Funding Mechanisms for Trainees (And Junior Faculty)

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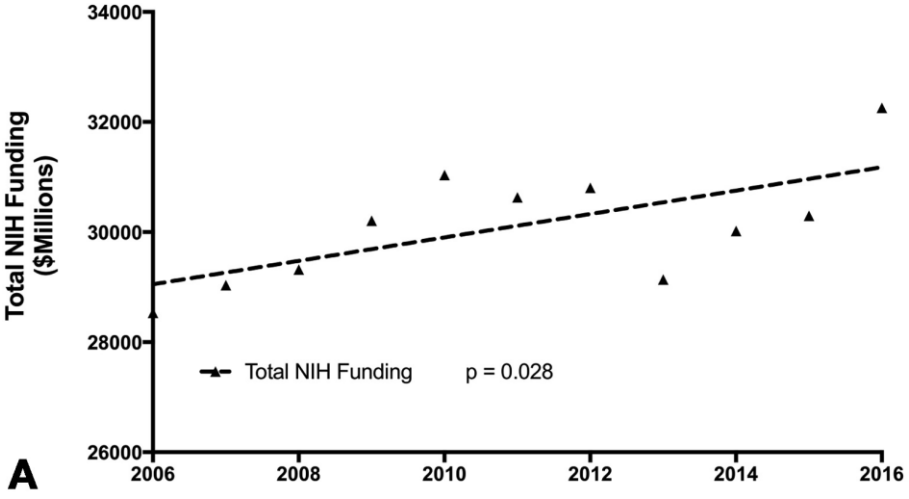
Disclosures

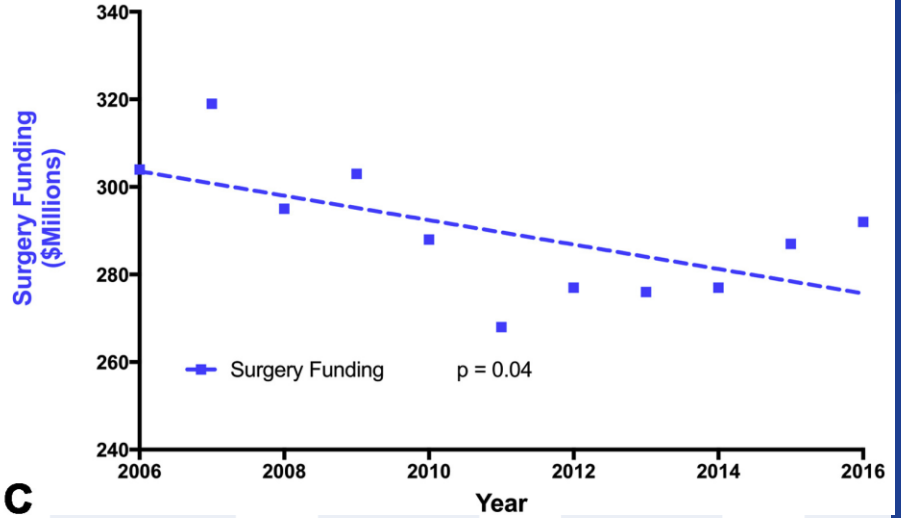
- Sponsored Research: Bristol Myers Squibb

Overview

- Protected Time/ Start-up Package
- NIH Funding
  - K awards & Institutional K awards
  - Loan Repayment Program
- Society & Foundation Awards
- Cooperative Groups
- Industry

Why are we having this talk?

