Research
Saves Lives

JOHNS HOPKINS TECHNOLOGY VENTURES

FISCAL YEAR 2025 ANNUAL REPORT

JOHNS HOPKINS
TECHNOLOGY VENTURES

Research Saves Lives

Commercialization and entrepreneurship ensure that research discoveries have the maximum impact.

Whether it's a new cancer therapy, a diagnostic breakthrough, or a cybersecurity platform, academic technology transfer ensures that research doesn't stop at the lab.

This was not always the case. The Bayh-Dole Act of 1980 unlocked the potential of academic research by enabling universities to patent discoveries based on government-funded research. This was a turning point in the U.S. innovation story. By incentivizing inventors to commercialize their findings, a myriad of research breakthroughs have emerged from academia. The protection and licensing of university intellectual property have led to many transformative products, including therapies for cancer, heart disease, HIV, and much more. Federally funded research has fueled over 17,000 startups, supported 6.5 million jobs, and contributed $2 trillion to the U.S. economy.

Here at the nation's first research university, we see a microcosm of this national triumph. In the last decade, we have taken a $17 million business and built one that generates $100 million for Johns Hopkins, a 20 percent CAGR. And value is accruing to the private sector, as well: Our portfolio of 131 startups has directly raised $4.8 billion in capital and achieved 45 company exits. Johns Hopkins research projects are also fueling the R&D pipelines of more than 70 corporate partners. Most importantly, patients are benefiting from new tests and cures. An example of our partnerships at work: Seeded with $11 million in NIH research, a Boston biotech company has brought to market a prostate cancer diagnostic that generates $1 billion in annual sales and helps 200,000 men each year manage their disease, the most common cancer diagnosed in American men.

JHTV serves as a front door for campus innovators and external partners alike, ensuring productive collaboration between Johns Hopkins, the government, and industry—a tripartite alliance that leverages the strengths of each sector to save lives.

Research Saves Lives is a call to action. Join us in ensuring that every promising idea has the chance to become a life-saving innovation.

Christy Wyskiel

Senior Adviser to the President of The Johns Hopkins University
for Innovation and Entrepreneurship
Executive Director, Johns Hopkins Technology Ventures

TABLE OF CONTENTS

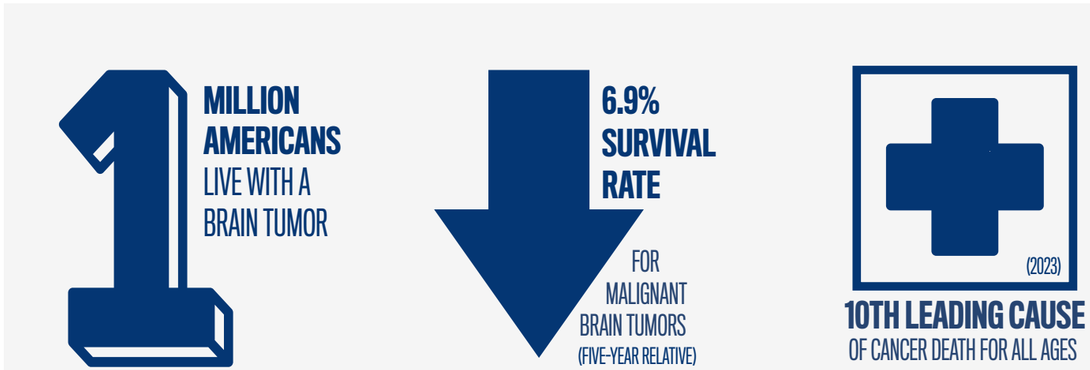
IMPACT IN ACTION

LIFE-SAVING DISCOVERIES

VORANIGO: HOPE FOR BRAIN CANCER PATIENTS

For decades, low-grade glioma meant an inevitable decline, with no treatment except risky surgery or damaging radiation. In August 2024, the FDA approved **Voranigo®**, a once-daily pill that slows the growth of IDH-mutant glioma or malignant tumor. This breakthrough offers hope to patients doomed to cognitive and physical deterioration, marking a milestone in U.S. biomedical leadership through the alignment of academic science and federal investment.

