



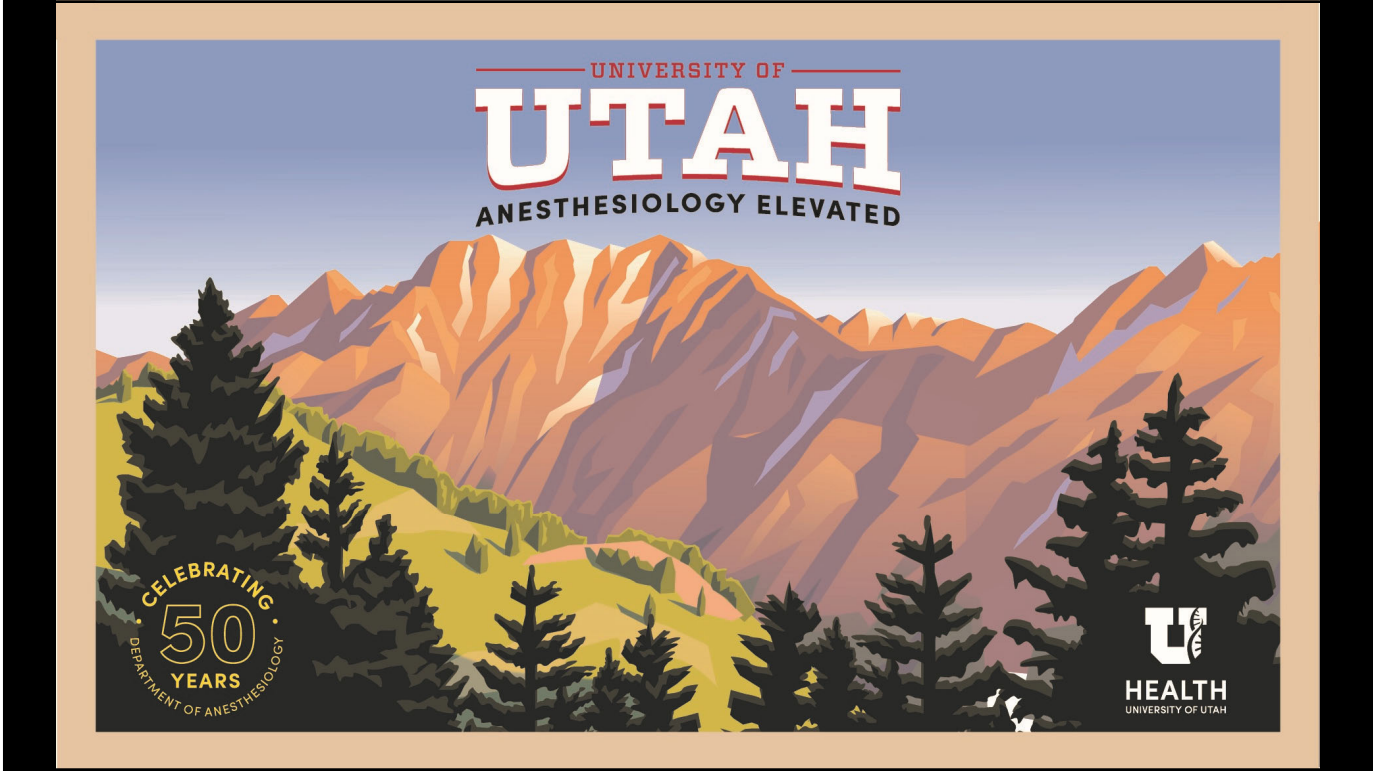
Entrepreneurship in Anesthesiology: The University of Utah Experience

Talmage D. Egan, MD
Department of Anesthesiology

1



2



3


Disclosures

U HEALTH
UNIVERSITY OF UTAH

©UNIVERSITY OF UTAH HEALTH. 2017

4

Outline

- Main Challenges of Commercialization
- Assets Required for Success
- Non-Traditional Funding Sources
- University of Utah Model 
 - State, University, Department Assets
 - Profile of Anesthesiologist-Entrepreneur & Projects

An Ongoing Revolution...

