Department of Radiation Oncology

The Department of Radiation Oncology (http://radonc.wustl.edu/) was created in 2001, after having been part of the Mallinckrodt Institute of Radiology for many decades. The department has a broad academic program that focuses on excellence in patient care and the development of new treatment paradigms; innovative research in each of our three divisions: Clinical, Medical Physics and Cancer Biology; and teaching graduate students, medical students, residents in both radiation oncology and medical physics, and allied health personnel.

The department is one of the largest, most academically balanced, and best equipped in the country, and it is responsible for all radiation therapy procedures at Washington University Medical Center and at Siteman Cancer Center facilities throughout the St. Louis regional area. Our faculty have gained international recognition for innovative technological advances in physics and treatment planning, biological research, computer applications and clinical investigation.

We have advanced treatment planning computer systems for 3D conformal and intensity-modulated radiation therapy as well as the latest Gamma Knife, the ICON unit. We have six linear accelerators with on-board CT imaging capability. The brachytherapy suite includes capabilities for high dose rate remote after-loading and for image-guided permanent prostate seed implants. Interstitial and external hyperthermia treatments are also available.

The Department of Radiation Oncology offers the following formal educational programs:

• Clinical Residency Training Program (4 years), ACGME-accredited; established 1971
• Medical Physics Residency Training Program (2 years), CAMPEP-accredited; established 1993
• Post-PhD Graduate Certificate in Medical Physics (1-2 years), CAMPEP-accredited; established 2017
• Master of Science (MS) in Medical Physics (2 years), CAMPEP-accredited; established 2020
• Doctor of Philosophy (PhD) in Medical Physics (2-5 years); established 2022

Website: http://radonc.wustl.edu

Faculty

Dennis Hallahan, MD (https://radonc.wustl.edu/people/dennis-hallahan/)
Department Head

Maria Thomas, MD (https://radonc.wustl.edu/people/maria-a-thomas-md-phd/)
Clerkship Director

Joanna Yang, MD (https://radonc.wustl.edu/people/joanna-yang/)
Clinical Residency Program Director

Michael Altman, PhD (https://radonc.wustl.edu/people/michael-altman-phd/)
Medical Physics Residency Program Director
Director of Education in Medical Physics

Visit our website for more information about our faculty (https://radonc.wustl.edu/faculty/) and their appointments.

A

Christopher Abraham, M.D.
Assistant Professor of Radiation Oncology (primary appointment)
Assistant Professor of Medicine
Bachelor of Science, Medical College of Georgia, 2005
Doctor of Medicine, Saint Louis University, 2006

Michael Bernard Altman, Ph.D.
Associate Professor of Radiation Oncology (primary appointment)
Doctor of Philosophy, University of Chicago, 2010

Anthony John Apicelli, Ph.D., M.D.
Assistant Professor of Radiation Oncology (primary appointment)
Bachelor of Science, Princeton University, 1999
Doctor of Philosophy, Washington University in St Louis, 2009
Doctor of Medicine, Washington University in St Louis, 2009

B

Shahed Nicolas Badiyan, M.D.
Associate Professor of Radiation Oncology (primary appointment)
Bachelor of Science, University of Texas Austin, 2005
Doctor of Medicine, University of Texas Austin, 2009

Brian Christopher Baumann, M.D.
Associate Professor of Radiation Oncology (primary appointment)
Bachelor of Arts, Princeton University, 2003
Doctor of Medicine, University of Pennsylvania, 2012

Carmen Renee Bergom, M.S., Ph.D., M.D.
Associate Professor of Radiation Oncology (primary appointment)
Bachelor of Science, Massachusetts Institute of Technology, 1998
Master of Science, University of Cambridge, 1999
Doctor of Philosophy, Medical College of Wisconsin, 2006
Doctor of Medicine, Medical College of Wisconsin, 2008

Walter R Bosch, M.S., D.Sc., B.E.E.
Professor of Radiation Oncology (primary appointment)
Bachelor of Electrical Engineering, Washington University in St Louis, 1980
Master of Science, Washington University in St Louis, 1983
Doctor of Science, Washington University in St Louis, 1990

C

Douglas Ford Caruthers, M.S.
Instructor in Radiation Oncology (primary appointment)
Master of Science, University of Texas Health Science Center, 2010