IMPACT OF BRAIN CANCER ON U.S. HEALTH



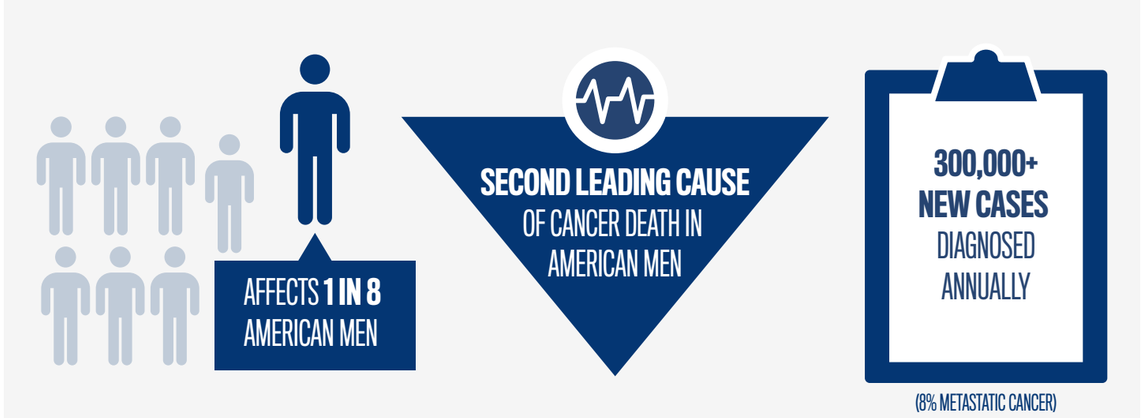
RETURN ON RESEARCH INVESTMENT

Voranigo's development stems from the discovery of the IDH gene linked to brain cancers. Backed by decades of NIH grants to Johns Hopkins since 2008, this breakthrough enabled a targeted therapy that inhibits the mutated gene, slowing previously untreatable tumor growth.

PYLARIFY: TRANSFORMING PROSTATE CANCER DETECTION

In May 2021, the FDA approved **Pylarify®** (piflufolastat F 18), a game-changing imaging agent that revolutionized prostate cancer detection and treatment. Pylarify provides radiologists with unprecedented clarity in identifying the spread of prostate cancer. This enables more precise treatment planning, helps avoid unnecessary procedures, and improves patient outcomes through earlier detection.

IMPACT OF PROSTATE CANCER ON U.S. HEALTH



RETURN ON RESEARCH INVESTMENT

The development of PSMA-targeted imaging, the technology behind Pylarify, was supported for over 15 years by a series of six NIH grants and one DOD grant totaling $11.3 million awarded to a research team at Johns Hopkins. Based on academic research, Johns Hopkins secured patent protection and licensed the technology to Lantheus, a publicly traded biotechnology company.

Pylarify is now the market leader for prostate cancer diagnostic imaging via PET scan. It is estimated to have been used in over 250,000 patient scans in 2024, and is the first radiodiagnostic blockbuster, achieving over $1 billion in sales in 2024.

PROJECT PIPELINE

JHTV works to optimize the commercial potential of faculty and student projects at any stage of development, whether it's an early disruptive concept or a de-risked technology/mature startup plan.

ACCELERATION APPROACH	DOMAINS SUPPORTED
» Scouting for projects with high commercial potential » Analysis, market research, and refinement of commercialization strategy » Resource navigation on and beyond campus, including project funding	» Therapeutics » Software » Medical devices » Data and procedures » Diagnostics » Energy » Materials

TECHNOLOGIES

CARDIAC DEATH PREVENTION

Despite CaMKII's link to deadly arrhythmias, no approved drugs target it due to limited screening tools. Betsy Luczak, PhD, developed **CaMKAR**, a biosensor that rapidly identifies CaMKII inhibitors. Partnering with medicinal chemists, her team is optimizing these compounds to treat atrial fibrillation, the most common clinical arrhythmia.

VIRTUAL WORLD BUILDING

Whiting School of Engineering computer scientists are combating a central AI challenge: understanding, navigating, and exploring the 3D physical world. Their technology, **GenEx**, creates full 3D-consistent imaginative environments and generates panoramic video from a single image, unlocking embodied AI's potential.

