

JOHNS HOPKINS TECHNOLOGY VENTURES

FISCAL YEAR 2021
ANNUAL REPORT

Bringing the benefits
of academy discovery
to the world



JOHNS HOPKINS
TECHNOLOGY VENTURES



**YOU CAN
INTERACT
WITH OUR
ANNUAL
REPORT!**

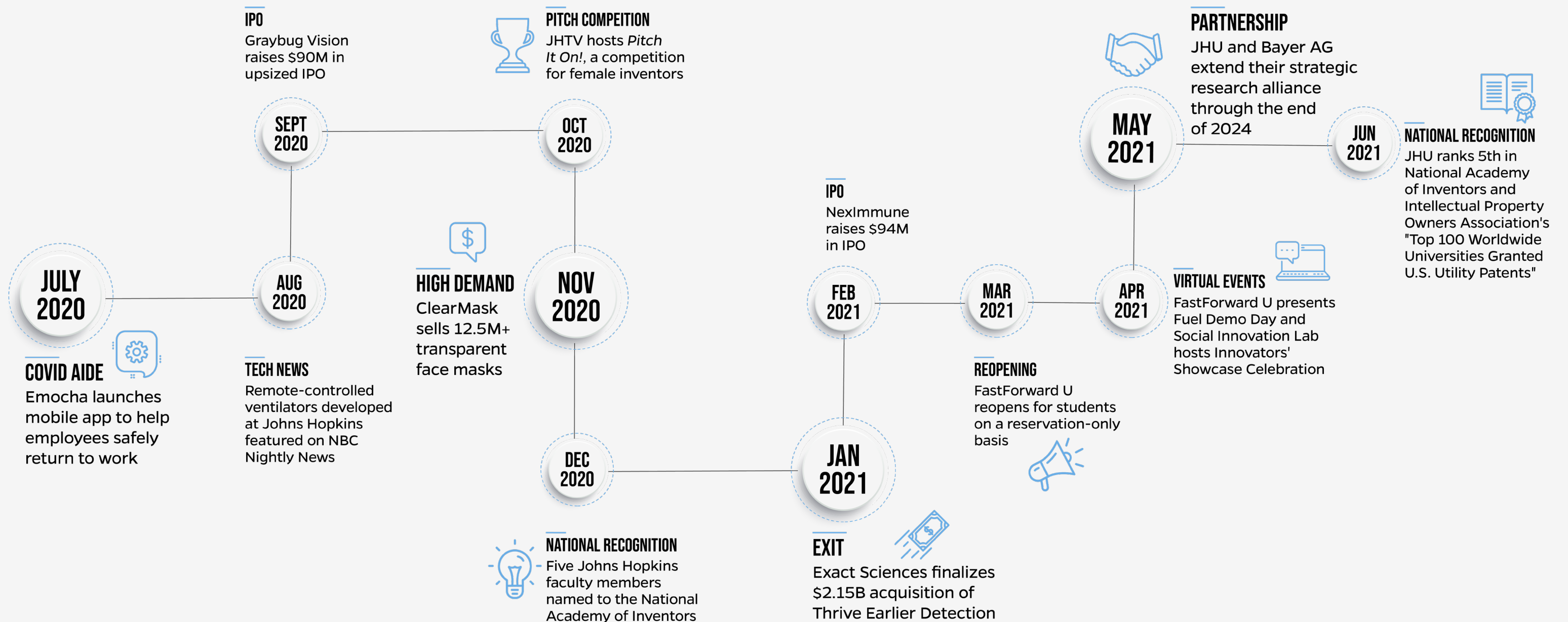
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TRACKING OUR YEAR

In Spring 2020, it felt as though the world pressed pause, but for innovation at Johns Hopkins, Fiscal Year 2021 was a year of significant forward motion.

