

Slide sets from Presidential Panel, AUA 2016

# How to Produce Successful Researchers

1. Basic Science (slides 2-22)

Charles W Emala & George Gallos, Columbia U

2. Health Policy Research (slides 23-30)

Lee A Fleisher & Mark D Neuman, U Penn

3. Clinical Research (slides 31-47)

Edward Sherwood & Frederic T. (Josh) Billings, Vanderbilt

4. Education Research (slides 48-54)

Jeanine P. Wiener-Kronish & Rebecca D Minehart, MGH

# AUA 63<sup>rd</sup> Annual Meeting

## Presidential Panel:

### *How to Produce Successful Researchers Part 1: Basic Science*

*George Gallos MD. & Charles W. Emala Sr. MD.*

Disclosures:

*No relevant financial disclosures*



***Success in Research .....***

***Is like a difficult intubation***



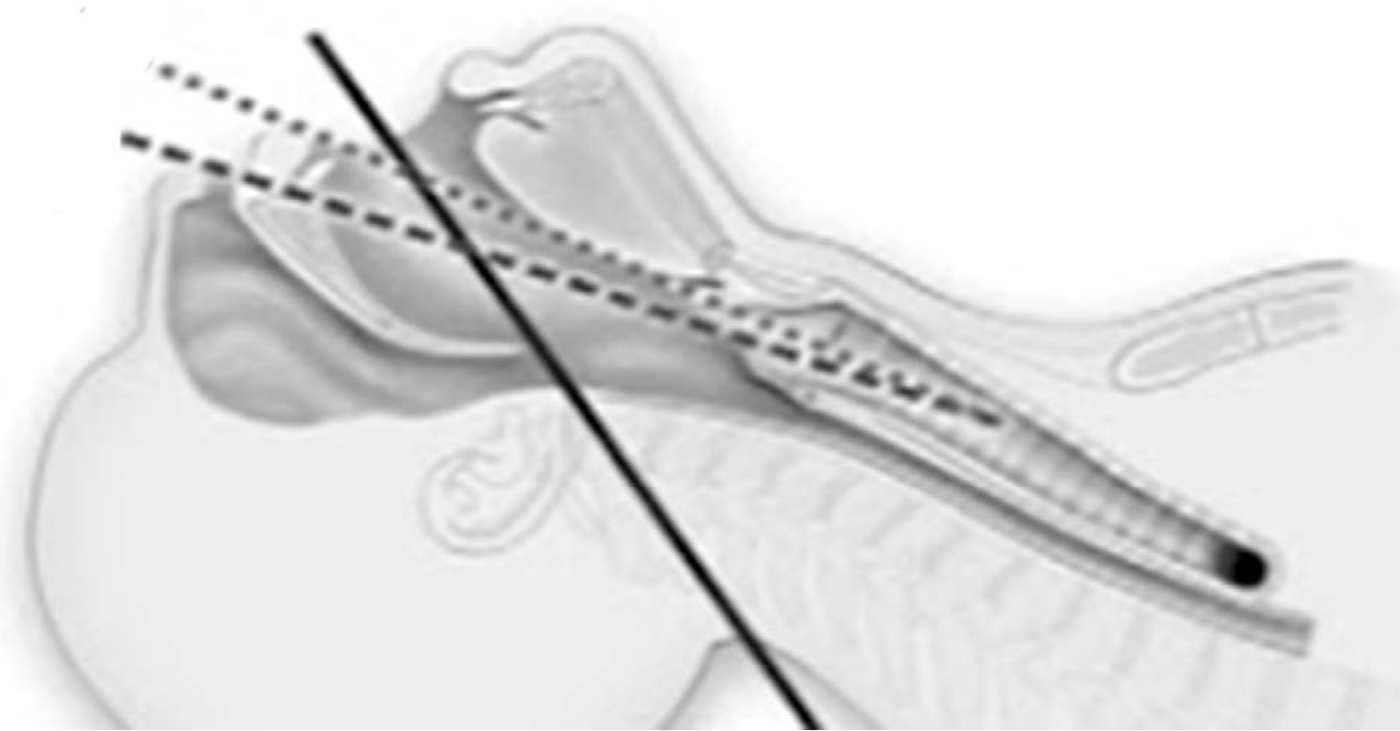
***Nobody thinks its easy.....***



***.....So proper planning is critical***

***Success requires.....***

***“ALIGNMENT”***



# Defining “Success”



# Grant Assessment

Core Criteria	Reviewer #1	Reviewer #2	Reviewer #3
Significance	1	2	1
Innovation	2	2	3
Investigator	2	1	2
Approach	2	3	2
Environment	1	2	2

