



JOHNS HOPKINS

TECHNOLOGY VENTURES

Myron L Weisfeldt MD

Professor of Medicine

Medical Consultant JHTV

July 16, 2020

MISSION

To maximize the impact of JHU excellence in research by facilitating the translation and commercialization of discoveries into accessible technologies, products, and services for the benefit of society.



Where can Johns Hopkins Medicine Gain Significantly Greater Financial Revenue?

NIH Research Grants

Taking Care of Patients

Philanthropy

Tuition

Technology

How much are we talking about?

The Cohen-Bayer patents for gene splicing produced \$255 million for Stanford University and the University of California, San Francisco, and the Axel patents for co-transformation, a method to insert DNA into cells to generate proteins, generated \$790 million for Columbia University.

Nathans-Smith restriction enzymes not patented.

Why were we so slow to support and invest in technology?

Leadership concerns and statements

Lack of competent program leadership

Promotional policies and criteria

What has Changed?

Leadership: new Initiative of Ron Daniels

New Program Leadership: Christy
Wyskiel (Consultant to the President)

Include Innovation as a Criteria for
Promotion...

What are our Real Assets?

Basic Science and Clinical Research Faculty

Adjacent Clinical and Basic Medical Research

APL

School of Nursing Orientation

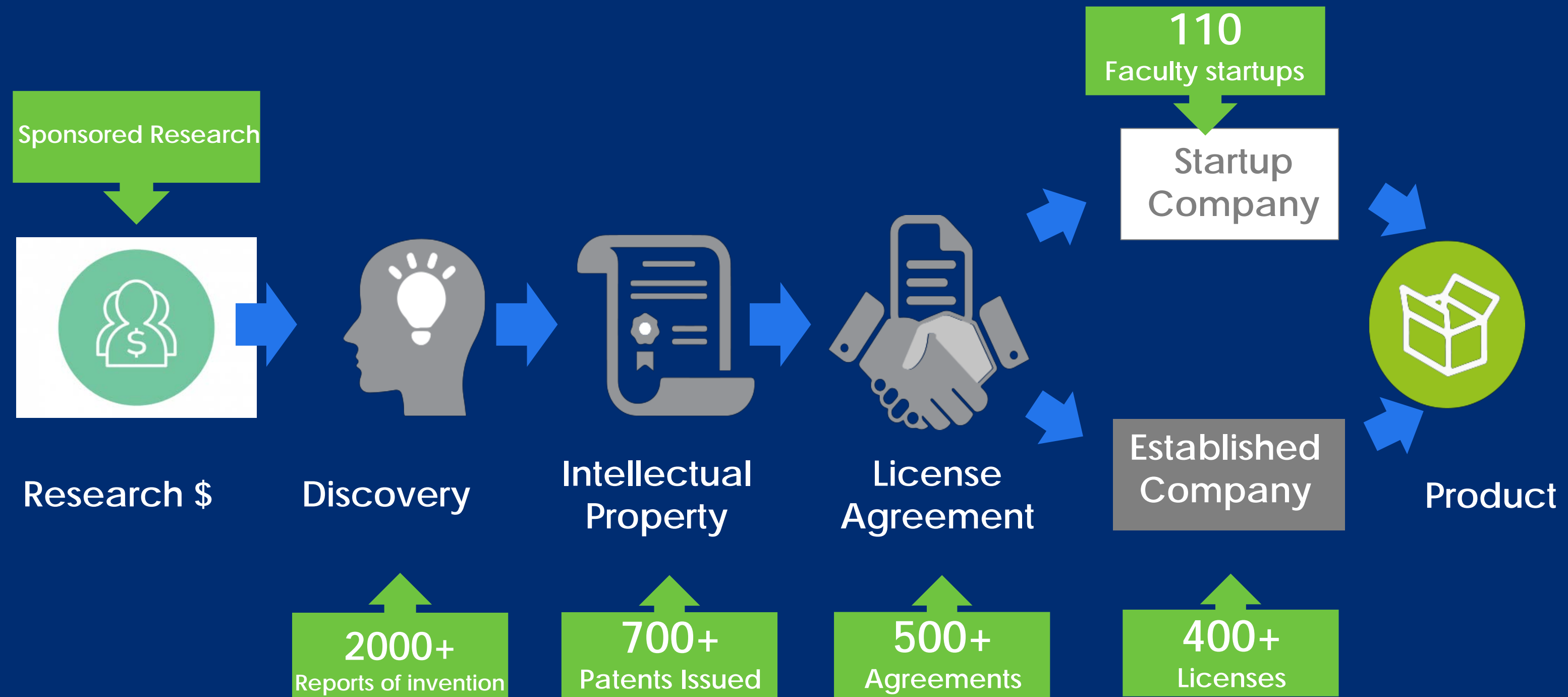
School of Engineering Orientation

Biomedical Engineering Department

School of Public Health

School of Business: Focus

Technologies take two paths to market



3

IP Protection

\$8 million annual patent budget

2

2

2

WHAT DOES JHTV DO?