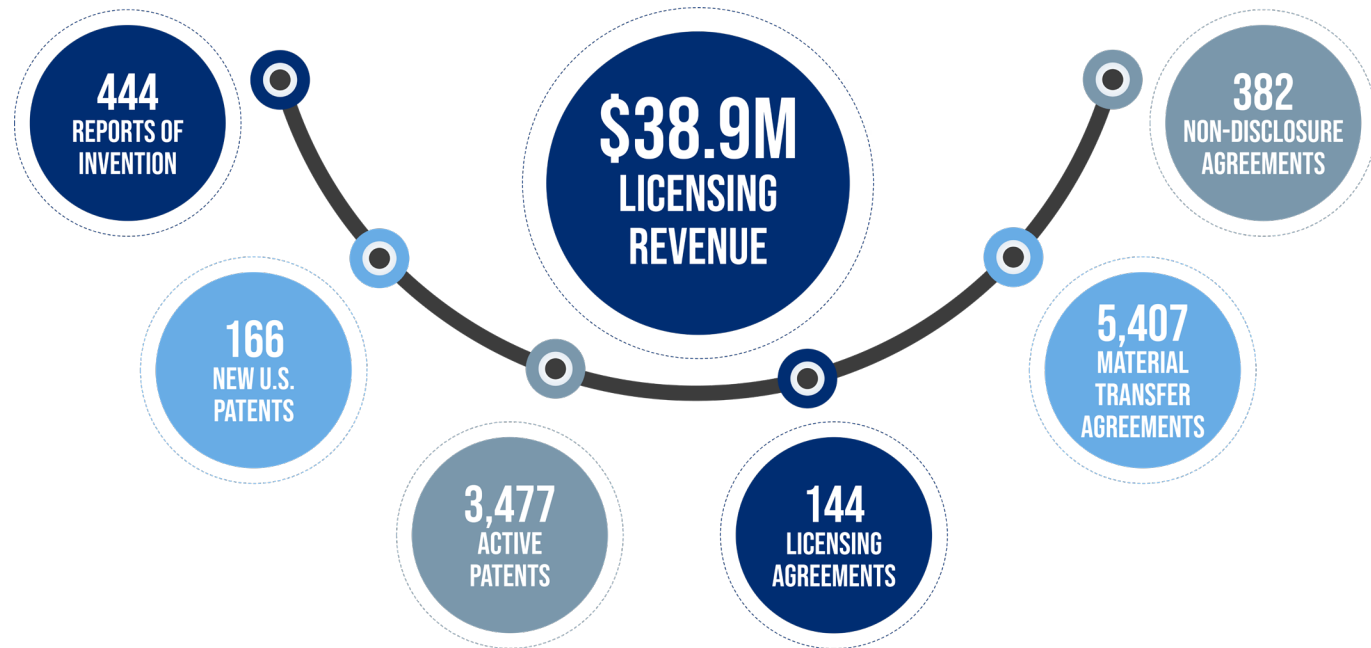
JHTV and its stakeholders took full advantage of underlying momentum and digital connectivity to achieve the following new milestones.



MOVING TO MARKET

TECHNOLOGY TRANSFER

Partnering with university inventors to translate academic discoveries into products and services that benefit society.