Aadel Ahmed Chaudhuri, M.D.
Assistant Professor of Radiation Oncology (primary appointment)
Assistant Professor of Computer Science and Engineering
Assistant Professor of Genetics
Bachelor of Science, Massachusetts Institute of Technology, 2004
Doctor of Medicine, Stanford University, 2013

Jessica Contreras, M.D.
Assistant Professor of Radiation Oncology (Pending Executive Faculty Approval) (primary appointment)
Bachelor of Science, Johns Hopkins University, 2009
Doctor of Medicine, University of South Florida, 2014

David T Curiel, Ph.D., M.D.
Professor of Radiation Oncology (primary appointment)
Professor of Obstetrics and Gynecology
Professor of Medicine
Distinguished Professor of Radiation Oncology
Bachelor of Arts, West Georgia College, 1978
Doctor of Medicine, Emory University, 1982
Doctor of Philosophy, University of Groningen, 2000

Arash Darafsheh, M.S., Ph.D.
Associate Professor of Radiation Oncology (primary appointment)
Bachelor of Science, University of Tehran, 2004
Master of Science, University of North Carolina at Charlotte, 2011
Doctor of Philosophy, University of Pennsylvania, 2015

Carl J. DeSelm, Ph.D., M.D.
Assistant Professor of Radiation Oncology (primary appointment)
Bachelor of Science, Dartmouth College, 2004
Doctor of Medicine, Washington University in St Louis, 2012
Doctor of Philosophy, Washington University in St Louis, 2016

Venkata Rao Devineni, M.D.
Associate Professor of Clinical Radiation Oncology
Doctor of Medicine, Osmania Medical College, 1973

Igor Dmitriev, Ph.D.
Associate Professor of Radiation Oncology (primary appointment)
Doctor of Philosophy, SRC Vector, 1994

Robert E Dryzymala, Ph.D.
Professor Emeritus of Radiation Oncology
Bachelor of Science, Northern Illinois University, 1972
Doctor of Philosophy, University of Oklahoma, 1977

H Michael Gach, Ph.D.
Professor of Radiation Oncology (primary appointment)
Professor of Radiology
Doctor of Philosophy, University of Pittsburgh, 1998

Jose L Garcia, M.S.
Assistant Professor of Radiation Oncology (primary appointment)
Bachelor of Science, University of Puerto Rico, 1995
Master of Science, Rosalind Franklin University of Medicine and Science (Formerly Finch University of Health Sciences), 1997

Hiram Alberto Gay, M.D.

Professor of Radiation Oncology (primary appointment)
Bachelor of Science, University of Puerto Rico, 1996
Doctor of Medicine, University of Puerto Rico, 2000

Sreerkrishna M Goddu, M.S., Ph.D.
Professor of Radiation Oncology (primary appointment)
Bachelor of Science, Andhra University, 1983
Master of Science, Andhra University, 1985
Doctor of Philosophy, Andhra University, 1991

Yuxing Gu, Ph.D.
Assistant Professor of Radiation Oncology (primary appointment)
Doctor of Philosophy, University of Missouri in St Louis, 2014

Lannis Hall, M.P.H., M.D.
Associate Professor of Clinical Radiation Oncology
Bachelor of Arts, University of Michigan (Duplicate of University of Michigan Ann Arbor), 1988
Doctor of Medicine, Howard University, 1992
Master of Public Health, Saint Louis University, 1995

Dennis E Hallahan, M.D.
Professor of Radiation Oncology (primary appointment)
Professor of Biomedical Engineering
Elizabeth H and James S McDonnell III Distinguished Professor of Medicine
Head of the Department of Radiation Oncology
Professor of Cell Biology and Physiology
Professor of Pathology and Immunology
Professor of Molecular Microbiology
Champaign, 1980
Doctor of Medicine, Rush University, 1984

Yao Hao, Ph.D.
Assistant Professor of Radiation Oncology (primary appointment)
California, 2004
Doctor of Philosophy, University of Massachusetts Lowell, 2016

Jiayi Huang, M.D.
Associate Professor of Radiation Oncology (primary appointment)
Doctor of Medicine, University of Massachusetts Medical School School of Medicine and Biomedical Sciences, Worcester, 2007

