



JOHNS HOPKINS TECHNOLOGY VENTURES CELEBRATES ITS 5TH ANNIVERSARY

2019 marks the fifth year of Johns Hopkins Technology Ventures, a division of the university created to support the translation of Johns Hopkins' academic excellence into commercial applications that benefit society. In reflecting on this journey, we celebrate the creation of infrastructure to support university innovators, the commercialization of hundreds of technologies, and a swell in entrepreneurial activity that enriches Baltimore.

5 YEARS OF SUCCESS



761
PATENTS GRANTED



\$183M
IN LICENSING REVENUE



\$2.3B
IN VENTURE FUNDING RAISED
BY JHU STARTUPS

80 COMMERCIAL STARTUPS FORMED
AROUND JHU TECHNOLOGY

44,000 SQUARE FEET OF
INCUBATOR SPACE BUILT

200+ STUDENT VENTURES
TAKING SHAPE

1000+ JOBS CREATED
IN MARYLAND



443 REPORTS OF INVENTION

28 TEAMS RECEIVED TRANSLATIONAL FUNDING TOTALING \$2.8 MILLION
5551 MATERIAL TRANSFER AGREEMENTS COMPLETED
\$21.7 MILLION IN CORPORATE SPONSORED RESEARCH



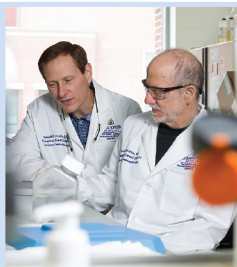
116 LICENSES AND OPTIONS
147 NEW U.S. PATENTS
915 ACTIVE TECHNOLOGIES
15 PRODUCT LAUNCHES

\$73.5M LICENSING REVENUE



\$525M RAISED BY 24 STARTUPS

88 STUDENT-LED VENTURES RAISED \$24 MILLION
10 TEAMS IN THE SOCIAL INNOVATION LAB
16 NEWLY CREATED STARTUP COMPANIES



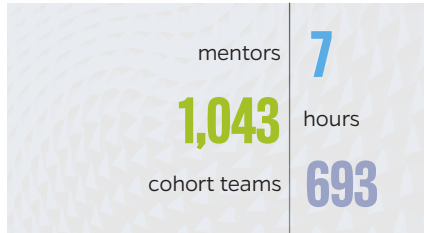
SPOTLIGHT ON

Based on technology from the Vogelstein lab, **Thrive Earlier Detection Corp.** aims to bring to market a liquid biopsy test to detect cancer as part of routine medical screening. The company launched in May 2019 with \$110 million in Series A funding and is conducting its research and development at the Johns Hopkins' innovation hub on the East Baltimore campus.

PROGRAMS & SERVICES

JHTV facilitates startup formation and growth through a range of supportive programs, including structured curricula, subsidized incubator space, mentorship, access to pro bono professional support, and funding.

MENTORS-IN-RESIDENCE



Pairs students, faculty, and other entrepreneurs with one or more mentors who have successfully built, sold, or invested in startup companies, allowing them to share their business and technical expertise with FastForward startups.

THE I-CORPS PROGRAM



A part of the National Science Foundation's National Innovation Network, this program is designed to help researchers better understand their target market for innovative new products and services by engaging directly with potential customers.

SOCIAL INNOVATION LAB



A mutually supportive, 9-month long cohort-based learning model where innovators and entrepreneurs can support each other on the pathway to scaling social ventures that make measurable impact in Baltimore and beyond. All participants received a \$1,000 participation stipend, and the cohort selected two peers to receive the cohort prizes. Eighty percent of participating SIL teams were led by women or entrepreneurs of color, and 40% were community members with no prior Johns Hopkins affiliation.

AWARDEES:

Happy Teacher Revolution awarded \$15,000

A movement seeking to organize and conduct support groups for teachers in the fields of mental health and wellness.

Fight Blight Bmore awarded \$10,000

A campaign to cultivate safe, green, economically vibrant communities.

THE COMMERCIALIZATION ACADEMY



Provides experiential learning opportunities to students interested in academic entrepreneurship and the commercial application of Johns Hopkins technologies. Fellows are exposed to emerging technologies and commercialization pathways, and they are provided networking and career exploration opportunities. This year's 44 fellows represented five of the nine schools of the University.