2

Translational Funding

3

IP Protection- infringement

4

MTAs & NDAs

5

Commercialization Strategy Development

6

Licensing

7

Entrepreneurship training

8

Venture creation support

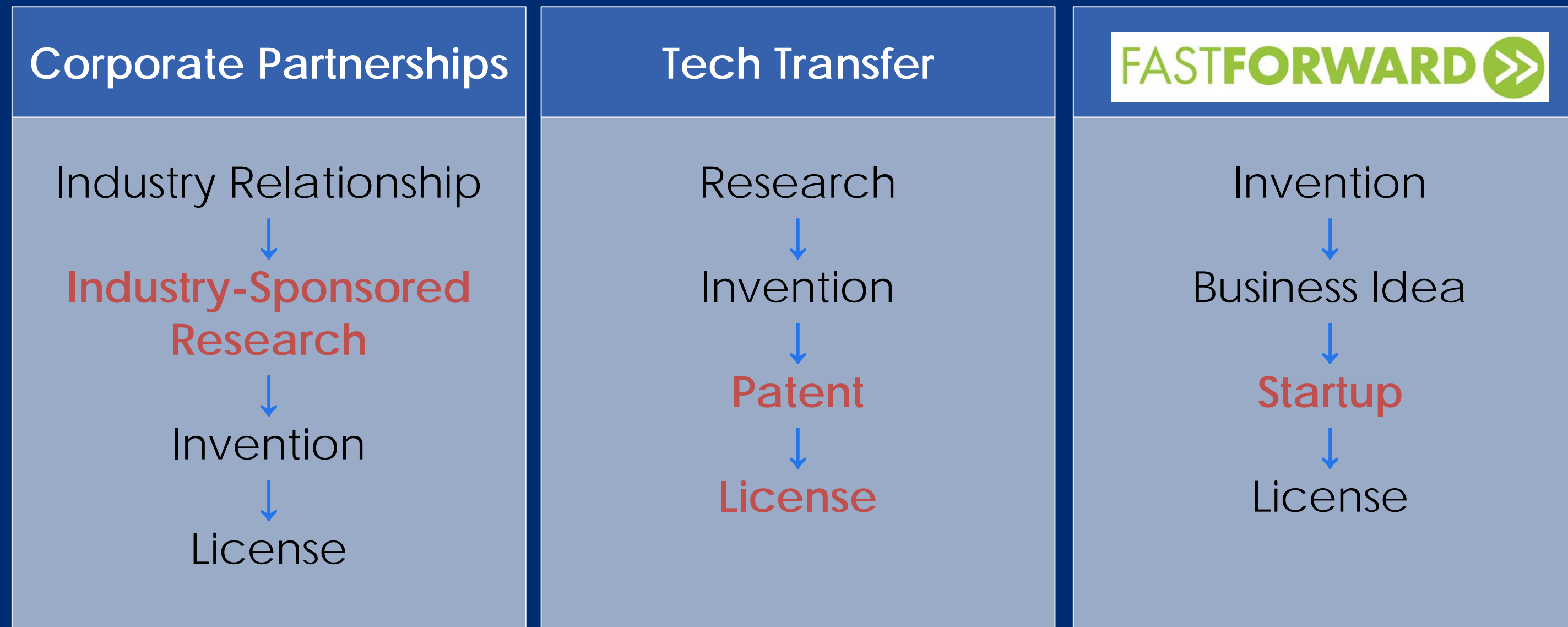
9

Mentorship

10

Space

JHTV is organized to support all paths to commercialization



Discoveries become products in the market

FROM LAB TO MARKET



JHTV Progress since the 2015

SPACE

43,000 sf built

FUNDING

\$2.4B raised

