ANNUAL REPORT

Bringing Ideas to Life

25

TechTransfer and Ventures

VCU

Research and Innovation

Mission

Our mission is to facilitate commercialization of university inventions for the benefit of the public, to foster a culture of innovation and entrepreneurship at the university, and to promote industry collaborations and new venture creation.

COVER PHOTO:
A 3D-printed resin model of a concept bCPAP bubbler as seen in the Aerosols in Medicine laboratory at the College of Engineering. Meet one of the researchers behind the models, Casey Grey, Ph.D., on page 10.

Design: BN Design & Advertising
Photography: Karl Steinbrenner
Content: Jeff Kelley, John Battiston, Christopher Kendall

Guiding innovation to success through every twist and turn

Research and innovation never follow a straight line. Today's success is tomorrow's setback. Tests take unexpected turns. Concepts fail and pivot. And sometimes, results surprise even the people who first imagined them.

In 2025, that truth was on full display at VCU. It was by no means an easy year in our labs and clinics that faced unexpected challenges across the national research enterprise. Federal funding priorities shifted. Grant timelines tightened. Long-standing programs faced uncertainty or were shuttered entirely.

For VCU and our fellow research universities, the year required adaptability in how projects are funded, how teams plan and the way we partner with government and private enterprises.

And we persevered. Despite challenges, VCU notched two historic milestones: $568 million in sponsored research funding in fiscal year 2025 and $524 million in research expenditures, placing the university at 46th among the top U.S. public research institutions. The achievements of crossing half-a-billion dollars in both elements speaks to a resilient culture that values collaboration, translational thinking and purpose-driven discovery.

Indeed, 2025 was no time to slow down, but to double down.

Groundbreaking research conducted at VCU in the fields of arts, humanities, social sciences as well as STEM and health sciences is addressing some of the greatest needs in the country and around the world. Through transdisciplinary approaches, our faculty are proving that there is no better place than VCU to make a direct impact through research and innovation.

TechTransfer and Ventures exists to help faculty inventors navigate the turns their research takes. We provide strategic direction in intellectual property evaluation, market assessment, industry engagement, licensing, startup formation and venture support. Our work guides innovators to a route that leads to meaningful use and a broad societal benefit — whether through a commercial partner or a startup.

Progress made in 2025 reflects the determination of our faculty, students, staff and partners who continued to move ideas forward even when the path was uncertain.

As we look to 2026, our focus is clear: strengthen every pathway, remove friction wherever possible and help move VCU innovations into the marketplace where they can lift lives and help those who need it most – even when the road is winding. Because it is in these unexpected turns where opportunity thrives.

With sincere gratitude,

P. Srirama Rao, Ph.D.
Vice President for Research and Innovation

Ivelina Metcheva, Ph.D.
Assistant Vice President for Innovation

25 FISCAL YEAR AT A GLANCE

111 Invention Disclosures

171 Patents Filed

27 Options/ Licenses

20 Patents Issued

$4.3M Licensing Revenues

17 Licenses to startups

2 Copyrights & Trademarks

DEPARTMENTS WITH 10 OR MORE INVENTION DISCLOSURES

- **17** Biomedical Engineering
- **14** Mechanical and Nuclear Engineering
- **11** Pharmaceutics

DEPARTMENTS WITH FIVE TO NINE INVENTION DISCLOSURES

- **9** Electrical and Computer Engineering
- **9** Medicinal Chemistry
- **7** Chemistry
- **7** Internal Medicine
- **6** Microbiology and Immunology
- **5** Office of Information Technology
- **5** Surgery

Distribution of Invention Disclosures (by School/College)

Engineering	42
Medicine	37
Pharmacy	21
Humanities & Sciences	11
Dentistry	9
The Arts	3
College of Health Professions	2
Business	1
VCU Health System	1

Photo: Christopher Kendall

Engineering's Worth Longest, Pharmacy's Mike Hindle named VCU 2025 Innovators of the Year

From left: Kelechi "K.C." Ogbonna, Pharm.D., dean of the VCU School of Pharmacy; Ivelina Metcheva, Ph.D., assistant vice president for innovation at VCU TechTransfer and Ventures; P. Srirama Rao, Ph.D., vice president for research and innovation; P. Worth Longest, Ph.D., the Alice T. and William H. Goodwin Jr. Endowed Professor in the Department of Mechanical and Nuclear Engineering at the College of Engineering; and Beverly J. Warren, Ed.D., Ph.D., former interim provost and senior vice president for academic affairs. At right is Peter R. Byron, Ph.D., the retired former chairman of the Department of Pharmaceutics at the School of Pharmacy and founder of its Aerosol Research Group. Byron accepted the Innovator of the Year award on behalf of Michael Hindle, Ph.D., interim chair in the Department of Pharmaceutics and its Peter R. Byron Distinguished Professor, who shares the 2025 honor with Longest. Hindle was unable to attend the Nov. 18 event at Main Street Station. **See the story on page 4.**

