

*DOS Research Toolkit Lecture*

# Introduction to the Research Years and How to Find a Mentor(s) – for PGY 1-3

September 12, 2024

Karen J. Ho, MD

Director of Resident Research

# Overview of today

- Why do research?
  - Why do research *during residency*?
- What is the **Physician Scientist Training Program (PSTP)**?
- What's the timeline?
- 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 is DOS Research Conference?
- What are important upcoming events?
- Where can I get more information?
- Who are people who can 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

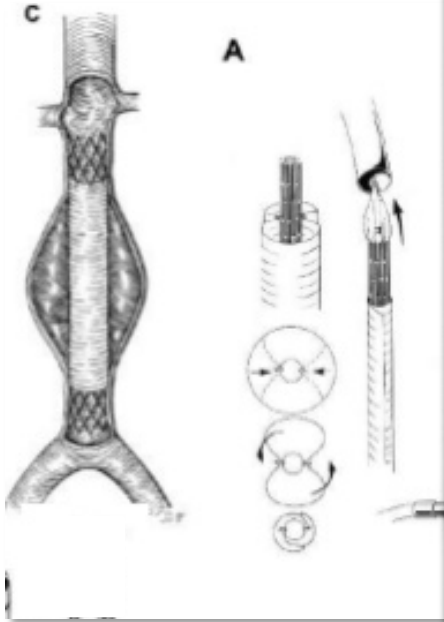
# Surgeon-scientists who have won Nobel Prizes

Surgeons	Country	Year	Accomplishments
Theodore Kocher	Switzerland	1909	Physiology, pathology, and surgery of the thyroid
Alexis Carrell	USA/France	1912	Vascular suture, transplantation of blood vessels and organs
Frederick Banting	Canada	1923	Insulin
Werner Forssmann	Germany	1966	Heart catheterization
Charles Huggins	USA	1956	Hormonal treatment of prostate cancer
Joseph Murray	USA	1990	Organ transplantation