FATAL INFECTION DETECTION

End-stage kidney disease patients on peritoneal dialysis face a high infection risk, with one in six proving fatal. **PeriDX** is a real-time monitoring solution offering the best prevention: early diagnosis and rapid response. After extensive customer discovery, the team is now completing technical validation and commercial prototyping.

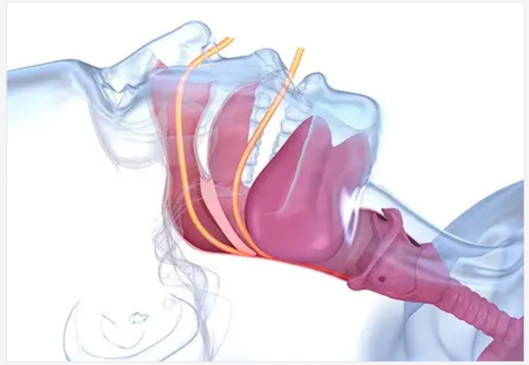
Verena Staedtke, MD, PhD
In memoriam

GENETIC DISORDER THERAPY

Neurofibromatosis Therapeutic Acceleration Program (NTAP) is working on effective therapies for Neurofibromatosis type 1 (NF1), a genetic disorder that leads to the development of multiple benign and malignant tumors. This includes development of a gene therapy to restore neurofibromin function with promising preclinical results.

STARTUPS

A representation of early-stage startups launching from Johns Hopkins.



SLEEP APNEA DEVICE

Founded by Johns Hopkins alumni Mitchell Turley and Anders Sideris, **Somnair** offers a custom-fitted, mouthguard-like device to treat obstructive sleep apnea, a condition linked to increased risk of stroke, heart attack, and diabetes. Their non-invasive, cost-effective solution has earned multiple campus awards, including the President's Venture Fellowship.

DIABETES 1 THERAPEUTICS

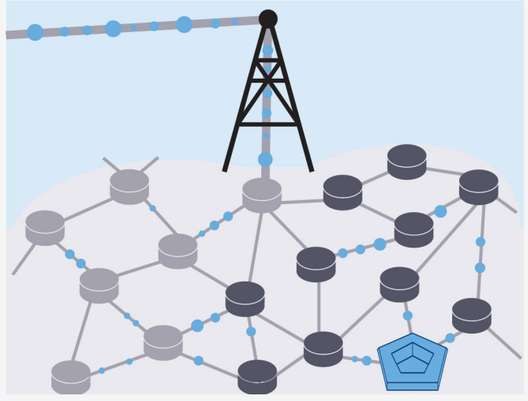
Leveraging 25 years of oncology expertise, **emc² ßio** developed a breakthrough therapy for Type 1 Diabetes. Its antibody-nanoparticle conjugate (ANC) delivers genetic cargo directly to pancreatic ß cells, using cancer-like immune evasion tactics to protect these cells from immune attack by modulating key gene networks.

AI POWERED LEGAL REVIEW

While working at a public defender's office, Iris Gupta saw how time-consuming legal document review distracted attorneys from case strategy. She founded **ProCounsel**, an AI platform that streamlines discovery by analyzing, summarizing, and classifying legal documents. The platform has won multiple campus awards and has paying clients.

