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INTRODUCTION

History of the Program

Owen Wangensteen, M.D., Ph.D., the first fulltime Chairman of the Department of Surgery, was the first recipient of a Ph.D. granted by the department of Surgery. Subsequently, he developed a surgical residency program with a commitment to training academic surgeons. To accomplish this goal, each resident was provided with dedicated time to engage in surgical research through the development of strong ties to multiple graduate education programs in the University and by creating a Ph.D. in surgery.

The University of Minnesota surgical research training program attracted outstanding medical students from a national pool who then went on to be surgical leaders throughout the country including some forty five heads of surgical departments, over two hundred division directors and numerous full professors in academic surgery. This same legacy continues today.

Values of Research

To continue this tradition of academic surgical training, the Department of Surgery faculty continues to invest financially to maintain a robust research program. This commitment from the Department allows residents to participate in independent and supervised investigations on an entrance level, with valuable opportunities to participate in scientific discovery and/or clinical innovation, and productively contribute to the academic literature. This research experience provides a tremendous opportunity to establish a foundation for a future career in academic surgery and to obtain the necessary prerequisites for entry into the most competitive fellowships in the country.

Program Goals and Objectives

The Department’s commitment to each resident entering the research program is a two-year experience with the opportunity to engage in basic science, clinical outcomes, or education research. At this time, the program is considered to be compulsory for all residents in the training program. However, exceptions will be made based on specific circumstances which may include, but are not limited to: number of residents currently participating in the laboratory experience, number of clinical residents in the program, career goals of the trainee, and previous research experience of the trainee.

FINDING A RESEARCH PROGRAM

Full Listing of Research Program
The current areas of academic investigation within the Department of Surgery are included as Appendix A (to be distributed separately each spring to G2 residents preparing to match to a research program).
Research Programs outside the Department

In general, the majority of residents will be required to train within the research program of a member of the Department of Surgery. On very rare occasion, a resident will be permitted to work within the research program of a non-Surgery Department faculty; however, such cases will also require simultaneous sponsorship by a member of the Department of Surgery. In addition, funding must be secured either by extramural funding, training grant, or by the outside sponsor.

Selection Process

The Resident Research Mentoring Council will meet annually to review and publish a compilation of faculty members who have the appropriate resources and research opportunities for the coming year to merit assignment of a resident to his/her laboratory.

Each G2 resident will be required to submit a Research and Career Intent Form describing their research, fellowship, and career interests by April 1st of their G2 year. The form will become part of the resident’s portfolio and submission is a prerequisite to advancement within the program. The Research and Career Intent form will be reviewed by the Resident Research Mentoring Council and an attempt will be made to identify three possible research mentors within the Department of Surgery who can provide a supportive and productive research environment for each resident, matching as much as is possible, the resident’s Research and Career Intent Form goals.

Factors determining the three suggested resident mentors include: 1) available funding, 2) prior resident experience in a given laboratory and 3) the faculty’s track record of accomplishments. Each resident will be required to meet with up to three prospective mentors one-to-one to discuss the possible fit of the mentorship relationship and laboratory opportunity. Each resident will then provide a rank order of his/her preferences (1, 2, 3), and a final decision will be made by the Resident Research Mentoring Council early in the third clinical year. This timing will provide adequate opportunity to put efforts toward acquiring extramural funding in order to support the resident laboratory research experience.

If a resident is assigned to a basic scientist mentor, a clinical mentor will additionally be assigned (i.e. if a Ph.D. laboratory mentor or non-practicing surgeon is chosen, a surgical mentor should also be chosen to foster development of that mentoring relationship for attainment of clinical career goals).

Funding and Commitment

The resident’s funding may come from multiple sources, including, but not limited to NRSAs or training grants.
Exceptions to the Two-Year Commitment

Extensions of the research experience to a total of three years may be rarely possible under one or more of the following circumstances:

1. Availability of other individuals to fill the upcoming G4 spots without compromising other individuals clinical or research training.
2. Scientific development and achievement sufficient to warrant an additional year.
3. Achievement of the criteria for being admitted to graduate school and active pursuit of a specialized graduate degree. This will require advanced planning, advanced approval, and is not guaranteed.

Occasionally, there is an unexpected departmental need for a senior clinical resident requiring that the two-year period is shortened to one year. Every effort will be made to ensure our commitment to all residents for a two year research experience. The decision to shorten the experience, if necessary, will be made on the basis of multiple factors, including but not limited to: ABSITE performance (<30th percentile), previous clinical performance, citizenship, and laboratory productivity to date/anticipated productivity.

Timeline

Winter (PGY-2 Year)
- Resident Research Mentoring Council meets and updates faculty research opportunities
- G2 residents receive portfolio of research opportunities
- G2 residents complete Research and Career Intent Form (April 1st)

Spring (PGY-2 Year)
- Resident Research Mentoring Council reviews G2s Research and Career Intent Form
- Research Council identifies up to 3 potential faculty mentors
- G2 residents meet with identified mentors of interest
- G2s rank mentors with whom they would like to work
- Mentors rank residents with whom they would like to work

Summer (PGY-2/3 Year)
- G2 residents meet individually with Resident Research Mentoring Council

Fall (PGY-3 Year)
- Finalized selections of laboratory assignments by Resident Research Mentoring Council
- Apply for applicable grants
RESPONSIBILITY AND EXPECTATIONS