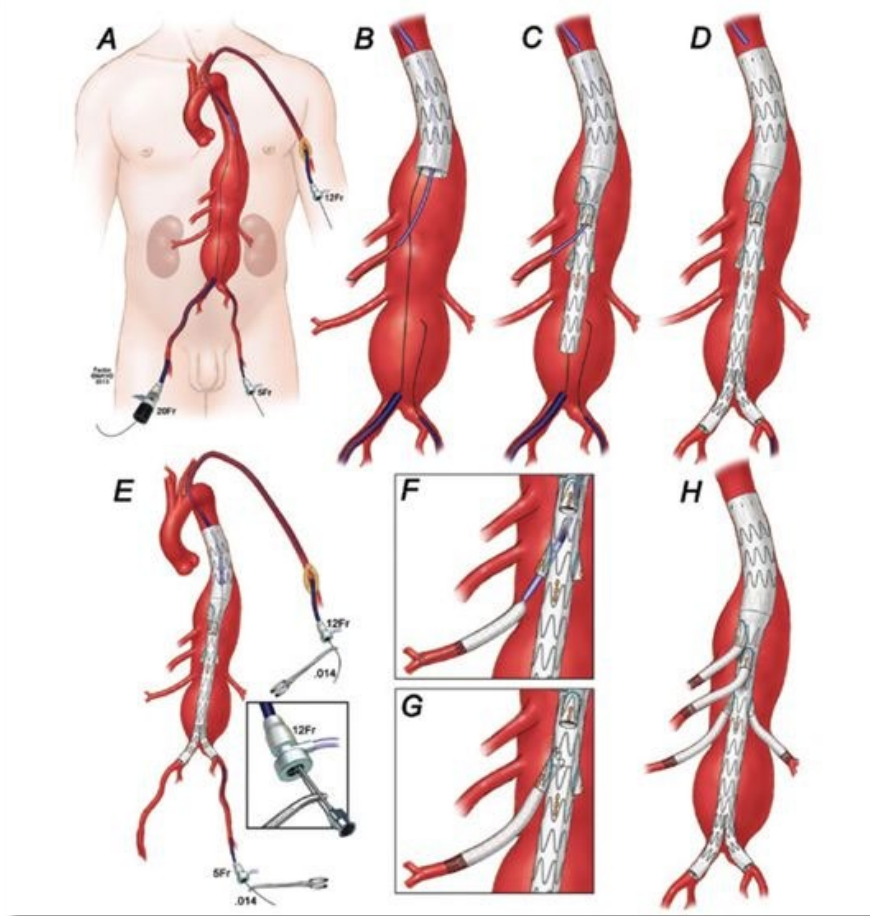
# Examples

- Cardiopulmonary

1991



TODAY



# Steps in surgery

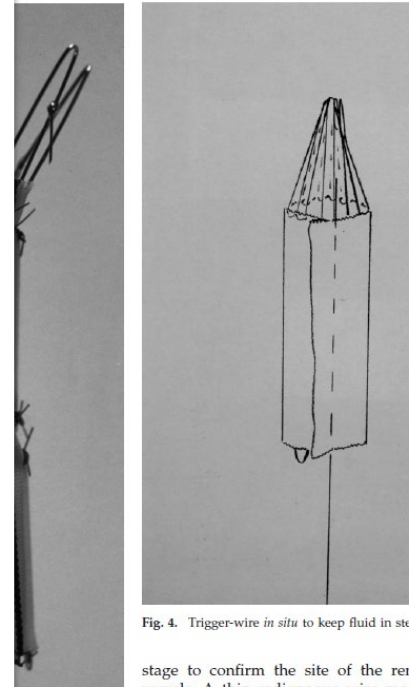


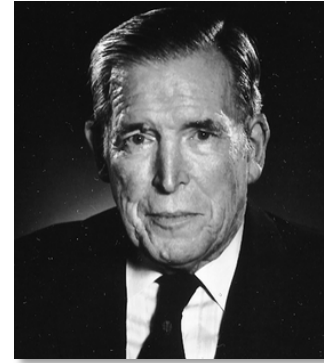
Fig. 4. Trigger-wire *in situ* to keep fluid in site

stage to confirm the site of the ret

- TPN



## 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!!

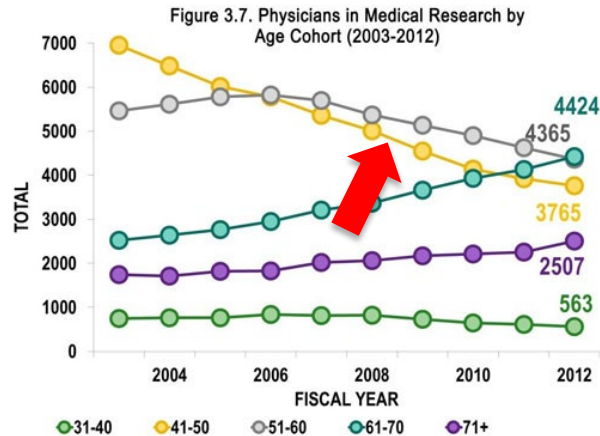
# Why do research *during residency*?

- 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 can be a barrier to completion of research projects



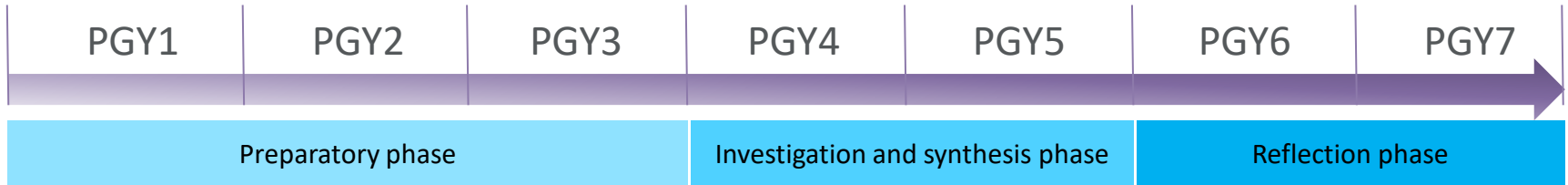
# What is the Physician Scientist Training Program (PSTP)?

