

Led by Quynh-Thu Le, MD, FACR, FASTRO

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Memorial Professor & Chair, the Department of
Radiation Oncology provides services for the treatment
of cancer.

The Stanford University Physics Residency Program
operates under the leadership of Professor Lex Xing,
PhD within the Department of Radiation Oncology. The
therapeutic program designed to provide broad, in-
depth training for qualified individuals in the principles
and modern practice of clinical radiation oncology
physics. The goals of the program are to teach residents
the ethical practice of full service, high quality clinical
radiation oncology physics, and how it is delivered in
cooperation with physicians, nurses, radiation
therapists, and other health professionals in a
structured and regulated environment dedicated to
patient care.

The ultimate educational goal is to qualify the resident
so that, at the end of training, she or he has sufficient
knowledge and experience to engage in the
independent practice of medical physics. A special goal
of the Stanford program is to select and train
individuals with the potential to become clinician
scientists who could contribute in a leadership role to
the advancement of the radiation oncology physics
specialty through engaging in clinical service, teaching,
and the pursuit of scientific investigations.
We welcome all qualified individuals interested in
developing a career in the exciting and rewarding field
of medical physics to apply to our residency program.



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<https://tinyurl.com/MED-PHYS-RESIDENCY>



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Training Curriculum

The mainstay of the curriculum is the instruction of residents by means of their performing clinical physics tasks under direct individual supervision of experienced mentors. Residents are afforded increased independence in performing these tasks, in so far as it has been demonstrated that they possess the capability of performing said procedures with reduced direct oversight. Mentors remain responsible for task completion, and in continuing with a defined task residents gain opportunities to learn more nuanced aspects of the subject. The training program consists of a sequence of 1-3 month clinical rotations, each organized around a particular topic, plus a continuing program of twice-monthly meetings that broadly range across specific topics in medical physics, such as AAPM Task Group reports. Each rotation is mentored by at least two board-certified physicists. To complete a rotation, the mentors must verify that residents have achieved defined knowledge goals and competencies.

Structure

The Stanford Radiation Oncology Physics Residency is structured as a two-year program of progressive, supervised clinical training in all areas of radiation oncology physics, with the purpose of enabling a resident to acquire the knowledge and skills needed to practice radiation oncology physics independently and gain board certification. An optional elective third year of research may be scheduled after the two fully clinical training years for a clinically related project by agreement with and under supervision of a member of the Radiation Oncology, Medical Physics faculty. The additional year is intended to provide clinically trained residents time to advance a translational research project, with consequent opportunities for accomplishments to support a career goal of being a clinician-scientist.



Our department offers vast opportunities to advance translational research, with consequent opportunities for accomplishments to support a career goal of being a clinician-scientist.

Medical Physics Residency Program

Led by Dr. Amy Yu, Program Director, and Dr. Yu Gao, Associate Program Director, our program is a two-year, CAMPEP accredited program emphasizing clinical competency and leadership in academic roles in the field of radiation oncology physics. We admit two new residents per year and have had 27 graduates of the program as of June 30, 2023. The program is comprised of 25 physics faculty, 10 dosimetrists, 8 radiation biology faculty, and 32 physicians.



Our team of expert
physicists, physicians,
therapists, and
dosimetrists are here to
help you develop
successful knowledge and
skills independently and
gain board certification.

Applications

Applications for July 1st start date are due December 1st of the previous year.

- Applicants must have a Ph.D. degree or equivalent in physics, biophysics, medical physics, engineering, or a related field, and must have completed six graduate level didactic courses described in CAMPEP guideline.
- Applicants must register with the National Matching Service (NMS) for Medical Physics and submit a complete application through the [AAPM Medical Physics Residency Application Program \(MP-RAP\)](#).
- Our NMS number is **10511**.