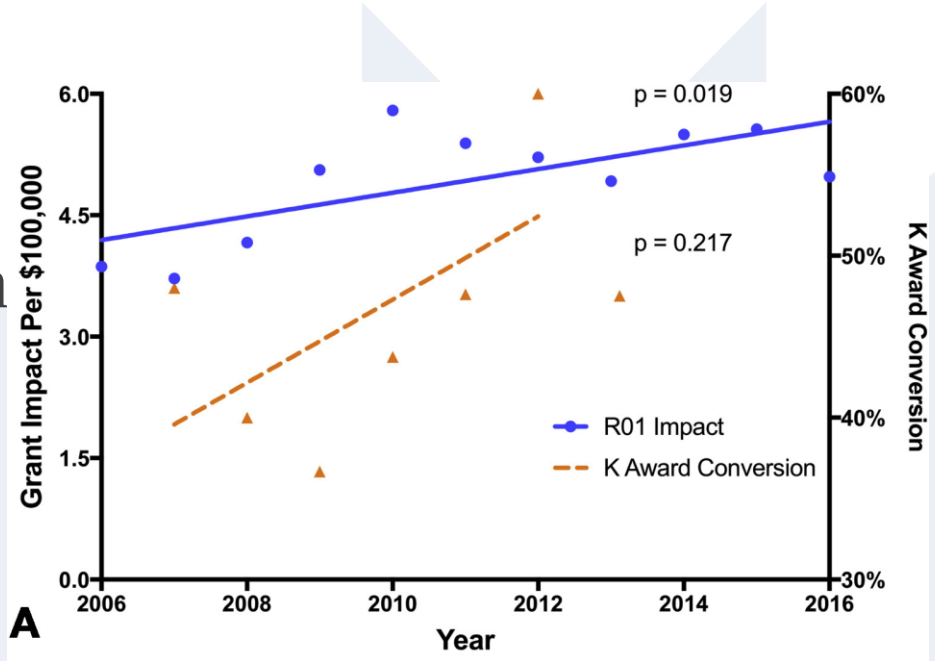




Narahari et al, *JACS* 2018

Surgeon-scientists are highly productive

- Increase in grant impact over time
- High K → R conversion
- Surgeons make great scientists!



Narahari et al, *JACS* 2018

A Roadmap for Aspiring Surgeon-Scientists in Today's Healthcare Environment

Allan M. Goldstein, MD, Alex B. Blair, MD,† Sundeep G. Keswani, MD,‡ Ankush Gosain, MD, PhD,§ Michael Morowitz, MD,¶ John Kuo, MD, PhD,|| Matthew Levine, MD, PhD,** Nita Ahuja, MD,†† and David J. Hackam, MD, PhD‡‡, Basic Science Committee of the Society of University Surgeons*