Old Model

- Publications
- Grants
- Awards
- Faculty-centric

**Culture of
Knowledge**



New Model

- Innovation
- Spinoffs
- Products
- Student-focus

**Culture of
Impact**

Prestwich GD. Culture of impact: faculty as mentors for student entrepreneurs. *Sci Transl Med.* 2013 Jan 23;5(169)

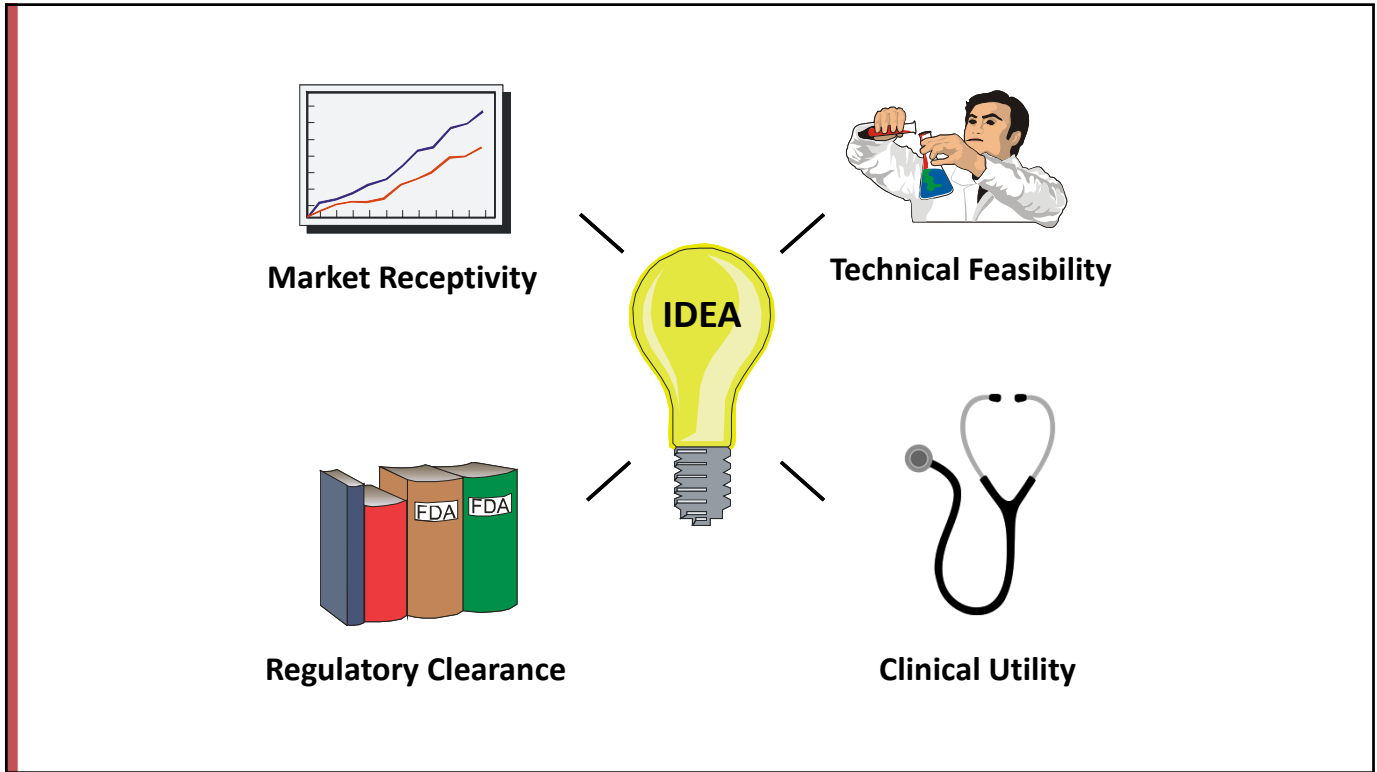
Key Point

Successful device or drug commercialization requires victory in four key battles.