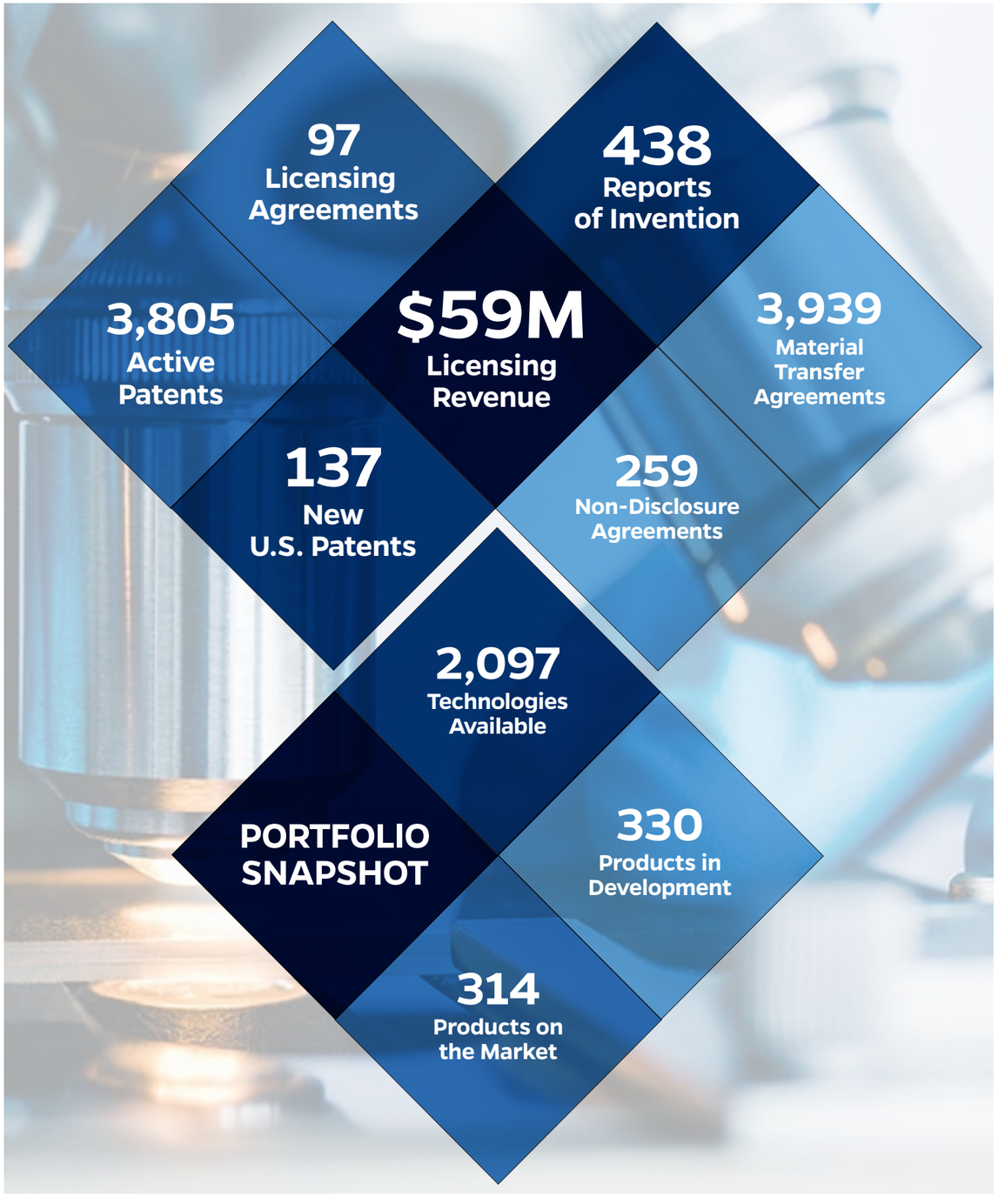
DATA SECURITY

Many cell towers manufactured and installed outside of the U.S. pose national security risks because they can collect data from any cell phone that connects to them. Computer scientist Alex Marder, PhD, has developed **Revalare**, a software that detects unsecured towers and automatically redirects phones to secure connections, thereby preventing user data from being accessed by foreign adversaries.