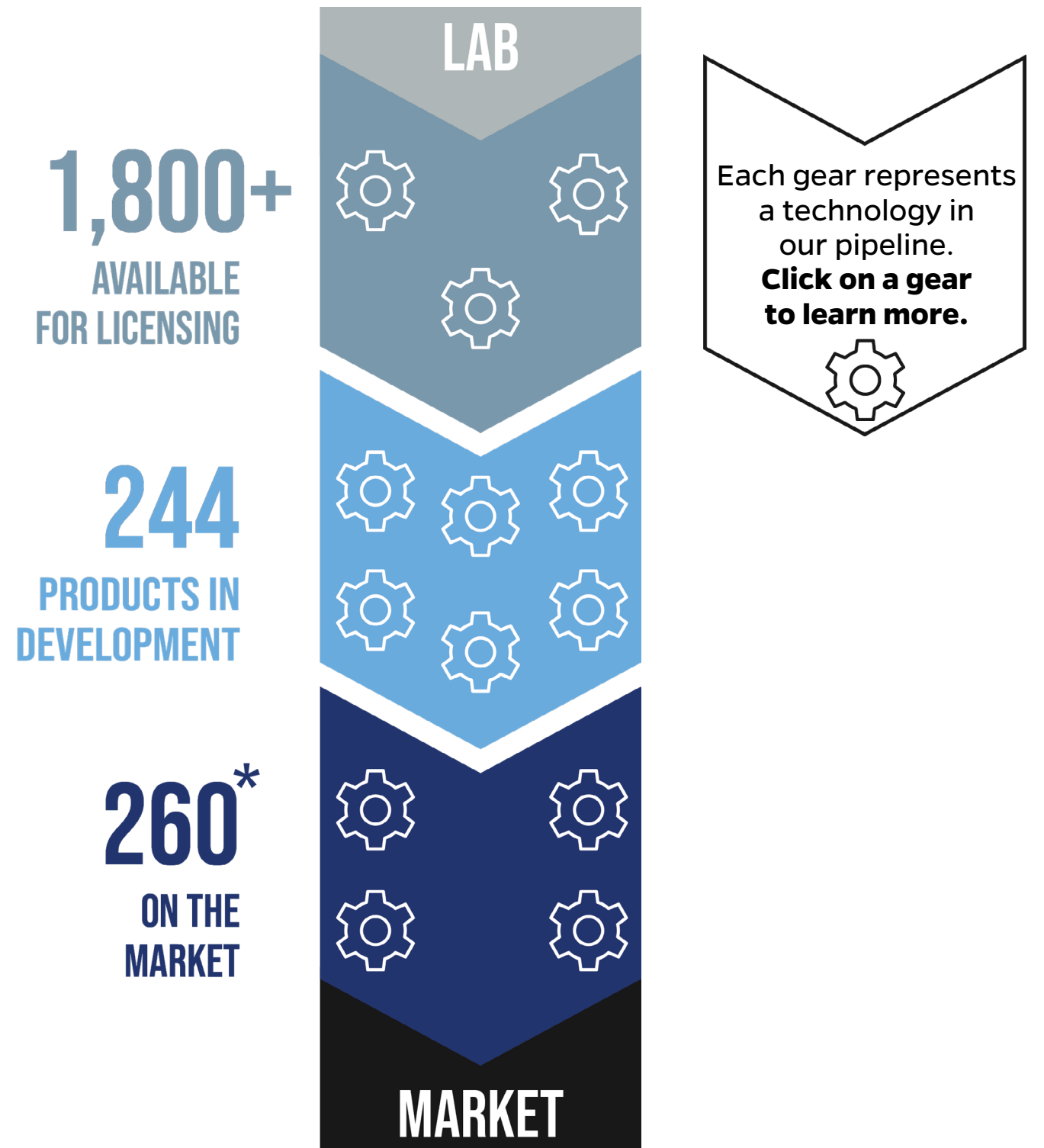
TRANSLATIONAL FUNDING

Philanthropic gifts providing \$1M in grants for technology development.

BISCIOTTI				
ALAN COHEN	SUNG KANG	VIVEK KUMBHARI	XINGDE LI	
COHEN				
MEHRAN ARMAND MEDICAL DEVICES	KUNAL S. PARIKH NANOMEDICINE/ OPHTHALMOLOGY	SAMI H. TUFFAHA RECONSTRUCTIVE SURGERY		
MICROSOFT				
NAKUL SHEKHAWAT OPHTHALMOLOGY	SHAMEEMA SIKDER SURGICAL EDUCATION	HARIKRISHNA TANDRI MEDICAL DEVICES		
THALHEIMER				
WILLIAM S. ANDERSON NEUROSURGERY	SASHANK REDDY THERAPEUTICS			

FEATURED TECHNOLOGIES

The pipeline from lab to market contains thousands of Johns Hopkins technologies. The following technologies offer a snapshot into the trending innovations within our robust portfolio.



*Technologies with multiple uses generate product variations. From 260 technologies, 2,231 products are on the market.

NURTURING COMPANIES

FASTFORWARD

A coordinated suite of resources designed to efficiently move technologies from startup to marketplace.

HEADLINES

\$1 billion+ was invested in our FY21 portfolio, including \$700+ million in venture capital and nearly \$500 million in public equity financing. Below is a selection of newsworthy startup milestones.



FY21 HIGHLIGHTS



174

ACTIVE
STARTUPS



\$768M

VENTURE FUNDING
RAISED BY
30 STARTUPS



\$496M

PUBLIC
EQUITY
OFFERINGS



20

TEDCO MII
AWARDS
GRANTED \$2.6M

NOTABLE FY21 ACTIVITY

It was a prosperous year for our cancer diagnostic companies. **Thrive Earlier Detection** last summer announced a \$257M Series B raise to advance its CancerSEEK liquid-biopsy test. In January, Thrive was acquired by Exact Sciences for \$2.1B. Also in January, **Delfi Diagnostics** announced a \$100M raise for its test to screen blood for signs of tumors. **Personal Genome Diagnostics (PGDx)** closed a \$103M Series C raise that it plans to use to expand its tissue-based and liquid biopsy portfolio.

Other local startups hit their stride. **Vita Therapeutics** last summer received orphan drug designation from the U.S. Food and Drug Administration to treat Duchenne's Muscular Dystrophy. The company announced a \$20M raise in February. **NexImmune**, which is developing T cell immunotherapies for cancer, announced a \$126M IPO in February. Remote mental health monitoring company **Rose** raised more than \$1.5M in an oversubscribed seed round.

Allakos Raises \$271 Million from Public Offering

AsclepiX Therapeutics Announces \$35 Million Series A Financing

Avhana Health acquired by digital health company Amalgam Rx

Escient Pharmaceuticals Raises \$77.5M Series B

Regenerative Medicine Startup LifeSprout out of Johns Hopkins Closes \$28.5M Round

BRIDGING ACADEMIA AND INDUSTRY

CORPORATE PARTNERSHIPS

Facilitating industry research collaborations that translate the novel work of Johns Hopkins researchers into real-world applications.



\$153M

SPONSORED
RESEARCH
SINCE 2014



37

CURRENT
PARTNERS

PARTNERSHIP UPDATES

Click on the following logos for short recaps of a selection of FY21 highlights specific to that partnership.



SPOTLIGHT ON BAYER

The Johns Hopkins University and Bayer AG have extended their research collaboration in ophthalmology through the end of 2024.



The agreement will provide multimillion-dollar funding for researchers at the **Johns Hopkins Wilmer Eye Institute** to pursue treatments for a variety of eye diseases and ailments while benefiting from the expertise of Bayer scientists about potential drug candidates.



