Led by Quynh-Thu Le, MD, FACR, FASTRO
Katharine Dexter McCormick & Stanley McCormick
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
**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, Medica 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.
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.
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 Mabetron**
- **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
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.
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

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

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.
**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 ≥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.

My residency program prepared me to continue pursuing professional growth?

- Agree 16%
- Strongly Agree 82%
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.