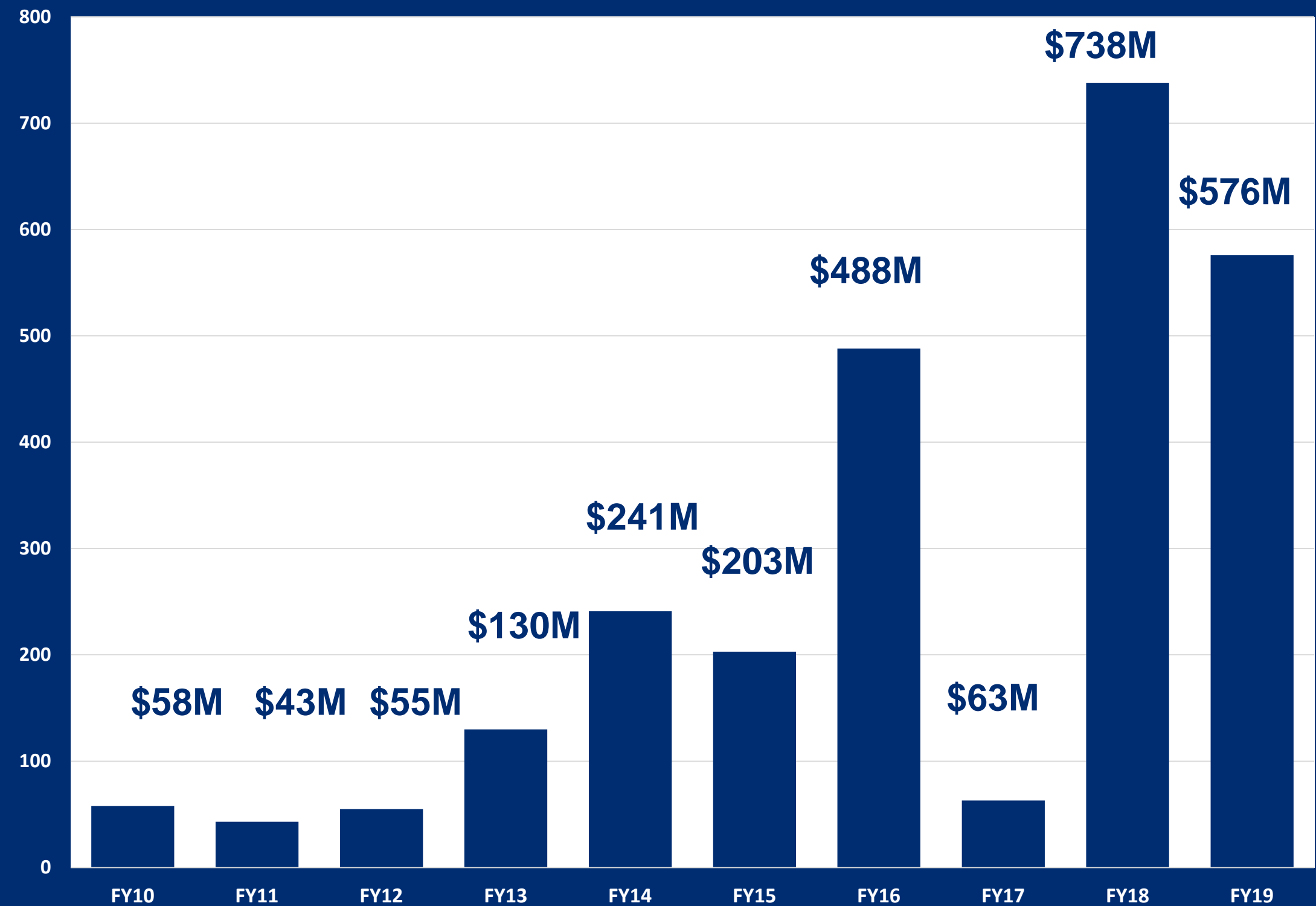
SUPPORT

111* startups formed

* Not including FFU & SIL startups

VC Investments: \$2.4 B

Venture Capital raised by JHU Startups



Venture Firms invested in Hopkins startups

- 5am
- Andreesen
- ARCH
- Brown Advisory
- Camden
- Clarus
- Deerfield
- Domain
- Flagship
- F-Prime
- Frazier
- IP Group
- Kairos
- Lux
- MPM
- NEA
- Orbimed
- Pfizer Venture Investments
- RA Capital
- Roche Venture Fund
- SR One
- Third Rock