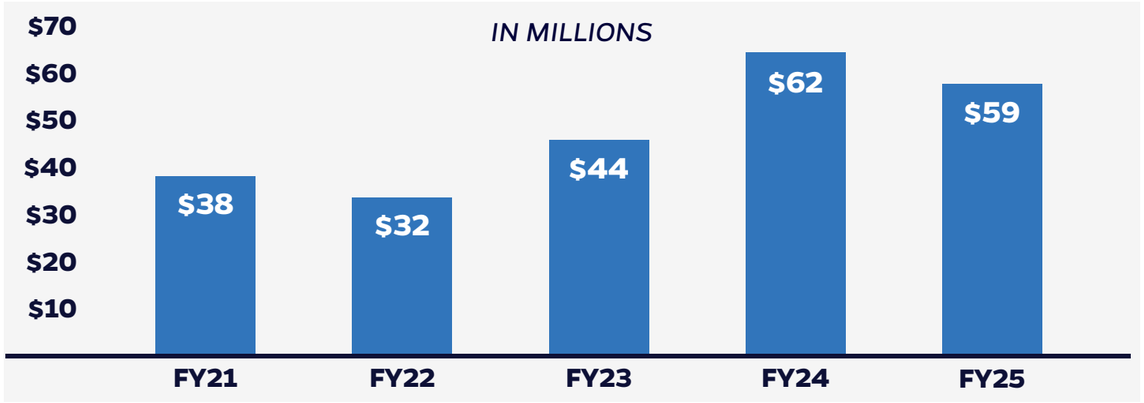


IP & LICENSING

Protecting and transferring technologies ensures research delivers real-world impact and reaches those who need it most.



LICENSING REVENUE TREND FY21-25



2025 LICENSING HIGHLIGHTS

Exclusive licenses this year included the following:

» PREDICTING PATIENT RESPONSE WITH ASTRONOMY ALGORITHMS

AstroPath combines astronomy algorithms with multiplex immunofluorescence to map tumor microenvironments. It identifies phenotypic signatures in melanoma that predict response to anti-PD-1 therapy, advancing precision immunotherapy.

» FUTURE OF ENZYME-POWERED TESTING

Bioengineered enzyme (PcrA M6 helicase) enables DNA amplification without the need for expensive thermal cyclers, allowing tests to run at a constant temperature. This solves key limitations of traditional PCR by enabling faster and more accessible infectious disease testing.

» BIOLUMINESCENCE TO ADVANCE IMMUNE DIAGNOSTICS

mHam 2.0 is a bioluminescent assay that detects immune complex deposition and complement-mediated cell killing in whole blood, enabling earlier diagnosis and drug development for rare complementopathies like aHUS and CAPS.

» SAFER GENE THERAPY FOR LIVER DISEASES

Researchers developed a non-viral gene therapy using ERCP-based hydrodynamic injection to deliver genetic material into liver cells. This technology offers a safer, scalable alternative to viral vectors for treating diseases like Wilson's Disease.

» NOVEL MEDICAL DEVICE FOR GI DEFECTS

The Flexible Endoscopic Stapler simplifies and accelerates closure of gastrointestinal defects, overcoming current limitations like steep learning curves and poor outcomes. It enables scalable treatment of obesity and GI perforations, addressing unmet needs in over 200,000 U.S. cases annually.

COLLABORATIONS

JHTV has contributed $276 million in sponsored research since FY14 and accounted for nearly half (44%) of all university industry-sponsored research in FY25.

AMAZON

The Johns Hopkins Amazon Initiative for Interactive AI (AI2AI) marked its third year by supporting 14 PhD fellows and 23 research awards. With growing community engagement, its Research Festival, featuring Whiting School members and coverage in Engineering magazine, showcased AI2AI's role in advancing innovation, collaboration, and commercialization in AI research.

EVOTEC & NOVO NORDISK

In collaboration with **Evotec** and **Novo Nordisk**, Johns Hopkins joined LAB eN^2, a translational drug discovery accelerator program with a mission to advance academic discoveries. LAB eN^2 combines Evotec's multimodality drug discovery and preclinical development capabilities with Novo Nordisk's therapeutic, clinical, and commercial expertise to accelerate research in new therapeutic options or drug development platforms.

EXOPERT & NEUROXT

Johns Hopkins School of Medicine researchers are advancing precision diagnostics through two distinct collaborations. **EXoPERT** is refining its exosome-based Multi-Cancer Early Detection (MCED) platform with SOM for more accurate and earlier cancer diagnosis. In parallel, SOM is working with **NeuroXT** researchers, using brain MRI analysis to predict patient responses to neurodegenerative treatments like Alzheimer's.

FY25 HIGHLIGHTS

70	49	65
Corporate Collaborations	Executed Deals	Deals in the Pipeline

BLACKBIRD LABORATORIES

Following an initial investment of over $1.5 million in 2024, Baltimore-based biotechnology firm Blackbird Laboratories contributed an additional $1.5 million to support new initiatives. These continued investments, now exceeding $3.5 million, are driving innovation in novel therapies targeting oncology, autoimmune disorders, and neurodegenerative diseases. A sampling of FY25 projects is below.