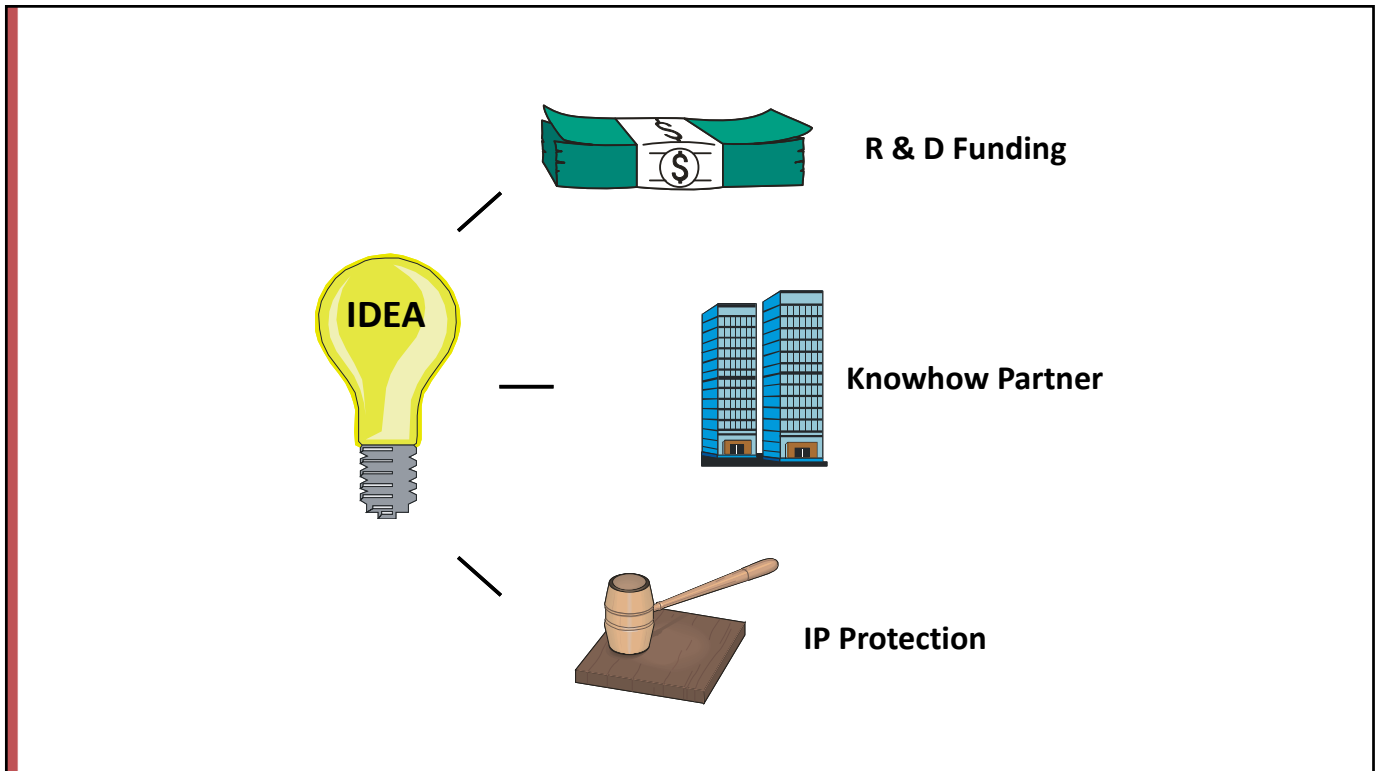
Four Main Challenges

1. Technical Feasibility
2. Clinical Utility
3. Regulatory Clearance
4. Market Receptivity

Adapted from Egan (*Br J Anaesth* 2010)



9



10

Key Point

Assets at many levels are usually needed for the faculty entrepreneur to succeed.