NEW RELEASE: THE STARTUP GUIDE

JHTV introduced a resource to guide Johns Hopkins inventors as they move ideas from the lab to the market via new company creation. Download it from our website at ventures.jhu.edu.

OTHER HAPPENINGS:

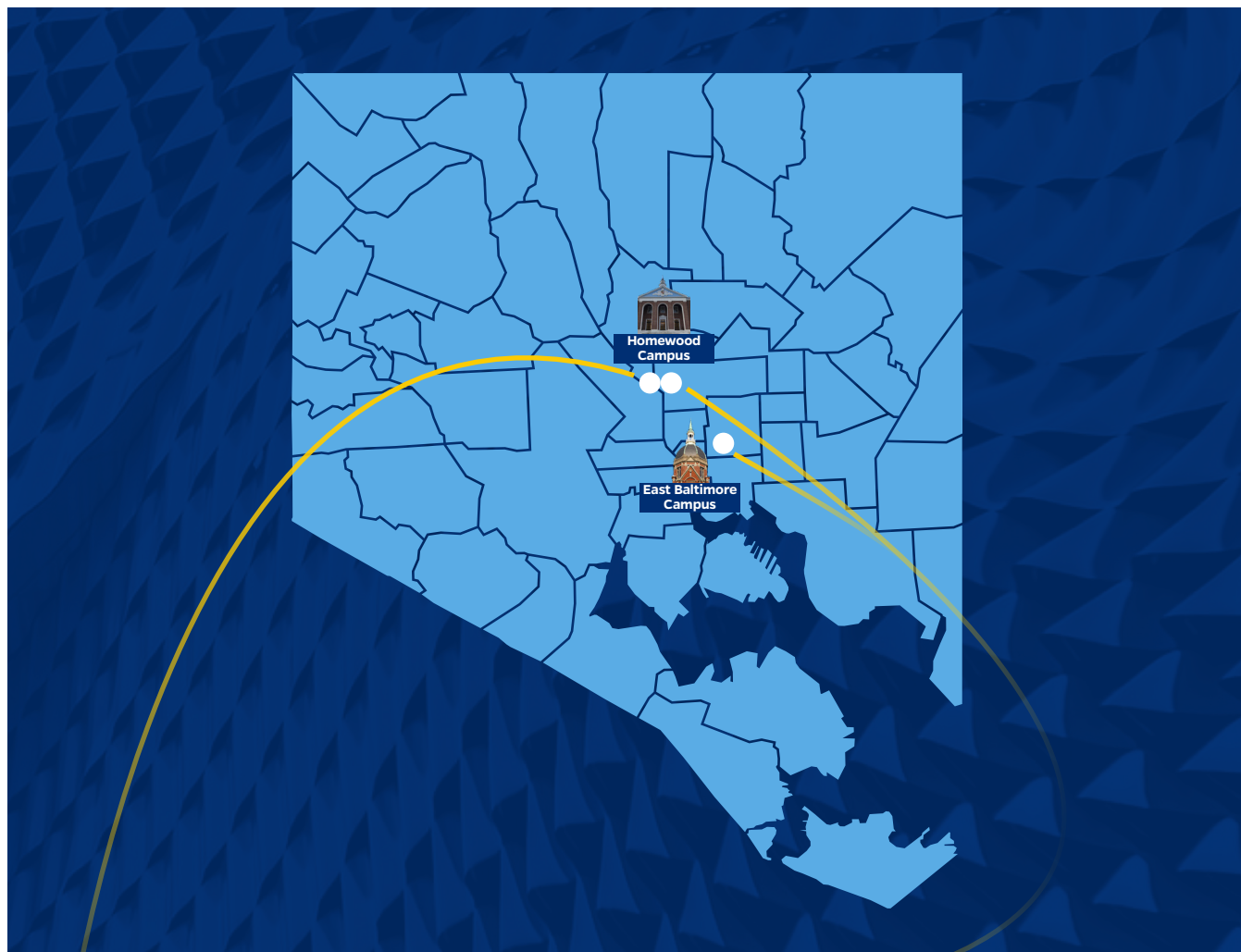
FastForward hosted a number of educational programs and events for members of the local entrepreneurial ecosystem. Eight

teams completed **Trajectory Next**, a sales training program for digital health, bio health and life sciences startups. Over 500 members of Maryland's innovation community

attended **Anchor Ventures** networking events. A cohort of **Federal Drug Administration (FDA) fellows** visited FastForward to learn about the unique challenges in bringing medical devices to market.