Stanford
MEDICINE

Radiation Oncology
Medical Physics



Facilities and Equipment

Stanford is committed to providing exceptional treatment with state-of-the-art technology:

- **Varian TrueBeam;**
- **Accuray Cyberknife**
- **RefleXion™ X1**
- **Varian Bravos**
- **IntraOp Mobetron**
- **Varian Eclipse**
- **2 PET/CT scanners** dedicated to patient simulation, including a new 128-slice Siemens Biograph mCT (Somatom Definition AS+ CT) with 4D and CT-perfusion capabilities
- **3T MAGNETOM Skyra MR simulator**
- **RPM™ and AlignRT® motion-management systems**



Rotation Schedule

Rotation 1: Orientation; Simulation, Planning, and Treatment; Ethics; Accelerator Theory and Operation; Radiation Safety

Rotation 2: Linac Safety; Equipment QA; Patient-Specific QA; Shielding Calculations; Calibration Protocols

Rotation 3: 3D Treatment Planning; Basic Dosimetry

Rotation 4: IMRT and VMAT Planning; Chart Checking

Rotation 5: Clinical Translational Project

Rotation 6: CyberKnife Radiosurgery; Linac-based SBRT

Rotation 7: Special Procedures; TBI and TSEI; Protons

Rotation 8: Brachytherapy

Rotation 9: Imaging Motion Management*

Rotation 10: Community Practice

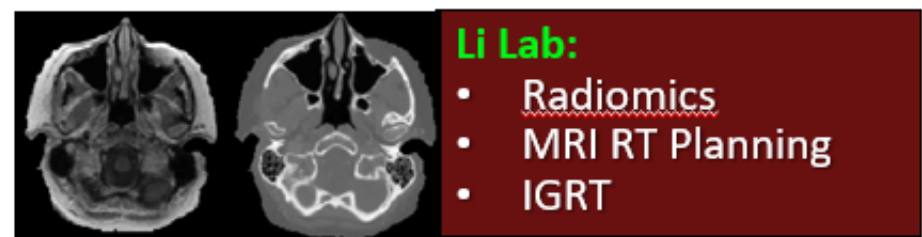
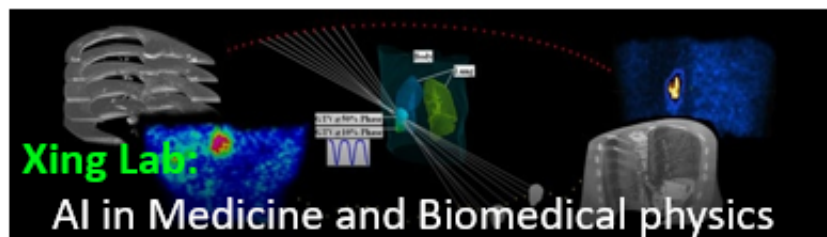
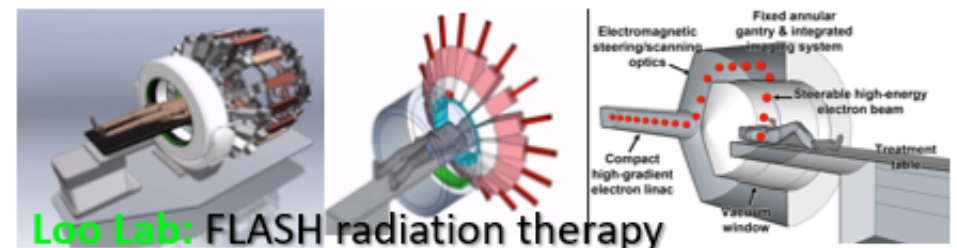
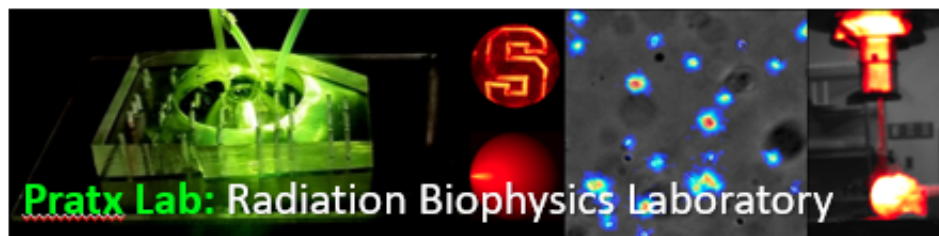
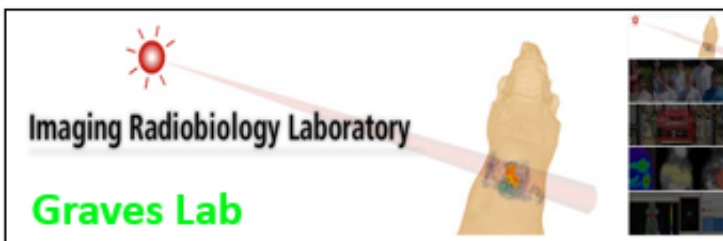
Rotation 11: Full Participation

Optional 3rd year: Research Fellowship

Vast Research Opportunities

Explore, contribute, and learn at one of the world's premier research institutions. With state-of-the-art technologies, nationally and internationally recognized researchers, and a team of outstanding, interdisciplinary staff, the Medical Physics Division stands at the forefront of scientific innovation and provides an extraordinary arena for career development and enrichment. Our vision is to be the world's premier program committed to excellence and innovation in clinical practice, scientific research, technological development, and education.