**Realize in advance how you & the work will be judged**

# *The Journey of a Young Investigator*

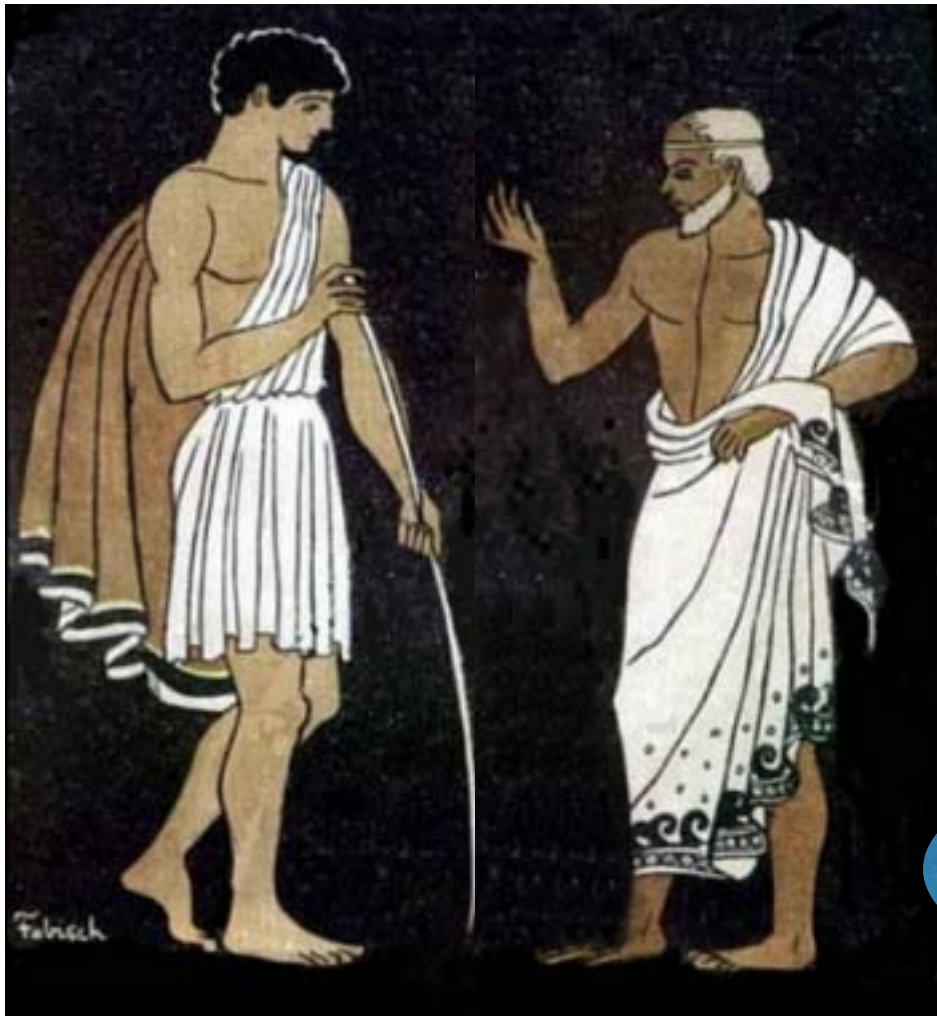


## ***Alignment among 3 Critical Categories:***

- Mentor Selection*
- Clinical Question/Theme*
- Path to Independence*

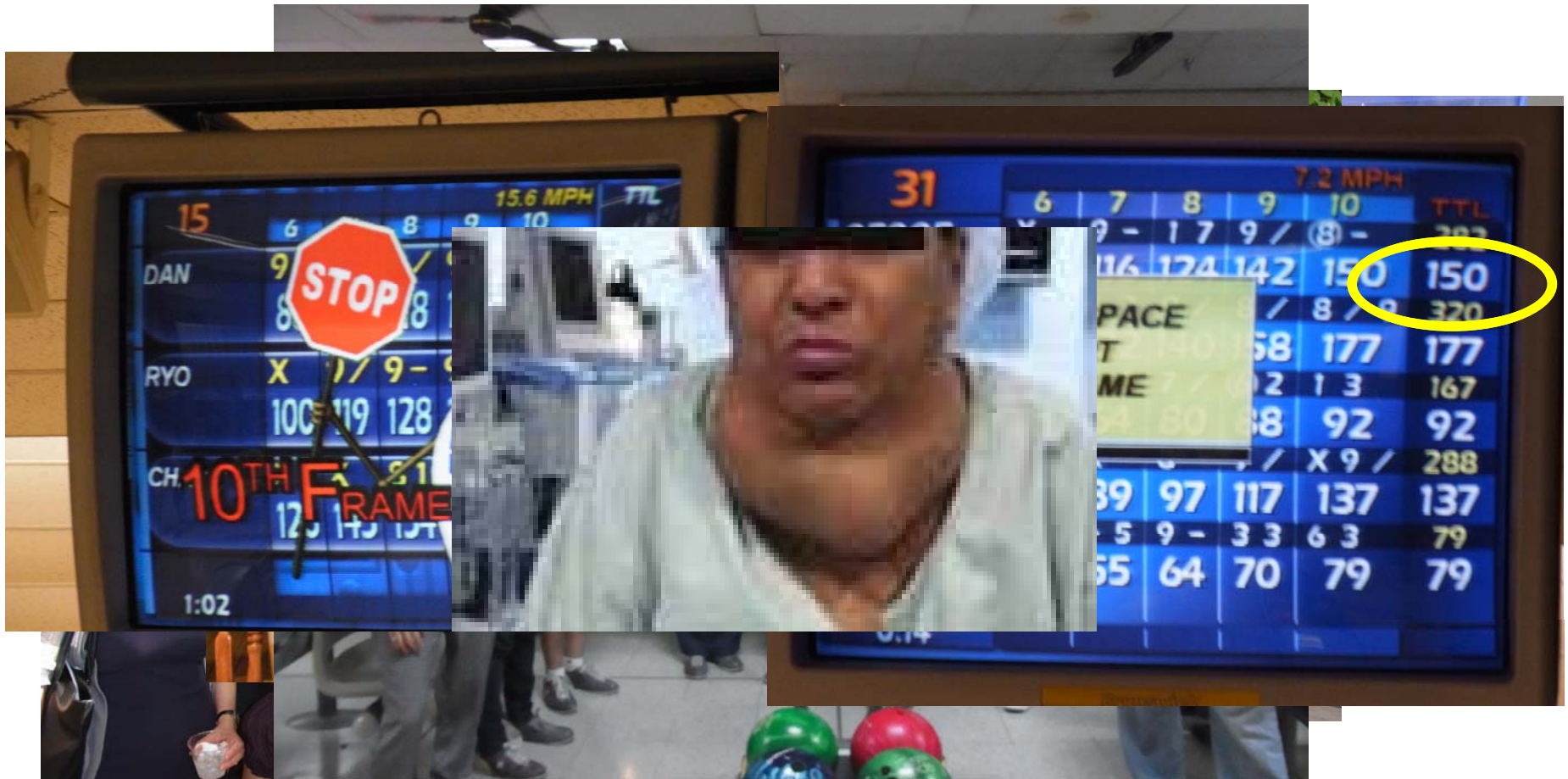


# Pick a Suitable Mentor



- **Gravitas**
- **History of Success**
- **Mentality**

# My Experience.....

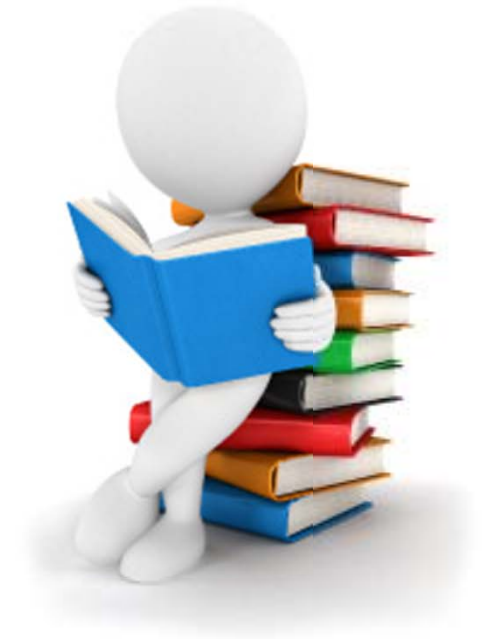
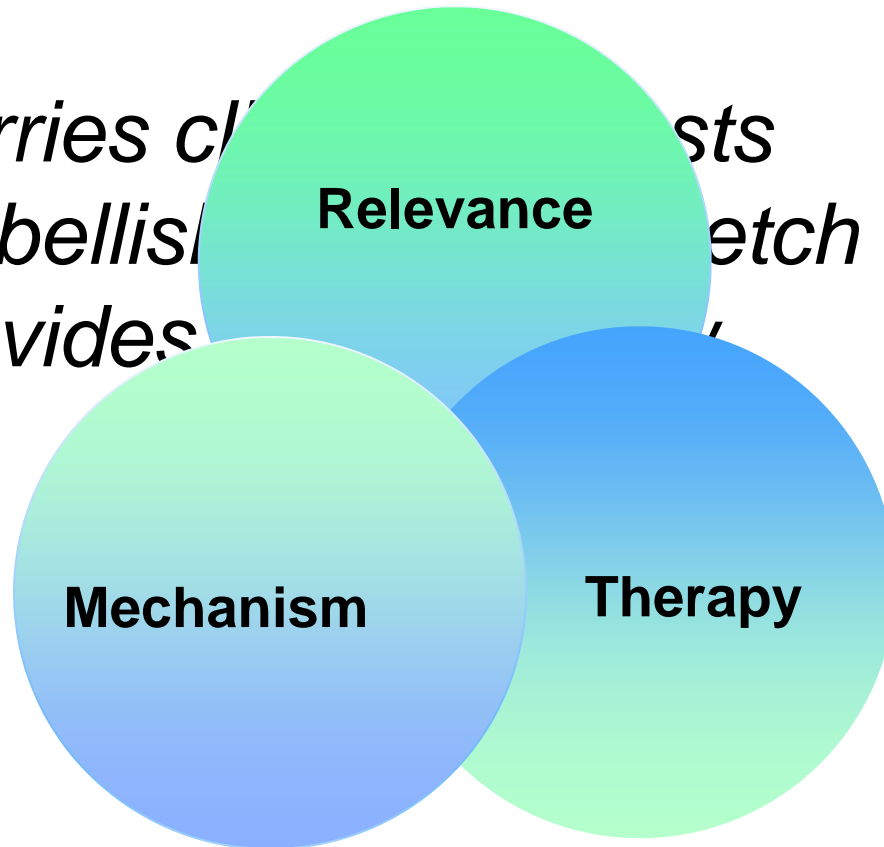


Best defined by the word “Generosity”

# Pick an Appropriate Research Question

*Everyone enjoys a good story....*

- Marries clinical interests*
- Embellishes research*
- Provides*



# My experience...

- Let the science dictate your direction...
  - GABA<sub>A</sub> In Airway
  - Role of Chloride in ASM
- Use critiques as opportunities for growth
  - Peripheral GABA<sub>A</sub> & Sub-unit Targeting
- Avoid being the master of a specific technique
  - Examination of other chloride channels
  - Translation into Uterine Smooth Muscle

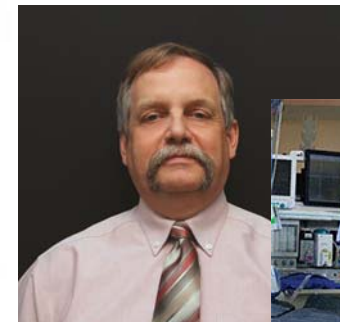
# Pick a Path Conducive to Independence - Networking

**Mayo  
Anesthesiology**

**Columbia  
MFM**



**Columbia  
Anesthesiology**



**Stanford  
Anesthesiology**



**Texas  
Physiology**



# *Beyond the Mentor.....*

**Necessary elements for the development  
of physician scientists in anesthesiology**

Charles Emala, MS, MD  
Columbia University

# Successful Development of Anesthesiology Physician Scientists (Basic Science)

- **Keys to success**