11

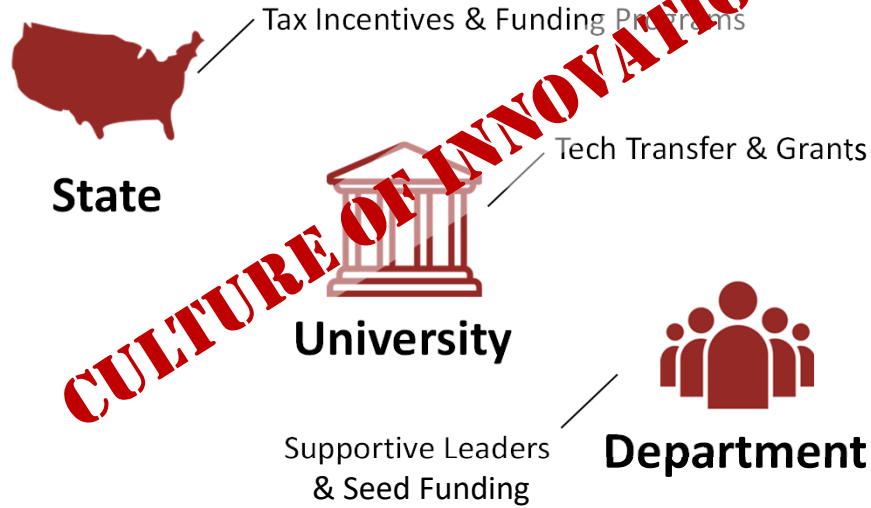
Activation Energy



https://en.wikipedia.org/wiki/Activation_energy
<https://socratic.org/questions/how-do-enzymes-catalyze-reactions>

12

Assets at Three Levels



13

Key Point

Non-traditional sources are usually needed to jumpstart faculty entrepreneurial research.

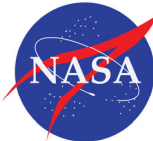
14

Non-Traditional Funding

- Government (Non-R,K,T)
- NGOs - Philanthropic
- Institutional
- Angel - Personal

NIH & NGOs don't typically fund projects aimed at commercialization...

