



Research and a Career in Vascular Surgery

General Surgery Resident Breakfast Session
2019 Vascular Annual Meeting
June 13, 2019

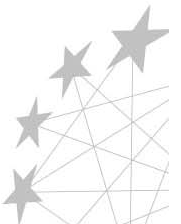
PRESENTED BY:

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Assistant Professor
Division of Vascular Surgery
Northwestern University

Disclosures

- None

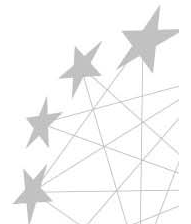




Internship to K award:

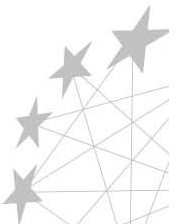
12 years!

A research career is a **process** that takes time, commitment, and investment from you AND your mentors AND institutions!



What's the value of research to patients and surgery?

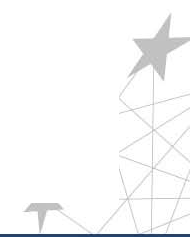
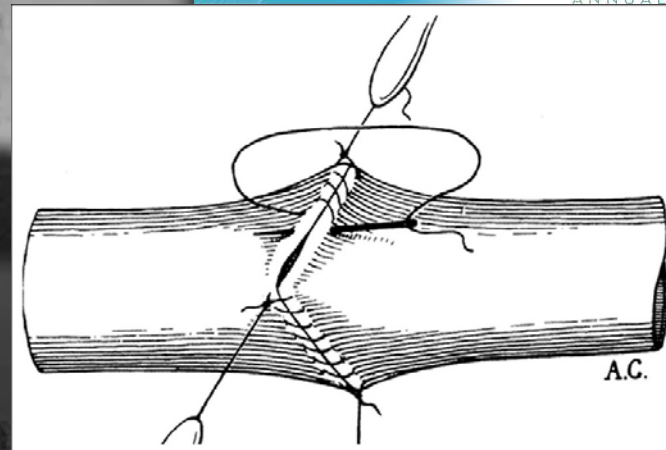
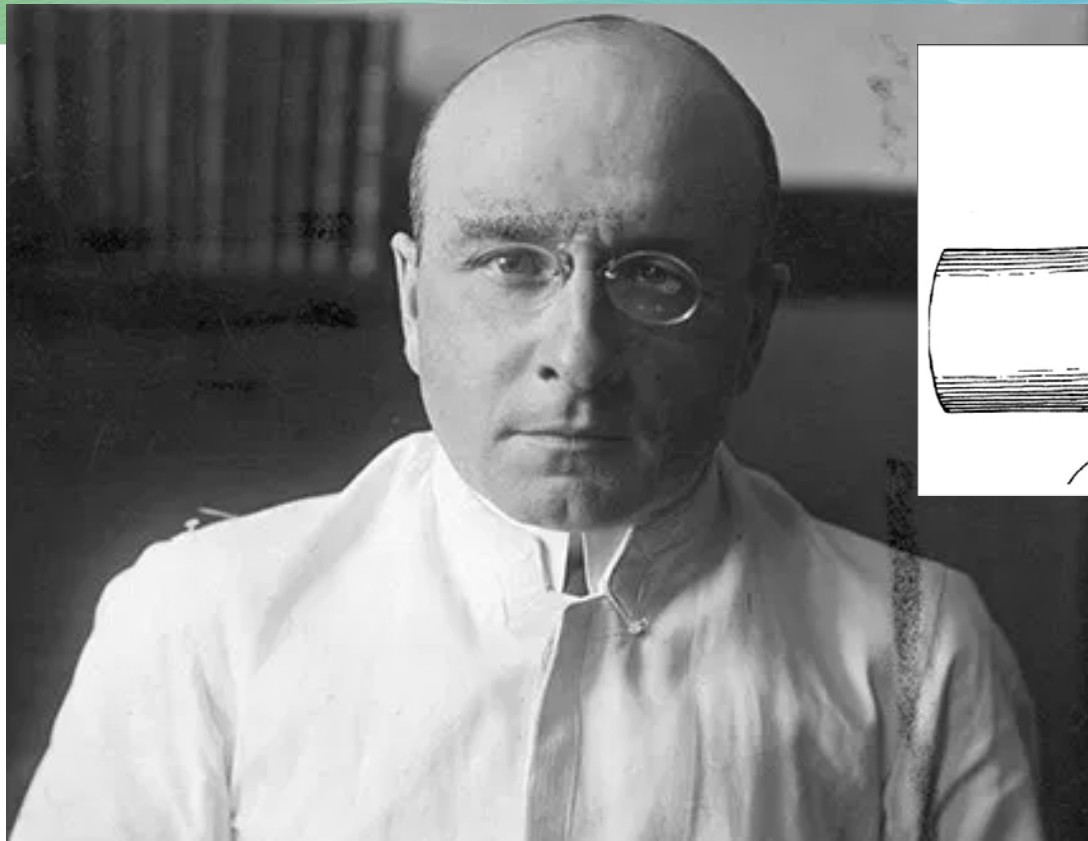
- Research leads to advancements in mechanisms of disease and the translation of these advancements to patients
- Research allows for rigorous evaluation of current practices and for quality improvement
- Surgery has always been a research-driven and evidence-based field
 - › History is replete with surgeons who have transformed 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
Sir 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