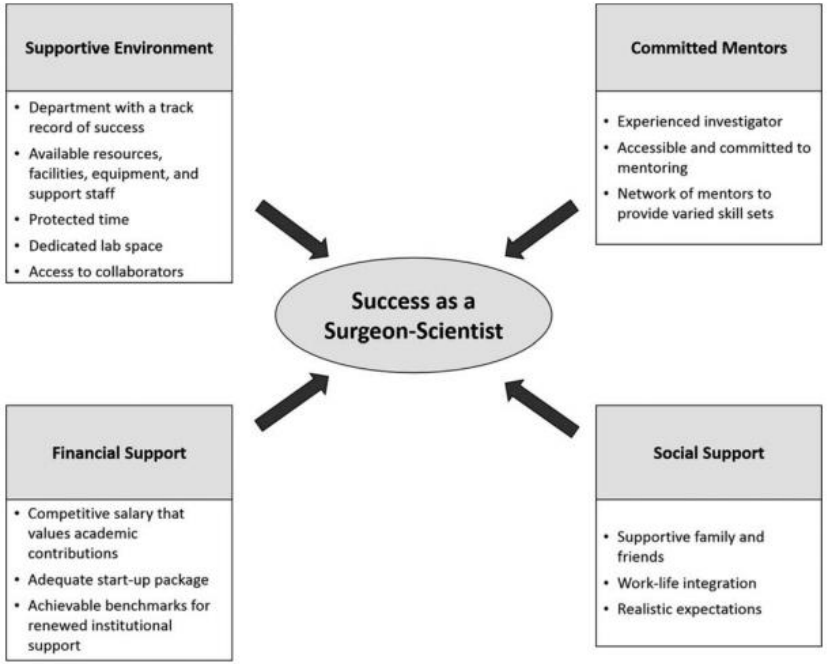


TABLE 1. Timeline for the Initial Years of a Surgeon-Scientist's Career

Early Years	Goals and Milestones
Year 1	Identify the scientific questions to be tackled
	Obtain skills necessary to achieve scientific goals
	Master the relevant literature and knowledge gap
	Begin to obtain preliminary data
	Hire a research technician and/or trainee or fellow
	Submit applications for institutional approvals
	Identify a team of mentors
	Attend research skills and grant writing workshops
	Start submitting grant applications
	Become active in national societies
Years 2–3	Identify collaborators
	Begin to publish initial manuscripts
	Maintain an up-to-date curriculum vitae
	Continue applying for research grants
	Participate in manuscript and grant reviews
Year 4 and beyond	Become familiar with requirements for academic promotion
	Be persistent and resilient!

Ann Surg 2018

Protected Time

- Invaluable
- Need to know clinical metric
  - What does 70% clinical mean?
    - Need to know the denominator
      - # RVU, # cases, days per week?
- Very hard to get protected time back after you lose it
  - Take it from the start

Start-up Package

- How much?
  - Time vs. $$$
  - Will salary be compensated during “start-up”
- How long? When does it start?
- Who? Personnel
- Space & Equipment?

NIH Programs

NIH Funding-K awards

- K08-the jackpot for early investigators
- 3-5 years
- Support ($50,000) + salary (cap $187,000)
- Protected time (75% research)
- Focus on mentor component
- Goal: achieve independence
  - K → R transition

NIH Funding-K awards

- Typical cycle includes resubmission
- First submission to funding: 20 months
  - Need start-up, foundation grants, institutional awards
  - Success rate ~ 45%
- Not the sole mechanism for obtaining research independence

NIH Funding-Other K awards

- K12/ KL2/ TL1 Clinical Scientist Institutional Career Development Program Award
- Held by institution/ established investigator, not individual
  - Set # of slots
- Some "flexibility" in time commitment
  - "Protected time can include effort treating patients on clinical trials"
  - Formal research training-Masters degree
- Can apply for K08 after

Example K12/KL2/TL1 in Texas

- Texas Regional CTSA Consortium
  - UT-Houston: KL2 program: Center for Clinical and Translational Sciences
  - MD Anderson: Paul Calabresi Career development Award for Clinical Oncology-NIH
  - UT Southwestern: Clinical Scholars Track: Center for Translational Medicine
  - UT San Antonio: Institute for Integration of Medicine & Science
  - UTMB: KL2 program: Institute for Translational Sciences

NIH Loan Repayment Program-TO YOU!

- Repay eligible debt up to $35,000/ year
  - Must have $140,000 at contract start date
  - Initial: 2 years
  - Renew yearly until debt paid
- Fellows eligible: $17,000/ year ($68,000 debt)

NIH Loan Repayment Program-TO YOU!

- Funding rate 56% for MD, 68% MD/ PhD
- Clinical, Pediatric, Health Disparities, Disadvantaged Backgrounds, Contraception & Infertility
- Independent or Mentored
- 20 hours research/ week
- Can have other NIH grants

Quality Research-AHRQ

- Agency for Healthcare Research and Quality
- K08 and K01 mechanisms

Society/Foundation Awards & Cooperative Groups

Society Awards

Funding source	Applied?	Due	Obtained?	$ (Annual)	Years
AAS	Yes	Aug 2015	Yes	40,000	1
NIH Loan Repayment Program	Yes	Dec 2015	Yes	35,000	2
ASCRS Limited Project Grant	Yes	Mar 2016	Yes	50,000	1
ASA	Yes	Jun 2016	No	75,000	2
ACS Clowes Award	Yes	Aug 2016	No	45,000	5
Society of MSK Award	Yes	Apr 2016	Yes	65,000	1
ASCO Career Development Award	Yes	Sep 2016	Pending	66,000	3
ASCRS Career Development Award	Yes	Oct 2016	Pending	75,000	2
ACS Faculty Research Fellowship	Yes	Nov 2016	Pending	40,000	2
MSK Faculty Research Award	Yes	Dec 2016	Pending	75,000	2
SSO Clinical Investigator Award	No	Jan 2017	n/a	50,000	2
SSAT Career Development Award	No	Jan 2017	n/a	50,000	2
SSAT/ASCRS Joint Research Award	Yes	Feb 2017	In process	50,000	2