Spotlight on Deerfield

- JHTV and Deerfield have formed a **5-year \$65M partnership** (“Bluefield”) with the goal of accelerating and de-risking JHU’s IP assets for commercialization
- Deerfield has also participated in investment rounds of Hopkins startups including **GrayBug, Dracen and Blade**

Thrive.

Earlier Detection



- Developed a single lab test that screens for 8 common cancer types
- Marcus Foundation is funding a \$50 million 5-year study in collaboration with Geisinger Health
- In FY19, raised **\$110M in Series A** funding led by Third Rock Ventures
- R&D operations based in East Baltimore and growing rapidly

Successes in the commercialization of Johns Hopkins discoveries



- Developing nanoparticle technology for dry eye and ocular surgery
- Venture funding from Longitude, Lux, Polaris, RA Capital, Third Rock
- \$ 103.5M initial public offering in July 2017
- As of August 2017, valuation of \$500 M

2017 IPO



- Clinical stage biotechnology company that is advancing a pipeline of drug treatment candidates for various gastrointestinal diseases
- Raised over \$140M in venture funding
- \$128M public offering in July 2018

2018 IPO



- JHU IP: Cardiovascular therapeutics
- Acquired by Bristol-Myers Squibb in 2015
- Up-front near term milestones up to \$300M; deferred consideration up to \$1.775B



- JHU IP: Technology to improve DNA vaccines
- Immunomic originally licensed IP in 2006 and proceeded into clinical trials for allergy indication
- Astellas deal with Immunomic in Oct 2015 for \$300M



RETURN TO THE UNIVERSITY: COST TO THE UNIVERSITY

4:1

Overall \$ROI to JHU

- Expenses: ~\$14 Million per year.
\$9M Costs paid plus 25% patent expenses not reimbursed to date (\$70 million over 5 years)
- Exceeded revenue goal of \$212M by 40% (\$300 Million)
- Two major licensing “wins” ; one patent infringement settled

In the last 5 years...

