in cancer susceptibility and therapy
- Debabrata Saha, Ph.D., tumor modeling for stereotactic ablative radiotherapy and the role of DAB2IP in prostate cancer
- Michael Story, Ph.D., genomic response to HZE radiation exposure and radiation response modifiers

- Kenneth Westover, M.D., Ph.D., structure-guided drug design of small molecule cancer therapeutics

Medical Physics and Engineering

The Division of Medical Physics and Engineering provides comprehensive, innovative clinical physics and is a major domain of research with 27 medical physics faculty, 10 medical dosimetrists, 11 medical physics residents, 10 software developers and IT personnel, as well as physics residents and postdoctoral fellows, graduate students, and visiting scholars. Our physicists work closely with various colleagues to solve critical clinical problems by developing novel techniques and translating them into clinical practice.



Approximately half of the physics and engineering faculty are focused primarily on research and are well-funded by the American Cancer Society, Cancer Prevention & Research Institute of Texas, Radiological Society of North America, and the National Institutes of Health, in addition to research grants from charitable foundations and industry. The extramural physics research funding totals almost \$15 million. All research efforts are supported by dedicated administrative staff. Current research projects include:

- Artificial intelligence and deep learning in medicine—specifically, radiation oncology and links to related fields of cancer care and research
- GPU- and cloud-based automatic treatment planning
- Adaptive re-planning
- Normal tissue toxicity
- GPU-based Monte Carlo simulation packages
- Low-dose and 4-D cone-beam CT reconstruction

CURRICULUM

The UT Southwestern Radiation Oncology Residency provides a comprehensive clinical, physics, and radiation biology curriculum that meets all requirements of the Accreditation Council for Graduate Medical Education. The clinical curriculum is arranged in site-specific blocks, with lectures provided by radiation oncology, radiology, surgery, and medical oncology faculty, and resident-led case conferences. Clinical rotations are generally three months in length, although during the PGY5 year residents may choose to split rotations in order to refine experience in particular disease subsites. Residents also gain experience in inpatient/palliative management of cancer patients throughout their residency. A wide range of multidisciplinary disease- and organ-specific tumor boards provide exposure to medical and pediatric oncology, pathology, surgery, and radiology principles in the management of neoplastic diseases.

Achievement

UT Southwestern residents have an outstanding record of research and professional achievement. As an example, resident achievement over the last three years have included:

- American Medical Association Research Symposium: first-place oral presentation for resident/fellow section
 - James M. Moorefield, MD, Economics Fellowship, sponsored by the ACR Economics & Health Policy Department of the American College of Radiology
 - Multiple platforms and poster presentations at annual ASTRO meetings
-

- More than 30 peer-reviewed publications authorized by residents out of 350+ departmental publications in the past three years

LIFE IN DALLAS

The city of Dallas is home to over 1.3 million people, the center of a dynamic greater Metroplex with over 7 million residents (adding more than 200 new residents on a daily basis)—making it the most populous urban area in the southern United States. Temperate weather for most of the year, a thriving economy combined with lower cost of living, and absence of a state income tax entice several major national and international companies to relocate to Dallas each year. The Metroplex is making it one of the top areas for growth nationally in industry headquarters.

Activities in Dallas include:

- Culture – The Dallas Museum of Art, Meyerson Symphony Hall, Winspear Opera House, Nasher Sculpture Center, and two major theatre centers are all part of the vibrant downtown Dallas Arts District, the largest in the U.S. The Dallas World Aquarium and the Perot Museum of Science and Technology are both nearby.
- Dining – Dallas residents love to eat out, supported by the diversity and ever-increasing number of restaurants in the city. Texas is famous for its steakhouses, barbecue, and Tex-Mex, but dining options in the Big D also include local farm-to-table bistros, seafood, and authentic international cuisines. The margarita was invented here, too—perfect for enjoying outside on a warm Dallas day.
- Sports – Home to the Dallas Cowboys, Dallas Mavericks, Texas Rangers, and Dallas Stars, as well as many popular college and high school teams, sports fans are sure to find a new team to cheer on.
- Outdoors – Located in East Dallas, White Rock Lake is host to the annual Dallas Marathon, the oldest marathon in Texas. A series of walk/bike trails connects many parts of the city. Both the Dallas Arboretum, which is home to Rory Meyers Children's Adventure Garden, and the Fort Worth Botanic Garden showcase the beauty of nature year-round and host outdoor concerts during the spring and summer months.
- Shopping – As the birthplace of the famous Neiman Marcus store, Dallas is renowned for its elegant, upscale shopping throughout the Metroplex.



