



# INNOVATION IN ACTION

2024



## Table of Contents

### **About Penn Health-Tech**

02

Our Mission & Vision  
Driving Action, Delivering Impact

### **Demo Day Recap**

04

Accelerator Cohort 2023 Update  
Pitch Competition Highlights

### **Accelerator Cohort 2024**

06

### **Innovation Training**

09

Boot Camp  
Clinical Fellows  
Student Fellows

### **Portfolio Highlights**

11

### **Made Possible Together**

13



# About Penn Health-Tech

## OUR MISSION

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We empower Penn and CHOP innovators to create and develop transformative medical devices and health technologies.

We focus our efforts in three main areas: **innovation**, **connection**, and **education**.

## OUR VISION

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As Penn's hub for health technology innovation, we facilitate the development and commercialization of novel medical devices and health technologies. By connecting innovators with unparalleled resources, mentorship, and expertise, we empower them to turn bold ideas into market-ready solutions. We aim to develop both breakthrough innovations and visionary innovators who will advance healthcare and improve lives everywhere.

Penn Health-Tech is sponsored by Penn Medicine, Penn Engineering, the Office of the Vice Provost for Research, and the Children's Hospital of Philadelphia (CHOP).







# About Penn Health-Tech

## DRIVING ACTION, DELIVERING IMPACT

Since our founding in 2017, Penn Health-Tech has powered transformative technology development and commercialization within the Penn and CHOP ecosystems.

As we step into FY24, we're proud to reflect on our progress:

- Over **640 proposals** reviewed
- **96 unique projects** supported through our Accelerator and Seed Grant Programs
- Over **\$3 million awarded** in pilot funding

Our portfolio, including **26 active startups**, has secured more than **\$119 million in follow-on funding** and produced over **140 new IP filings**, resulting in more than **65 US patents**.

Beyond technology advancement, we've trained more than **150 faculty, clinicians, researchers, and students** through our innovation boot camp and Fellows programs, equipping the next generation of health-tech leaders.





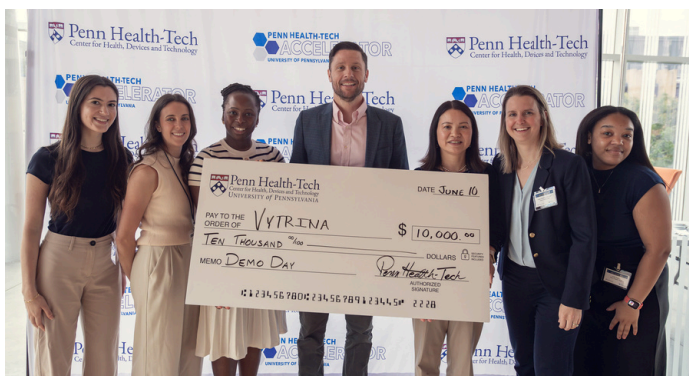
## CONNECTING INNOVATORS CELEBRATING IMPACT

### AREA OF FOCUS: CONNECTION

We identify, engage, and connect innovators and health technology ecosystem partners to enable a culture of collaboration and innovation.

### SUMMARY

Penn Health-Tech's Demo Day brought together a vibrant community of innovators, industry leaders, and investors to witness the culmination of 12 months of hard work. Six teams presented their med-tech innovations, sharing their journey in the accelerator, and competed in a pitch competition. The event showcased the incredible progress of the cohort and celebrated the entrepreneurial spirit driving healthcare innovation.



### HIGHLIGHTS

Congratulations to the Vytrina team, Shu Yang, PhD, and Alexander Tucker, MD, for their work in developing a novel scar-minimizing tissue adhesive. Vytrina was selected as the winner of the 2024 Demo Day Pitch Competition.

“Although the financial support is very helpful in progressing the project, the mentorship was the most beneficial part of the program. The Accelerator program team is incredible - full of smart, dedicated experts.”