Yi Huang, Sc.M.
Instructor in Radiation Oncology (primary appointment)
Master of Science, Louisiana State University Health Sciences Center at New Orleans, 2016

Geoffrey Douglas Hugo, Ph.D.
Professor of Radiation Oncology (primary appointment)
Professor of Computer Science and Engineering
Director - Physics Division, Medical Physics
Doctor of Philosophy, University of California Los Angeles, 2003

Amir Irvani Tabrizipour, M.D.
Assistant Professor of Radiation Oncology
Doctor of Medicine, Tehran University, 2003

K

Vaishali Kapoor, M.S., Ph.D.
Assistant Professor of Radiation Oncology (primary appointment)
Bachelor of Arts, Delhi University, 2006
Master of Science, All India Institute of Medical Sciences, 2008
Doctor of Philosophy, All India Institute of Medical Sciences, 2013

Hyun Kim, M.D.
Associate Professor of Radiation Oncology (primary appointment)
Bachelor of Science, University of California, 2006
Doctor of Medicine, University of Pittsburgh, 2012

Taeho Kim, Ph.D.
Associate Professor of Radiation Oncology (primary appointment)
Doctor of Philosophy, Washington University in St Louis, 2007

Nels C Knutson, M.S., Ph.D.
Associate Professor of Radiation Oncology (primary appointment)
Bachelor of Science, University of Montana Missoula, 2009
Master of Science, Louisiana State University, 2012
Doctor of Philosophy, University of Massachusetts Lowell, 2016

L

Susan Joy Laduzinsky, M.D.
Assistant Professor of Radiation Oncology (primary appointment)
Champaign, 1983

Heui Chang Lee, M.S., Ph.D.
Assistant Professor of Radiation Oncology (Pending Executive Faculty Approval) (primary appointment)
Bachelor of Science, Hanyang University, 2009
Master of Science, Seoul National University, 2011
Main Campus, 2016

Jason Dole Lee, Ph.D., M.D.
Assistant Professor of Radiation Oncology (primary appointment)
Doctor of Philosophy, Duke University, 2009
Doctor of Medicine, Duke University, 2010

Hua Li, Ph.D.
Professor of Radiation Oncology (Pending Executive Faculty Approval) (primary appointment)
Doctor of Philosophy, Huazhong University of Science and Technology (#####, HUST), 2001

Hsiu-San Lin, Ph.D., M.D.
Professor Emeritus of Radiation Oncology
Doctor of Medicine, National Taiwan University, 1960
Doctor of Philosophy, University of Chicago, 1968

Zhi Hong Lu, Ph.D.
Assistant Professor of Radiation Oncology (primary appointment)
Bachelor of Science, Fudan University (###, 1990
Doctor of Philosophy, University of Mississippi Medical Center, 1999

M

Stephanie Markovina, M.D.

Assistant Professor of Radiation Oncology (primary appointment)
Doctor of Medicine, University of Wisconsin Madison, 2010

Nichole M Maughan, Ph.D.
Assistant Professor of Radiation Oncology (primary appointment)
Doctor of Philosophy, Washington University in St Louis, 2017

Thomas Rolf Mazur, Ph.D.
Assistant Professor of Radiation Oncology (primary appointment)
Bachelor of Science, Union College New York, 2007
Doctor of Philosophy, University of Texas Austin, 2014

Jeff Michael Michalski, M.B.A., M.D.
Professor of Radiation Oncology (primary appointment)
Director - Clinical Division, Clinical Programs
Vice Chair - Department of Radiation Oncology
Carlos Perez Distinguished Professor of Radiation Oncology
Bachelor of Science, University of Wisconsin Madison, 1982
Doctor of Medicine, Medical College of Wisconsin, 1986
Master of Business Administration, Washington University in St Louis, 2001

Justin Mikell, Ph.D.
Assistant Professor of Radiation Oncology (Pending Executive Faculty Approval) (primary appointment)
Champaign, 2002
Doctor of Philosophy, University of Texas Houston, 2015

