How to Plan Your Research Years and Find a Mentor(s) – for PGY 1-3

August 31, 2023
Karen J. Ho, MD
Director of Resident Research
Overview

• Why do research?
  - Why do research during residency?
• What is the Physician Scientist Training Program (PSTP)?
• What’s the timeline?
• What is DOS Research Conference?
• How do I find a faculty mentor or mentoring team?
• How do I get funded?
• What other career development activities can I do during my research years?
• What are important upcoming events?
• Where can I get more information?
• Who are people I can reach out to for help?
What’s the value of research to patients and surgery?

• The medical profession is defined by curiosity, critical thinking, and humanitarianism
• Research leads to advancements in mechanisms of disease and the translation of these advancements to patients
• Research allows for rigorous evaluation of current practices and for quality improvement
• Surgery has always been a research-driven and evidence-based field
  - History is replete with surgeons who have transformed the practice of medicine
## Surgeon-scientists who have won Nobel Prizes

<table>
<thead>
<tr>
<th>Surgeons</th>
<th>Country</th>
<th>Year</th>
<th>Accomplishments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theodore Kocher</td>
<td>Switzerland</td>
<td>1909</td>
<td>Physiology, pathology, and surgery of the thyroid</td>
</tr>
<tr>
<td>Alexis Carrell</td>
<td>USA/France</td>
<td>1912</td>
<td>Vascular suture, transplantation of blood vessels and organs</td>
</tr>
<tr>
<td>Sir Frederick Banting</td>
<td>Canada</td>
<td>1923</td>
<td>Insulin</td>
</tr>
<tr>
<td>Werner Forssmann</td>
<td>Germany</td>
<td>1966</td>
<td>Heart catheterization</td>
</tr>
<tr>
<td>Charles Huggins</td>
<td>USA</td>
<td>1956</td>
<td>Hormonal treatment of prostate cancer</td>
</tr>
<tr>
<td>Joseph Murray</td>
<td>USA</td>
<td>1990</td>
<td>Organ transplantation</td>
</tr>
</tbody>
</table>
Examples of recent research accomplishments in surgery:

- Cardiopulmonary bypass and cardiac surgery
- Endovascular surgery

1991
Stanley Dudrick and “Stinky”
SURGICAL RESIDENT

Jonathan Rhoads  Harry Vars
Other examples of recent research accomplishments in surgery

- Effect of hormones on cancer
- Minimally invasive surgery (first lap chole – 1985; first robotic-assisted aortic surgery - 2006)
- Fetal surgery
- Extracorporeal gas exchange
- Immune therapy for cancer

... and the list goes on and on!!
Why do research during residency?

- Residency is a time to explore personal and professional interests
  - Intellectual curiosity
  - Explore potential career options within academia or a subspecialty
  - Complete a program requirement
  - Develop CV or other credentials

- **Structured** research training during residency enhances scholarly success and leads to a greater appreciation for evidence-based medicine
  - Absence of a research curriculum is a barrier to completion of research projects

What is the Physician Scientist Training Program (PSTP)?

- The Physician-Scientist Training Program (PSTP) experience is designed to facilitate the development of surgical residents into clinician-investigators
  - Name given to the pathway that combines research training with clinical training
  - For most surgery residents, this means 5 years of residency + 2 years of research

- According to the 2014 NIH Physician-Scientist Workforce Report, physician-scientists are becoming an endangered species!

- In the DOS, we hope that all PSTP scholars will emerge with the tools and training needed to engage in research at the highest levels
  - PSTP plans are highly individualized!
What’s the timeline?

<table>
<thead>
<tr>
<th>PGY1</th>
<th>PGY2</th>
<th>PGY3</th>
<th>PGY4</th>
<th>PGY5</th>
<th>PGY6</th>
<th>PGY7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparatory phase</td>
<td>Investigation and synthesis phase</td>
<td>Reflection phase</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

**PGY1**
- Brainstorm research/personal/professional interests
- Identify mentor(s) and funding opportunities
- Discuss your ideas with other people
- Identify institutional resources
- QI projects

**PGY2**
- Solidify research project(s)
- Apply for funding
- Obtain regulatory approvals

**PGY3**
- PSTP (“Research years”)
  - Set goals for research projects
  - Collect and analyze data
  - Submit abstracts to meetings
  - Write and submit manuscripts
  - Get grantwriting experience
  - Attend SURPASS and Power Hour
  - Review your goals

**PGY4**
- Review what you’ve learned about yourself and your interests
- Consider the role of research in your career
- Apply for fellowships/jobs

Look for flyers and calendar invites!

DOS Research projects, annual William H. Pearce, MD Research Symposium

DOS Research Toolkit Lectures by faculty and lab residents

DOS Research Conference (work-in-progress research talks by your peers)
What’s on the schedule for Research Toolkit Lectures in AY 2023-2024?