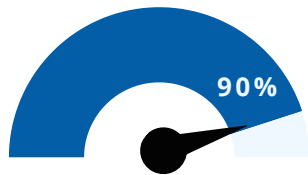
**Alexander Tucker, MD**  
Attending Neurosurgeon (CHOP)  
Co-Founder, Vytrina



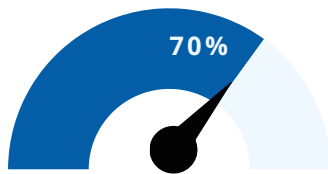
## CONNECTING INNOVATORS CELEBRATING IMPACT

### 2023-2024 HTA COHORT

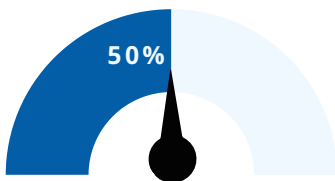
Over twelve months, the Health Tech Accelerator has propelled eight participating teams through significant milestones in their journey to commercialize innovative healthcare solutions. Teams made notable strides in validating their market opportunity, building prototypes, testing their solutions (benchtop and/or preclinical), and establishing valuable connections with investors and industry experts, strengthening their networks and opening pathways for future funding and collaboration. Demo Day highlighted these achievements, showcasing each team's progress and celebrating their dedication to translating cutting-edge research into viable healthcare solutions.



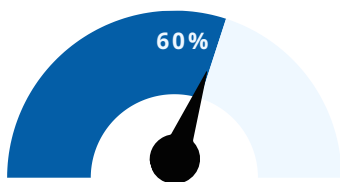
*Validated Their Market Opportunity*



*Developed a Prototype*



*Performed Benchtop or Pre-Clinical Testing*



*Established connections with potential investors and/or industry professionals*

### 2023-2024 Cohort

#### Tissue Adhesive for Head and Face (Vytrina)

Shu Yang, PhD, Alexander Tucker, MD

#### Needle Thoracostomy Device (EZ-NT)

Jonathan Bar, MD, Neil Ray, MD, Nick Benson, MD

#### Earable Intelligence

Andrew Richardson, PhD, Xilin Liu, PhD, Flavia Vitale, PhD, Ben Ferleger, PhD

#### Device for Intraventricular Entry (Ventru)

Michael Spadola, MD, Rachel Blue, MD, Bryan Humbarger, Melisa Lopez-Anton

#### Nerve Fusion (Nerve Coupler)

D. Kacy Cullen, PhD, Justin Burrell, PhD

#### Postpartum IUD Applicator (IUDine)

Eileen Wang, MD, Gabriel Arenas, MD

#### Optic Nerve Fenestrator (iCut)

William Katowitz, MD, Gabriela Lahaie-Luna, MD, Jasmine Brown, Ali Thaler, Sabrina Bulas, MD

#### Tunable Biomimetic Decellularized Extracellular Matrix-based Systems for Rotator Cuff Repair

Su Chin Heo, PhD, Se-Hwan Lee, PhD, Zizhao (Molly) Li



# Accelerator Cohort 2024



## Health Tech Accelerator Program

The Health Tech Accelerator is a year-long, cohort-based program that provides support through advising and funding aimed at accelerating the development of innovative health technologies.

### AREA OF FOCUS: INNOVATION

We facilitate discovery, development, and commercialization of health technology innovations to address important unmet clinical needs.



#### TIMING

July to June



#### DELIVERABLES

**Technical De-risking**  
(e.g., prototype development, proof of concept)

**Commercial De-risking**  
(e.g., setting development milestones; clinical, regulatory, reimbursement strategy)



#### GOALS

Reach a go/no-go decision.

Attract further financial support.

**In June, Penn Health-Tech revealed eleven teams stepping up to the plate this year as part of the Health Tech Accelerator 2024-2025 cohort.**

### Alpha-c

[Read More](#)

Personalized responsive deep brain stimulation (DBS) for treatment-refractory pathological compulsivity.