Fundamental Medical Physics Research Laboratories:



Exchange Programs and Other Electives

- Gamma Knife at **UCSF** via the exchange program with our Bay Area sister institution
- **Proton** Therapy School at **UCSD**
 - Course registration and travel costs sponsored by the program
- **Clinical Translational Project** within Rotation 5
- Hands-on in-house **3D printing**
- **Firsthand** RefleXion and experience with new technologies

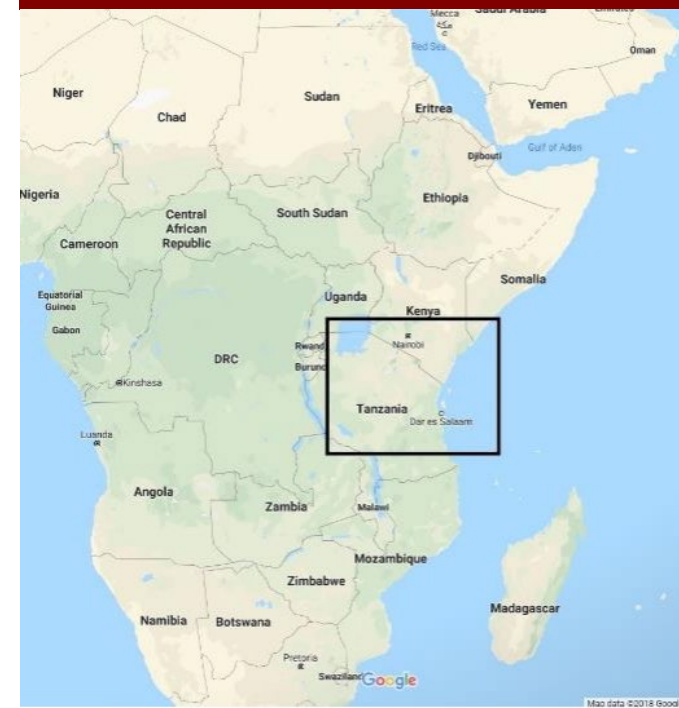


This is a unique opportunity to practice in a diverse, resource-limited environment, improve problem-solving skills, and foster an interest in expanding access to care for communities in adverse circumstances.

International Rotation

- Offered to ONE senior resident or alternate
- 2-3 weeklong trip
- Time is split between one or two center institutes in various East African countries
- This trip is dependent on the partnerships of different institutions

UCSF Medical Center



Program Completion Requirements

The following must be completed over a period of 24 months:

- Complete all 11 clinical rotations, demonstrating clinical competency.
- Perform recurring clinical responsibilities, as they are assigned.
- Submit monthly reports/logs describing clinical activities to the program director and current rotation mentor for the 24-month period.
- Make three assigned presentations as in-service training (with training materials) or as research
- Regularly attend required clinical conferences, chart rounds and clinical physics group meetings.
- Attend departmental physics seminars.
- Complete all twice-monthly educational sessions with the program director.
- Successfully complete the following lecture-based courses:
 - 1) Radiation Therapy Physics (attend >80% of classes, score $\geq 85\%$ on Raphex exam or 90th percentile)
 - 2) Radiology Physics (attend >70% of classes, if available)
 - 3) Radiation and Cancer Biology (attend >70% of classes, if available)
 - 4) Clinical Lecture (attend >80% of classes, if available)
- Pass comprehensive oral examination (required completion of 50 % of items on the proficiency list before taking the comprehensive exam)
- Completion of requisite number of procedures as listed in the proficiency list reviewed bi-annually by steering committee.



Salary & Benefits Information

Information on financial support including benefits is updated annually on the Stanford GME website. Scan below to see other perks!