<table>
<thead>
<tr>
<th>Date</th>
<th>Title</th>
<th>Speaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>9/14/23</td>
<td>NIH Loan Repayment Program</td>
<td>Justin Ryder, PhD</td>
</tr>
<tr>
<td>9/28/23</td>
<td>Research Training Grants in DOS and beyond</td>
<td>Program Directors</td>
</tr>
<tr>
<td>11/9/23</td>
<td>How to Make Global Surgery Interests Part of Your Career</td>
<td>Monica Langer, MD</td>
</tr>
<tr>
<td>12/7/23</td>
<td>How to Engage with Your Mentor as a Lab Resident</td>
<td>Kate Ott, MD</td>
</tr>
<tr>
<td>1/25/24</td>
<td>How to Negotiate Your First Contract</td>
<td>Jesse Meyer</td>
</tr>
<tr>
<td>3/14/24</td>
<td>Writing for Peer Review</td>
<td>Lauren Janczewski, MD</td>
</tr>
<tr>
<td>4/11/24</td>
<td>How to Present Your Work</td>
<td>Brooke Golisch, MD</td>
</tr>
<tr>
<td>5/9/24</td>
<td>Grantwriting and Funding Opportunities for Residents</td>
<td>Shelbie Kirkendoll, MD and Karen Ho, MD</td>
</tr>
</tbody>
</table>
What if I miss a Toolkit Lecture?

- The website provides recordings of past Toolkit Lectures.
- Click on the links to view recordings of the talks and review copies of the slides.

Example:

<table>
<thead>
<tr>
<th>Date</th>
<th>Title</th>
<th>Speaker</th>
<th>Slides</th>
<th>Recordings of Presentations</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/9/20</td>
<td>How to Pick a Mentor and Be a Good Mentee</td>
<td>Andrew Noel, MD</td>
<td>Slides unavailable</td>
<td>No Recording</td>
</tr>
<tr>
<td>11/12/20</td>
<td>Strategic Career Planning</td>
<td>Hazan Alam, MD</td>
<td>Slides [link]</td>
<td>Recording</td>
</tr>
<tr>
<td>1/14/21</td>
<td>How to Write an Abstract</td>
<td>Steven Schrubl, MD</td>
<td>Slides [link]</td>
<td>Recording</td>
</tr>
</tbody>
</table>
How do I find a faculty mentor(s)?

- Who or what is a mentor?
  - Not a coach
  - Not a teacher

A mentor is someone who helps you develop your interests and realize your potential

- Mentorship roles are dynamic over time
  - Consider the medical student versus the mid-career surgeon

Slide courtesy of Dr. Andrew Hoel
What can/should a mentor do?

**Tactical**

- Recommend funding opportunities, journals for submission
- Provide funding
- Define research project, review data
- Help refine manuscripts, grant applications, talks
- Sponsor/support/nominate for applications, awards, career development activities
- Help develop timelines
- Support networking and collaboration

**Conceptual**

- Help clarify career and research interests
- Aid in goal setting
- Identify strengths to develop
- Identify weaknesses and areas for improvement
- Challenge you...
How do you find a good mentor?

Start with introspection:
- Know yourself (at least a little bit)
- Know your goals (at least a few of them)

Do your homework:
- Actively seek out mentors you suspect will be receptive to your values, ideas and goals; mentor also needs to have time, expertise, and funding
  - Talk to senior residents, fellows, and peers
  - Set up a meeting to discuss your personal, research, and career interests
- If you don’t “click” with someone, keep looking!
- Professional society resources (ACS, AAS)
- Think broadly – you can have > 1 mentor and/or have a mentor outside
DOS = mentoring TEAM!
DOS faculty research descriptions

https://www.surgery.northwestern.edu/education/residency/resident-research/faculty-mentors-and-research-descriptions.html
Past and current lab resident research projects

https://www.surgery.northwestern.edu/education/residency/resident-research/projects.html
“SURGE-N” Newsletter has quarterly resident research news

https://www.surgery.northwestern.edu/education/residency/resident-research/SURGE-N%20Newsletters.html
FSM websites

• Departments
  https://www.feinberg.northwestern.edu/depts/index.html

• Institutes & Centers
  https://www.feinberg.northwestern.edu/centers/index.html
How do I get funded?

• Broad categories:
  1. NIH institutional research training grants
     • DOS: Transplant, Surgical Oncology, Vascular
     • DOM
  2. Individual postdoctoral research fellowships (e.g., AAS, SUS, ACS, NIH F32)
  3. Intramural (e.g., Stryker endowment)
  4. Mentor

• You need to plan ahead and pay attention to deadlines!