» **Neurodegenerative Disease Therapeutics**

Pioneering a breakthrough antisense oligonucleotide therapy for ALS and other neurodegenerative disease areas with few treatment options and an urgent unmet medical need.

» **Efficient Biomanufacturing**

Using a novel DNA barcode strategy, researchers aim to enhance cell line development and productivity, potentially saving millions of dollars in biomanufacturing costs.

» **Autoimmune Disease Therapeutics**

Developing first-in-class T-cell engager therapeutics for the treatment of T-cell driven autoimmune diseases.

» **Liquid-biopsy Diagnostics Beyond Oncology**

Implementing fragmentomics for the non-invasive, early detection, diagnosis, and monitoring of diseases outside of cancer.

DRIVING INVESTMENT

18 new startups were added to our portfolio of over 130 licensed companies this year. Startups raised over $130 million in venture capital, with 56% of the investment staying in Baltimore.

STARTUP MILESTONES

» Clasp Therapeutics began a Phase 1 trial of novel T-Cell cancer therapy

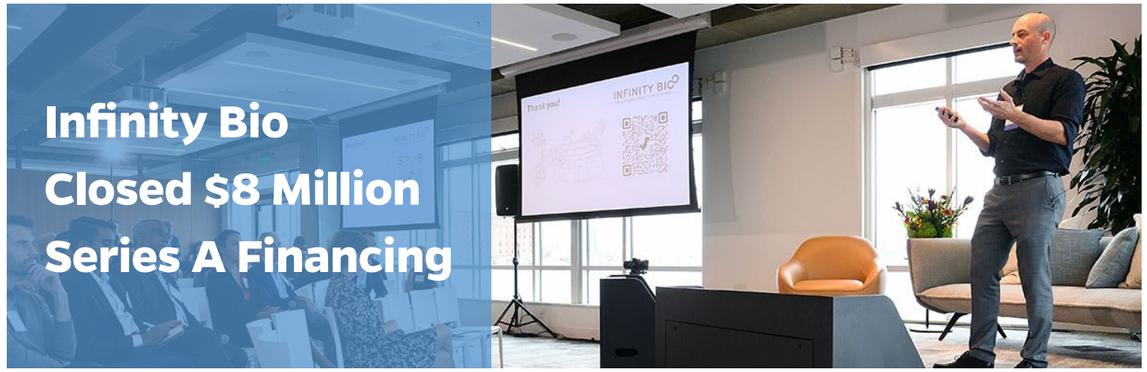
» EpiWatch, Inc. announced FDA 510(k) clearance

» Previse acquired by Castle Biosciences

» Protenus acquired by Bluesight

» Sonavex Technologies secured $15 Million Series A-2 financing and was named among TIME's Best Inventions of 2024

FEATURED RAISE



Infinity Bio founder and CSO, Benjamin Larman, PhD, pitched at JHTV's inaugural Innovation Summit (pictured). Hosted in collaboration with the Carey Business School, Department of Biomedical Engineering, PTX Capital, and Blackbird Laboratories, the **Innovation Summit** brought together over 70 investors and Johns Hopkins innovators at Brown Advisory. Infinity Bio, a startup specializing in antibody profiling, subsequently closed an $8 million Series A led by Illumina Ventures.

Johns Hopkins innovators received over $4 million in translational funding, with more than $3 million awarded through the Maryland Innovation Initiative (MII).

COHEN TRANSLATIONAL ENGINEERING FUND

Ishan Barman, PhD

Low-cost, label-free, and highly robust bioanalytical method for monitoring biopharmaceutical manufacturing.

Alex Marder, PhD

Securing safe cellular communications infrastructure and protecting secure communications.

LOUIS B. THALHEIMER FUND FOR TRANSLATIONAL RESEARCH

Hee Cheol Cho, PhD

Transforming ordinary heart cells into pacemaker cells through gene therapy for a device-free, minimally invasive solution.

Kenneth Kinzler, PhD

Making cancer more visible to the immune system for better treatment outcomes and enhancement of cancer immunotherapy.

