

DOS Research Toolkit Lecture

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

September 11, 2025

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 research funding – and when do I start the process?
- 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 through research and innovation

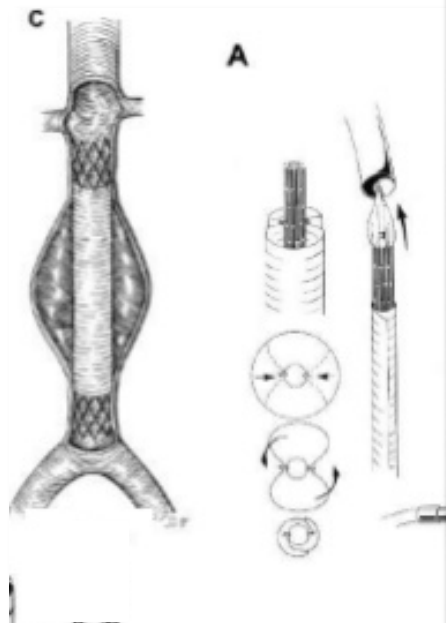
Surgeon-scientists who have won Nobel Prizes

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

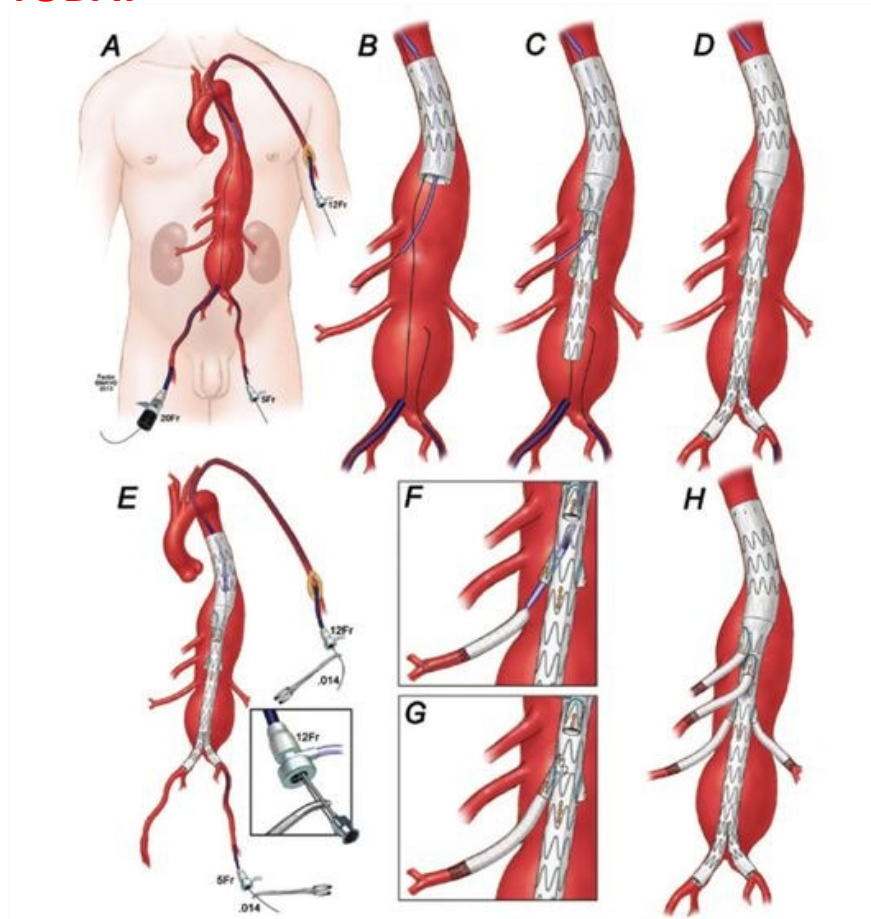
Examples

- Cardiopulmonary

1991



TODAY



ts in surgery

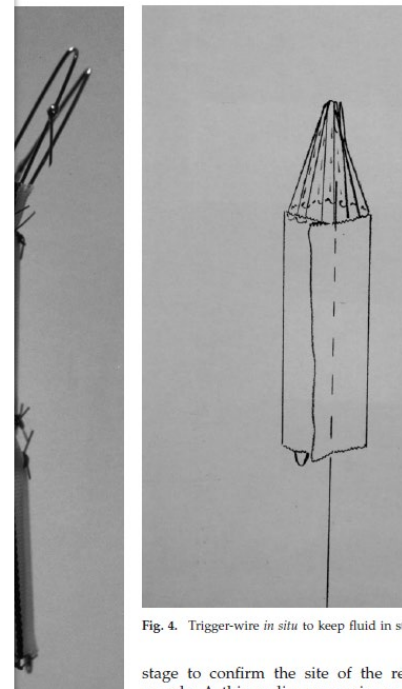


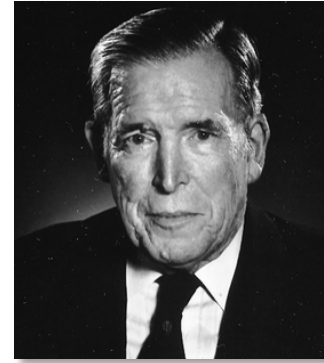
Fig. 4. Trigger-wire in situ to keep fluid in site

stage to confirm the site of the re-

- 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
- ECMO
- Immune therapy for cancer