The Medical Physics Residency Program is overseen by the Graduate Medical Education office at Stanford School of Medicine. Salaries for new trainees in our program will be always be starting at PGYII level and based on an annual amount. The 2023-2024 annual salary is \$81,660. The 2024-2025 have not been posted. In addition, effective the first pay period following July 1, 2024, in lieu of a separate housing allowance, \$10,000 shall be added to each Resident/Fellow's base salary (subject to taxes and withholdings). Also, effective the first pay period in September 2024 salaries shall be increased by five percent (5%).

Other allowances are as follows:

- Education: \$2,000/year
- Cell phone plan: \$1,000/year
- Moving: \$3,500 (for NEW hires only)

Other benefits:

- Access to all Stanford campus athletic facilities, local transportation (Caltrain Go Pass)
- Insurance: No premiums with Aetna plan. No coinsurance/copays for residents, fellows and their families at Stanford and Packard hospitals. Kaiser plan also available.
- Infertility and gender affirmation services available.

Alumni

Our program has admitted 32 applicants since 2005 and as of July 1st, 2024, will have 30 who have completed the program and 4 who are in training. Out of those 30 alumni, 26 are currently ABR certified and 1 completed the CCPM certification. All 30 are clinically employed and 26 also hold an academic appointment. Some of the employers include Varian Medical systems, Cedar-Sinai Medical Center, University of Washington, UCSD, UT Southwestern, MSK, UCSF, Sunnybrook, Rutgers and MD Anderson, Sindi Ahluwalia Hawkins Centre, Fresno Cancer Center and Stanford University.



When asked how strongly they agreed or disagreed with their decision to choose Stanford University, this 2019 alumni stated “[I am] very, very happy in many, many ways; best and toughest 2 years of my life.”

[The program’s strengths is] the emphasis on the fundamentals of physics, in terms of thinking as a medical physicist, and approaching a clinical problem as a physicist, and communicating effectively with other team members.” -2020 Alumni Survey

“[The program] encourages residents to think critically about what they are doing and how they are doing it. Not just learning the motions. Also, excellent variety of equipment to gain experience.” -2021 Alumni Survey

“[One of the strengths of the program] is the flexibility to perform both clinical work and research.” -2021 Alumni Survey

“[The Program involves] solid training on physics part, including QA, planning, basics of physics etc.”-2023 Alumni Survey



Alumni Stats

Our program takes feedback from current and past graduates earnestly. We survey our graduates every winter to better understand the strengths and the weakness of the program. Responses remain confidential and reviewed by an internal committee. 2023 Alumni Survey results show that candidates are 100% pleased with their decision to choose Stanford University's Medical Physics Residency Program for their residency. Survey results also show that after completion of the program, residents strongly agree that the program prepared them to think and communicate professionally and independently.