PRESIDENT'S INNOVATION AWARD

Gregory Newby, PhD

Developing efficient genome editing tools to correct genetic disease mutations and studying the regulatory landscape of the genome to better understand and control gene expression.

NURTURING ENTREPRENEURSHIP

PAVA MARIE LAPERE CENTER FOR ENTREPRENEURSHIP

A record number of students (400+), alumni, and community members engaged with the Pava Center's programming, including 170 accelerator teams.

NEW ACCELERATOR

Eighty students joined the first two cohorts of Kindling, a pre-accelerator where Johns Hopkins students and trainees team up to explore startup ideas and build community.

FY25 HIGHLIGHTS

~$800K
Non-Dilutive Grants

~$83M
External Investment

$50M
Raised by Alumni Startup Proscia

PRESIDENT'S VENTURE FELLOWSHIP

For the third year, two student startups each won $140,000 through the PVF, the university's largest-ever award for student entrepreneurship. The fellowship, funded by the Office of the President and generous philanthropic alumni support, is awarded to graduating students who are committed to launching their startup in Baltimore.

Fetal Therapy Technologies
Selena Shirkin
A novel port system optimized for fetal therapy surgeries.

Modelus
Prem Umang
An AI platform that accelerates pharmaceutical lead optimization.

COMMUNITY INNOVATORS

During the accelerator program, Social Innovation Lab Showcase winner PREPARE raised nearly $200,000, including $75,000 from the Abell Foundation, to support its mission of empowering formerly incarcerated individuals.

EDUCATIONAL & FUNDING RESOURCES

IDEA TO INDUSTRY

Over 200 faculty, students, staff, and aspiring entrepreneurs have attended the newly launched Idea to Industry seminars, a monthly educational series bridging the knowledge gap between university innovation and commercialization by equipping attendees with the knowledge and resources needed to transform ideas into viable ventures. Topics included demystifying investor relations, TEDCO and MII Funding, and the patent process.

GEM FELLOWSHIP

Generously funded by alumnus Lou Forster, the inaugural Graduate Fellowship for Entrepreneurship in Medicine supports four PhD/MD fellows with mentorship, industry connections, and commercialization training to drive scientific innovation. As part of the curriculum, fellows are personally matched with life science industry leaders for one-on-one guidance tailored to each student's project/professional goals.

VENTURE MENTORSHIP PROGRAM

Entrepreneurs are paired with a panel of seasoned mentors who guide them through commercialization, customer discovery, and business planning. Open to Johns Hopkins faculty and students, VMP empowers entrepreneurs by leveraging university resources and networks to help innovators transform ideas into viable ventures, boosting startup success.

I-CORPS

More than fifty teams participated in the immersive entrepreneurial training program developed by the National Science Foundation for researchers, faculty, and student entrepreneurs. An additional instructor and four mentors were added to the program, and participants conducted over 1,000 customer discovery interviews.

IN THE NEWS

INC. MAGAZINE

How Johns Hopkins Became a Stealth Entrepreneurship Hub

Highlights how Johns Hopkins transformed into a top entrepreneurship hub by building infrastructure, launching JHTV, supporting student ventures, and fostering innovation and entrepreneurship.

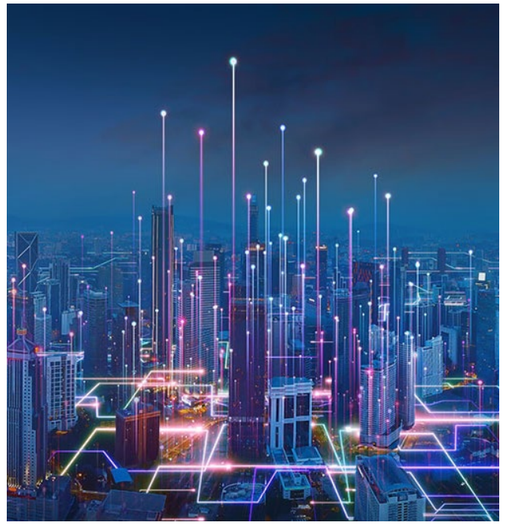
FASTCOMPANY

The 50 Colleges and Universities Making an Outsize Impact on Business and Society

Named in the "Ignition Schools 2024" series, Johns Hopkins was recognized for innovative approaches and the impact of accelerator programs in academia and the community.