Timothy John Mitchell, M.S., Ph.D.
Assistant Professor of Radiation Oncology (primary appointment)
Bachelor of Science, John Carroll University, 2005
Master of Science, Washington University in St Louis, 2007
Doctor of Philosophy, University of Missouri in St Louis, 2014

Michael Moravan, M.S., Ph.D., M.D.
Assistant Professor of Radiation Oncology (Pending Executive Faculty Approval) (primary appointment)
Bachelor of Science, Clarkson University, 2001
Master of Science, Clarkson University, 2003
Doctor of Philosophy, University of Rochester, 2011
Doctor of Medicine, University of Rochester, 2011

Eric Daniel Morris, Ph.D.
Assistant Professor of Radiation Oncology (Pending Executive Faculty Approval) (primary appointment)
Bachelor of Science, Michigan Technological University, 2015
Doctor of Philosophy, Wayne State University, 2020

Robert J Myerson, Ph.D., M.D.
Professor Emeritus of Radiation Oncology
Bachelor of Arts, Princeton University, 1969
Doctor of Philosophy, University of California, 1974
Doctor of Medicine, University of Miami, 1980

Gilbert H Nussbaum, M.A., Ph.D.
Associate Professor Emeritus of Radiation Oncology
Bachelor of Science, City College, 1960
Master of Arts, Harvard University, 1962
Doctor of Philosophy, Harvard University, 1967
Carlos A Perez, M.D.
Professor Emeritus of Radiation Oncology
Bachelor of Science, School Not Found, 1952
Doctor of Medicine, School Not Found, 1960

Stephanie Mabry Perkins, M.D.
Professor of Radiation Oncology (primary appointment)
Bachelor of Science, Union University, 2001
Doctor of Medicine, University of Tennessee at Memphis, 2005

James Vernon Piephoff, M.D.
Instructor in Clinical Radiation Oncology
Bachelor of Science, Citadel Military College of South Carolina, 1985
Doctor of Medicine, University of South Carolina (Duplicate of University of South Carolina Columbia), 1989

Michael Thomas Prusator, M.S., Ph.D.
Assistant Professor of Radiation Oncology (primary appointment)
Bachelor of Science, University of Ozarks, 2012
Master of Science, University of Oklahoma Health Sciences Center, 2014
Doctor of Philosophy, University of Oklahoma Health Sciences Center, 2018

James A Purdy, M.A., Ph.D.
Emeritus Professor of Radiation Oncology
Bachelor of Science, Lamar University, 1967
Master of Arts, University of Texas Austin, 1969
Doctor of Philosophy, University of Texas Austin, 1971

Francisco Javier Reynoso, M.S., Ph.D.
Assistant Professor of Radiation Oncology (primary appointment)
Main Campus, 2008
Main Campus, 2014

Clifford Grant Robinson, M.D.
Professor of Radiation Oncology (primary appointment)
Professor of Medicine
Bachelor of Science, University of Pittsburgh, 2000
Doctor of Medicine, Case Western Reserve University, 2004

Buck Edward Rogers, M.A., Ph.D.
Professor of Radiation Oncology (primary appointment)
Professor of Radiology
Bachelor of Science, Loyola University Chicago, 1989
Master of Arts, Washington University in St Louis, 1991
Doctor of Philosophy, Washington University in St Louis, 1995

Tapan Roy, M.S.
Instructor in Clinical Radiation Oncology
Master of Science, Baroda Medical College, 1974

Pamela Parker Samson, M.A., M.P.H., M.S., M.D.
Assistant Professor of Radiation Oncology (primary appointment)
Bachelor of Arts, University North Carolina, 2001
Master of Arts, University of Washington, 2003
Main Campus, 2007
Main Campus, 2011
Master of Public Health, Washington University in St Louis, 2020

Matthew Schmidt, M.S., Ph.D.
Assistant Professor of Radiation Oncology (primary appointment)
Bachelor of Science, Valdosta State University, 2011
Master of Science, Duke University, 2013
Doctor of Philosophy, University of Massachusetts Lowell, 2022

Julie K Schwarz, Ph.D., M.D.
Professor of Radiation Oncology (primary appointment)
Professor of Cell Biology and Physiology
Director - Cancer Biology Division
Vice Chair - Research
Bachelor of Science, Duke University, 1995
Doctor of Philosophy, Washington University in St Louis, 2004
Doctor of Medicine, Washington University in St Louis, 2004