- The Physician-Scientist Training Program (PSTP) 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 individualized to your interests and goals!

# What's the timeline?



# What's on the schedule for Research Toolkit Lectures in AY 2024-2025?

Date	Title	Speaker
10/10/24	How to Navigate the Editorial Process	Melina Kibbe
11/14/24	How to be a good research mentee (from a mentor's perspective)	Carl Atkinson
12/19/24	Surgical Education Research: How I Do It	Rebecca Williams
2/13/25	How to Make a Good Figure and Present Data Effectively	Bowen Wang
3/13/25	How to Navigate the IRB	Sharnia Lashley
4/10/25	Research funding opportunities for residents, OSR, and "How I Did It"	Jessie Ho, Saieesh Rao, Darlene Ratliff, Karen Ho
4/17/25	25 Years of Surgical Outcomes Research Using IL Hospital Data	Joe Feinglass
5/15/25	NU Alumni Career Panel	TBA

# What if I miss a Toolkit Lecture?



Northwestern Medicine  
Feinberg School of Medicine

## Department of Surgery

About Us | Education | Research | Patient Care | Divisions

Feinberg Home > Home > Education > Residency > Resident Research > Research Toolkit Lecture Series

### Education

- Education Overview
- NU Surgical Education Center
- Medical Students
- Residency
  - Residency Overview
  - General Surgery
  - Plastic Surgery
  - Thoracic Surgery
  - Vascular Surgery
- Resident Research
  - Resident Research Overview
  - Projects
  - Surgical Conferences Calendar
  - Training Opportunities
  - Physician-Scientist Training Program
  - Resources
  - Research Toolkit Lecture Series**

### Research Toolkit Lecture Series

See below for upcoming and past Research Toolkit Lectures. Click on the links to view recordings of the talks and review copies of the slides.

Date	Title	Speaker	Slides	Recordings of Presentations
10/8/20	How to Pick a Mentor and Be a Good Mentee	Andrew Hoel, MD	Slides unavailable	No Recording
11/12/20	Strategic Career Planning	Hasan Alam, MD	<a href="#">Slides (PDF)</a>	<a href="#">Recording</a>
1/14/21	How to Write an Abstract	Steven Schwulst, MD	<a href="#">Slides</a>	<a href="#">Recording</a>



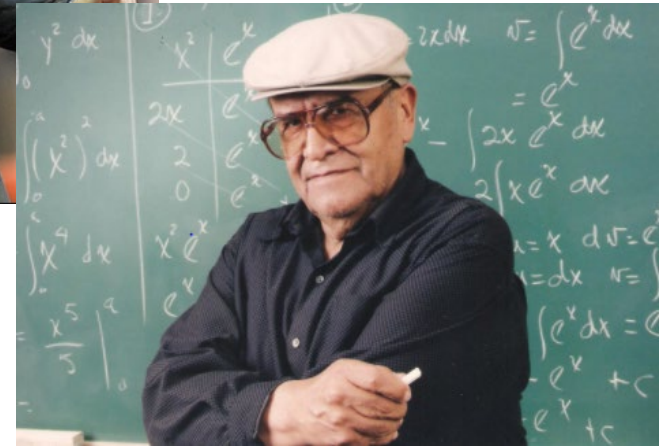
# How do I find a faculty mentor(s)?

- 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



# What can/should a mentor do?

## Tactical

- Provide funding
- Define research question, identify projects, develop plan, review data, troubleshoot
- Develop timelines/milestones/goals
- Refine manuscripts, grant applications, presentations
- Sponsor/support/nominate for applications, awards, career development activities
- 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 who 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



Department of Surgery


Search web or people

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Faculty Mentors and Research Descriptions

Research Area: All

Search by Keyword: Search by Keyword




**Hasan B Alam, MD**  
Professor of Surgery (Trauma and Critical Care) and Cell and Developmental Biology  
[@DrHasanAlam on Twitter](#)  
[Dr. Alam's Faculty Profile](#)