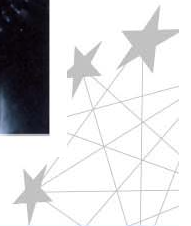
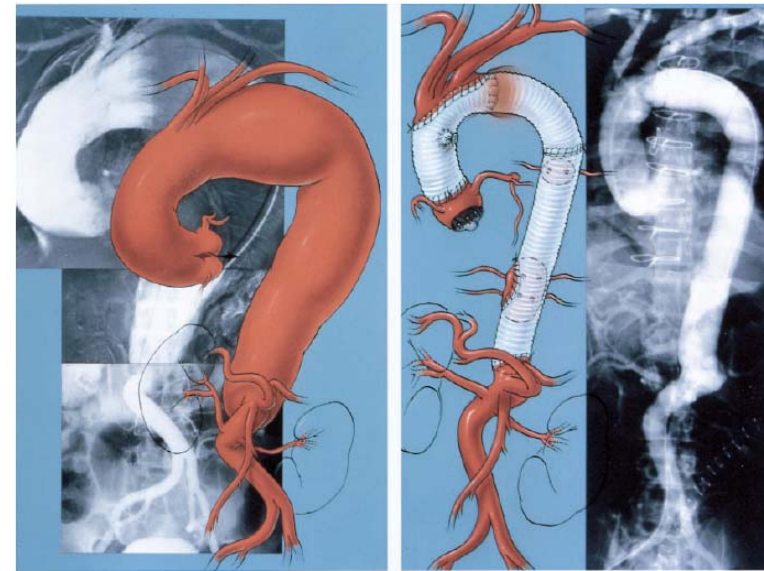
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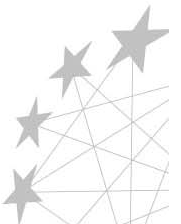
Other examples of recent research accomplishments in surgery

- **Cardiopulmonary bypass**
- **Aortic surgery**
 - › Arthur Voorhees and Michael DeBakey, 1950s – aortic replacement with Dacron grafts
 - › Stanley Crawford and Joseph Coselli



Other examples of recent research accomplishments in surgery

- Cardiopulmonary bypass
- Aortic surgery
- Aortic stent-grafts
 - › Juan Parodi, 1991