\$183M

“Licensing” Revenue

\$104M

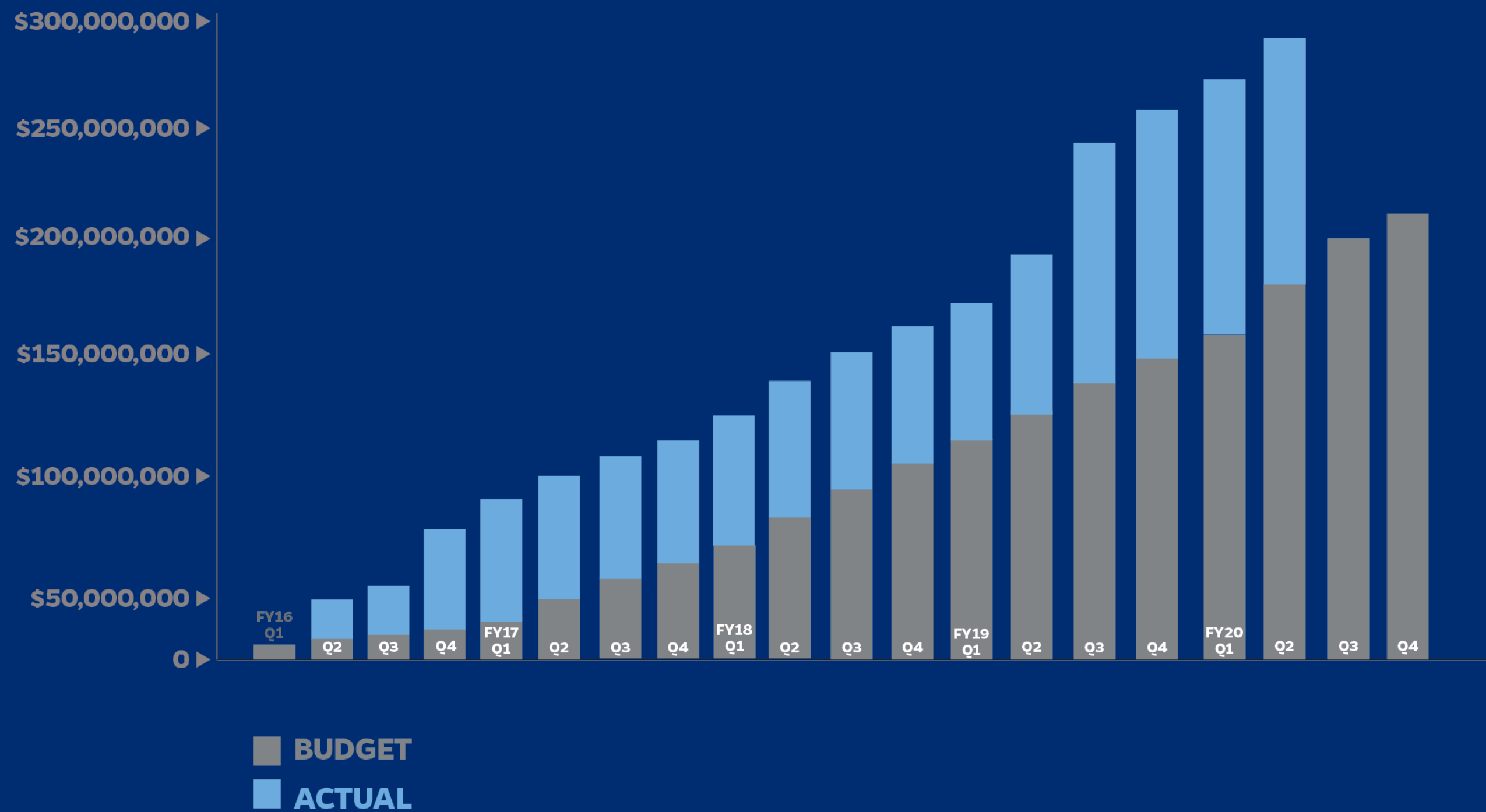
JHTV Corporate Partnerships
Revenue

\$1.9B

Venture capital raised by JHU
startups

5-Year Plan progress: JHTV Quarterly

Cumulative Total JHTV Revenue



What is the NIH and NSF Doing to Help?