15



16



TECHNOLOGY LICENSING OFFICE
 THE UNIVERSITY OF UTAH

Helping **U** Innovate

17

U THE UNIVERSITY OF UTAH'S®

**#4 for Commercialization in Milken Institute report,
 Top 20 for Innovation in Nature Index report**



2022

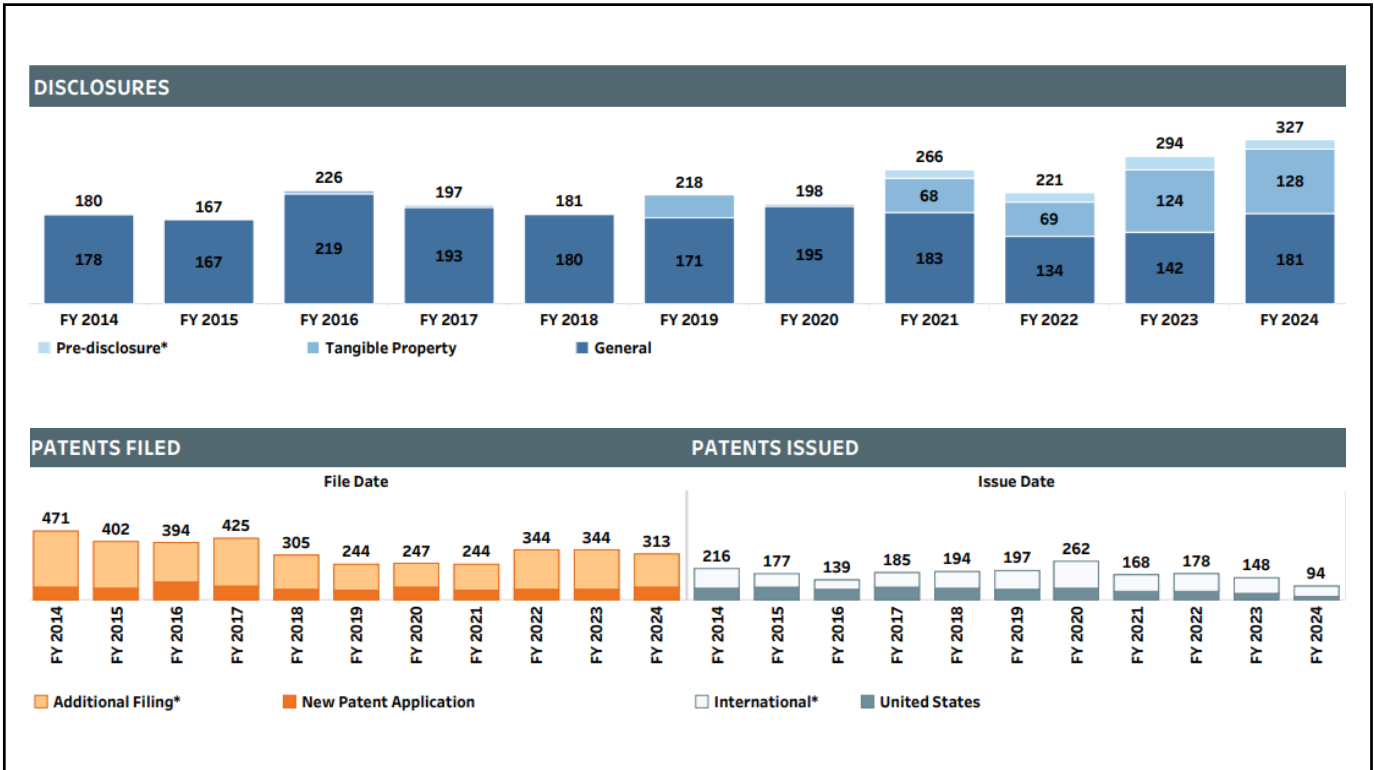


2017

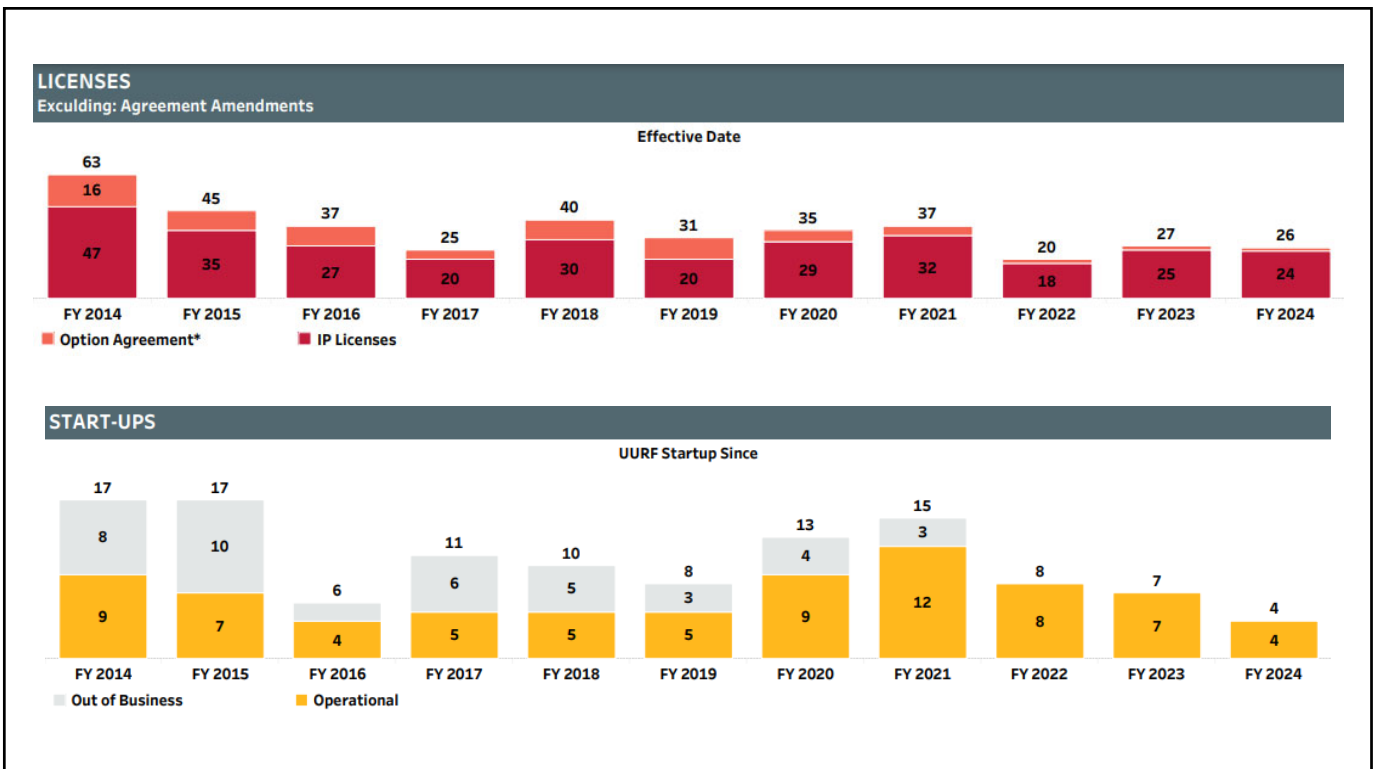
TECHNOLOGY & VENTURE COMMERCIALIZATION