The 2025 Billy R. Martin Innovators of the Year

Michael Hindle, Ph.D.
Interim Chair and Peter R. Byron Distinguished Professor
Department of Pharmaceutics
VCU School of Pharmacy

P. Worth Longest, Ph.D.
Alice T. and William H. Goodwin Jr. Endowed Professor, Department of Mechanical and Nuclear Engineering
VCU College of Engineering

Step inside the lab at VCU where inventors Michael Hindle and Worth Longest are developing a handheld powder inhaler designed to treat premature infants in respiratory distress.

Advancing lifesaving aerosol therapy for newborns

A two-decade collaboration between VCU's School of Pharmacy and College of Engineering is reshaping how premature babies with underdeveloped lungs may one day be treated.

For years, Pharmacy's Michael Hindle, Ph.D. and Engineering's P. Worth Longest, Ph.D. have pursued their idea to deliver lung-saving medications to premature infants without the need for intubation. Their therapy — a dry-powder aerosol surfactant delivered through soft nasal prongs — could offer a gentler, safer alternative to mechanical ventilation for infants with neonatal respiratory distress syndrome (RDS).

Surfactant, a naturally occurring mixture that keeps the lungs' tiny air sacs from collapsing, is often insufficient in premature infants. Traditional surfactant therapies require invasive breathing tubes and cold-chain storage. The Hindle-Longest formulation overcomes both barriers: it is stable at room temperature and delivered noninvasively, akin to an oxygen cannula.

Backed by federal funding and more from the Gates Foundation, the team has shown that powder restores lung function in premature animal models — a critical milestone as the therapy moves toward human clinical trials. The project has also generated 3D-printed airway models and computational tools recognized by the FDA and used by pharmaceutical developers worldwide.

Longest, the Alice T. and William H. Goodwin Jr. Endowed Professor in the Department of Mechanical and Nuclear Engineering, stresses the long-term vision behind their work: "The hope is that this therapy can improve those long-term lung health outcomes, and give them many more years of life where they don't have to worry about living with a chronic disease."

For their efforts, the pair were recognized as VCU's 2025 VCU Innovators of the Year.

"This award really reflects probably 40 years' worth of work in this area and being recognized nationally and internationally as a leading aerosol drug-delivery research environment," said Hindle, interim chair in the Department of Pharmaceutics and the Peter R. Byron Distinguished Professor – a professorship named after the research group's founder, who retired in 2016. "We stand on the shoulders of those who came before us."

Turning sugar chemistry into a weapon against cancer relapse

For more than three decades, Umesh Desai, Ph.D., professor and chair of the Department of Medicinal Chemistry at the VCU School of Pharmacy, has investigated one of biology's least understood molecular families: glycosaminoglycans (GAGs).

These long sugar-based polymers coat nearly every human cell and regulate blood clotting, inflammation, growth and immune signaling. Their complexity and importance make them a challenging but promising target for drug discovery.

"Even today, people don't fully understand glycosaminoglycans," Desai said. "One of the things that attracted me to them is that there is so much unknown and unexplored around GAGs. The critical thing that I have tried to bring about in this field is to think of glycosaminoglycans as potential drugs and therapeutic agents."

At the VCU Center for Drug Discovery, Desai's lab develops synthetic GAG mimetics that replicate therapeutic effects while avoiding the variability and toxicity of natural compounds such as heparin. His group has published more than 200 peer-reviewed papers and holds multiple patents.

A major advance came through his collaboration with Bhaumik Patel, M.D., at the Central Virginia VA Health Care System and the VCU Massey Comprehensive Cancer Center. Together they developed G2.2, a small molecule that targets cancer stem cells — the dormant, therapy-resistant cells responsible for relapse.

"Cancer relapses," Desai explains. "Patients walk out of surgery or chemotherapy thinking they are free of cancer, and five years later, it relapses intensely. Cancer stem cells are essentially like a hibernating bear... chemotherapy and radiation don't touch cancer stem cells because they are essentially hibernating."

G2.2 mimics a specific GAG fragment known as heparan sulfate hexasaccharide (HS06) and binds to the insulin-like growth factor 1 receptor (IGF-1R), disrupting downstream signaling and forcing cancer stem cells into death.