ACTIVITY IN OUR HUBS

Physical space anchors good ideas, facilitates networks, and – literally – houses growth. This year, we opened a new innovation hub, welcomed several new tenants, and watched several companies graduate to more permanent commercial space.



Student Activity

FastForward U Homewood

FastForward U Homewood was buzzing with activity this year, having hosted 100 events with 4,600 attendees. The inaugural Demo Day brought in eight startups who pitched to over 80 attendees and a judges' panel for a \$10,000 prize. In addition to event attendees, there were 200 visitors to the JHU Makerspace that were trained to employ the 3D printers, laser cutters, vinyl cutters and more.

Commercial Activity

FastForward 1812 and FastForward R. House

Our East Baltimore and Remington facilities housed 30 startup companies whose presence ranged from desks to lab-and-office combinations. The hubs provide professional startup teams with proximity to campus, conference and meeting facilities, programs and pro bono resources, and a community of peers and champions.

ON THE MOVE

Two Johns Hopkins startups graduated to new space after early incubation in our hubs: **emocha Mobile Health** expanded into a 5,000-square-foot office space in downtown Baltimore; **LifeSprout** moved to a facility with manufacturing capability in Port Covington.

CORPORATE PARTNERSHIPS

These collaborations leverage Johns Hopkins' areas of excellence and provide research pathways with the potential to dramatically impact society. Highlights include:



This oncology collaboration has resulted in seven active oncology projects since 2016. In 2019, a project presented by a clinical faculty was approved that focuses on solid tumors.



Bayer supported four joint research projects at the Wilmer Eye Institute as well as work in pharmacokinetics at Johns Hopkins Drug Discovery to develop therapies for retinal diseases. Two Bayer projects have achieved major pre-clinical development milestones.



Johns Hopkins participates in the Celgene cancer consortium, which pursues research in a number of areas within oncology. In FY18, two Johns Hopkins faculty projects were approved, both focused on the inhibition of cancer through epigenetics.



This relationship began with MedImmune and now continues under the AstraZeneca name, spanning a variety of therapeutic areas. A first-of-its-kind joint Ph.D. program, the Hopkins-AstraZeneca Scholars Program is now entering its third year.



The immuno-oncology partnership is focused on both pre-clinical and clinical drug discovery/development research. Two smaller immunology/rheumatology projects have also been executed.



Two new deals were established with GSK Vaccines, and an expanded partnership with GSK Consumer Healthcare in the pain management and sleep/wellness monitoring space has been explored.

FUNDING

JHTV connected Johns Hopkins innovators with \$19.4 million in technology development funding, and our startup companies raised \$525 million in financing. Mentors, donors, alums, and other local stakeholders made this possible.

THE MARYLAND INNOVATION INITIATIVE (MII)



A partnership between the State of Maryland and five Maryland academic research institutions designed to promote commercialization of research conducted in the partnership universities and leverage each institution's strengths.

BLUEFIELD INNOVATIONS



A collaboration between Deerfield Management and JHTV designed to support the commercialization of early-stage therapeutic research at Johns Hopkins.

LOUIS B. THALHEIMER FUND FOR TRANSLATIONAL RESEARCH



Enabled by the philanthropist Louis B. Thalheimer, this fund provides seed money to Johns Hopkins faculty members to produce the proof-of-concept, prototype and commercial feasibility studies necessary to bring their discoveries and innovations out of the laboratory and into the world.

BISCIOTTI TRANSLATIONAL FUND



New this year, the Bisciotti Translational Fund was established with a generous multi-year gift from the Stephen and Renee Bisciotti Foundation. The fund provides \$300,000 annually in seed money to advance Johns Hopkins discoveries on a commercial path. Recipients are awarded between \$25,000 and \$100,000 to conduct their work over a period of up to nine months.

COHEN TRANSLATIONAL ENGINEERING FUND



Available to Whiting School of Engineering faculty and made possible by a generous commitment from alumnus Neil Cohen, '83, and his wife, Sherry, this fund provides critical early funding for translation.