- A drug candidate from one of the collaboration's programs has advanced to a **phase II clinical trial** and another program is licensed to a startup company. Researchers on both sides hope to translate the joint research into improved vision by moving innovative treatments from labs to patients' eyes.

EQUIPPING INNOVATORS

FACULTY RESOURCES

JHTV provides dynamic learning opportunities for Johns Hopkins faculty in pursuit of research, discovery, and education.



I-CORPS

The National Science Foundation I-Corps program challenges participants to test their hypotheses on their technologies' relevance and viability through customer discovery, which will lead to viable value propositions. Another **38 teams** took part in FY21, meaning more than 200 teams have now engaged with JHTV's I-Corps program.



LAB TO MARKET BOOTCAMP

Johns Hopkins inventors participated in a new course to learn how to maximize the impact of their research. **Twenty teams** attended the bootcamp, which included guest lectures by industry professionals, evaluations of significant case studies, and weekly presentations of the inventors' technologies.



MENTORSHIP

Mentorship from veteran entrepreneurs provide faculty with technical expertise and guidance. As an additional opportunity for faculty to gain valuable insight from our mentors, we introduced monthly **Office Hours** with JHTV Medical Director Sashank Reddy, M.D, Ph.D. and Mentor-in-Residence Sean Tunis, M.D., MSc.



DIGITAL LIBRARY

JHTV created a one-stop resource for faculty innovators to learn about commercialization and obtain project-specific advice. Faculty can access documents and videos online to learn about translational funding, intellectual property, startup creation, and more.

FASTFORWARD U

A student innovation hub that supports budding entrepreneurs across campus through funding, mentorship, space, and resources.

FY21 STUDENT STATS

123
VENTURES
SUPPORTED

\$29.7M
VENTURE
FUNDING RAISED

80%
INCREASE
IN ONLINE
ENGAGEMENT



FASTFORWARD U
FY2021
YEAR-IN-REVIEW

VIRTUAL DEMO DAY



This year's **Fuel Demo Day** went virtual with eight exceptional student venture teams competing and pitching for funding. The top prize was awarded to **Mo. Na. Gems**, a transformative brand aiming to replace plastic accessories in the fashion industry by offering a bio-based, biodegradable, and sustainable alternative.

COMMERCIALIZATION ACADEMY

Forty Johns Hopkins students participated in JHTV's fellowship program in FY21, gaining experiential learning and career exposure to commercialization.

NEXT STOPS FOR FELLOWS

- » AstraZeneca
- » Bloomberg
- » Harvard Law School
- » Medtronic
- » Sage Growth Partners
- » Stryker
- » US Food & Drug Administration



SAMIKSHA RAMESH
M.S.E., Biomedical
Engineering
Technical Advisor,
Ropes & Gray LLP

“ JHTV provided the exposure and experiences I needed to make informed decisions about the direction to take my studies and career. ”

BUILDING COMMUNITY

DIVERSITY IN INNOVATION

JHTV is committed to supporting a diverse community of innovators who reflect the human differences that enrich our society and our institution.



SRIDEVI V. SARMA
ASSOCIATE PROFESSOR, DEPARTMENT OF BIOMEDICAL ENGINEERING

CHANGING THE FACE OF INVENTORSHIP

The field of commercialization has traditionally been dominated by the most privileged groups in our society, resulting in significant untapped potential and under-resourced ideas. By fostering an innovation community at Johns Hopkins that is characterized by excellence and inclusion, we can hasten and strengthen discovery.



WOMEN IN INNOVATION

Sridevi V. Sarma won \$10,000 in JHTV's *Pitch It On!* competition for female inventors. The virtual event was the culmination of the *AccelHERator*, JHTV's yearlong series dedicated to female inventorship at Johns Hopkins. Sarma pitched *EZTrack*, which creates a heat map of the brain to help doctors determine the source of seizures in drug-resistant epilepsy patients.



TECHINCOLOR

JHTV created a new webpage dedicated to celebrating the achievements of underrepresented minorities and individuals of diverse racial and ethnic backgrounds. Our goal is to connect these innovators with programs and resources across and beyond our institution. The page spotlights diverse innovators on campus and includes resources specific to innovators of color.

SOCIAL INNOVATION LAB

Supports mission-driven leaders and organizations to develop into sustainable ventures that generate measurable impact in Baltimore and beyond.