The work is supported by the National Institutes of Health, the Department of Veterans Affairs and VCU's commercialization programs. VCU TechTransfer and Ventures has secured domestic and international patents.

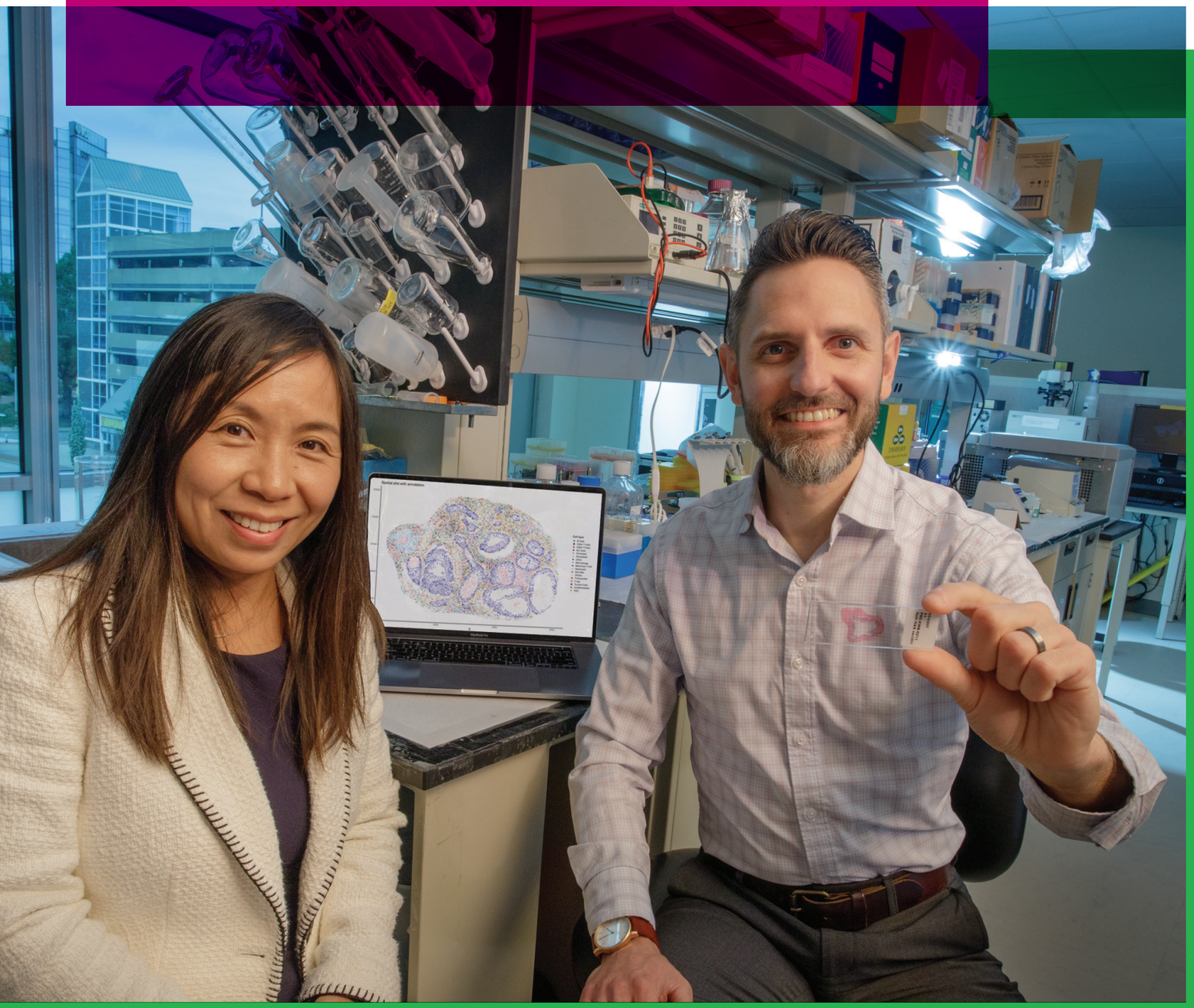
"When you see a discovery like G2.2, you realize the power of long-term research," said TechTransfer director of licensing Magdalena Morgan, Ph.D. "G2.2 is not just a molecule, but a platform that could change how we think about preventing cancer recurrence."

What are GAGs? VCU's Umesh Desai explains. Meet him in our video.