**Team Members:** Casey Halpern, MD, Liming Qiu, MD, Younghoon Nho

### AMP-Vent

[Read More](#)

High-tech, low-cost ventilation for austere environments and underserved communities.

**Team:** Todd Kilbaugh, MD, Katie Weeks, Rodrigo Menezes Forti, PhD

### Cerespectus

[Read More](#)

Microcatheter and navigation platform technology for targeted CNS therapy delivery.

**Team Members:** Bryan Pukenas, MD, Kamna Giare-Patel

### CogSpeech

[Read More](#)

Digital speech assessment for monitoring behavioral symptoms in dementia.

**Team:** Sunghye Cho, PhD, Naomi Nevler, MD, Yoonduk Kim





# Accelerator Cohort 2024



## Cranio Care

[Read More](#) →

A single-stage bio-resorbable craniofacial distractor.

**Team:** Alexander Tucker, MD, Shu Yang, PhD, Jordan Swanson, MD

## Graftable

[Read More](#) →

Oxygen microparticles for wound healing.

**Team:** Daeyeon Lee, PhD, Sarah Ebmeier, Oren Friedman, MD

## Mending the Eardrum

[Read More](#) →

Decellularized cartilage for tympanoplasty.

**Team Members:** Riccardo Gottardi, PhD, Narintadeach Charoensombut, PhD, Dana Ragbirsingh, John Germiller

## Neurometabolic Optical Monitor

[Read More](#) →

Non-invasive neurometabolic optical monitor to improve pediatric brain health.

**Team Members:** Todd Kilbaugh, MD, Rodrigo Menezes Forti, PhD, Katie Weeks

## Osetomics

[Read More](#) →

Blood test for prognosis of long-bone fracture healing.

**Team Members:** Al Jernigan, Annamarie Horan, MPA, PhD, Samir Mehta, MD

## RadHawk

[Read More](#) →

AI-Based radiology expert advisor.

**Team Members:** Janet Reid, MD, FRCPC, MEd, Julian Lopez Rippe, MD, MSc

## ZeoDrop

[Read More](#) →

POC device to accurately and quickly determine birth blood loss.