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1. A Repertoire of Potential Mentors

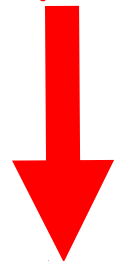
*Beyond the Mentor*

2. Attracting, Training and Retaining Interested Trainees

3. A departmental philosophical (and financial) commitment

4. Institutional resources that extend departmental capabilities

5. A specialty that recognizes the value and commits resources to physician scientist development



## 2. Attracting and Selecting Suitable Mentees

### Educating Medical Students about the diverse research opportunities in anesthesiology

- involvement in medical student basic education
- Anesthesiology research opportunities during medical school  
FAER, NIH T35s, research required by med sch curriculum

### Anesthesiology residencies with defined research tracks

- Promotes a residency to applicants with research interests
- Immerse residents with research interests into the research community and culture throughout residency

### Choosing candidates for anesthesiology physician scientist training

- Passion (“fire in the belly”) may be more important than prior research experience. (having both is optimal)
- Choose carefully and re-assess at regular intervals with established milestones
- Blind generosity does not work

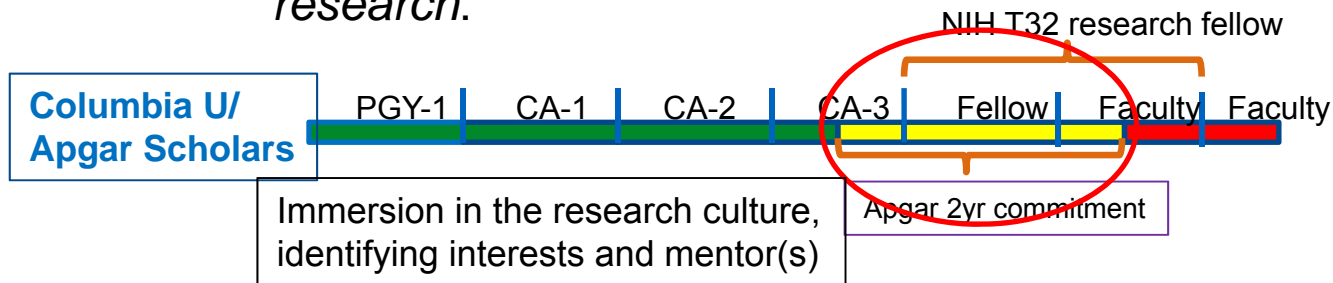




## 2. Integrating research training with clinical training

### When to formally have protected time for research

- ABA: “residents could spend 25% of their 3- or 4-year training program, and 38% of a 5-year program in research.”