J. Joshua Smith, MD, PhD
http://www.aasurg.org/blog/early-career-funding-opportunities/

Society Grants-General Considerations

- First 1-3 years in practice
- 1-2 year s of support
- $35,000-$50,000/ year
- Most require mentor
- Almost all societies have these

Foundation Awards

- Innumerable Foundations
- All stages of career
- Generally 1-2 years
- ~$50,000-wide range
- Grants department has lists

Training

10/15/2018: American Cancer Society — Audrey Meyer Mars International Fellowships in Clinical Oncology **App**

American Cancer Society — Postdoctoral Fellowships **App**

10/19/2018: American Association for Cancer Research — AACR Anna D. Barker Fellowship in Basic Cancer Research **LOI**

Career

10/01/2018: Colorectal Cancer Alliance — Young-Onset Colorectal Cancer Grant **App**

Greenwall Foundation — Faculty Scholars Program in Bioethics **LOI**

10/15/2018: American Cancer Society — Clinician Scientist Development Grant **App**

American Cancer Society — Pilot and Exploratory Projects in Palliative Care of Cancer Patients and Their Families **App**

American Cancer Society — Research Scholar Grants **App**

Conquer Cancer Foundation — Advanced Clinical Research Award in Breast Cancer **LOI**

10/19/2018: Melanoma Research Alliance — Bristol-Myers Squibb-MRA Young Investigator Award in Immunotherapy **LOI**

Melanoma Research Alliance — MRA Young Investigator Awards **LOI**

Melanoma Research Alliance — MRA Young Investigator Award for Artificial Intelligence Applied to Melanoma **LOI**

Melanoma Research Alliance — MRA Young Investigator Award in Dermatology **LOI**

Melanoma Research Alliance — MRA Young Investigator Award in Immune-Related Adverse Events Associated with Immunotherapy **LOI**

10/30/2018: Pablove Foundation — Seed Grant Program **LOI**

10/31/2018: American Association for Cancer Research — AACR Gertrude B. Elion Cancer Research Award **App**

Research

10/03/2018: American Lung Association — Lung Cancer Discovery Award **LOI**

10/12/2018: Alzheimer's Drug Discovery Foundation — Program to Accelerate Clinical Trials (PACT) **LOI**

10/22/2018: American Association for Cancer Research — SU2C Catalyst Research Grant: Genentech-Supported Projects **App**

November

Training

11/07/2018: Robert Wood Johnson Foundation — Health Policy Fellows **App**

11/15/2018: American Association for Cancer Research — AACR-Genentech Cancer Health Disparities Research Fellowships **App** *new*

11/30/2018: American Association for Cancer Research — AACR Breast Cancer Research Fellowships **App** *new*

American Kidney Fund — Clinical Scientist in Nephrology Program **App**

Career

11/01/2018: Harry J. Lloyd Charitable Trust — Career Development Award (supports melanoma research) **App**

