Resident Training Program
Washington University Medical Center is a 1700 bed complex that includes Barnes-Jewish Hospital (north and south campuses), St. Louis Children’s Hospital, Mallinckrodt Institute of Radiology, The Center for Advanced Medicine, the Alvin J. Siteman Cancer Center and Washington University School of Medicine. The Medical Center is across the street from beautiful Forest Park (site of the 1904 Olympic Games and World’s Fair) in the fashionable Central West End neighborhood of St. Louis.

The practice of Radiation Oncology will reach the highest quality when it is based on sound clinical skills, fundamental concepts of cancer biology and radiation physics, and a thorough knowledge of the principles of cancer pathology. Our residency program includes theoretical and practical work in each of these areas. To stress the multidisciplinary nature of cancer therapy, residents work closely with our staff, physicians in the Siteman Cancer Center and members of other departments within the Washington University School of Medicine, fostering an environment of understanding for the indications and limitations of each therapeutic modality or combination of modalities. The objective of the program is to train highly competent, strongly motivated and academically oriented radiation oncologists.
Eligibility
The residency program is open to United States citizens or foreign-born residents holding a valid visa for training or residence in the United States. Applicants must be graduates from an accredited medical school and must have passed FLEX or National Board examinations to become eligible for medical licensure in the State of Missouri. All foreign applicants with J-1 visas, except graduates of Canadian medical schools, must have passed the FMGEMS (formerly VQE) qualifying examination, have a valid ECFMG certificate and plan to return to academic programs in their countries.

Application
Applications for the clinical residency program are accepted through the Electronic Residency Application System (ERAS). Completed applications should be submitted by October 30. The review process begins in early November after the Dean’s letters are available. Candidates will be invited for interviews in late November or early December. The interviews take place in late December through January. We do participate in the National Residency Match Program (NRMP).

Postgraduate Year 1
The Department of Radiation Oncology residency program starts with the Postgraduate Year 2. Postgraduate Year 1, the internship year, must be completed in an ACGME accredited medicine, surgery, family practice, obstetrics/ gynecology, or transitional year internship.

Stephanie M. Perkins, MD
Residency Program Director

Postgraduate Year 2 (First Year)
In general, the first year of the residency program is devoted to learning clinical radiation oncology. Residents become familiar with patient evaluation, treatment planning and other clinical aspects of radiation therapy. Residents assume more responsibility as their fund of knowledge increases. Clinical rotations are designed in 8 week blocks with 1:1 resident to faculty coverage where the resident is responsible to a single attending faculty member concentrating on one or two disease sites. Residents are not expected to cross-cover each other during absences.
Postgraduate Years 3 and 4  
(Second and Third Year)
All residents are expected to complete 12 months of research, split into two 6 months blocks during their second and third years here. A program of laboratory or clinical research in cancer biology, physics or computer applications can be pursued depending on individual interests. This research time is conducted under the supervision of a medical school senior investigator after a review of the proposed project by the Residency Director, Chairman, and Program Research Coordinator. The Department’s cancer biology division has 27,000 square feet of lab space located a few blocks from the medical center within the Forest Park building. In addition, the Department has almost 10,000 square feet of space devoted to medical physics research. Alternatively, residents may pursue their research interests in any other department within the Medical School or pursue Master’s degrees at Washington University.

Holman Pathway
The Department strongly encourages individuals to consider residency training in the American Board of Radiology Holman Research Pathway that allows for 18 months of dedicated research times. The decision to pursue this research-oriented training will be made jointly by the resident and the Department during the first year of residency training.

Postgraduate Year 5  
(Fourth Year)
Residents continue with a final year of clinical service and assume greater responsibility for patient management and decision making.
Clinical Rotation

The majority of the resident’s time will be spent in the clinic taking care of patients. The resident will become well versed in all aspects of patient care from initial consultation and multidisciplinary decision making, through simulation and treatment planning, to weekly on treatment management, to short-term and long-term follow-up care. Therefore, experience in each of these areas is provided in the clinical rotations. Over the past three decades, Mallinckrodt Institute has helped to define the standard of care for clinical radiation therapy. This legacy continues in the newly constructed clinical facility housed within the lower level of the Center for Advanced Medicine, on the north end of the Medical Center.