 THE UNIVERSITY OF UTAH

WWW.TVC.UTAH.EDU

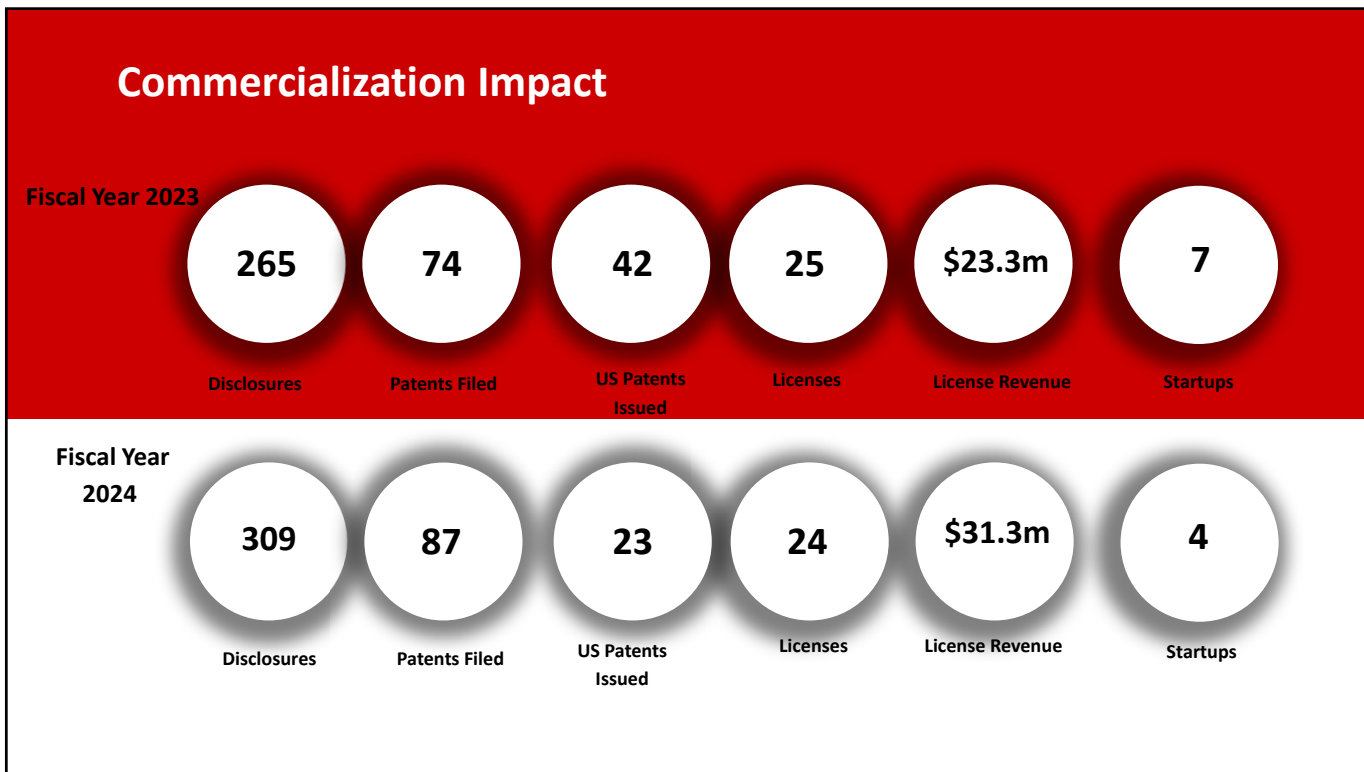
18



19



20



21



22

Competitions



PARTNERSHIPS FOR PROPELLING
CLINICAL TRANSLATION



Educational Events



Mentoring



23



24

Key Point

The U of Utah Department of Anesthesiology has a culture of innovation that has delivered tangible results.