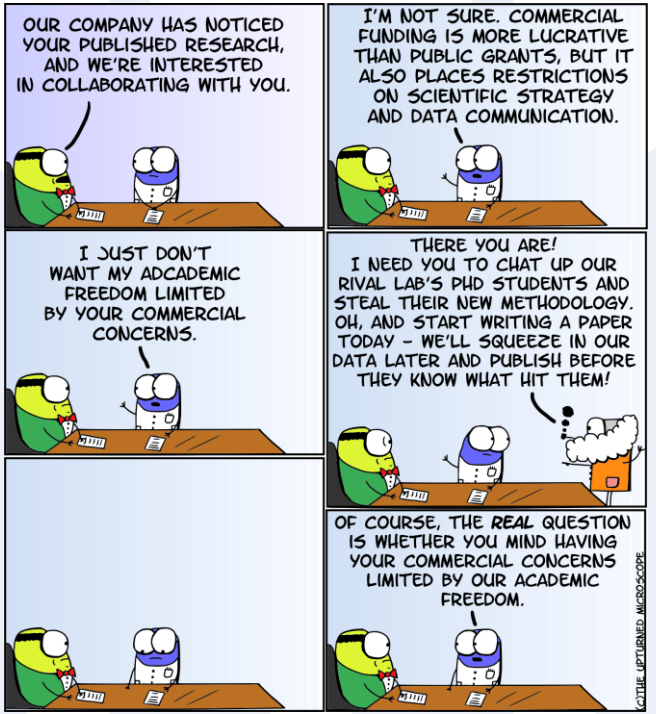
Cooperative Groups

- Many surgical subspecialties
  - Eastern Association for the Surgery of Trauma (EAST)
  - Alliance/ SWOG/ ECOG-ACRIN/ COG
  - Lung Cancer Study Group
- Supplemental funding for putting patients on trial
  - ~$2000/ patient-Alliance
- Also have grants for research on protocol tissue

Industry

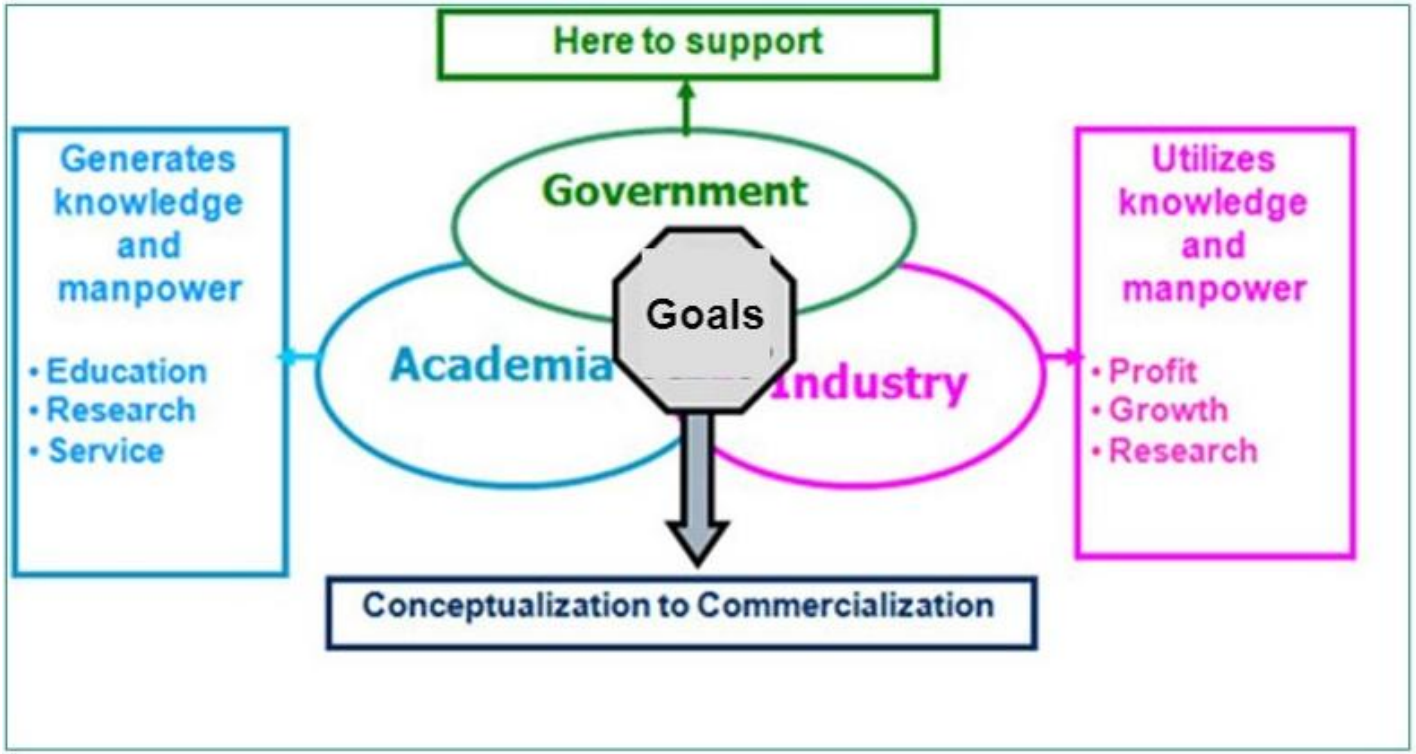
Industry Funding-Tricky

- 3 general concerns
  1. Interactions promote research misconduct
  2. Commercial intrusion leads to bias, limitations on academic freedom → decreased quality
  3. Reduced public trust
- Significant regulations
  - Mandatory reporting