**Team Members:** Stefanie Modri MSN, RNC-MNN, C-OB

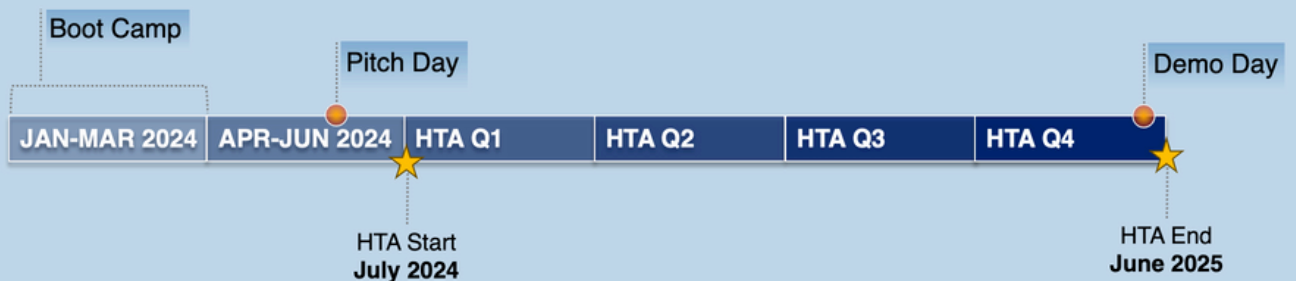


# Accelerator Cohort 2024

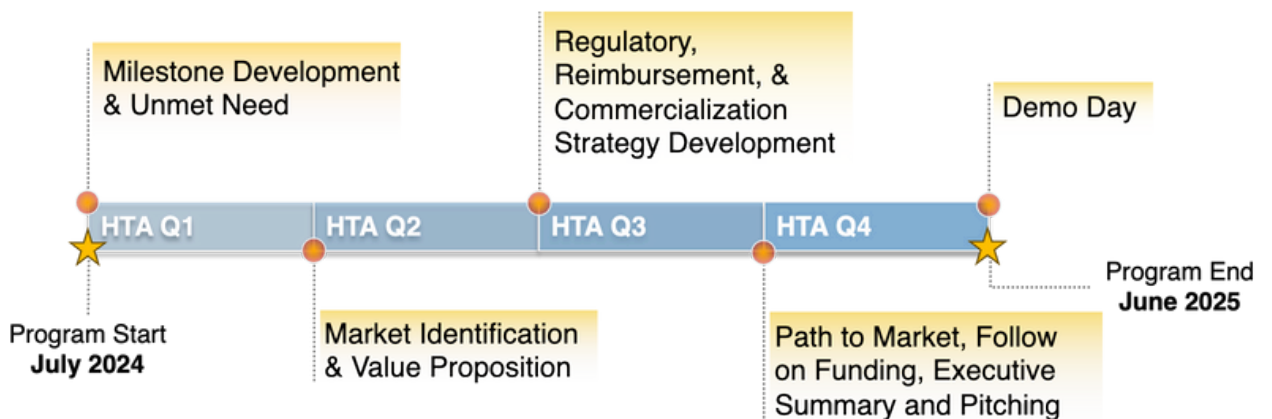


## A YEAR WITH PENN HEALTH-TECH

Before selection to our Health Tech Accelerator program, applicant teams may choose to participate in our Pre-Accelerator Boot Camp. Topics covered in the series include: Problem Definition and Validation, Value Proposition, Market, Reimbursement, Business Model, Regulatory, Reimbursement, and Intellectual Property.



Once selected by Penn Health-Tech, the Accelerator year officially starts with kickoff meetings in July, where teams finalize their milestones and project budget. The year is divided into quarters, capped by quarterly update meetings where teams provide key project updates to a panel of experts.



In addition to Milestones, teams will have areas of focus each quarter to ensure that critical aspects of health technology commercialization are systematically addressed.





## AREA OF FOCUS: EDUCATION

We educate and train the next generation of health technology innovators and leaders.

## CURRENT PROGRAMS

- Innovation Boot Camp
- Student Fellows Program
- Clinical Fellows Program

### Boot Camp

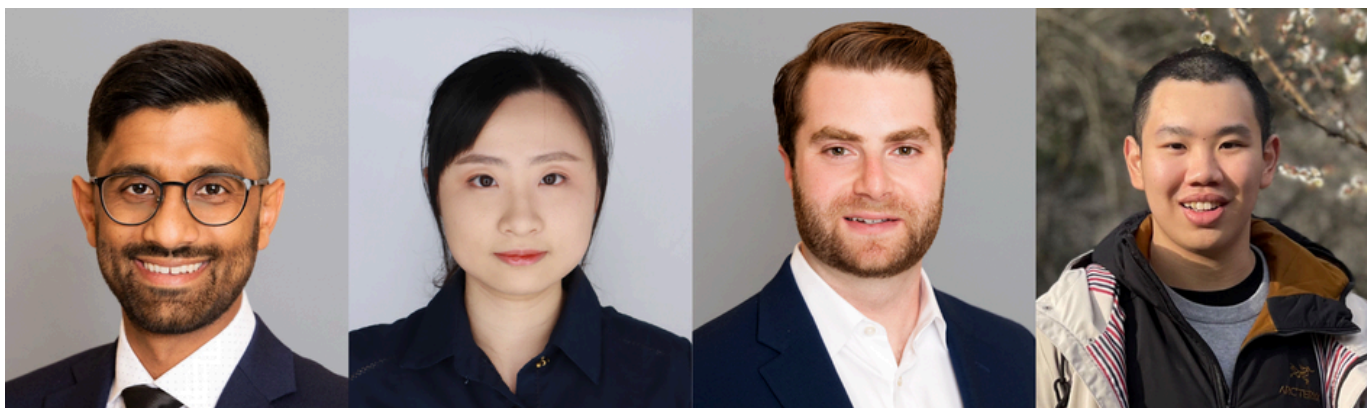
We host a 10-week strategic education program for faculty, staff, and trainees applying to our Accelerator program, in partnership with Penn Bioengineering.