RO-1 Funding: commercial potential and funding

SBIR programs

Institute by Institute

Phase 1: \$~150,000

Phase 2: need license and startup with
investor partner potential

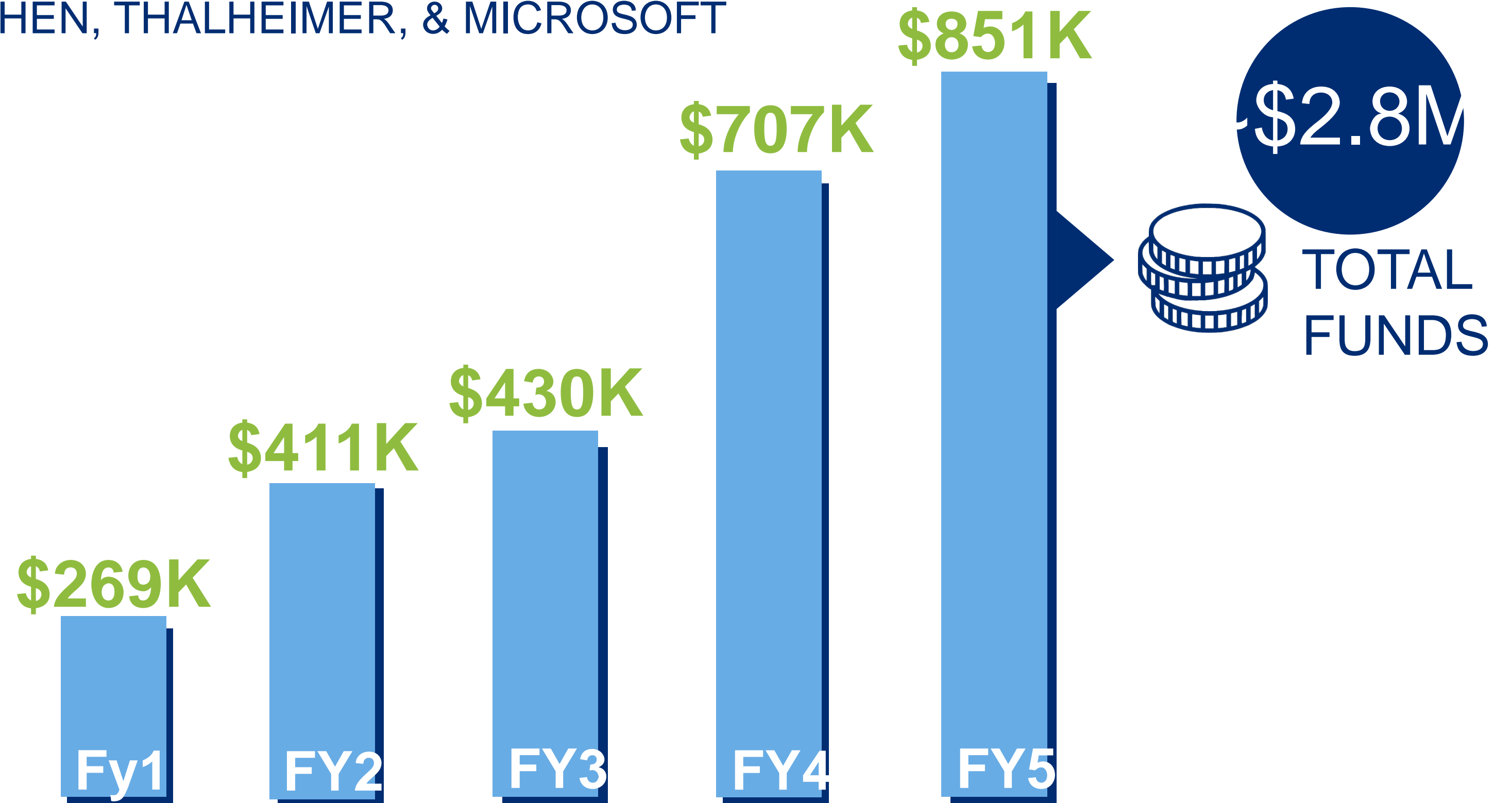
Direct to Phase 2 up to \$2.5 Million

Phase 3: \$3 Million.