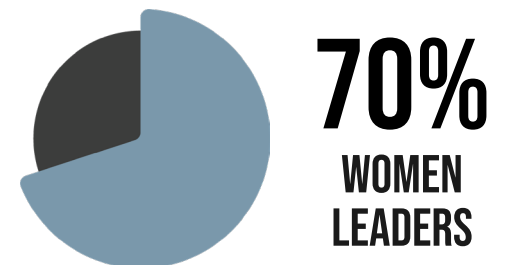
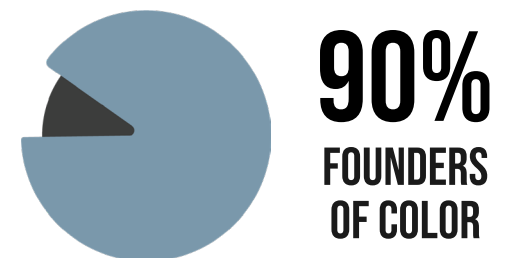
SIL PROGRAM HISTORY

103
VENTURES
SUPPORTED

\$76M+
FUNDING
SECURED

580
TRAINED IN
BOOTCAMPS

2020-21 COHORT VENTURES



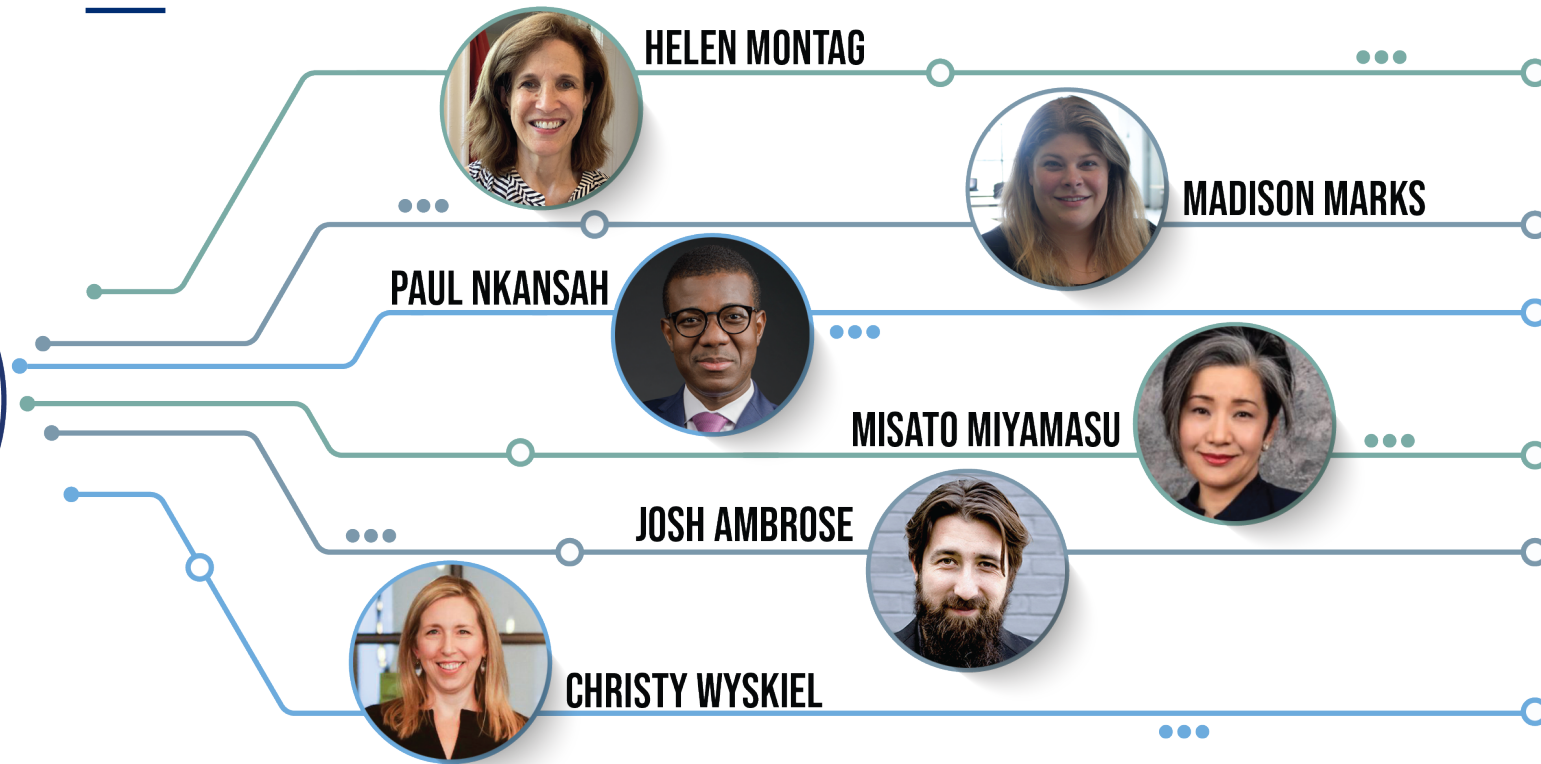
VIRTUAL INNOVATORS SHOWCASE



This year's virtual celebration featured 10 impact-driven teams who completed SIL's rigorous five-month accelerator program. The \$25K Cohort Prize was awarded to Winifred A. Winston of **Dyslexia Advocation Inc.**, a nonprofit that educates, empowers, and equips adults and parents of children with dyslexia with the necessary tools to advocate successfully for themselves and their children.