### UCSF Research Scholars

PGY1		PGY2		PGY3		PGY4		PGY5	
title	research	title	research	title	research	title	research	title	research
CBY	0-1 Mos.	CA1		CA2	6 Mos.	CA3	6-9 Mos.*	CA4	9-12 Mos.*

# *Beyond the Mentor.....*

Mentorship cannot occur in a vacuum and requires support from:

3. Department
4. Institution
5. Specialty

## Key #3. An academic department with a philosophical (and financial) commitment to physician scientists

- Overall support of a research mission is necessary to maintain an expansive pool of talented mentors
- Research, especially the cost of career development requires financial sacrifices from the department extended over many years:
  - From training grants ► foundation grants ► K career development grants ► R awards
  - Even with successful R awards, the sustained research career at the R level will require net departmental investment (time, pilot funds, support of trainees/techs/postdocs)

# Key #4. Institutional Support

## Career Development Training

- Course work related to career development
  - life balance, grant writing, lab management, responsible conduct of research, rigor and reproducibility, Individual Development Plans (IDPs)

## Research Core support

- genetics, microscopy, flow cytometry, bioanalysis and interpretation (statistics support)

## Funding support

- Internal Pilot and Career Funding: Numerous pilot awards, assistant professorships, focused pilot grant awards, CTSA supported activities

# Key #5. Anesthesiology Foundation Support (AUA, IARS, FAER, SCA, APSF, etc)

- Foundations offer support from medical students through junior faculty years
- Likely are the first direct experience with grant writing
- Funding success is a huge step of encouragement to the applicant and often the first external validation of the research to departmental leadership encouraging continued support
- Frequently the bridge to NIH funding





**Successful, motivated physician scientist**

**Institution**

**Mentor**

**Specialty**

**Departmental Philosophical and  
Financial Commitment**

**AUA 63<sup>rd</sup> Annual Meeting**

# Mentoring in health services & translational research

Lee A. Fleisher, MD

Mark D. Neuman, MD, MSC



# AUA 63<sup>rd</sup> Annual Meeting

Disclosures:

N/A





# Career pathway

- MD, UCSF 2000-2004
- Residency BWH 2004-2008
- RWJ Clinical Scholars/MSc at Penn 2008-2010
- Assistant Professor of Anesthesiology and Critical Care 2010-present



# RWJF Clinical Scholars

- Academic interest/experience in policy research from medical school...wanted to do *something*, not sure what
- RWJFCSP—*the* critical step
  - Protected time/mentorship/formal training
  - Challenged me to find a policy-relevant area of focus
  - Time/resources to develop my own network
  - Strong buy in from chair from interview through graduation



# Joining the faculty

- No formal job search outside Penn, but extensive dialogue with Chair about structure/goals of position
- Key concept: shared vision for building a successful & independently funded HSR group within the department
- Investment on both sides for long-term success
- Clarity around milestones and expectations
- Open communication/transparency from the start--trust developed and sustained over the long run



# Funding and publications

- Funding timeline:
  - 2011: FAER MRTG
  - 2012: NIA K08
  - 2015: PCORI Large Pragmatic Study Contract
- Publications: 75 total, 55 peer-reviewed original research
- Awards: 2015 ASA Presidential Scholar, 2015 Penn Marjorie Bowman Award for Health Evaluation Research



# REGAIN Trial

- Pragmatic randomized controlled trial of spinal versus general anesthesia for hip fracture surgery
- Target enrollment: 1,600 patients at 37 centers in US & Canada
- Primary outcome: inability to walk or death at 60 days
- Funding: PCORI 5y/\$12M
- Builds directly on FAER-Funded retrospective work
- Key mentor contributions: encouragement/protected time/direction towards public-health focus



# Mentoring environment

- Typical Penn approach: aim for independence early; identify multiple mentors to meet diverse needs
- Lee Fleisher--overall guidance/career mentor
  - Increasing focus on management issues with REGAIN
- Other faculty at Penn and other institutions key for methods expertise, content expertise, grant writing/career development.
- All key for credibility/ connections/ access; each is a unique relationship that has taken work to build/maintain



# Developing Clinical Research in an Academic Anesthesiology Department

Frederic T. Billings IV, M.D., MSc

Co-director, BH Robbins Scholars physician-scientist development program

Edward R. Sherwood, M.D., Ph.D.

Vice Chair for Research

**DEPARTMENT OF ANESTHESIOLOGY**

VANDERBILT  UNIVERSITY

MEDICAL CENTER

Compassionate | Creative | Committed | Collaborative

Disclosures:  
None

# Requisites for Successful Clinical Research

1. People – Mentorship, training, and collaboration
2. Resources – Access to research nursing support, compliance support (IRB), biostatistical design and analytic, laboratory supplies
3. Time – Protected time for investigators
4. Incentives – Opportunities to complete studies, publish results, and disseminate knowledge; recognition; financial
5. Culture – Department and Institution culture of research support