Joseph Rogers Simpson, Ph.D., M.D.
Professor Emeritus of Radiation Oncology
Bachelor of Arts, Cornell University, 1963
Doctor of Philosophy, University of Chicago, 1967
Doctor of Medicine, Harvard University, 1973

Abhay Kumar Singh, M.S., Ph.D.
Instructor in Radiation Oncology (Pending Dean’s Approval) (primary appointment)
Bachelor of Science, Brabu, 2002
Master of Science, Jamia Hamdard University, 2005
Doctor of Philosophy, All India Institute of Medical Sciences, 2012

Christopher Spencer, M.A., M.D.
Adjunct Instructor in Radiation Oncology
Master of Arts, Truman State University (Duplicate of Truman State University (Formerly Northeast Missouri State University)), 2006
Doctor of Medicine, Saint Louis University, 2010

William L Straube, M.E.E.
Associate Professor of Radiation Oncology (primary appointment)
Champaign, 1983
Master of Electrical Engineering, Washington University in St Louis, 1992

Jeffrey Szymanski, Ph.D., M.D.
Instructor in Radiation Oncology (Pending Dean’s Approval) (primary appointment)
Bachelor of Science, Northern Michigan University, 2005
Doctor of Philosophy, Wayne State University, 2014
Doctor of Medicine, Wayne State University, 2014

Maria A Thomas, Ph.D., M.D.
Associate Professor of Radiation Oncology (primary appointment)
Bachelor of Science, Creighton University, 2000
Doctor of Philosophy, Saint Louis University, 2006
Doctor of Medicine, Saint Louis University, 2008
Wade L Thorstad, M.D.
Professor of Radiation Oncology (primary appointment)
Bachelor of Science, Trinity University, 1986
Doctor of Medicine, University of Texas Austin, 1991

Amaris Renee Tippey, Ph.D.
Assistant Professor of Clinical Radiation Oncology
Doctor of Philosophy, East Carolina University, 2014

V

Gregory Riccardo Vlacich, Ph.D., M.D.
Associate Professor of Radiation Oncology (primary appointment)
Doctor of Philosophy, University of Chicago, 2007
Doctor of Medicine, University of Chicago, 2009

W

Phillip Douglas Hardenbergh Wall, M.S., Ph.D.
Assistant Professor of Radiation Oncology (Pending Executive Faculty Approval) (primary appointment)
Bachelor of Science, Davidson College, 2014
Master of Science, Louisiana State University, 2017
Doctor of Philosophy, Louisiana State University, 2020

Bruce J Waltz, M.D.
Associate Professor of Clinical Radiation Oncology
Bachelor of Arts, Washington University in St Louis, 1962
Doctor of Medicine, Washington University in St Louis, 1966

Jeffrey F Williamson, M.S., Ph.D.
Professor of Radiation Oncology (primary appointment)
Bachelor of Arts, Saint Olaf College, 1974
Master of Science, University of Minnesota, 1980
Doctor of Philosophy, University of Minnesota, 1982

Y

Joanna Chensi Yang, M.P.H., M.D.
Assistant Professor of Radiation Oncology (primary appointment)
Bachelor of Arts, Stanford University, 2008
Doctor of Medicine, Mount Sinai School of Medicine, 2013
Master of Public Health, Harvard University, 2018

Z

Jin Zhang, M.Eng., Ph.D.
Assistant Professor of Radiation Oncology (primary appointment)
Bachelor of Science, Tianjin University (#####), 2005
Master of Engineering, Tianjin Polytechnic University (#####), 2008
Doctor of Philosophy, University of Connecticut, 2012

Tiezhi Zhang, M.S., Ph.D.
Professor of Radiation Oncology (primary appointment)
Bachelor of Science, Jilin Medical University, 1994
Master of Science, Drexel University, 1999
Doctor of Philosophy, University of Wisconsin Madison, 2004

Tianyu Zhao, M.S., Ph.D.
Associate Professor of Radiation Oncology (primary appointment)
Bachelor of Science, Shanghai Jiao Tong University (#####), 1998
Master of Science, Shanghai Jiao Tong University (#####), 2001
Doctor of Philosophy, Washington University in St Louis, 2010