©UNIVERSITY OF UTAH HEALTH, 2017

Entrepreneurial Activity

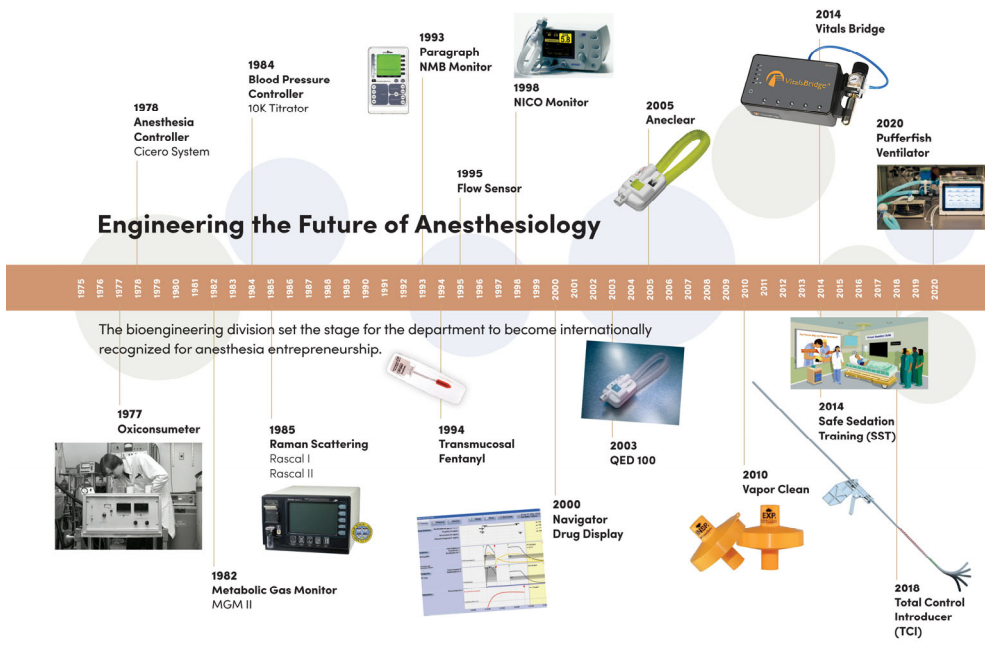


History of Innovation



27

Engineering the Future of Anesthesiology



28



29

ANESTA

30



Theodore Henry Stanley

1940 - 2017

31

Success breeds success!



**STANLEY CHAIR
& RESEARCH FUND**

- Numerous Endowed Chairs
- Endowed Research Fund
- “Quasi” Endowment Fund

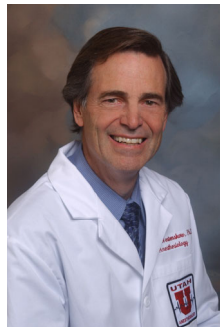
32

- Integrated Unit
- Graduate Students
- Gadget Knowhow
- Project Management



Division of Bioengineering

Dr. Dwayne Westenskow



Dr. Kai Kuck



33

Faculty Entrepreneur Profile



Derek Sakata, MD



It's in their blood!

- Professor in anesthesiology, adjunct in bioengineering
- Engineering background, engineer collaborators, many patents
- Director of ambulatory anesthesia (vice-chair)

34

Entrepreneurial Project Profile

“Universal Vital Sign Simulator”

Unmet Need = Vital Sign Emulator for any Monitor



Joe Orr, PhD



- “In situ” simulation requires use of “native” monitors
- Current technology limited to “non-native” monitor
- Targets burgeoning simulation training market



© UNIVERSITY OF UTAH HEALTH, 2017

35

Entrepreneurial Project Profile

“Airway Management Tools Designed for the Video Laryngoscope”

Unmet Need = Affordable Difficult Airway Management Tools



Sean Runnels, MD



- Airway tools that fully harness the superior view of VLS
- Cost effective (affordable, easy to master)
- Targets: prehospital, ED, and ICU markets



© UNIVERSITY OF UTAH HEALTH, 2017

36

Entrepreneurial Project Profile

“Noninvasive Real-Time Renal Hypoxia Monitor”