The Boot Camp provides hands-on training to navigate the technology development process and explore the commercial potential and risks for their ideas. Last Spring, 35 faculty and staff participated alongside 25 graduate students.



## Student Fellows Program

We offer a competitive cohort-based training programs for graduate students. Student Fellows support Accelerator teams and gain exposure to health technology development and commercialization in an academic setting. This summer we welcomed our new cohort of Student Fellows (pictured below). Applications for the next cohort open Winter 2025.



From left to right: Sachin Doshi, MD (Wharton), Chuming (Helen) Zhang (SEAS), Eric Erle (Wharton), and Mingde (Bryan) Zeng (SEAS).

## Clinical Fellows Program

We provide a proven pathway for clinical faculty and staff to pursue their interest in healthcare innovation. Clinical Fellows provide guidance to our programs and teams and serve as a connection point to Penn Medicine, CHOP, and beyond. Our current cohort of Clinical Fellows (pictured below) conclude their 2 year-program in Summer 2025. Applications for the next cohort open Winter 2025.



From left to right: Heather Giannini, MD (Medicine), Lawrence Fried, MD (Neurology, CHOP), Lorraine Boakye, MD (Orthopaedic Surgery), Ashley Boenisch, MSN, RN, CMSRN (Penn Heart and Vascular Center), Sonul Mehta, MD (Ophthalmology), and Nadav Schwartz, MD (Obstetrics and Gynecology).





# Portfolio Highlights



## VASOWATCH

HTA 2021-2022

Vasowatch is advancing its postpartum hemorrhage risk prediction software, backed by over \$750K in funding from grants and angel investors. As it finalizes a \$1.1M pre-seed round, Vasowatch seeks an additional \$350K to advance regulatory and clinical milestones. Notable progress includes FDA pre-submission meetings and strategic software partnerships. Vasowatch is currently fundraising via seed round to fund its clinical trial.

[Read More](#)



## RHEOTEK MEDICAL

HTA 2021-2022

RheoTek Medical's Needle-Free Injector is advancing precise drug delivery with enhanced dispersion technology. Backed by \$1.3 million in funding to-date, the project has developed prototypes, secured a manufacturing partner, and seeks \$7 million, including \$4-5 million for regulatory clearance, with plans for FDA pre-submission and expanded pre-clinical testing.

[Read More](#)

## BEYOND ACCELERATION

Penn Health-Tech provides ongoing support to its alumni teams, including those who have participated in our Health Tech Accelerator, Seed Grant program, or sponsored prizes with Penn Engineering (NEMO Prize) or Penn Dental Medicine (IDEA Prize). We actively track the progress of our Accelerator and Seed Grant teams for up to five years, offering continued guidance and support, which may include follow-on funding to help them advance their innovations.

NEMO and IDEA Prize winners are also encouraged to continue the development and commercialization of their projects by participating in our Accelerator program. One of our key five-year goals is to scale these offerings, ensuring that alumni teams receive the resources they need to successfully bring their healthcare technologies to market.





# Portfolio Highlights



## INSTANOSIS

SEED 2020

Instanosis is set to launch InstaStrip Fentanyl, a rapid, OTC-compliant urine test with FDA breakthrough designation and 510(k) clearance. Supported by \$7 million in funding, including a \$3 million NIH fast track grant, the product is ready for market with manufacturing and clinical milestones completed. Instanosis is now finalizing distribution partnerships to address urgent demand in public health.