Research Type

- Basic Science
- Translational

Research Interests

Hemorrhage, shock, sepsis, traumatic brain injury, novel treatments



**Amir M Alhajjat, MD**  
Assistant Professor of Surgery (Pediatric Surgery) and Pediatrics  
[@amirhajjat on Twitter](#)  
[Dr. Alhajjat's Faculty Profile](#)

Research Type

- Basic Science
- Translational

Research Interests

Fetal immunology, fetal infections



# Does my mentor need to be in DOS?









Northwestern University | NORTHWESTERN SCHOLARS

Welcome to Northwestern Scholars

Advanced search

For System Status and Known Issues, [click here](#)

 5091	 348	 286566	 27284	 55	 10413
Experts	Organizations	Research Output	Grants	Core Facilities	Research Data

The image shows a screenshot of the Northwestern University 'Northwestern Scholars' website. At the top, a purple header contains the text 'Northwestern University | NORTHWESTERN SCHOLARS'. Below this is a large, artistic photograph of a campus path with people walking. Overlaid on the center of the image is a dark grey search bar with the text 'Welcome to Northwestern Scholars' and a search icon. Below the search bar is a link for 'Advanced search'. At the bottom of the page, there is a purple footer with a link: 'For System Status and Known Issues, click here'. Below the footer is a navigation bar with six categories, each with an icon and a count: Experts (5091), Organizations (348), Research Output (286566), Grants (27284), Core Facilities (55), and Research Data (10413).

# What have NU lab residents done for their research?



The screenshot shows the Northwestern Medicine Department of Surgery website. The header includes the Northwestern Medicine logo and the text "Northwestern Medicine | Northwestern Medicine NEWS CENTER". The main navigation bar features "Department of Surgery" and a search box. Below the navigation bar, a breadcrumb trail reads: "Feinberg Home > Home > Education > Residency > Resident Research > Projects".

The left sidebar contains a menu with the following items: Education (Education Overview, NU Surgical Education Center, Medical Students), Residency (Residency Overview, General Surgery, Plastic Surgery, Thoracic Surgery, Vascular Surgery, Resident Research), and Projects (Resident Research Overview, Surgical Conferences Calendar, Training Opportunities, Physician-Scientist Training Program, Resources, Research Toolkit Lecture Series, Faculty Mentors and Research Descriptions).

The main content area is titled "Resident Research Projects" and includes the following text: "Browse below to learn about the investigations recently conducted by our residents. For information on residents' quality improvement projects as part of their research fellowships, [visit the Northwestern Quality Improvement, Research & Education in Surgery page.](#)"

Under "Current Research Projects", two profiles are displayed:

- Paola Barrios, MD, MS**  
General Surgery Resident  
2024-Present  
Mentor: Daniela P. Ladner, MD, MPH  
Dr. Barrios' research interests include Surgical Outcomes as well as Translational Research in the field of Transplantation. Her current research focuses on finding biomarkers for progression of liver cirrhosis and decompensation. She is also using national databases to study trends in hospitalizations among cirrhotic patients. Dr. Barrios is currently a Transplant Surgery T32 Research Fellow and additionally received funding through the Steven J. Stryker, MD, Gastrointestinal Surgery Research and Education Endowment. Dr. Barrios is also interested in the use of Artificial Intelligence
- Raheem Bell**  
Postdoctoral Research Fellow  
2024-Present  
Mentor: Brian Hitsman, PhD  
Dr. Bell's research and career focus is on Thoracic Oncology, with a strong emphasis on health equity and policy. He aims to improve cancer care quality and optimize patient outcomes. Currently, he is partnering with Friend Health, a federally qualified health center, to develop a QR-code-based lung cancer screening tool to address screening disparities in the community. Dr. Bell is also a postdoctoral research fellow with the American College of Surgeons Cancer Programs, where he is gaining expertise in big data, statistical coding and formulating clinically and organizationally relevant questions to

# “SURGE-N” Newsletter has resident research news



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NEWS CENTER

## Department of Surgery

Home About Us Education Research Patient Care Divisions

Feinberg Home > Home > Education > Residency > Resident Research > “SURGE-N” Research Newsletters

### Education

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### Residency

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Resources  
Research Toolkit Lecture Series  
Faculty Mentors and Research Descriptions

► “SURGE-N” Research Newsletters  
Frequently Asked Questions  
Fellowships  
PurpleSurg and Conferences  
Starzl Academy for Physician-

## Surgery Research Growth and Engagement Newsletter (SURGE-N)

This newsletter promotes and celebrates Department of Surgery trainee research activities and accomplishments. If you have news that you want to share (your own or your peers), please send it to **Karen J. Ho, MD**.