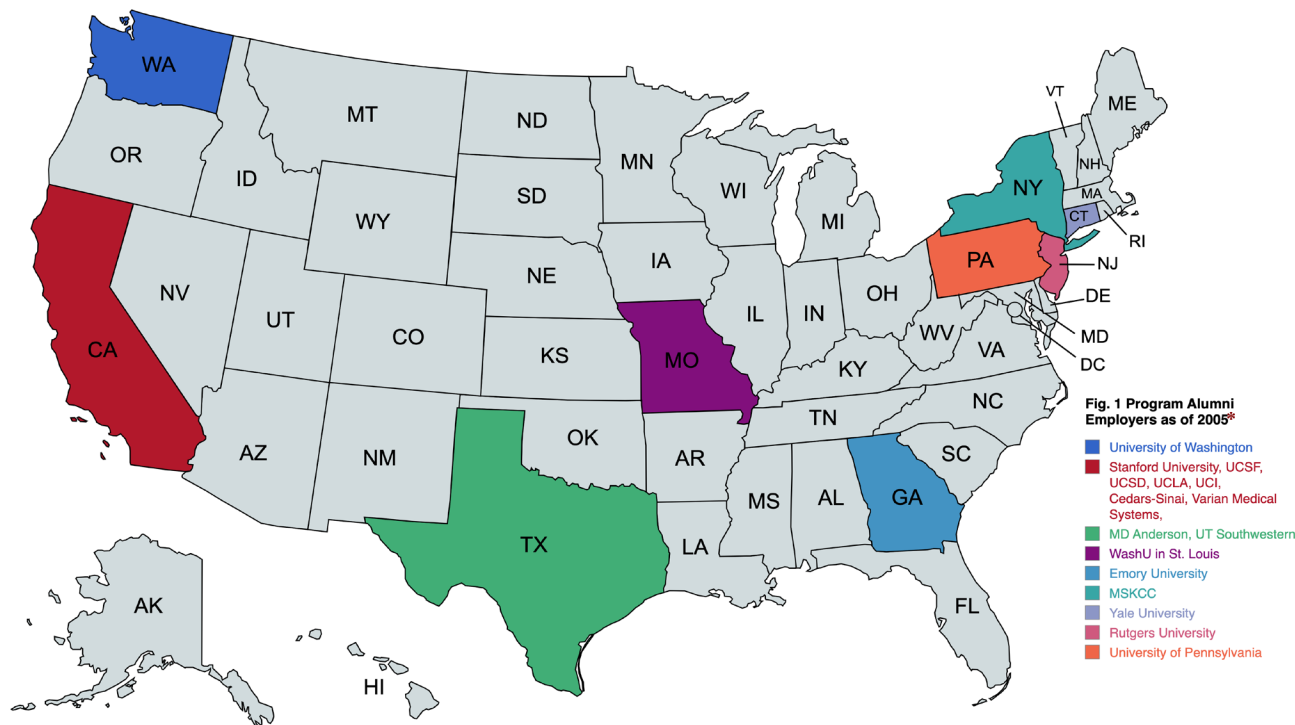
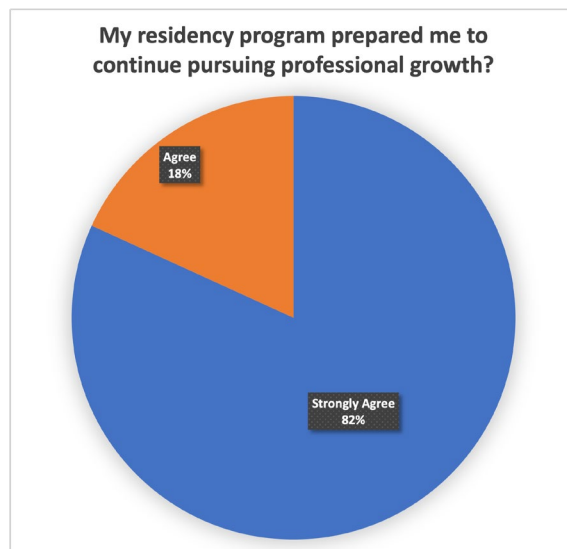


FIGURE 1 (above). Physics Resident Alumni Employers (since* 2005).

FIGURE 2 (below) 2023 Alumni Survey Data up until 2023.



Life in the Bay Area

Known to be one of the best suburbs in the Bay Area, Palo Alto provides a safe, friendly environment for all its residents. **The city is more than 100 years old and is named after an astonishing 1,000-year-old coastal redwood tree that was along San Francisquito Creek.** Palo Alto is nicknamed the “Birthplace of Silicon Valley” and is best known for being home to many multi-billion-dollar technological companies. With pleasant weather, an active nightlife, and various outdoor activities, Palo Alto provides a comfortable culture and desirable lifestyle for all their residents.



Enjoy the clear blue beautiful skies in the sierras or the sunset skyline in the Pacific Ocean. Adventure is always a 30 min - 2 hour driving distance.

Campus Life

The School of Medicine's close ties to world-class hospitals and the Silicon Valley tech corridor creates a unique opportunity to merge research with health-care expertise to drive real-world innovation.





Strive diligently, celebrate heartily.





Mission Statement

Mission

Creating and delivering the most innovative, equitable, environmentally sustainable, personalized care and education through compassion, cutting-edge technology, and transformative research.

Research

Advancing discoveries, promoting health equity and translating new knowledge in radiation therapy, radiation physics, and cancer biology in ethically responsible and environmentally sustainable ways.

Clinical Care

Eradicating cancer and other diseases and eliminating cancer healthcare disparities by providing the highest quality, compassionate, cutting-edge, personalized radiation therapy.

Education

Training the next generation of compassionate leaders in radiation oncology, biology, and physics to address the healthcare needs of diverse populations through innovation, personalized patient care and research.

Organization & Infrastructure

Fostering an environment and culture in which diversity is celebrated, and all faculty, staff and trainees are respected, included and empowered to achieve professional fulfillment.