Department Responsibilities

The Department of Surgery has a commitment to:
- Provide a sustainable research program
- Seek and provide active funding
- Maintain research resident connection to the Department of Surgery and its faculty
- Encourage a positive, productive training / mentorship experience
- Recognize faculty with track records of successful resident training
- Encourage junior faculty development in investigation and pursuit of mentorship and training roles

On behalf of the Department, the Resident Research Mentoring Council will:
- Help the resident identify his/her primary research mentor
- Help identify additional clinical mentors, where appropriate
- Monitor academic progress of the trainee in the research laboratory

The Department is financially committed to:
- 2 years of salary support for each resident in the lab
- Funding for research activities
- Support each research resident to attend two national/international meetings per year in which the resident is presenting his/her research (at a maximum of $1,500 per meeting)
- Additional meetings may be attended by the resident where funding has been independently secured or where the division/mentor has made a financial offer (optional) to send the resident to the meeting

Trainee Responsibilities

The trainee is expected to:
- Provide a commitment to the research program
  - Minimum 40 hours/week including research time, writing time, and meetings/conferences
- Engage in scientific writing, through
  - Abstracts
  - Grants
  - Publications in peer-reviewed journals
  - Book chapters
- Present research findings
  - Lab meetings
  - Weekly research resident seminar series
  - Resident Research Day
  - Department of Surgery Research Day
Local / National Meeting presentations to be determined under guidance of mentor
- Completion of initial Responsible Conduct of Research (RCR) training, IRB and/or IACUC training and other required research training and annual updates
- Meet regularly with mentor
- Semiannual report and meeting with Resident Research Mentoring Council
- Attend and participate in monthly research resident conference
- Attend and participate in weekly didactic lectures
- Participate in department education activities
  - Medical student education
  - Grand Rounds
  - Core Curriculum
  - Resident Meetings

Primary Mentor Responsibilities

The primary mentor will commit to:
- Provide long-term guidance throughout the mentee’s academic career
- Guide and support mentee
- Meet at regular intervals with mentee
- Prepare a semi-annual evaluation to share with the Research Council
- Financially sustain the laboratory and project
- Financially support the resident to attend meetings where mentor has approved submitting abstracts for presentation
- Provide mentorship on research program development and management, career development, scholarship, and professional development
- Provide lab training for all required assays, materials, devices, etc.

Evaluation Process

The resident will be expected to set short- and long-term goals with the primary mentor, and to address progress on these goals on a regular basis, at least every two months. The resident will meet with his/her mentor and the Research Resident Mentoring Council twice each year, at which time goals, objectives, and progress will be reviewed. The resident is expected to prepare a semiannual report for this meeting, and the primary mentor will prepare an evaluation for this meeting. Subsequent goals will be set at these meetings.

Moonlighting

Residents have traditionally had the privilege to engage in moonlighting opportunities during their laboratory experiences. Residents are required to report their moonlighting experience in accordance with the Graduate Medical Education Policy on moonlighting (http://www.med.umn.edu/gme/residents/instpolicyman/genpolprocmoonlighting/home.html). This privilege will be continued for residents who are in good academic standing and who are productive in their research activities. Residents will be asked to submit
detailed reports of moonlighting activity to the Program Director, with possible revocation of the moonlighting privilege, in the following general circumstances:
- Academic probation, as determined by performance on the ABSITE in-service examination
- Poor laboratory research effort as determined by the primary mentor

FORMAL CURRICULUM

Weekly Research Resident Seminar Series
- Led/organized jointly by the office of the Vice Chair of Research, the Division of Basic and Translational Research, and by senior lab residents
- All research residents are required to attend and participate
- Commitment by senior faculty members to attend
- Information sharing
  - Upcoming events (local, regional and national conferences and meetings)
  - Upcoming deadlines (abstract submissions, grant applications)

Monthly Department of Surgery Research Seminar
- Invited speakers to present research

Monthly Resident Presentations
- Resident presentation of research
  - Updates
  - Practice/feedback for meeting presentation
- Facilitated by a senior faculty member

Biweekly Enrichment Program (This curriculum is currently being developed and implemented)
- Conducted early in the research experience (summer or fall of initial research year)
- Invite research/clinical faculty from various departments
- Topics:
  - Basic principles of research
  - Basic science review
    - Immunology
    - Oncology
    - Inflammation
    - Cell signaling
  - Fundamentals of statistics
  - Principles of translational research
  - Sources/experts on site for specific tools
  - Literature review/writing
  - Grant writing
  - Research ethics
  - Outcomes research
- Scholarly activity how-to’s:
  o Writing abstracts
  o Making PowerPoints
  o Making posters
  o Writing a manuscript
- Public speaking course

Resident Research Day

All residents engaging in the laboratory experience will be expected to submit at least one abstract for possible inclusion to the Resident Research Day, and all research residents will present at least once. One basic science and one clinical science research award will be given at the conclusion of Resident Research Day.

Department of Surgery Research Day

All residents engaging in the laboratory experience will be expected to submit at least one abstract for possible inclusion to the Department of Surgery Research Day. This will be a part of a robust day of research presentations and posters, including faculty, post doctoral fellows, and lab scientists. The abstract review committee will select those abstracts which will be chosen for oral presentations versus posters. All clinical residents will be expected to attend, and all faculty will be encouraged to participate. Awards will be given for a variety of research endeavors.