THALHEIMER FUND AWARDEES:

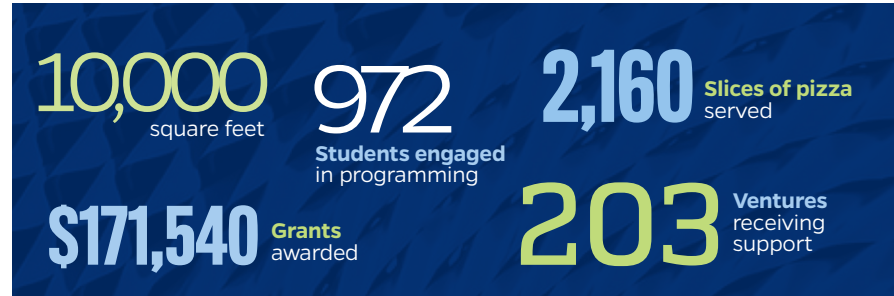
Parag Karmarkar is working on a cardiac RF ablation monitoring and lesion assessment system.

Edward James Wright is developing an animal testing ready prototype to perform endoscopic urethral reconstruction for the treatment of Urethral Stricture.

Dan Stutman is developing a prototype phase-contrast X-ray imaging system.

STUDENT ENTREPRENEURSHIP

The university's hub for student entrepreneurship, **FastForward U** came to life this year with **the opening of a dedicated facility adjacent to the Homewood campus**. FastForward U serves as a collaborative, extracurricular environment for any student looking to experiment, innovate or start a business.



EVENTS

FastForward U hosted 110 events with over 1,300 unique student visitors and was toured by 46 different groups, including prospective students, university departments, local development corporations, parents and alumni.

SUMMER UNDERGRADUATE ENTREPRENEURSHIP AWARD



This annual award supports one Johns Hopkins undergraduate-led startup each year with grant funding of \$10,000 and functions like a paid internship, enabling students to use their summer break from coursework to build a successful company. This year's awardee, Relavo, is developing the PeritoneX, which aims to reduce touch contamination by disinfecting potentially contaminated connection points for peritoneal dialysis (PD).

SPARK GRANTS



This program provides small grants of up to \$1,000 to early student teams to support the direct costs of testing ideas, building prototypes or launching a pilot.

RALPH S. O'CONNOR UNDERGRADUATE ENTREPRENEURSHIP FUND



Made possible by a generous gift from the late Ralph O'Connor, a Johns Hopkins Krieger School of Arts and Sciences alumnus, and his wife, Becky, this fund supports Johns Hopkins students aiming to solve major challenges through entrepreneurship.

BISCIOTTI FOUNDATION PRIZE FOR STUDENT ENTREPRENEURSHIP



New this year, the Bisciotti Foundation Prize for Student Entrepreneurship is a non-dilutive grant made to two teams annually. The goal of the Bisciotti Student Prize is to help student startups scale their businesses as they graduate from our FastForward U student entrepreneurship programs on campus. Prizes totaling \$50,000 were awarded to two teams: Kubanda Cryotherapy and HALE.

SPOTLIGHT ON KUBANDA CRYOTHERAPY

The largest FastForward U award of the year (\$30,000) was awarded to a team of biomedical engineering students advancing a cryoablation technique that freezes and kill cancerous masses on pets. While now focused on the veterinary market, Kubanda eventually wants to use its technology to treat breast cancer patients in low- and middle-income countries.

Philanthropy allows JHTV to realize its mission.

With the support of our donors and sponsors, we enable the brilliant minds at Johns Hopkins to bring the benefits of discovery to the world, while enriching the local ecosystem with meaningful economic activity.

Thank you to our lead donors

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A NEW WAY TO GIVE:

The Founders' Pledge

Launched in 2019, the Founders' Pledge program provides company founders the opportunity to engage with Hopkins and each another. Through this program, select founders are able to give back to entrepreneurs while Hopkins provides support, networks and campus resources. The first Founders' Pledge cohort includes six alumni entrepreneurs from the schools of Arts and Sciences, Engineering, and Education who head companies in biotech, consumer goods, artificial intelligence and financial technology.



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