TODAY

1991

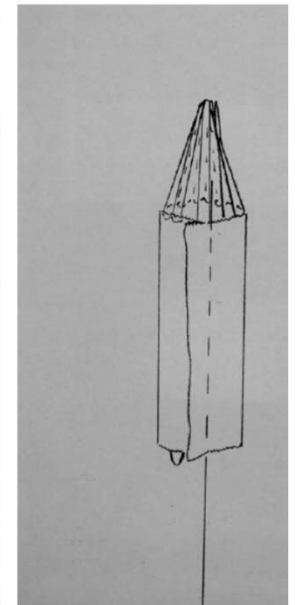
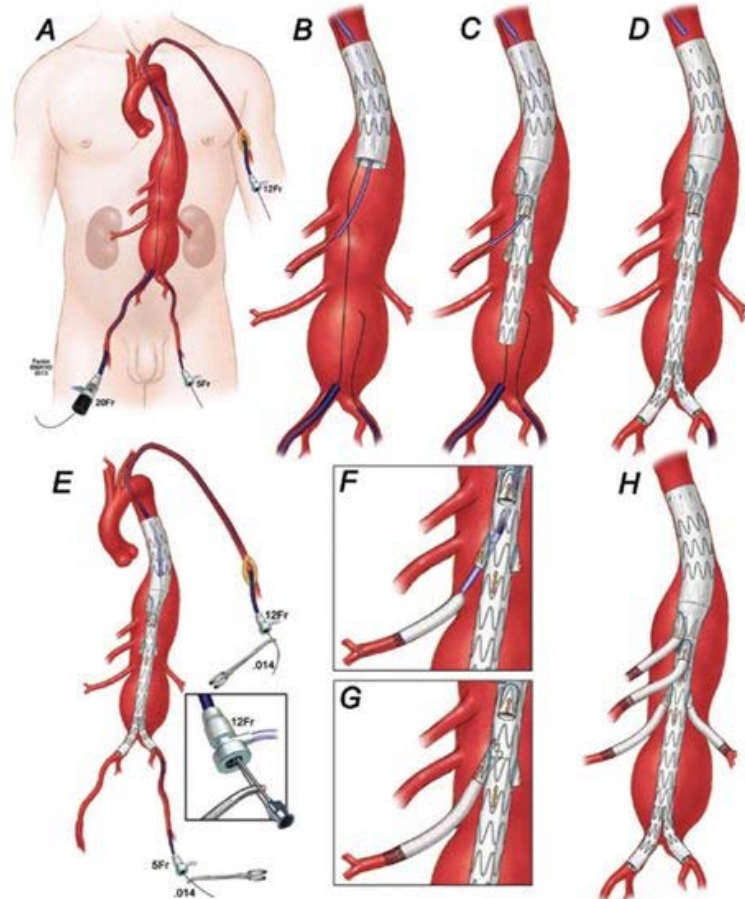
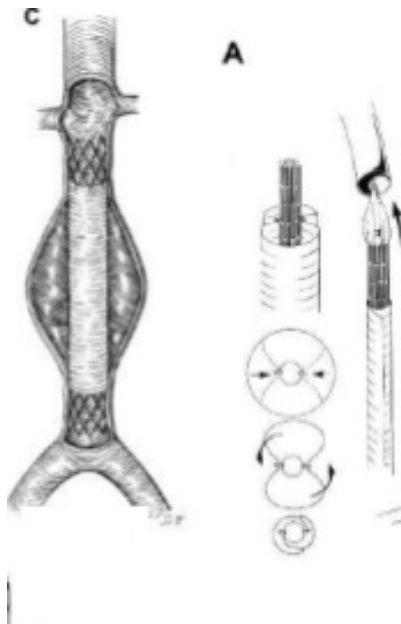
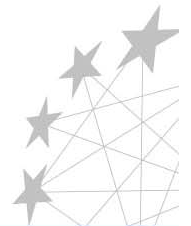


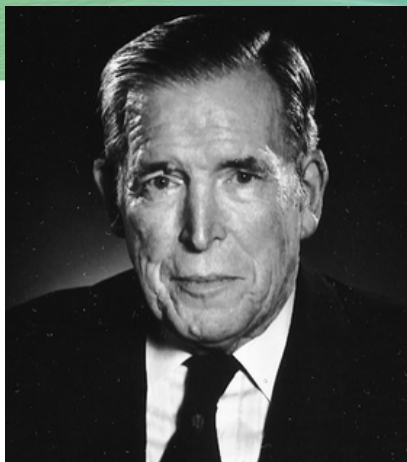
Fig. 4. Trigger-wire *in situ* to keep fluid in sto

stage to confirm the site of the ren
... A thin radiopaque wire ...

Other examples of recent research accomplishments in surgery

- Cardiopulmonary bypass
- Vascular surgery
- Aortic stent-grafts
- Total parenteral nutrition





Jonathan Rhoads
(University of Pennsylvania)



Harry Vars

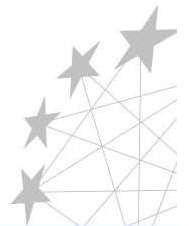


Stanley Dudrick and "Stinky"
SURGICAL RESIDENT



Other examples of recent research accomplishments in surgery

- Cardiopulmonary bypass
- Vascular surgery
- Aortic stent-grafts
- Total parenteral nutrition
- Metabolic response to sepsis and trauma (burn care)
- Controlled clinical trials for cancer
 - › Radical mastectomy vs. lumpectomy + radiation (1970s)



Other examples of recent research accomplishments in surgery

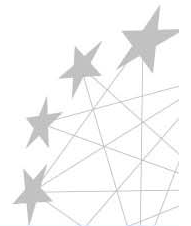
- Effect of hormones on cancer
- Minimally invasive surgery (first lap chole – 1985; first robotic-assisted aortic surgery - 2006)
- Fetal surgery
- Extracorporeal gas exchange
- Immune therapy for cancer

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



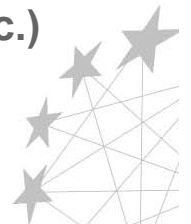
How can you prepare during residency for a career in surgery?