KEEPING CONNECTED

LEADERSHIP UPDATES



HOME OFFICE STATS AND FRIENDS

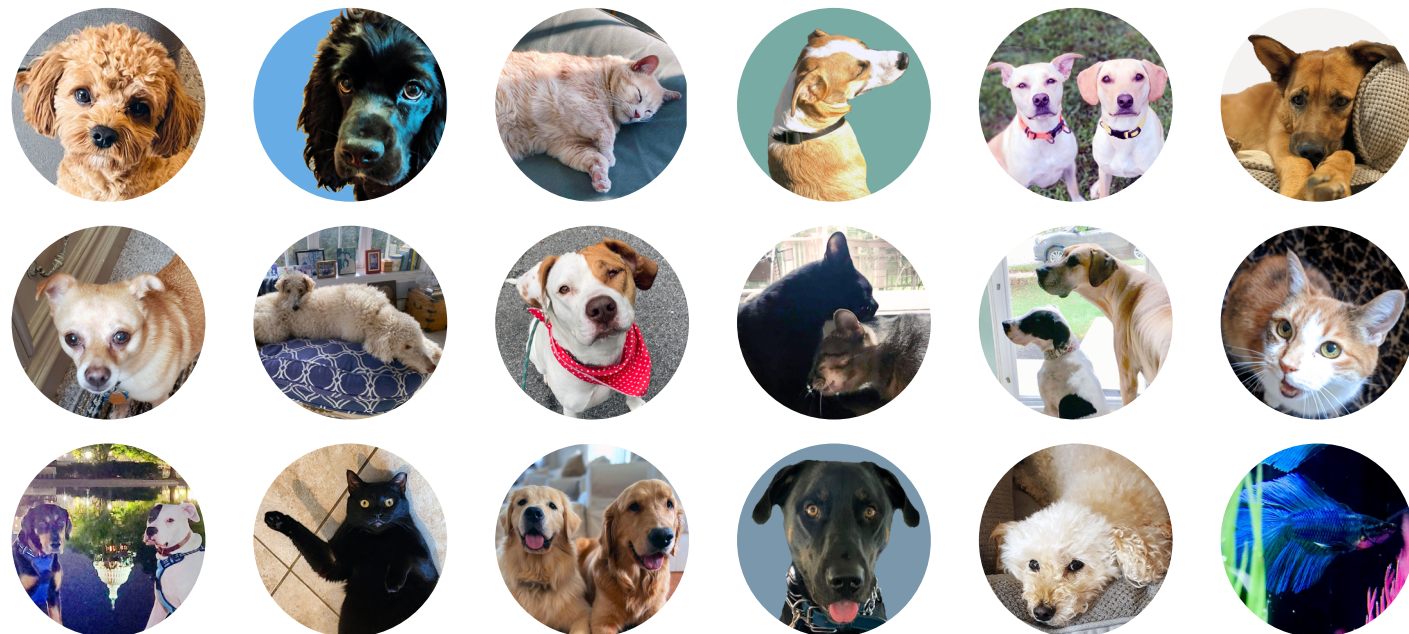
70 JHTV TEAM MEMBERS

17 MONTHS AT HOME

10 PETS ADOPTED

5 BABIES BORN

∞ ZOOM CALLS



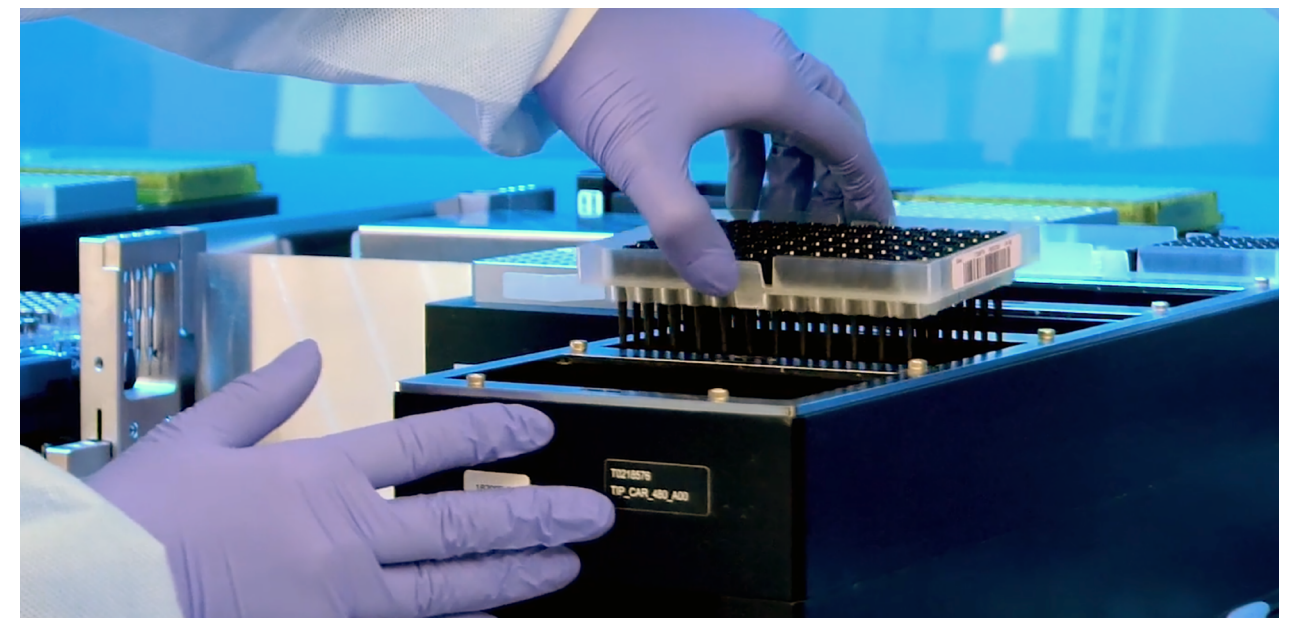
INNOVATION HUBS

While the coronavirus pandemic kept most people working at home, the labs and facilities at our FastForward and R. House innovation hubs never closed. Nineteen lab-based companies had approved COVID plans and were able to use their spaces during the fiscal year. All of FastForward's suite of startup resources — including mentoring, investor introductions and office hours with corporations, lawyers, and accountants — were offered virtually.

FY21 SUPPORT STATS

18	39	43	815
ACCOUNTING ENGAGEMENTS	CORPORATE ENGAGEMENTS	LEGAL ENGAGEMENTS	MENTOR-IN-RESIDENCE ENGAGEMENTS

With just a 1% vacancy rate for life sciences real estate in Baltimore, demand for our space remains high.



PLANNING FOR GROWTH

WHAT'S NEXT



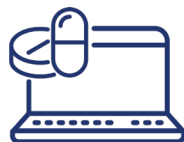
ENERGY TECH

In March 2021, Johns Hopkins launched the Ralph O'Connor Sustainability Energy Institute (ROSEI) to harness the institution's excellence in energy research and build a more climate-conscious future. JHTV is poised to help the University maximize its translational impact.



ECOSYSTEM

Technology-based companies are a critical means by which Baltimore and Maryland can become stronger communities through equitable economic growth. JHTV is partnering with UpSurge Baltimore, a program that will grow the local ecosystem and serve as an investment engine, beginning with the city's first Techstars accelerator cohort in late 2021.



PRECISION MEDICINE

Johns Hopkins has built a robust analytic infrastructure to harness its rich pool of data in order to improve patient outcomes, fuel research, and develop solutions for commercial application. This platform provides a host of opportunities for corporate partnerships.