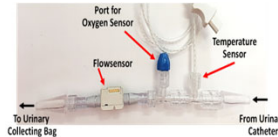
Unmet Need = Early Detection of Emerging AKI



Natalie Silverton, MD



Kai Kuck, PhD



- Cardiac Surgery AKI incidence 30%, doubles mortality risk, costs
- Current AKI detection takes hours/days, too late for prevention
- Urinary oxygen is surrogate for renal oxygen ("ST segment of the kidney")

Outline

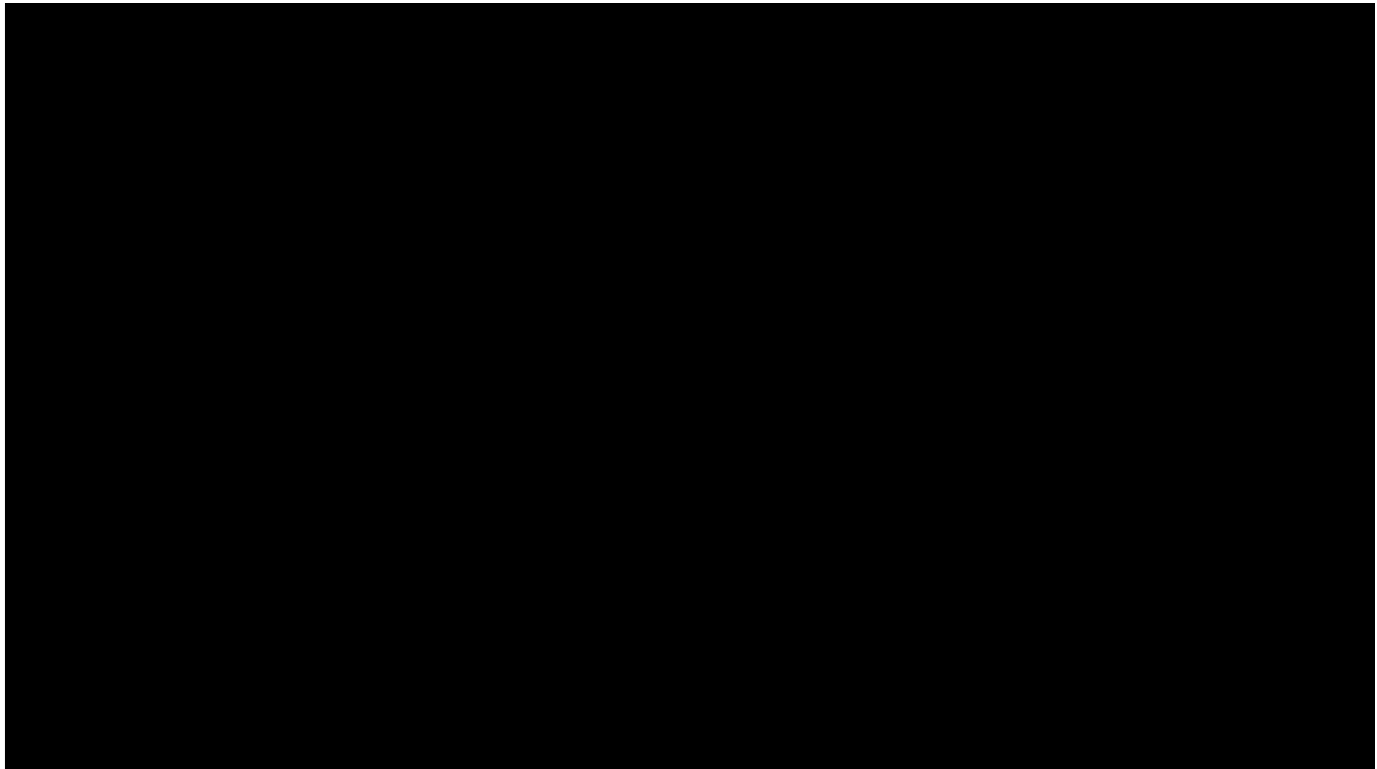
Culture is #1!

- Main Challenges of Commercialization
- Assets Required for Success
- Non-Traditional Funding Sources
- University of Utah Model
 - State, University, Department Assets
 - Profile of Anesthesiologist-Entrepreneur & Projects

Culture is #1!



39



40