Umesh Desai, Ph.D.
Professor and Chair
Department of Medicinal Chemistry
VCU School of Pharmacy

Bhaumik Patel, M.D.
Professor, Department of Internal Medicine
VCU School of Medicine
Chief, Section of Hematology and Oncology
Central Virginia VA Health Care System

Stratica Biosciences is a startup developing artificial intelligence tools to help doctors see disease in ways never before possible. Its VCU founders hope to transform how scientists can interpret complex tissue environments to discover new biomarkers and predict therapeutics matched to a patient's own tissues.



Jinze Liu, Ph.D.
Professor, Department of Biostatistics
VCU School of Public Health
Co-founder, Stratica Biosciences

Kevin M. Byrd, D.D.S., Ph.D.
Assistant Professor, VCU School of Dentistry's Philips Institute for Oral Health Research
Co-founder, Stratica Biosciences

Mapping paths to quicker diagnosis and treatment

Two VCU researchers from distinct disciplines are reshaping the possibilities of diagnostics and personalized medicine.

The VCU School of Dentistry's Kevin M. Byrd, D.D.S., Ph.D., and VCU School of Public Health's Jinze Liu, Ph.D., are the co-founders of Stratica Biosciences, a startup developing artificial intelligence tools that help doctors see disease in ways never before possible.

The duo hope to transform how scientists can interpret complex tissue environments to discover new biomarkers and predict therapeutics matched to a patient's own tissues.

Spatial biology, defined as technologies that map thousands of molecules in their precise location in tissues, has created an unprecedented window into disease, but the method comes with overwhelming amounts of data. While spatial biology has revolutionized how tissues are analyzed, converting complex molecular images into clinically meaningful insights is slow, labor-intensive and difficult to scale.

Byrd and Liu's work includes TACIT (Threshold-based Assignment of Cell Types from Multiplexed Imaging Data), an algorithm developed to tackle one of spatial biology's most persistent challenges: identifying cell types in a timely manner. When he first discussed the issue with Liu, Byrd said the time it took to analyze a single pathology slide from a biopsy was "not scalable."

"It was taking us five weeks to look at one slide," Byrd said. "We wanted to get it down to five minutes."

Byrd and Liu's team developed a statistical, threshold-based approach for assigning cell phenotypes from highly multiplexed imaging data, addressing one of the hardest and most time-consuming problems in spatial biology.

"Rather than cleaning the images themselves, TACIT compares those measurements to reference profiles derived from millions of single-cell observations across diverse human tissue architectures," Byrd said.

This automated workflow, now embedded within their platform called AstroSuite, reduces the time from raw multiplexed imaging to actionable insights from weeks to minutes.

"You want to identify which are the immune cells, which are the tumor cells, how they interact and how they fight with each other," Liu said. Byrd added that TACIT offers "a way to give names to cells we were struggling to give names to."

TACIT is one component of AstroSuite, a growing ecosystem of tools designed to map cell neighborhoods, interactions and communication circuits across diseases. The tools help clinicians diagnose and prescribe treatment based on patients' specific biological architecture, and increasingly, they lay the groundwork for uncovering how a patient's tissue might respond to therapies.

For Byrd, the work carries personal meaning. His father endured recurring cancer three times, and though he is currently cancer-free, Byrd wonders what tools like TACIT and AstroSuite could have done for him.

"What could we have seen in the pathology slide at his first diagnosis that would have matched the right drug for him?" he said. "Would he have avoided these recurrences?" With his own tools, Byrd said, doctors can more aptly match patients to clinical trials and avoid enrolling patients unlikely to benefit from them.

With support from VCU TechTransfer and Ventures, Byrd and Liu are positioning their technology to reach clinics, trials and industry partners.

Liu says their company's impact will only expand: "As we gain more data across tissues and diseases, AstroSuite's ability to accelerate spatial interpretation and guide more personalized treatment strategies will continue to grow."

Turning frontline frustration into functional devices

Casey Grey, Ph.D., is something of an engineering Swiss Army knife.

A postdoctoral researcher in the College of Engineering's Aerosols in Medicine Lab, Grey moves between disciplines — neuroscience, respiratory medicine, critical care, pharmacology — to make products that can ultimately help patients young and old.

He gets called into clinics, listens, identifies what the provider can't explain, and builds something to fix the problem.

"You have an idea and you don't know where to go with it?" he said. "That's me."

He's got his own project, funded in 2025 by the VCU TechTransfer and Ventures Commercialization Fund: a modified "bubble CPAP" designed to improve respiratory support for premature infants.

Grey reimagined the decades-old technology by engineering a system that stabilizes pressure delivery and creates a high-frequency oscillation — specifically at 40Hz, which reflects the number of pressure wave oscillations per second (a typical bubble CPAP pulses at 5Hz). Clinical studies show 40Hz frequencies can stimulate the brain's glymphatic system, which uses cerebrospinal fluid to clear waste and toxins from the brain and support neurological development. "By superimposing a 40Hz signal onto the existing 5Hz bubble CPAP, we believe we can support brain development in preterm infants," he said.