Stossel, NEJM 2005

Industry-Academia Interaction



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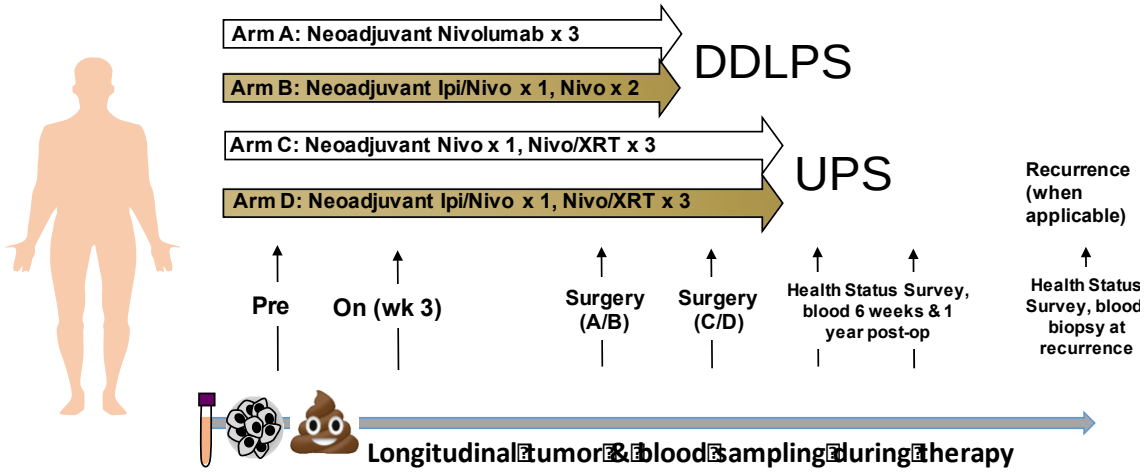
Industry Funding-Sometimes Necessary



Downstream analyses being performed

Tumor
- Genomic analysis (WES)
- Transcriptomic profiling (RNAseq)
- Immune profiling
  - IHC,
  - Flow cytometry, +/- CyTOF
  - TCR sequencing

Blood
- Germline for WES
- Immune profiling
  - Flow cytometry, +/- CyTOF
  - TCR sequencing
- Measurement of serum cytokines

- Microbiome profiling/bacteria

Bristol-Myers Squibb
NCT03307616

- 40 patients
- ~$5000/ dose nivolumab
- ~$25,000/ dose Ipilimumab
- Drug costs alone: $1.1 million
- Does not cover:
  - personnel
  - translational studies

Industry Funding-Different Avenues

- Strategic Partnerships
  - Institutional
  - Usually multi-million dollar
  - Individual applies to institution for funding
- Investigator-Initiated Trials (IIT)
  - Researcher applies directly to company
  - Similar to a grant

Industry Funding-What I am NOT talking about

- Scientific Advisory Board
- Paid Speaker
- Member of Board of Directors
- Consultant
- Sponsor-Initiated Trial
  - Industry-owns patentable inventions
  - Data sent to Industry

Investigator-Initiated Trials (IIT)

- Device or Drugs
- Generally early stage clinical trials
- Investigator maintains the data
- Sponsor-Investigator Agreement-standard
- Need infrastructure
  - Budget expert-very expensive
  - IND/ IDE through FDA
- Many academic centers have offices to help

Conclusions

- Variety of funding mechanisms for trainees/ junior faculty
- K mechanism-secure time
  - Not only way to independence
- Early Career Awards for most societies
- Many Foundation grants
- Industry can be helpful if done carefully

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