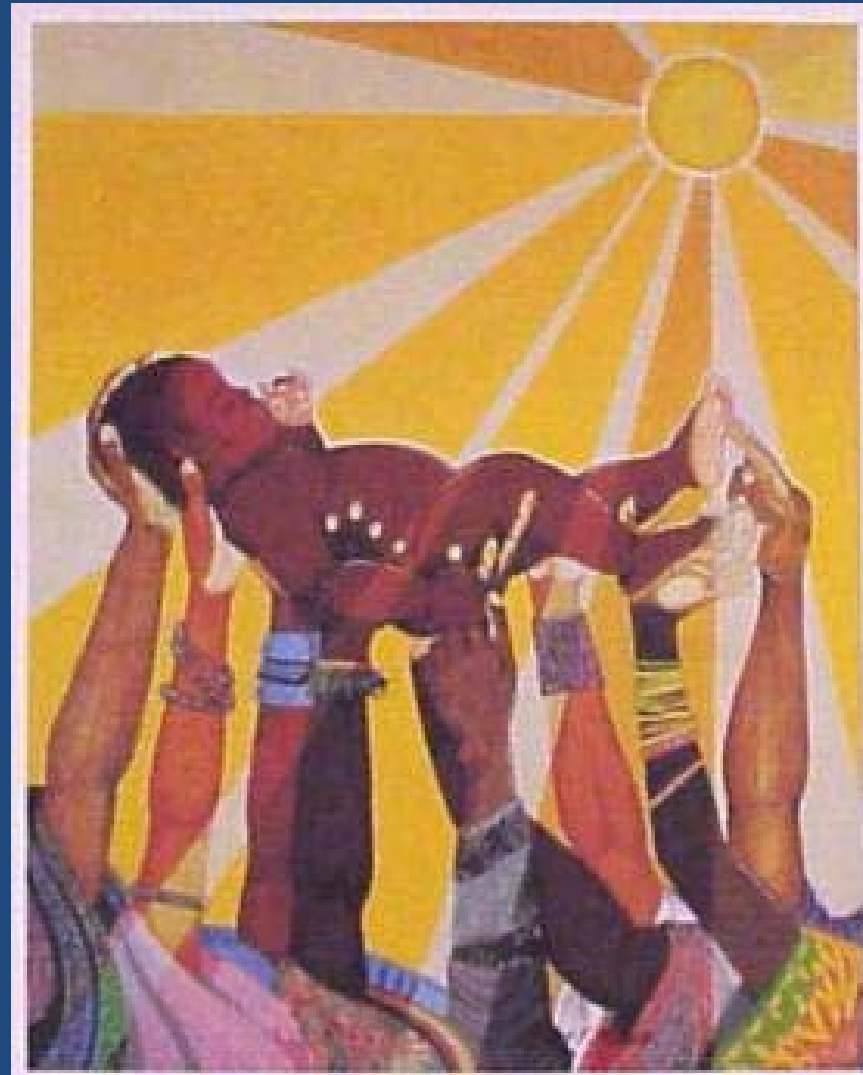




# Institutional Priority – What is your culture?

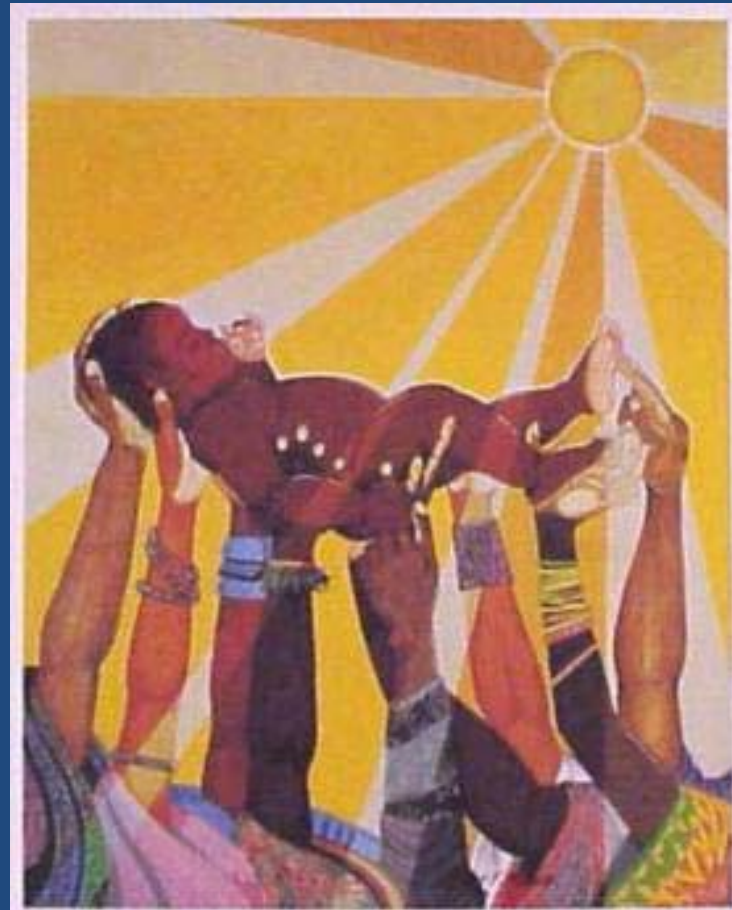
It takes a village to raise a child.

It takes an institution to develop clinical research.



# Institutional Priority

- Chancellor
  - Chief of Staff
    - Executive Faculty
      - Physicians
        - Nurses
          - Technicians
            - Receptionists



# People – Mentorship, Training, Collaboration



## BH ROBBINS SCHOLARS MENTORED RESEARCH TRAINING PROGRAM - VUMC Department of Anesthesiology

	Clinical Base Year / INTERNSHIP	CA-1	CA-2	CA-3	Fellowship Year 1	Fellowship Year 2	Full-time Faculty (remain active in Program for 2 years)
<b>MATCH ENTRY</b>  Basic, clinical, translational, education, global health, or QI RESEARCH	Not applicable	6 MONTHS RESEARCH IN MENTORED ENVIRONMENT AND AN OPTION FOR 12 ADDITIONAL MONTHS DURING RESIDENCY EXTENDING RESIDENCY 1 YEAR WHILE PROVIDING MORE RESEARCH MONTHS THROUGHOUT RESIDENCY  - Stipend of \$10,000 per year after intern year in addition to resident salary			T-32 RESEARCH FELLOWSHIP opportunity (80% protected time)* - 20% clinical effort as faculty + T-32 salary support = approximately \$110,000/year		50% protected time or more depending on career development award support (VPSD, FAER, SCA, NIH, etc.), progress, and plans. - full-time faculty salary with fringe and benefits
<b>CA-2 ENTRY</b>	Not applicable	Not applicable	Not applicable	6 MONTHS RESEARCH IN MENTORED ENVIRONMENT DURING LAST 18 MONTHS OF RESIDENCY  - Stipend of \$15,000 per year	MANDATORY RESEARCH FELLOWSHIP (80% protected time) - 20% clinical effort as faculty + fellow salary = approx \$95,000	OPTIONAL CLINICAL FELLOWSHIP, ‡ before or after RESEARCH FELLOWSHIP - clinical fellow salary + \$15,000 stipend	50% protected time or more depending on career development award support (VPSD, FAER, SCA, NIH, etc.), progress, and plans. † - full-time faculty salary with fringe and benefits
	Not applicable	Not applicable	Not applicable	Not applicable	T-32 RESEARCH FELLOWSHIP opportunity (80% protected time)* - 20% clinical effort as faculty + T-32 salary support = approximately \$110,000/year		
<b>FELLOW ENTRY</b>	Not applicable	Not applicable	Not applicable	Not applicable	T32 RESEARCH FELLOWSHIP (80% protected time) - 20% clinical effort as faculty + T-32 salary support = approximately \$110,000/year		50% protected time or more depending on career development award support (VPSD, FAER, SCA, NIH, etc.), progress, and plans. † - full-time faculty salary with fringe and benefits