Nearly 3,000 new patients are seen, and 45,000 external beam treatments are delivered annually in a single facility that covers 54,000 square feet and includes 9 treatment vaults, 6 linear accelerators, 2 CT simulators, 1 MRI simulator, and multiple suites for brachytherapy and hyperthermia.

The Department continues its role as a global leader in state of the art treatment. This department is home to the world’s first single room proton center, the world’s first MRI-guided clinical treatments, and the world’s first online adaptive treatments. MRI fusion and PET imaging are routinely used in treatment planning. Extensive experience with radiopharmaceuticals and high-dose rate brachytherapy is gained on the gynecology and gastrointestinal services.

There is an active prostate interstitial seed implant service. Additionally, HDR is often used to treat patients with breast, sarcoma, esophagus, and prostate tumors. There is a busy thyroid service, and residents become well trained in the use of radioactive iodine in treating this disease. The radiosurgery service continues to expand; over 250 patients are treated by Gamma Knife radiosurgery every year. Other modalities include total body irradiation and radioactive eye plaque irradiation for intraocular tumors. All patients from the adjoining St. Louis Children’s Hospital who require radiation therapy receive treatment within the Department, resulting in a busy pediatric service.
Lectures and Conferences
In addition to seeing and treating patients, residents participate in a wide range of educational lectures and conferences.

Cancer Biology
This lecture series deals with basic principles of cellular and radiation biology, cancer chemotherapy and immunology. The material is covered in two courses in the second half of the academic year. The relevance of these concepts to the clinical practice of radiation therapy is emphasized. PGY-2 and PGY-3 residents attend twice a week in the morning.

Radiation Physics
A lecture series is presented on the physics of radiation therapy and its application to clinical radiation therapy, dosimetry, treatment planning, brachytherapy, and radiation protection. This lecture series is offered each year in the fall semester. PGY-2 and PGY-4 residents attend twice a week in the morning.

Experimental Design and Statistics
A series of lectures is held in alternate years to familiarize the staff and residents with the basic principles of experimental design, data analysis, and statistical validity testing. Some lectures are devoted to describing the foundations of computer design, data processing, and application of this technology to radiation oncology’s clinical operation, patient information systems, data processing and analysis.

Intramural Conferences
Patient Management Conference
This faculty-led conference occurs on Monday, Tuesday and Wednesday over lunch provided by the department. One resident presents a case from their clinical rotation to the faculty and fellow residents. The discourse includes a review of work up, staging, prognostic factors and all treatment options based on the pertinent literature. While decision making and rationale are emphasized, detailed technical aspects of the radiotherapeutic management may also be reviewed.
Radiation Oncology

Academic Update

A formal didactic is delivered every Friday morning by a faculty member. Occasionally, visiting professors will give a talk during this time. This is a highly regarded series, often attended by community radiation oncologists from around the region.

Clinical Resident Education Course

Once a week on Thursday mornings, a lecture or tutorial is given by faculty members of surgical, radiation, or medical oncology. These sessions range from pure didactic lectures on a specific disease to interactive discussion of practical and technical issues encountered in patient management scenarios.

Current Case Review

Once a week on Tuesday mornings, the Department gathers for a critical review of patients currently under treatment. Residents briefly describe cases being treated on their clinical services. The treatment plan, including isodose distribution and dose-volume histograms are reviewed. Simulation films, localization imaging, and treatment rationale are all reviewed.

Journal Club

The monthly journal club meets informally over lunch to discuss 3 to 4 related current journal articles.