[Read More](#)

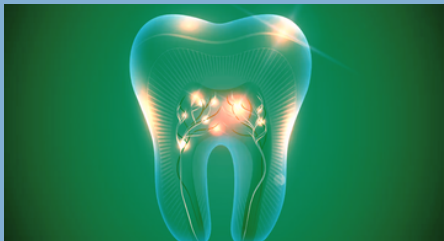


## EARABLE INTELLIGENCE

HTA 2023-2024

Earable Intelligence is developing a noninvasive ear-based device to monitor brain activity and predict seizures, improving care for epilepsy patients. Backed by \$1.8 million in NIH funding, the team has completed early development and collected a proprietary dataset. Now seeking \$250,000, the project aims to finalize its dataset and machine learning algorithms for commercial deployment.

[Read More](#)



## MICROROBOTICS FOR PRECISION BIOFILM REMOVAL

HTA 2018-2019

The team is developing a microbot platform to detect, diagnose, and remove dental biofilms, potentially automating oral hygiene and benefiting individuals with disabilities. Backed by \$3.5 million from NIH and industry, including P&G, the project has completed feasibility testing and developed a functional prototype. Now entering pre-clinical testing, the team seeks further investment to refine the technology, secure FDA approvals, and spin off a dedicated company.

[Read More](#)

“The Penn Health-Tech program provided our earliest outside funding that allowed us to create the initial proof-of-concept prototype that led to over [\$2M] of additional funding.”



John Welsh, PhD  
CEO and Co-Founder  
OsciFlex



# Made Possible Together

## OUR TEAM



Katie Reuther, PhD, MBA  
Executive Director



Glory Durham, MPH, MBA  
Director of Operations



Courtney M. Houtsma, MS  
Director of Development



India Watson  
Program & Admin Coordinator



Gabriella Grym, MS  
Project Manager



Brian Litt, MD  
Faculty Director



Cameron Baston, MD  
Faculty Associate Director



Todd Kilbaugh, MD  
Faculty Associate Director



Mark Yim, PhD  
Faculty Associate Director



Eric Eaton, PhD  
Technical Advisor



Dustyn Roberts, PhD  
Engineer in Residence

### Strategic Advisory Board Members

Det Ansinn	Justin McMurray
Jayaram Brindala, MD, MBA, MPH	Dean Miller, MBA
Carol Burns	Sasha Schrode, MBA
Matthew Buten	Scott Snyder, PhD
James Crowley	Samantha Surrey
Pitou Devon, MD, MBA	John Swartley, PhD, MBA
Monica Ferrante	Warren Thaler, MBA
Anthony Green, PhD	Gwen Watanabe, MBA
Sean Haag, MBA	Tiffany Wilson, MBA
Lou Lieto, JD, PhD	

### HTA Mentors & Advisors

Det Ansinn	James Keller
Melisa Anton-Lopez	Alex Lyness
Mikael Avery	George Maliha
John Barrett	Scott Manaker, MD, PhD
Jayaram Brindala, MD, MBA, MPH	Bhavana Mohanraj, PhD
Joe Camaratta	Clare Padgett
Mark Chandler	Jiah Pearson-Leary
Eric Eaton, PhD	Mike Reed
Andrew Haas, MD	Dustyn Roberts, PhD
Scott Hollander	Collin Stabler
Alex Herzlinger	John Welsh, PhD
Bryan Humbarger	

### Boot Camp Speakers & Office Hour Leaders

Pitou Devgon, MD, MBA	Bruce Shook
Monica Ferrante	Eric Sugalski, MBA
Craig Kenesky, PhD	Steven Weiner, Esq.
Scott Manaker, MD, PhD	

### Pennsylvania Pediatric Medical Device Consortium

Robert Levy, MD	Stan Stachelek, PhD
Joshua Dienstman	

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