\*Robbins Scholars will be highly competitive for a T-32 fellowship during their research fellowship.

†Robbins Scholars who enter the program as CA-2s or fellows will have the option to remain as faculty if they remain active and productive in the Program.

‡Robbins Scholars who enter the program as CA-2s will be highly competitive for and will receive preference over non-Scholars for a clinical fellowship.

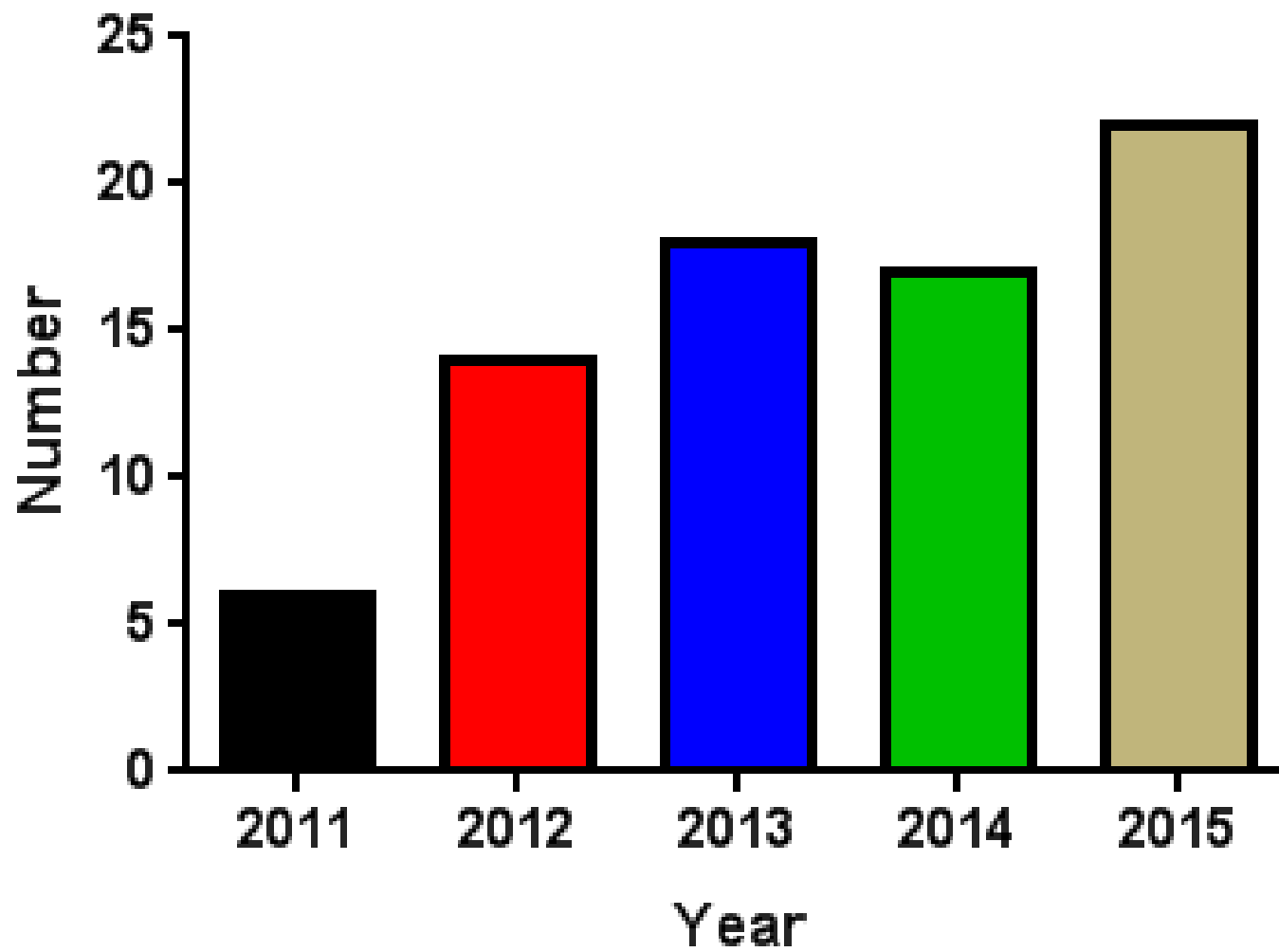
# People – Mentorship, Training, Collaboration

## VACRAC Research Studios

(Vanderbilt Anesthesiology Clinical Research Advisory Committee)

- Multidisciplinary team including clinician scientists, a biostatistician, informatics experts, regulatory experts, and research nurses
- Investigator presents research study including:
  - Background / Rational
  - Hypothesis
  - Specific Aims
  - Methods
  - Analytical plan
- The group discusses ways to strengthen the study.
- Required for department support

## Studios



# Department Resources for Clinical Research

- Perioperative Clinical Research Institute (PCRI)
  - Regulatory support – IRB drafting and submission, IND support, FDA
  - Study coordinator
  - Research nurse support – subject consent, data collection and entry, research tests and procedures
  - Research assistant support – research procedures, sample processing
- Biostatistical support
- Informatics support – queries into the EDW and PDW which houses our EMR data
- Substantial resource requests require additional submission of a Department Innovation Grant