Special Innovation Programs

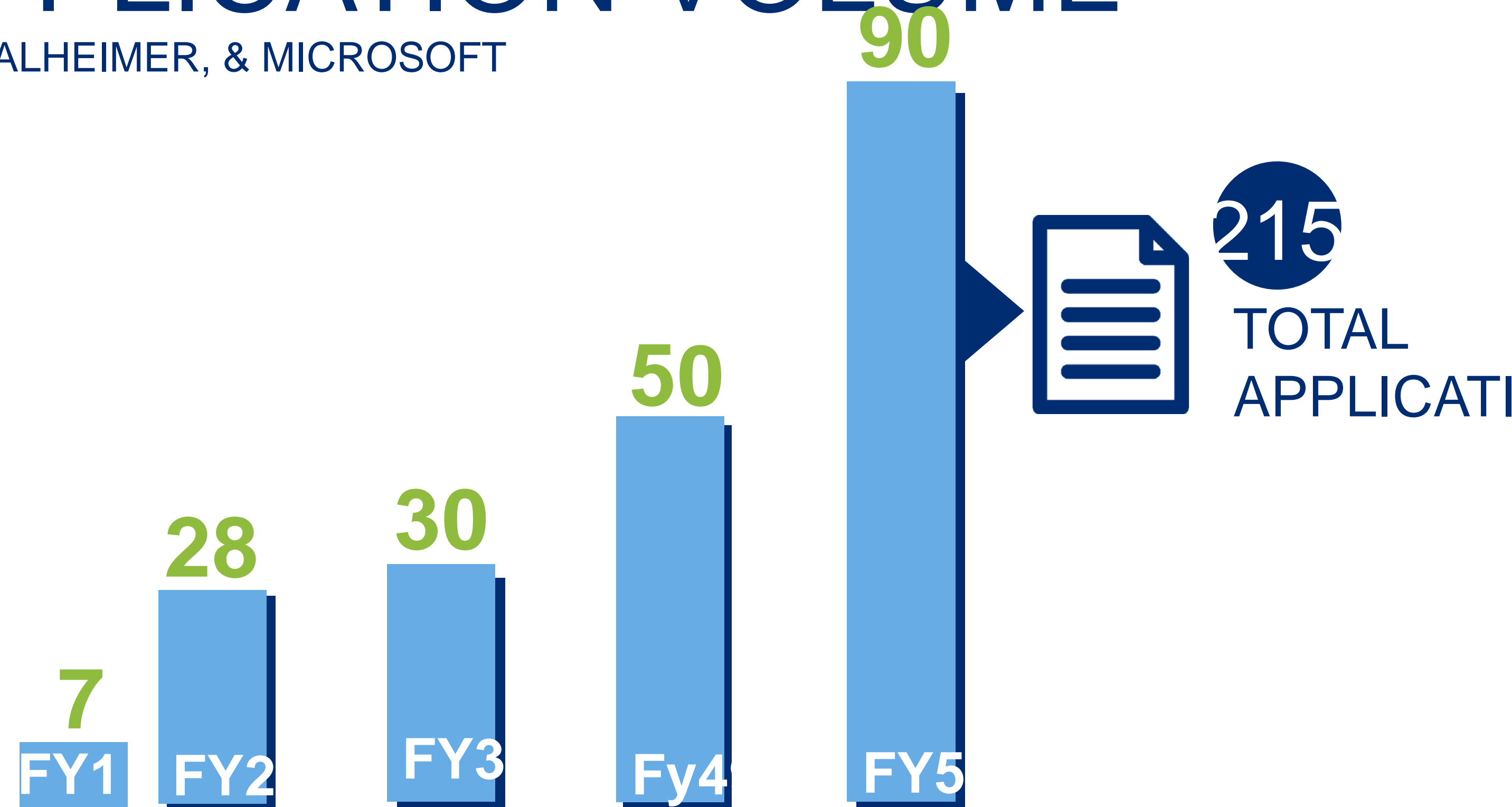
COMPETITIVE EARLY FUNDS

INCLUDES BISCOTTI, COHEN, THALHEIMER, & MICROSOFT



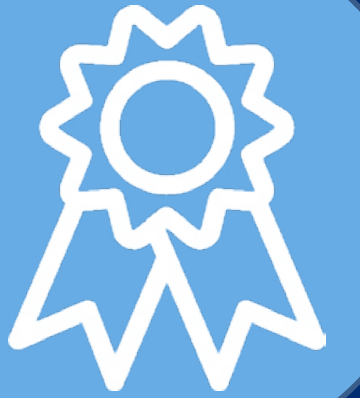
COMPETITIVE EARLY FUNDING: APPLICATION VOLUME

INCLUDES BISCOTTI, COHEN, THALHEIMER, & MICROSOFT



THALHEIMER FUND FINALISTS

42 TOTAL APPLICATIONS



Alan Cohen

CortiTech: Atraumatic Brain Retractor for Minimally-Invasive Neurosurgery

Henry Halperin

Reduced-Pain & MRI-Conditional External Cardiac Defibrillator

Paul Kim

Commercialization of Bryostatin-1 as a Remyelinating Agent with a Novel Drug Target for Multiple Sclerosis

Rajat Mittal

FoSS: A Flettner Rotor Sail with Suction for Efficient Wind-Assisted Ship Propulsion

Sashank Reddy

NanoTox: A Novel Sustained Release Therapeutic for Migraine and Facial Aesthetics

William Anderson

ePACStim: Biomarker Driven Adaptive Brain Stimulation System for Parkinson's Disease

What can Senior Faculty Do to Help?

Express interest

Learn by going to sessions at Fast
Forward

Review grants in your area

Advise faculty in your area

Angel Investment