- **Take time off to do research during residency (2 years)**
 - › Plan ahead of time; talk to your program director in PGY1-2 years
 - › Clinical research vs. basic science vs. global surgery vs. education?
 - MPH, MBA, clinical effectiveness courses
 - › Attend workshops: career development (e.g., AAS Fall Courses) and grant-writing (e.g., AAS Surgical Investigators Course)
- **Attend and present at research- and surgery-oriented meetings**
 - › e.g., Academic Surgical Congress, American College of Surgeons, Vascular Research Initiatives Conference/Vascular Discovery, AHA Scientific Sessions, Translational Science, regional and national vascular and surgery meetings, etc.
 - › Institutional research meetings and conferences



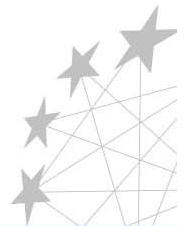
How can you prepare during residency for a career in surgery?

- **Build a track record of publications and academic output**
 - › Book chapters, review articles
 - › Data-driven, peer-reviewed publications
- **Build a track record of successful funding**
 - › NIH T32 programs (check <https://vascular.org/research-quality/research-opportunities>; check out opportunities at your own institution)
 - › NIH F32
 - › Research funding through societies (ACS, AAS, SUS, AHA, SAAS, VESS, etc.)
 - › Keep an eye on deadlines – need to apply early!



How can you prepare during residency for a career in surgery?

- Network to identify potential mentors
 - › Does not need to be at your institution or in your subspecialty
 - › You can—and should—have more than 1 mentor (mentoring team)
 - › Go to meetings and meet people
 - › Career development awards are based on *candidate, career development plan, mentor, environment,* and research strategy



Find mentor(s)

A person with:

- Accumulated wisdom
- Personal interest
- Generosity
- Integrity
- Availability



How to find a good mentor

- Recognize your own needs, strengths, and weaknesses
- Seek out potential mentors

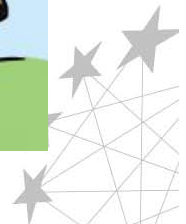


- Interview potential mentors and listen for word-of-mouth endorsements
- Recognize that one isn't always enough
- Mentee-mentor relationships can last decades!



How can you incorporate research into your first faculty position?

- ★ **Decide on a research career FIRST and THEN find a place that will set you up for success**
 - › Commitment from mentors, division chief, department chair, and medical school dean
- **Be clear about your research interests early during your job search**
 - › “T to K transition”
 - › K08, K23, KL2, AHRQ, PCORI, AHA, VA



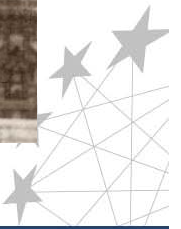
How can
first facu

- Identify and be success
- › Mentorsh
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- › Tuition al
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- › Collabora
- › Institutio
- › Intramura
- › Establish
- › Be a good

**I CAN'T TELL YOU
THE KEY TO SUCCESS,
BUT THE KEY TO
FAILURE IS
TRYING TO
PLEASE
EVERYONE.**



to your



<https://vascular.org/research-quality/research-career-resources>

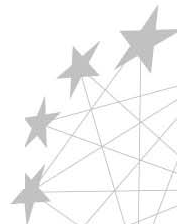


Research Career Resources

In addition to the SVS Foundation comprehensive research awards program, SVS maintains strong relationships with the National Institutes of Health (NIH)/National Heart, Lung, and Blood Institute (NHLBI), Food and Drug Administration (FDA), Agency for Healthcare Research and Quality (AHRQ), and other government agencies involved in research. This page provides various resources available to explore a career in vascular disease research.

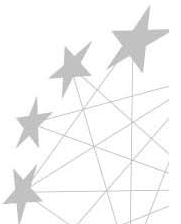
SVS Foundation Research Awards

- Community Awareness and Prevention Project Grant
- Mentored Research Career Development Awards Program
- E.J. Wylie Traveling Fellowship
- Clinical Research Seed Grant
- Research Career Development Travel Award
- Resident Research Award
- Student Research Fellowship



Why do surgeons need to be actively involved in research?

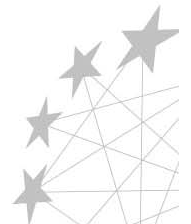
- Surgery is evidence-based
 - › Surgeons need to own the data, not just be technicians!
- We have a unique perspective on diseases and our patients (bedside to bench to bedside)



Perceived barriers to research



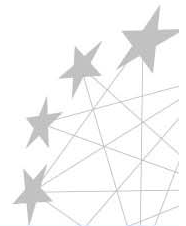
- Not enough time
- Concerns about funding
- Difficulty melding research with surgical practice
- Surgeon-scientists can't have an active practice



Stay involved in research!



- Fun and intellectually stimulating
- Expand understanding and knowledge in vascular surgery
 - › Basic science, translational, clinical, education
 - › Research is the pathway to discovery and innovation!
- In the right environment and with the right mentorship, you will be successful!



THANKS!

Contact me with questions:

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