CONNECT AND GROW WITH JHTV



LICENSE TECHNOLOGY

Jeanine Pennington,
Director of Licensing



PARTNER WITH RESEARCHERS

Paul Nkansah,
Sr. Director, Corporate Partnerships



INVEST IN STARTUPS

Brian Stansky,
Sr. Director, FastForward



BUILD UP BALTIMORE

Helen Montag,
Sr. Director, Ecosystem Development



VOLUNTEER OR DONATE

Maddy Stokes,
Director, Innovation Initiatives and Corporate Relations

ACKNOWLEDGEMENTS

JHTV is grateful for the support of many generous stakeholders, especially its donors, corporate sponsors, mentors, and strategic advisers.

IDEA BOARD

Brian Bizoza	Michael Hankin
Louis Brown Jr.	Nancy Howard
Jeff Cherry	Isaac Kinde
Chuck Clarvit	Ethan Leder
Nick Culbertson	Joe Migliara
George Davis	Mary Miller
Bob Embry	Heather Murren
Scott Ferber	Myra Norton
Susan Ganz	Morris W. Offit
Justin Hanes	Chandra Ramanathan

MENTORS AND SITE MINERS

Graham Allaway
Arthur (Skip) Colvin
M. Christina De Mur
Graham Dodge
AJ Donelson
Richard (Ric) Hughen
Albine Martin
Bill McNamara
Joseph M. Migliara
Daniel J. Roche
Bob Storey
Sean R. Tunis

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Deloitte
DLA Piper
Emergent BioSolutions
Genentech
Microsoft
Newmark
Pfizer
Saul Ewing Arnstein & Lehr
SC&H Group
SolidWorks
Thermo Fisher
Venable
Whiteford Taylor Preston LLP

TOP DONORS

The Abell Foundation
AstraZeneca
Bayer
Stephen and Renee Bisciotti Foundation
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Jay Crim and Shekar Davarya
Emmett T. Cunningham Jr.
Susan Ganz
Johns Hopkins Federal Credit Union
David L. Koch
Karen and Ethan Leder
Microsoft
Migliara Family Foundation
Morris W. Offit
Jeff and Laura Raider
Karthik Seshan
Louis B. Thalheimer
Yury Yakubchyk Jr.