For example: NIH F32 application cycles are 3 times/year

<table>
<thead>
<tr>
<th>Application deadline</th>
<th>Earliest start date for funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>April 8</td>
<td>September of following year</td>
</tr>
<tr>
<td>August 8</td>
<td>April of following year</td>
</tr>
<tr>
<td>December 8</td>
<td>July of following year</td>
</tr>
</tbody>
</table>
List of training and funding opportunities + links

https://www.surgery.northwestern.edu/education/residency/resident-research/funding-opportunities.html
# Mentor timeline

<table>
<thead>
<tr>
<th>PGY1</th>
<th>PGY2</th>
<th>PGY3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mtgs with me</strong></td>
<td><strong>Mtgs with me</strong></td>
<td><strong>Mtgs with me</strong></td>
</tr>
<tr>
<td>Fall/Winter</td>
<td>Fall/Winter</td>
<td>Fall/Winter</td>
</tr>
<tr>
<td>1:1</td>
<td>1:1</td>
<td>1:1</td>
</tr>
<tr>
<td>Spring</td>
<td>Spring</td>
<td>Spring</td>
</tr>
<tr>
<td>1:1</td>
<td>1:1</td>
<td>1:1</td>
</tr>
<tr>
<td>Summer</td>
<td>Summer</td>
<td>Summer</td>
</tr>
<tr>
<td>You</td>
<td>You</td>
<td>You</td>
</tr>
<tr>
<td>Explore mentor options</td>
<td>Develop short list of mentors</td>
<td>Solidify mentor(s), think about funding an projects</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Develop research projects with mentor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Apply for funding!</td>
</tr>
</tbody>
</table>

- **PGY1**
  - Explore mentor options
  - Mtgs with me: 1:1

- **PGY2**
  - Develop short list of mentors
  - Mtgs with me: 1:1

- **PGY3**
  - Solidify mentor(s), think about funding an projects
  - Mtgs with me: 1:1

- Start the onboarding process
- “Shovel ready” for research years!
Other career development during research years

• Master’s degrees
  • MS in HSOR
    • Methodology Certificate
  • MS in Clinical Investigation
• NU Center for Leadership 1:1 leadership coaching program
• McGaw Medical Education Clinical Scholars Program
• ASE Surgical Education Research Fellowship Program
• ACS Resident as Teachers and Leaders
• ACS Leadership and Advocacy Summit

... and many more!
What are important upcoming events?

- **Training Grant Directors will talk about their programs**
  - Thursday, 9/28, 9-10 AM
  - Surg Onc T32 and R38 – Dr. Seema Khan
  - NQUlRES – Dr. Julie Johnson
  - ACS programs – Dr. Anne Stey
  - Vascular T32 – me
  - Transplant T32 – Dr. Daniela Ladner
  - Pediatric Obesity – Dr. Justin Ryder
  - VA Chief Resident in Quality and Safety – Dr. Dave Bentrem
- **Resident research blitz**
  - October, date TBA
  - Faculty and lab residents will talk to PGY1s and 2s about research in small groups
- **Fall 1:1 meetings with me**
  - Check your email next week to sign up on the Google sheet!
Where can I get more information?

- DOS Resident Research website has links to all of the above
  https://www.surgery.northwestern.edu/education/residency/resident-research/index.html

AND:

- Surgical conferences calendar + abstract deadlines
- Link to Edelstone-Bendix Day and William H. Pearce, MD Research Symposium
- Other resources, including the NEW travel reimbursement policy and Smartsheet

Be sure to use all your PSTP travel money!
What if I can’t get funded?

No resident who has wanted to do research and tried to get funded but was unsuccessful has been excluded from research!

This is a valuable learning process....
You will get help!
People who can help you

Karen J. Ho, MD
Director of Resident Research
kho1@nm.org

Page or call me (617-501-7232) any time!

Daniela Ladner, MD MPH
Vice Chair of Research & Innovation
dladner@nm.org

DOS Research Conference emails, website updates

Marianne Mkrdichian
Director of Research Operations
mblaszak@nm.org

Help with grant submissions, onboarding,
DOS research event planning, awards administration

Lynnette Dangerfield
Admin Asst
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DO NOT IGNORE HER EMAILS!

Rhiannon Weathers
Program Asst
Rhiannon.weathers@nm.org

DO NOT IGNORE HER EMAILS!
Recap

- Why do research?
  - Why do research during residency?
- **Physician Scientist Training Program** (PSTP)
- Research timelines – overview and mentor
- DOS Research Conference and Research Toolkit Lectures
- How to find a faculty mentor or mentoring team
- Possible sources of research funding and why you need to plan ahead
- Examples of other career development activities you can do during your research years
- DOS Resident Research website is a rich source of information
- Important upcoming events
- People who are here to help you
Thank you

QUESTIONS?