CLINICAL FACULTY

Chairman

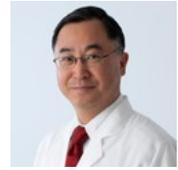
Hak Choy, M.D.

Professor

Holder of the Nancy B. and Jake L. Hamon Distinguished Chair in Therapeutic Oncology Research

Trained: Ohio State University Hospital; UT Health Science Center at San Antonio

Dr. Choy is known globally for his pioneering work, beginning in the early 1990s, showing the benefit of combining paclitaxel and other chemotherapeutic agents with radiation treatment for lung cancer. He continues to be active in designing national clinical trials that combine chemotherapy with the latest radiation treatment techniques and focuses on lung cancer in the clinic.



Vice Chairman

Robert Timmerman, M.D.

Professor and Medical Director

Holder of the Effie Marie Cain Distinguished Chair in Cancer Therapy Research

Trained: The Johns Hopkins Hospital

Dr. Timmerman specializes primarily in treating adults and children with brain tumors and vascular malformations. He has achieved worldwide attention for his work in translating the specialized treatment techniques developed for brain tumors into the treatment of cancer sites in the body. This technique, known as stereotactic ablative radiotherapy or stereotactic body radiation therapy, is often in the setting of hypofractionation.



Prasanna Alluri, M.D., Ph.D.

Assistant Professor

Trained: University of Minnesota

Dr. Alluri is a physician-scientist working at the interface of clinical breast oncology and translational breast cancer research. His laboratory studies molecular mechanisms underlying treatment resistance in breast cancer with the goal of developing targeted therapies to overcome such resistance.



Todd Aguilera, M.D., Ph.D.

Assistant Professor

Trained: UC San Diego School of Medicine

Dr. Aguilera is a physician-scientist trained as a radiation oncologist with expertise in molecular engineering, molecular imaging, tumor microenvironment, and tumor immunology. His lab is studying factors in the tumor microenvironment that promote immunologic tolerance and developing therapeutic approaches to improve immunotherapy responses in solid tumors.



Kevin Albuquerque, M.D.

Professor

Trained: University Hospital of Brooklyn

Dr. Albuquerque focuses on the treatment of gynecologic cancers and melanoma. He is an expert in the use of brachytherapy for the management of these malignancies.



Tu Dan, M.D.

Clinical Instructor

Trained: Sidney Kimmel Medical College at Thomas Jefferson University

Dr. Dan has a primary focus on adult and pediatric central nervous system diseases. He devotes a majority of his professional time to the laboratory study of radiation resistance and strategies to improve the efficacy of radiation.



Neil Desai, M.D.

Assistant Professor

Awarded the Dedman Family Scholar in Clinical Care

Trained: Memorial Sloan Kettering Cancer Center

Dr. Desai focuses on the treatment of genitourinary disease and lymphoma, and is an expert in the use of brachytherapy for prostate cancer.



Michael Folkert, M.D., Ph.D.

Assistant Professor and Residency Program Director

Trained: Memorial Sloan Kettering Cancer Center

Dr. Folkert specializes in treating many disease sites with brachytherapy and coordinates the intraoperative radiation therapy program. His clinical sites also include gastrointestinal and pediatric cancers, sarcoma, eye, and spinal tumors.



Raquibul Hannan, M.D., Ph.D.

Assistant Professor

Trained: Albert Einstein College of Medicine

Dr. Hannan, leader of the genitourinary radiation oncology team and a co-leader of the Cancer Center's kidney cancer program, has a clinical focus on the treatment of genitourinary malignancies—specifically in the application of SBRT for tumors in both the primary and metastatic settings. He leads a translational lab that examines the immune and inflammatory responses induced by tumor irradiation, which he utilizes in the clinical setting by strategically combining radiation therapy with immunotherapy to induce abscopal effects.



Puneeth Iyengar, M.D., Ph.D.