# Perioperative Clinical Research Institute (PCRI)

- Who pays for the PCRI, biostatistics effort, equipment and supplies?
  - Extramural Grant Support
    - NIH
    - Foundations
  - Industry-supported Trials
    - Importance of running cost-effective industry supported trials
    - Investigator-initiated vs Industry-initiated
  - Medical Center Resources (CTSA/VICTR)
    - Mechanism for covering the cost of reagents and supplies
  - Departmental Support
    - Clinical Revenue



# Requisites for Successful Clinical Research

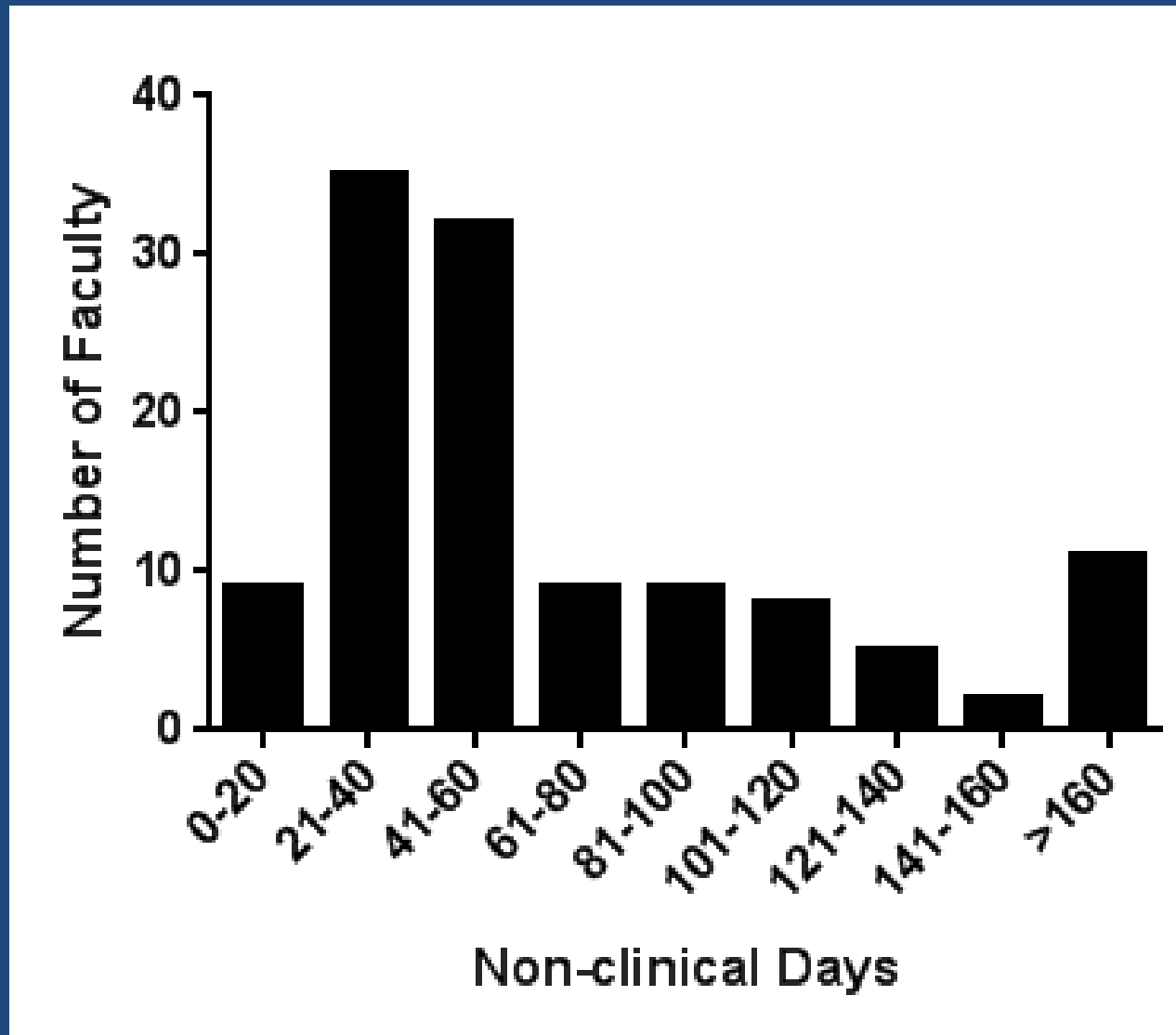
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2. Resources – Access to research nursing support, compliance support (IRB), biostatistical design and analytic, laboratory supplies
3. Time – Protected time for investigators
4. Incentives – Opportunities to complete studies, publish results, and disseminate knowledge; recognition; financial
5. Culture – Department and Institution culture of research support



# Annual “Career Development Award (CDA)” to receive non-clinical time

- Faculty submit an application requesting non-clinical time (# of days) to support their academic goals for the coming year
- Submission
  - Application defines past year academic achievements and goals for the coming year
- Review
  - Initial review by Vice Chair or Division Chief (not your own)
  - Final review is an All-day CDA Review meeting
    - Initial reviewer presents their recommendation based on academic productivity (and administrative responsibilities)
    - Group reaches consensus on academic time allocation
  - Reviewed by Department Chair and Executive Committee
    - Refinements based on Dept needs & equity as well as total CDA budget