JHTV Proves you Don't Need to Move to a Tech Hub. Just Build your Own

A dedicated feature in FastCompany's "Innovative Colleges and Universities 2024" series highlights how JHTV's initiatives, like tailored accelerator programs and support for local entrepreneurs, have fueled innovation and positioned Baltimore as a rising tech hub beyond traditional centers.



ON WITH KARA SWISHER

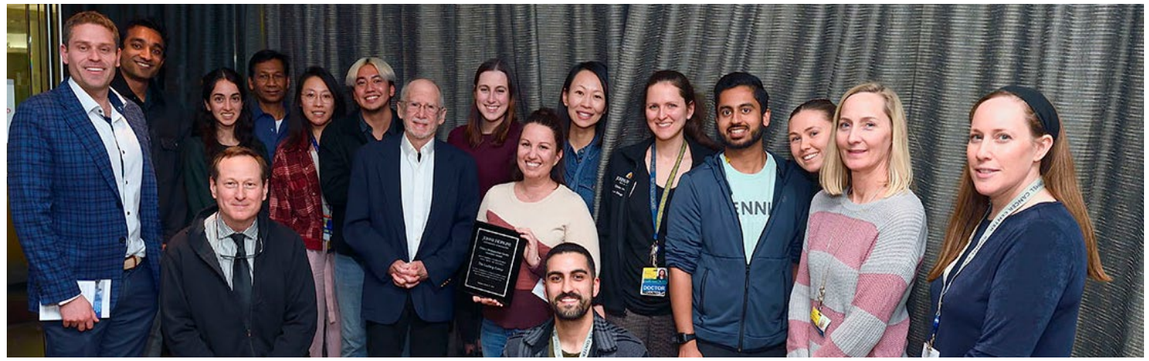
Can Smaller Startups Compete in the AI Race?

Christy Wyskiel, Sr. Advisor to the President for Innovation and Entrepreneurship, took center stage at the Johns Hopkins Bloomberg Center in a dynamic conversation with tech journalist Kara Swisher. In a live podcast recording, Wyskiel discussed the impact of government cuts to research grants, how small AI startups can compete with tech giants, how AI could revolutionize health care, and the foundation for many tech innovations: university research.

EVENTS & VIBRANCY

CELEBRATION OF INNOVATION IN MEDICINE

The inaugural event highlighted the world and health-changing contributions of the School of Medicine faculty and alumni innovators who built their careers around translational research and commercializing their innovations.



The Ludwig Center was honored with the inaugural Dean's Distinguished Faculty Innovator Award for its pioneering work in cancer genetics.

ANCHOR VENTURES

In collaboration with the University of Maryland, Baltimore and supported by the Maryland Department of Commerce, this speaker series aims to grow and strengthen the local startup ecosystem.

PITCH IT ON!

Mary Austin, PT, DPT, WCS, won $20,000 for her startup, UrInControl, an over-the-counter pessary for stress urinary incontinence. The virtual pitch competition welcomed over 200 attendees.

SHOW HER THE MONEY

JHTV, UpSurge, and Loyola University hosted over 100 people at the Parkway Theatre for a documentary screening, networking session, and panel discussion about female founders and investors reshaping venture funding.

INNOVATION SUMMIT RECAP

ACKNOWLEDGMENTS

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

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"**Time Capital Solutions** has been a tremendous resource to our startup, offering guidance that led us to manage our finances more effectively."

–***Niranjan Pandey, Founder, Terebra***

"Support from **Wilson Sonsini (WSGR)** and **DLA Piper** was pivotal. WSGR provided multi-faceted legal guidance, including HIPAA expertise, while DLA Piper's insights streamlined our incorporation."

–***Ryan Chou, Founder, MediKeet***

"The structured yet flexible format of **VMP** distinctly sets it apart. Having multiple mentors simultaneously provides a broader range of insights than a single mentor relationship."

–***Evan Haas, CEO and Founder, CurveAssure***

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