Morbidity and Mortality

A resident, guided by a faculty advisor, leads a discussion on the biological basis, predictive factors, and management of radiation induced late complications every quarter.

Physics and Treatment Planning

A resident, advised by a faculty medical physicist, covers important physics topics monthly. This year’s topics included proton therapy, intra-operative radiation, brachytherapy, and total body irradiation.

Conclusion

In summary, the broad range of clinical experience and the abundant research opportunities within one of the elite medical schools in the nation combine to create a superior radiation oncology residency at Washington University. The faculty and staff are proud of the Department’s heritage, look enthusiastically towards the future, and consider the training of highly skilled residents integral to the Department’s continued success.
Employer

As a resident in the Radiation Oncology Training Program, you will be an employee of Barnes-Jewish Hospital and will be expected to comply with all policies, rules, and regulations of the hospital including passing a drug and tobacco screen.

Libraries

Washington University’s Bernard Becker Medical Library is one of the oldest and largest medical libraries in the Midwest. Located on the medical campus, just east of Barnes-Jewish Hospital south, the eighth level medical library is easily accessible. The library houses 208,000 volumes, including 2,000 separate journal subscriptions.

Computer Services

PCs and software are available for residents’ use. The Bernard Becker Medical Library provides training for word processing, data analysis and collection.

Exercise Centers

On the medical school campus, the WellAware Center offers a complete exercise center for a small fee to faculty, staff, and students. An indoor track, rowing machines, stationary cycles, treadmills, free weights, Nautilus machines, and aerobic exercise classes are available.

Child Care

The hospital sponsored Child Development Center is open from 6 a.m. to 6 p.m. Monday through Friday, with extended evening care available until 8 p.m. Programs are available year round for infants through kindergarten age children. Summer camp is available for school age children.

Uniforms

Residents receive four white lab-coats each year.

Parking

Designated parking facilities are available in the immediate vicinity of the Medical Center at no charge, as provided by Barnes-Jewish Hospital.
**Diversity Programs**

Washington University School of Medicine strongly believes its continued success and preeminence depends on creating and maintaining a culturally competent and diverse academic workplace. In 1996, the Medical School demonstrated its commitment to cultural diversity by creating the Office of Diversity Programs. The current mission reflects the promotion of cultural diversity, not only within the student body, but also within the entire academic workforce, as a means of enhancing the environment at the School of Medicine.

Goals set forth by the Office of Diversity Programs reflects the Medical School’s efforts to promote an academic environment that extols personal differences and affirms the benefits of multiculturalism – an active process that stresses an understanding and acceptance of cultures, beliefs, and practices distinct from one’s own.

Washington University encourages and gives full consideration to all applicants for admission, financial aid, and employment. The University and Barnes-Jewish Hospital do not discriminate in access to, treatment, or employment in its programs and activities on the basis of race, color, age, religion, sex, sexual orientation, national origin, veteran status, or disability. Present Department of Defense policy governing ROTC and AFROTC programs discriminate on the basis of sexual orientation; such discrimination is inconsistent with Washington University's policy. Inquiries about compliance should be addressed to the University’s Vice Chancellor for Human Resources, Washington University, Campus Box 1184, One Brookings Drive, St. Louis, MO 63130-4899; 314-935-5949.
Living in St. Louis

Ranking sixth in the nation as headquarters for Fortune 500 companies, St. Louis is ranked by Fortune magazine as the nation’s third best place to live and work. St. Louis ranks second in Entrepreneur magazine’s listing of the top places in the United States for small businesses and made Inc. magazine’s top-ten list for areas for growing firms. Yet among major metropolitan areas, St. Louis has the fourth-lowest cost of living. The city offers various communities of single-family homes, apartments, lofts, and condominiums. Many parts of St. Louis reflect their immigrant backgrounds with Italian, German and Irish neighborhoods still prominent. A growing Asian population is present in the city’s south side along South Grand Avenue.