- June 2024 Newsletter (PDF)
- Winter 2024 Newsletter (PDF)
- Fall 2023 Newsletter (PDF)
- Summer 2023 Newsletter (PDF)
- Winter 2023 Newsletter (PDF)
- Fall 2022 Newsletter (PDF)
- Spring 2022 Newsletter (PDF)
- Winter 2022 Newsletter (PDF)
- Fall 2021 Newsletter (PDF)
- Spring 2021 Newsletter (PDF)

# SURGE-N

Surgery Research Growth and Engagement Newsletter  
Issue 7 (Winter 2023)

www.surgery.northwestern.edu  
@NMSurgery  
@purple surg  
northwesternsurg

## CONGRATULATIONS TO THESE AWARD WINNERS!

Emily Carlier (mentor: Chitaru Kurihara): Finalist in Resident Forum at American Association for Thoracic Surgery  
Calvin Chao (mentor: Bin Jiang): Society for Asian Academic Surgeons Resident Development Scholarship and Vascular & Endovascular Surgery Society Resident Research Award  
Atieh Hajirahimkhan (mentor: Seema Khan): Surgical Oncology T32  
Jessie Ho (mentor: Hasan Alam): Committee on Trauma of the American College of Surgeons Regional Resident Paper Competition (for the second year in a row!)  
Booker T. Davis, IV (mentor: Steve Schwulst): K39/R00 from NINDS entitled “Fecal Microbiota Transfer Attenuates Aged Gut Dysbiosis and Functional Deficits after Traumatic Brain Injury”  
Ryan Jacobs (mentor: Dave Odell): Surgical Oncology R38  
Joe Sanchez (mentor: Anne Stey): ISQIC fellowship  
Dominic Vitello (mentor: Dave Bentrem and Daniela Ladner): Surgical Oncology R38  
Norah Zaza (mentor: Dave Bentrem): VA Chief Resident in Quality and Patient Safety

**GOOD LUCK ON YOUR GRANT APPLICATIONS!!**

Ryan Jacobs (mentor: Dave Odell): NIH Loan Repayment Program and American Association for Thoracic Surgeons  
David J. Sugarbaker Surgical Resident Investigator Award  
Shelbie Kirdendoll and Regina Royan (mentor for both: Anne Stey): NIH Loan Repayment Program

The Steven J. Stryker, MD Gastrointestinal Surgery Research and Education Endowment is accepting applications! This is a great opportunity for NU residents going into the lab. Deadline is March 1. See the [website](#) for more information and application materials. The Vascular Surgery Scientist T32 Training Program is accepting applications! Deadline is March 1. See the [website](#) for more information and

## 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 research funding?

- Broad categories:
  - NIH institutional research training grants
    - DOS: Pediatric Surgery, Transplant, Surgical
    - NU: many others
  - Individual postdoctoral research fellowships
  - Intramural (e.g., Stryker endowment)
  - Mentor
- You need to plan ahead and pay attention to deadlines!



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

Application deadline	Earliest start date for funding
April 8	September <u>of following year</u>
August 8	April <u>of following year</u>
December 8	July <u>of following year</u>

# Training and funding opportunities + links



Northwestern Medicine | Northwestern University  
Feinberg School of Medicine

Northwestern Medicine | Northwestern University  
NEWS CENTER | FACULTY

## Department of Surgery

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    - Physician-Scientist Training Program
    - Resources
    - Research Toolkit Lecture Series
    - Faculty Mentors and Research Descriptions
    - "SURGE-N" Research Newsletters

### Funding and Training Opportunities for Residents & Students

#### For Residents

Show Details

- NIH Supported Training/Fellowship Programs
- Programs at Northwestern University
- Programs outside Northwestern University
- Non NIH-Funded Training Programs
- NIH Loan Repayment Program
- Research Trainee Awards
- Prizes/Travel/Meeting Awards