Assistant Professor

Trained: UT MD Anderson Cancer Center

Dr. Iyengar's clinical emphasis is on the treatment of lung cancer. His laboratory research focuses on the complex crosstalk between inflammatory states, cachexia, and lung cancer progression and therapeutic resistance.



Nathan Kim, M.D.

Associate Professor

Trained: Vanderbilt University Medical Center

Dr. Kim is focused on treating breast cancer. His research interests include combined modality therapy for breast cancer and the mitigation of normal tissue injury from radiation therapy.



Radiation Oncology Medical Resident Program

Larry Kun, M.D., FASTRO

Professor

Trained: Penrose Cancer Hospital

Dr. Kun is the former Chair of Radiation Oncology and Radiological Sciences, and the former Clinical Director of St. Jude Children's Research Hospital. He is a world-renowned pediatric radiation oncologist, with particular expertise in pediatric brain tumors.



Aaron Laine, M.D., Ph.D.

Assistant Professor

Trained: UT Southwestern Medical Center

Dr. Laine focuses on the treatment of genitourinary cancer. As a medical scientist, he directs laboratory research exploring cachexia where he, along with other researchers, have successfully identified genomic and inflammatory alterations in cells that are linked to its cachexia development.



Lucien Nedzi, M.D.

Associate Professor

Trained: Harvard Medical School

Dr. Nedzi treats patients with central nervous system malignancies, both primary brain cancers and brain metastases.



Nhat-Long Pham, M.D., Ph.D.

Assistant Professor

Trained: University of California – San Diego

Dr. Pham treats patients with head and neck disease. His scientific interest focuses on designing and implementing innovative strategies to improve the efficacy of radiation therapy in conjunction with tumor immunotherapy.



Asal Rahimi, M.D.

Assistant Professor and Director of Clinical Research

Trained: University of Virginia

Dr. Rahimi's practice focuses on breast cancer and she is administratively responsible for the clinical research infrastructure, including oversight of more than 90 current clinical trials.



Jennifer Shah, M.D.

Assistant Professor

Trained: Stanford University

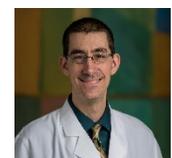
Dr. Shah focuses on the treatment of malignancies of the head and neck.



David Sher, M.D., MPH

Associate Professor

Trained: Harvard Radiation Oncology Program



Dr. Sher focuses on the treatment of head and neck cancer. His research interests include outcomes and comparative and cost-effectiveness analysis.

Ann Spangler, M.D.

Associate Professor

Trained: Shands Hospital at the University of Florida

Dr. Spangler has a primary focus on treating breast cancer. She can provide partial-breast irradiation with the CyberKnife, a noninvasive robotic radiosurgery system.

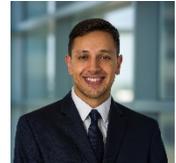


Zabi Wardak, M.D.

Assistant Professor

Trained: UT Southwestern Medical Center

Dr. Wardak's clinical focus is on adult and pediatric central nervous system neoplasms and vascular malformations.



Kenneth Westover, M.D., Ph.D.

Assistant Professor and Director of Clinical Innovation and Information Systems

Trained: Harvard Radiation Oncology Program

Dr. Westover is a practicing member of the thoracic oncology service, but also leads a research laboratory focusing on structural biology, enzymology, early stage drug development, and chemical biology. In his role of Director of Clinical Innovation and Information Systems, he brings together teams of technology developers and care providers to develop technology solutions that enhance patient care.



SCIENTIFIC DIVISIONS

Steve Jiang, Ph.D.

Professor and Vice Chair; Director, Division of Medical Physics and Engineering

Trained: Medical College of Ohio-Toledo

Dr. Jiang's research interests are graphics processing unit- and cloud-based automated treatment planning, online re-planning for adaptive radiotherapy, and artificial intelligence in medicine.



Michael Story, Ph.D.

Professor and Vice Chair; Director, Division of Molecular Radiation Biology

Trained: Colorado State University

Dr. Story's research interests include charged particle radiotherapy, intrinsic radiosensitivity, carcinogenic risk from charged particle exposures in space, and biomarkers of radiotherapeutic response in head and neck cancer.



For more information, please call Susan Brown, Residency Program Coordinator, at 214-645-8559 or visit us at www.utsouthwestern.edu/radonc.