Urban renewal is evident downtown along the Washington Avenue loft district. Metrolink, St. Louis’ light rail system, has 37 stations servicing the metro St. Louis area, with service to Lambert- St. Louis International Airport. A Metrolink station is conveniently located on the Washington University Medical Center Campus.

If suburban living is your style, there are numerous communities within easy commuting distance of the Medical Center. There are 115 public school districts in the St. Louis region. The average ACT score for St. Louis area schools is 21.8, higher than the national average of 21.0. St. Louis boasts 12 universities and four-year colleges and eight two-year institutions as well as many professional schools.

Beyond the Gateway Arch

Performing Arts

The renowned Powell Symphony Hall is home to the Grammy Award-winning Saint Louis Symphony Orchestra which celebrated its 125th season in 2004. Hear a diverse range of musical artists in the acoustically perfect Sheldon Concert Hall. The rich St. Louis traditions of jazz, blues, and rock & roll are preserved in lounges, clubs and venues downtown and in the neighborhoods of midtown, Soulard and University City. Jazz lovers have a place all their own at Grand Center’s Jazz at the Bistro.

Built in 1927 as part of the William Fox Circuit of Theaters, the Fabulous Fox Theatre in St. Louis hosts the official touring companies and casts of broadway productions as well.
Living in St. Louis

as popular, well-known entertainers. Live theatre is available at the acclaimed Repertory Theatre of St. Louis and the 470-seat Grandel Theatre, home of the St. Louis Black Repertory Company. For live theatre in the open air, visit the nation’s oldest and largest outdoor theatre – the Municipal Opera of St. Louis in Forest Park.

Dance St. Louis is dedicated to bringing the entire spectrum of dance to the region. Touring productions can be seen at a variety of St. Louis theatres.

Visual Arts and Museums
There are many excellent museums and galleries in St. Louis, including the nationally acclaimed St. Louis Art Museum. If you prefer your art to be a bit irreverent, visit the whimsical City Museum.

Founded in 1866, the Missouri Historical Society sponsors the Missouri History Museum that provides information on the St. Louis region and its diverse community. The newly relocated Contemporary Art Museum St. Louis displays several exhibitions each year featuring local, national and international artists.

Children of all ages will enjoy the region’s many family oriented attractions. The Magic House – St. Louis Children’s Museum is the third most visited children’s museum in the country. The St. Louis Science Center is the eighth most visited science center in the world. And the renowned and still admission free St. Louis Zoo is rated the nation’s best by the Zagat Survey.

Dining
The city’s many distinct neighborhoods, immigrants, and innovative chefs combine to offer the entire culinary spectrum in settings ranging from formal elegance to side-walk cafés.

Spectator Sports
The Major League Baseball Cardinals, National Football League Rams, and National Hockey League Blues provide live sports entertainment all year. Each of their respective venues is located downtown and is easily accessed from metropolitan St. Louis by the Metrolink light rail system.
Additonal spectator sports include the St. Louis Steamers (Major Indoor Soccer League), horse racing at Fairmount Park, two minor league baseball teams, and Indy car, NASCAR, and NHRA drag racing at Gateway International Raceway.

**Other Attractions**

Covering 80 acres in the heart of St. Louis, the world-renowned Missouri Botanical Garden is a cultural institution, historic landmark, and research center. Outdoor enthusiasts will also enjoy a seemingly endless network of hiking and biking trails throughout the region.

While usually not thought of as traditional wine country, Eastern Missouri is home to many vineyards and wineries. Several of these are within a short drive from the St. Louis metropolitan area and can be a nice weekend diversion.

Often referred to as the crown-jewel of St. Louis, Forest Park is across the street from the medical center campus. The 1371-acre park (which is 60 percent larger than New York's Central Park) contains the St. Louis Zoo, the St. Louis Art Museum, the Missouri History Museum, the MUNY, the Science Center, the Jewel Box Flower conservatory, 2 golf courses, hand-ball courts, and an ice skating rink, 30 athletic fields, 20 lakes and ponds, and 7.5 miles of trails for walking and bicycling.