# Mentor timeline

PGY1	PGY2	PGY3	PGY4	PGY5	PGY6	PGY7
Preparatory phase		Investigation and synthesis phase			Reflection phase	
<ul style="list-style-type: none"> <li>Brainstorm research/personal/professional interests</li> <li>Identify mentor(s) and funding opportunities</li> <li>Discuss your ideas with other people</li> <li>Identify institutional resources</li> <li>CI projects</li> </ul>	<ul style="list-style-type: none"> <li>Society research</li> <li>Apply for funding</li> <li>Obtain regulatory approvals</li> </ul>	<ul style="list-style-type: none"> <li>PSIP ("Research years")</li> <li>Set goals for research projects</li> <li>Collect and analyze data</li> <li>Submit abstracts for meetings</li> <li>Write and submit manuscripts</li> <li>Get grant-writing experience</li> <li>Attend SURPASS and Power Hour</li> <li>Revisit your goals</li> </ul>	<ul style="list-style-type: none"> <li>Reassess what you've learned about yourself and your interests</li> <li>Consider the role of research in your career</li> <li>Apply for fellowships/jobs</li> </ul>			

	PGY1			PGY2			PGY3		
	Fall/Winter	Spring	Summer	Fall/Winter	Spring	Summer	Fall/Winter	Spring	Summer
Mtgs with me	1:1	1:1		1:1	1:1		1:1	1:1	
You	Explore mentor options		Develop short list of mentors	Solidify mentor(s), think about funding an projects	Develop research projects with mentor	Apply for funding!		Start the onboarding process	"Shovel ready" for research years!

# Career development during research years

- Master's degrees
  - MS in HSOR
  - MS in Clinical Investigation
- Graduate certificates (Methodology, AI)
- NU Center for Leadership
- McGaw Medical Education Clinical Scholars Program
  - Bioethics, Global Health, Health Equity & Advocacy, Education
  - Residents as Teachers & Leaders
- 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?

- **Resident research recruitment blitz**
  - Thursday, October 3, 2024, 6 pm at Francesca's
  - Faculty and lab residents will talk to PGY1s and 2s about research in small groups
- **Fall 1:1 meetings with me**
  - [Check your email to sign up on the Google sheet!](#)

# Where can I get more information?

- DOS Resident Research website has LOTS of information!



PLUS:

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



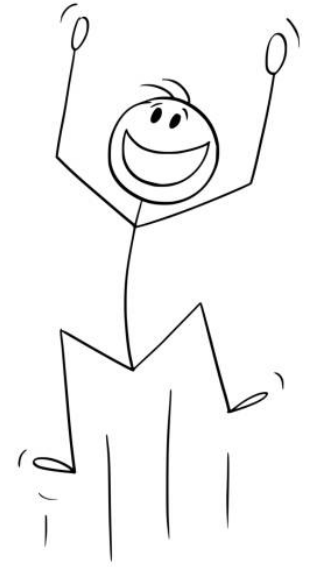
Be sure to use all your PSTP travel money (\$2500/year)!



## What if I can't get research funding?

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

Bowen Wang, PhD

Associate Director of Basic and

Translational Research

bowenwang@northwestern.edu

Kash Raza

Manager of Finance Administration

kraza@nm.org

*Help with onboarding, DOS research event planning, awards administration*

Lynnette Dangerfield

Research Project Manager

l-dangerfield@northwestern.edu

*DO NOT IGNORE HER EMAILS!*

Darlene Ratliff

Manager of Research Administration

darlene.ratliff@northwestern.edu

*Pre- and post-award management for extramural awards*

# 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?**

# Coming up next:

## Research INSIGHT Talk

Northwestern University Feinberg School of Medicine

Department of Surgery Research Conference

*Research INSIGHT Presentation*

Interesting New Studies, experiments, and Ideas for Growth and Transformation



*Social Drivers of Health in Surgery*

**Joseph Sanchez, MD**

General Surgery Resident, PGY-5

*Mentor: Anne Stey, MD*