Tong Zhu, Ph.D.
Associate Professor of Radiation Oncology (primary appointment)
Doctor of Philosophy, University of Rochester, 2009

Imran Zoberi, M.D.
Professor of Radiation Oncology (primary appointment)
Bachelor of Science, University of South Dakota, 1992
Doctor of Medicine, Washington University in St Louis, 1996

Jacqueline Esthappan Zoberi, Ph.D.
Professor of Radiation Oncology (primary appointment)
Bachelor of Arts, University of Chicago, 1995
Doctor of Philosophy, University of Chicago, 2000

Research Electives

Radiation Oncology Research Electives

The Cancer Biology division provides opportunities for graduate students in the Division of Biology and Biomedical Sciences (http://dbbs.wustl.edu/Pages/) (DBBS) and the Medical Scientist Training Program (http://mstp.wustl.edu/Pages/) (MSTP) to train with faculty in the cancer biology research laboratories. Please visit the Department of Radiation Oncology website (https://radonc.wustl.edu/education/) for more information about current research in the department.

Courses

Graduate Programs in Medical Physics

For course information related to the Master of Science in Medical Physics, the PhD in Medical Physics, and the Post-PhD Graduate Certificate in Medical Physics, please visit the Medical Physics page (http://bulletin.wustl.edu/medicine/areas-of-study/medical-physics/#courses) of this Bulletin.

MD/MSTP Programs

The Department of Radiation Oncology offers courses that are open to students in the MD and MSTP (MD/PhD) programs. For course information, please visit the online course listings (https://acadinfo.wustl.edu/CourseListings/Semester/List.aspx).

M92 RadOnc 801 Clinical Radiation Oncology (Clinical Elective)

The Radiation Oncology clinical division offers an elective with emphasis on the evaluation, planning, and administration of radiation therapy in patients with malignant tumors. Students will have the opportunity to enhance their knowledge of the natural history of cancer as well as its pathological and biological features. Students will sharpen
their clinical skills by participating in the management of cancer patients. Students will be mentored to prepare and lead a department noon conference on the management of a specific patient’s care, including literature review and discussion. Students will be expected to prepare for clinical consultations by reviewing patient records and relevant literature, obtaining the patient’s history, and performing a physical examination. This will be followed by presenting findings and a proposed care plan to the attending and resident physicians. This course is designed for MS4 students who are entering the Radiation Oncology Match. If a student is an MS4 applying in another specialty but interested in a radiation oncology elective, we encourage them to pursue a two-week special study elective in Radiation Oncology.

M92 RadOnc 910 Radiation Oncology Advanced Clinical Rotation (ACR)
The Department of Radiation Oncology invites students planning to apply for radiation oncology residency to enroll in the Radiation Oncology Advanced Clinical Rotation (ACR). The field of radiation oncology involves the delivery of therapeutic radiation for patients with malignant and some benign conditions. Radiation oncology is a field which has a great team dynamic among physicians, physicists, nurses, therapists, social workers, and many others. We also collaborate in a multi-disciplinary fashion with medical oncology and surgical oncology. Clinical care will be provided at Barnes-Jewish Hospital, South County, and West County.

This course will fully immerse the student in the field of radiation oncology and prepare them for a successful transition to radiation oncology residency. Students will be directly involved in patient care, including seeing new outpatient and inpatient consults, follow ups, and on-treatment patients. Students will review the patient charts as well as relevant literature, obtain the patient’s history, perform a physical exam, and counsel the patient regarding their proposed treatment recommendations. The student will then present their findings and proposed treatment plan to the resident and attending. Students will also be involved in radiation simulations, contouring, and treatment planning. Students will attend lectures on clinical management, radiation biology, and radiation physics. Students will present at the department case management conference as well as give a talk at the completion of the rotation to department faculty and residents. During this course, students will expand their knowledge of radiation oncology and will be well prepared to start radiation oncology residency.

**Student time distribution:** Inpatient 10%; Outpatient 75%; Conferences/Lectures 15%; Subspecialty Care 100%

**Patients seen weekly:** 20-35

**On-call/weekend responsibility:** ACR students will participate in on-call duties during the rotation.

Credit 140 units.