For additional information on St. Louis, visit these websites: St. Louis Convention & Visitors Commission or the St. Louis Regional Chamber and Growth Association.
## 2015 – 2016 Faculty

### Faculty

#### Clinical Section

- Dennis E. Hallahan, MD, Chairman
- Jeff M. Michalski, MD, MBA
- Perry W. Grigsby, MD, MBA
- Jeffrey D. Bradley, MD
- Christina I. Tsien, MD
- Hiram A. Gay, MD
- Parag J. Parikh, MD
- Cliff G. Robinson, MD
- Julie K. Schwarz, MD, PhD
- Wade L. Thorstad, MD
- Imran Zoberi, MD
- Qin Yang, MD, PhD
- Heping Yan, PhD
- Andrei Laszlo, PhD
- Dinesh Thotala, PhD
- Girdhar Sharma, PhD
- Hideyo Ugai, PhD
- Mackenzie A. Daly, MD
- Stephanie Markovina, MD, PhD
- John W. Matthews, DSc
- Susan Richardson, PhD
- Lakshmi Santanam, PhD
- William L. Straube, MS
- H. Omar Wooten, PhD
- Deshan Yang, PhD
- Anthony J. Apicelli, MD, PhD

### Physics Section

- Sasa Matic, PhD, Director
- Jose Garcia-Ramirez, MS
- Michael Altmann, PhD
- Yanle Hu, PhD
- Walter R. Bosch, DSc
- Robert E. Drzymala, PhD
- Jacqueline Esthappan, PhD
- S. Murty Goddu, PhD
- Olga Green, PhD
- Vivian Rodriguez, PhD
- Enrique Izaguirre, PhD
- Rojano Kashani, PhD
- Harold H. Li, PhD
- Hua Li, PhD
- Susan Richardson, PhD
- Lakshmi Santanam, PhD
- William L. Straube, MS
- H. Omar Wooten, PhD
- Deshan Yang, PhD
- Tianyu Zhao, PhD

### Radiation and Cancer Biology Division

- David Curiel, MD, PhD, Director
- Buck Rogers, PhD, Associate Director
- A. Kareem Azab, PhD
- Igor Dmitriev, PhD
- Andrei Laszlo, PhD
- Sergey Kaliberov, PhD
- Girdhar Sharma, PhD
- Dinesh Thotala, PhD
- Hideyo Ugai, PhD
- Xiaowei Wang, PhD
- Heping Yan, PhD
- Qin Yang, MD, PhD
- Jeff M. Michalski, MD, MBA
- Maria A. Thomas, MD, PhD
- Robert E. Drzymala, MD
- Harold H. Li, PhD
- Lakshmi Santanam, PhD
- William L. Straube, MS
- H. Omar Wooten, PhD
- Deshan Yang, PhD
- Anthony J. Apicelli, MD, PhD

DEPARTMENT OF RADIATION ONCOLOGY

Barnes-Jewish Hospital | Siteman Cancer Center
Washington University School of Medicine
2015 – 2016 Stipends

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There is a resident allotment of $3,500 per year.

Residents have 15 days of paid vacation per year and up to 10 paid meeting days per year for presentations.

Interdepartmental Conferences

Weekly Conferences
- Colorectal Surgical Case Management
- Radiation Oncology / GYN Tumor Conference
- Joint Radiation Oncology / ENT Conference
- Multidisciplinary Tumor Conference
- Breast Cancer Multidisciplinary Conference
- Pediatric Tumor Board
- Pediatric Neuro-Oncology Conference
- Thoracic Oncology Conference
- Neuro-Oncology / Gamma Knife Conference
- Skull Base Conference
- Pediatric Solid Tumor Conference
- Musculoskeletal Tumor Conference
- Lymphoma Conference

Monthly Conferences
- Marilyn Fixman Clinical Cancer Conference