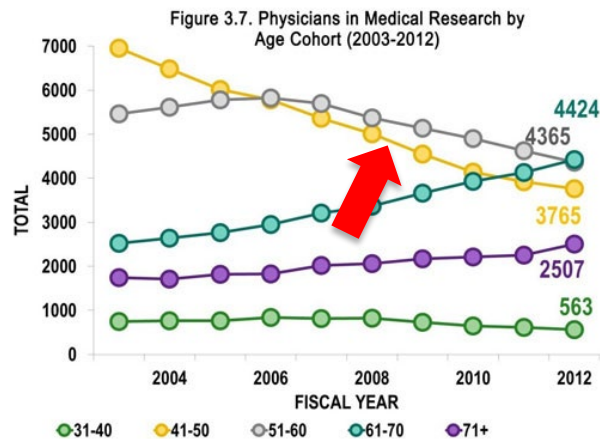
... and the list goes on and on!!

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
 - In surgery, this means 5 years of residency + 1-3 years of research

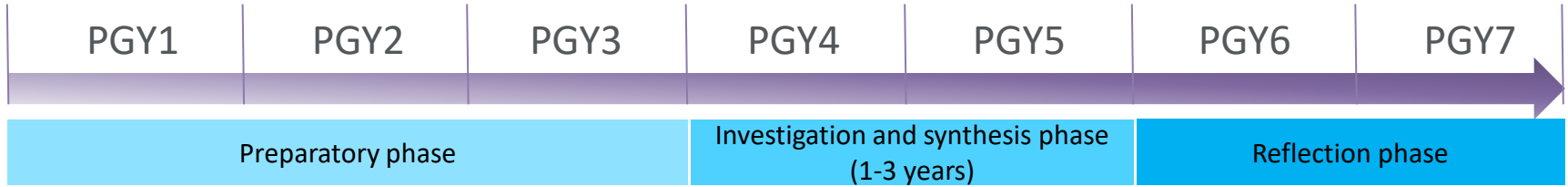


- According to the 2014 NIH Physician-Scientist Workforce Report, physician-scientists are becoming an endangered species!
- In DOS, PSTP plans are individualized to your interests and goals!

How can I do research during residency?

- Engage with faculty and work on projects, presentations, and publications concurrently with clinical work
 - book chapters, review articles, join active projects led by others
 - longitudinally work on your own projects
 - does not necessarily require research funding
- Dedicated research time - optional
 - 1-3 years
 - Optional advanced degree(s)
 - Requires funding

What's the timeline for dedicated research time?



What if I miss a Toolkit Lecture?



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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	Slides (PDF)	Recording
1/14/21	How to Write an Abstract	Steven Schwulst, MD	Slides	Recording



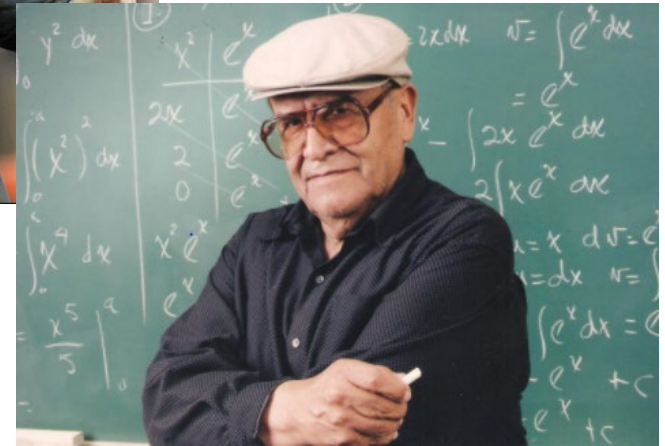
How do I find a faculty mentor(s)?

- 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

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Faculty Mentors and Research Descriptions

Research Area:All ▾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?



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

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

The image shows the Northwestern Scholars homepage. It features a purple header with the university name and a scenic background image of a campus path. A central search bar is prominent, with a 'Welcome to Northwestern Scholars' message above it. Below the search bar, there's a link to system status. At the bottom, a navigation bar displays various metrics: 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?



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Education

Education Overview

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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

Faculty Mentors and
Research Descriptions

Resident Research Projects

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](#).

Current Research Projects



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

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
 - NU: many others
 - Individual postdoctoral research fellowships
 - Intramural (e.g., Stryker endowments)
 - Mentor
- You need to plan ahead and pay attention to deadlines!



PGY 3

PGY 2

Start funding by July 1, 2026
Submit grant by December 2025
Start writing by August 2025
Identify project and Aims by July 2025
Discuss funding roadmap by January 2025
Identify mentor by Dec 2024

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



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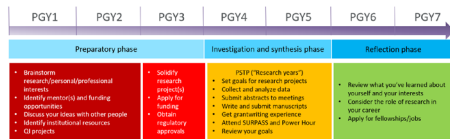
Funding and Training Opportunities for Residents & Students

For Residents

Show Details Search

- 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		
	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 with your mentor!		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**
 - Usually in Oct or early November
 - Dinner 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 emails to sign up!

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)!

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

Darlene Ratliff

Manager of Research Administration

darlene.ratliff@northwestern.edu

Pre- and post-award management for extramural awards



Thank you
QUESTIONS?