# Career Development Award (CDA) – 2015 Results



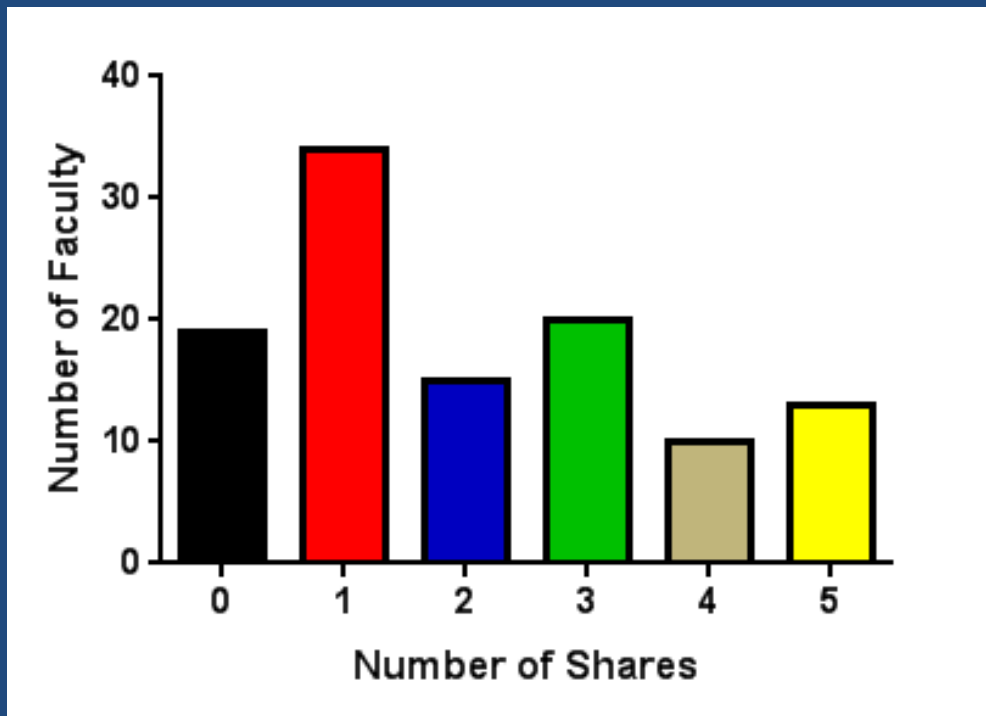
# Annual “Academic Achievement Award (AAA)”

- Encourage professional development and academic achievement
- Graded point system to reward publication, grant submission, presentation of research at national meetings and scientific service (as well as teaching/institutional service)
- Applications reviewed by Executive Committee

Award Level	Point Threshold	Shares Received
Merit	400	1
Distinction	800	2
Excellence	1200	3
Chair’s Award	2000	4
Chair’s Award of Distinction	3000	5

## AAA Results (2015)

- Faculty submitted AAA applications = 104 / 111
- Faculty disqualified for teaching issues = 4
- Faculty awarded shares = 92
- Total AAA shares awarded based on points = 228

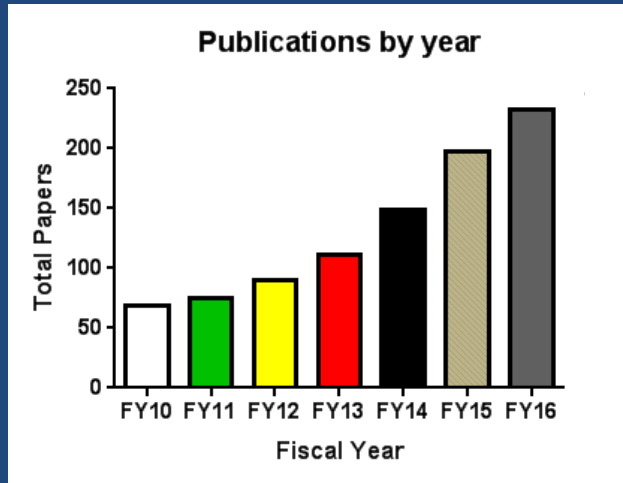


# Annual Academic Development Cycle

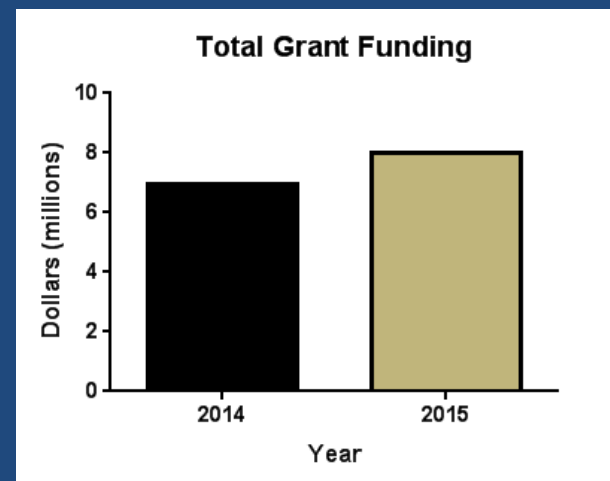
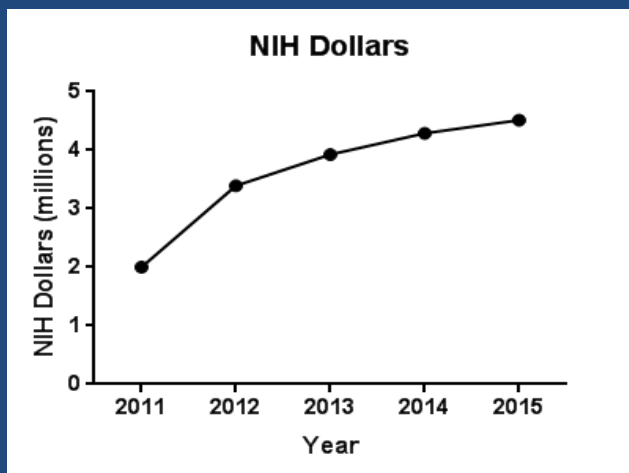


# Measuring Success

- Peer-reviewed papers



- Extramural grant support



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## Educational Research: Massachusetts General Hospital

Rebecca D. Minehart, MD, MSHPEd  
Assistant Professor, Harvard Medical  
School/Massachusetts General Hospital  
May 20, 2016





# AUA 63<sup>rd</sup> Annual Meeting

## Disclosures:

**None relevant to this talk.**

**I am on the Medical Advisory Board  
for Rivanna Medical, Inc., a device company.**



# An homage to my mentors

**“MENTORING IS A BRAIN TO PICK, AN EAR TO LISTEN, AND A PUSH IN THE RIGHT DIRECTION.”**

**JOHN C. CROSBY**

© Lifehack Quotes



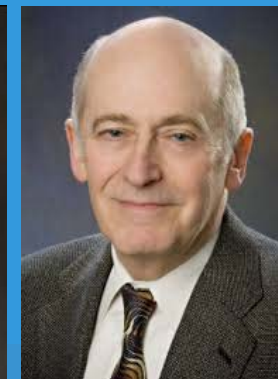
Early experiences matter.



# Faculty Development plays a huge role



# Learning research skills from others, outside of anesthesia



# The idea family tree