**FY2021
ANNUAL REPORT
APPENDIX —
INTERACTIVE
CONTENT**



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TECHNOLOGY VENTURES

PARTNERSHIP UPDATES

We have initiated eight oncology-focused collaboration projects with **AbbVie** since 2017, some still ongoing. We look forward to expanding our collaboration into other therapeutic areas as we celebrate our fifth anniversary working together in FY22.

A new collaboration with **AbMeta Therapeutics** will focus on the validation of a novel oncology therapeutic. The research will occur at both the School of Medicine and the Whiting School of Engineering.

Johns Hopkins collaborates with the **Centers for Therapeutics Innovation (CTI)** to accelerate early-stage research into viable therapies with breakthrough potential for patients. There are multiple ongoing projects in cancer and cancer-related syndromes under this collaboration. One project in Jim Stivers' lab resulted in publication in *Molecular Pharmacology* in March 2021.

Entering its third year working with Johns Hopkins faculty and students, **DH Diagnostics** maintains broad engagement across multiple divisions within the institution including the School of Medicine, the Whiting School of Engineering, and the Carey Business School.

Canon Medical's collaboration with The Johns Hopkins University is centered on Canon's state-of-the-art MRI and ultra-high-resolution CT scanner, both housed at Johns Hopkins. A new program focused on Radiogenomics was launched in FY21, with Drs. Kristin Redmond and Junghoon Lee's proposal on imaging and genomic biomarker for chordomas using both MRI and UHR-CT techniques.

A new collaboration was formed between Johns Hopkins faculty members Barbara Slusher and Luis Garza, and **SPARC**, a clinical stage biopharmaceutical company. The three-year project will investigate the anti-inflammatory metabolite, itaconate, as a treatment for alopecia areata.

LEADERSHIP UPDATES



JOSH AMBROSE

Josh is no stranger to student innovation as he takes on the role of director of student ventures. While at McDaniel College, he served as an associate dean and helped start their entrepreneurship program, the McDaniel Commitment, and many community-engagement programs. Josh's ultimate travel goal is to retrace his great-great-grandfather's Alaska trip during the 1890s, when he participated in the Yukon Gold Rush. His grandfather chronicled the journey in a journal that was the basis for Josh's undergraduate thesis.



MADISON MARKS

Madison hit the ground running as the Social Innovation Lab's new director after spending three years in the Middle East building support systems for social innovators. If money were no issue, she would travel to the Maldives for scuba diving and relaxing in its natural beauty. Madison would also stay in The Muraka, an underwater hotel which on the low end is \$50K per night.



PAUL NKANSAH

Paul brings a combined 19 years of experience in the pharmaceutical industry, global health, and consulting sectors along with a deep life sciences background and strong track record of developing global and national partnerships to his role as senior director of Corporate Partnerships. The most fascinating person he ever met was Stephen Hawking. A few years before Hawking's death, Paul had a chance meeting with the renowned theoretical physicist while visiting the town of Barnard Castle in the English countryside.



MISATO MIYAMASU

As director of Corporate Partnerships, Misato brings extensive experience in developing and cultivating partnerships in the life sciences sector to the Johns Hopkins research community. Outside of work, Misato is a classically trained musician with extraordinary sight-reading skills. However, she notes, it is a struggle to memorize music and she always needs a score in front of her in order to play.



HELEN MONTAG

Helen has taken on a newly created role, senior director of ecosystem development, after successfully leading the Corporate Partnerships team since its inception in 2014. Due to the pandemic, she has now included two essential items to almost every dinner menu — wine and ice cream.



CHRISTY WYSKIEL

Nothing stops Christy from putting Johns Hopkins and Baltimore innovators on the map, not even a pandemic! In FY21, our executive director led the team to a record-breaking year, taught a course at the Carey Business School, participated in podcasts, published blog posts, and even did an Instagram takeover. During quarantine, Christy learned to speak Italian with the goal of being able to order gelato, panini, and vino in Italian for her trip to Sicily next year.

HOME OFFICE FRIENDS



Brady
Cavapoo cutie



Luc
Commander
in Chief



Panther
JHTV's
Zoom star



Poe & Hunter
Shadow Prince
& The Watcher



Olive & Zeus
Sassy troublemaker
& Gentle giant



Misty
15-year-old
kitten at heart



Kickstand
Barkless &
camera-shy



Dexter & Nito
Rescues & best
work buds



Patterson
Rescued in
2017



Mena & Marley
National treasures



Magic
Talkative,
little lovebug



Stevie & Giselle
Pudding pups



Mason
Office Manager



Fred & Winnie
Short for Fred Astaire &
Winifred Spencer Churchill



Clementine
Sweetie-pie



Zeke
Professional
babysitter



Chloe
Cuddlebug &
breakfast lover



Blue
Betta fish &
JHTV color expert

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