For Grey, who earned his doctorate at VCU in 2014, the pursuit of a better bubbler is both personal and professional. Though always interested in neuroscience, surviving a concussion years ago motivated him to leave his corporate career and return to academia to tackle the significant gaps in neurological care, especially related to concussion and traumatic brain injury.

Today, he is an adjunct professor researching under P. Worth Longest, Ph.D., the Alice T. and William H. Goodwin Jr. Endowed Chair in the Department of Mechanical and Nuclear Engineering (and one of VCU's 2025 Innovators of the Year).

Grey is also collaborating with VCU Health ICU nurse Emma Shawcross and is co-inventor of the Flow Positioning Wedge, a fecal-management device that helps position the critically ill patients to improve dignity, comfort and safety. Additionally, he leads a team in VCU's Acute Medical Care and Systems Strengthening (ACCESS) Vertically Integrated Project (VIP) focusing on preventing pressure injuries and major complications for patients on ventilators. He mentors engineering senior design teams and holds six full patents with seven more pending.

"My goal is simple: keep asking questions and keep helping people," Grey said. "There are so many opportunities to collaborate between VCU Engineering and VCU Health, and I intend to explore as many of them as I can to help our patients."

Casey Grey, Ph.D.
Adjunct professor and postdoctoral researcher
Department of Mechanical and Nuclear Engineering
VCU College of Engineering

Changing campus culture with online gaming

Adrienne Baldwin-White, Ph.D.
Assistant Professor
VCU School of Social Work

To address alarming increases in sexual and dating violence on college campuses, one VCU researcher is meeting students where they already are: on their devices.

Through her startup Noble Tech, Adrienne Baldwin-White, Ph.D., an assistant professor in the VCU School of Social Work, developed "Once Upon a Party," a text-based interactive game designed to promote realistic, engaging learning. The project draws directly from her extensive work in gender-based violence prevention, but turning that research into a digital game required a creative pivot.

"My husband is a gamer, so I consulted with him first to get an idea of what type of game would work…because I am not a gamer," Baldwin-White said. As she explored how gaming mechanics could deliver evidence-based content, she quickly realized she needed collaborators: "I don't know how to code, I don't know how to do graphic design."

Baldwin-White partnered with Melody Huslage, Ph.D., of the University of Nevada Reno, to help develop the project. Over several years, they conducted heavy research including focus groups to craft a narrative tool grounded in student experiences.

Text messages became the engine of the game's story, as Baldwin-White reasoned that modern students would "rather text message than actually call someone on the phone." The result is an immersive simulation of real conversations between friends navigating risky situations. "Every part of it has to feel real," Baldwin-White said.

In the game, players guide friends through unfolding party-night scenarios involving sexual harassment or potential assault. It follows a "choose-your-own-adventure" format that deviates from standard click-through programs students are used to using for school orientations and other functions. "You receive the text messages in the game, and then it prompts you with two different responses," Baldwin-White said. "You choose how you would respond, and that decides what happens next in the story."

"Once Upon a Party" has been licensed by the University of Notre Dame, but Baldwin-White's vision doesn't stop there: "I would love for this game to be standard practice for universities and colleges across the United States, maybe even globally." Her team is developing a second game, "Student Body," which will feature more diverse characters and added scenarios.

VCU TechTransfer and Ventures was essential in bringing "Once Upon a Party" to market, with Baldwin-White noting support with intellectual property, marketing and business development.

"The TechTransfer team has been really helpful every step of the way," she said. "Without them, I would be completely lost."

Meet Baldwin-White and see a demo of "Once Upon A Party."

Combating youth violence with VR

"Imagine a teenager being excited to improve their mental health. That's the potential we have here: getting youth necessary mental health care in a way that's engaging, stigma-free and affordable. It has the power to make a real difference."

Nicholas Thomson, Ph.D.
Director of Research, Injury and Violence Prevention Program, VCU Health
Assistant Professor, Department of Surgery, VCU School of Medicine

Virtual reality is more than a trendy technology for Nicholas Thomson, Ph.D. It's also a pathway to closing gaps in care for some of the nation's most vulnerable young people.

Through his startup Arche XR, the forensic psychologist and VCU researcher is developing and deploying immersive programs that teach critical mental health and violence-prevention skills.

In September, Thomson received a $3 million grant from the National Institutes of Health to lead the nation's largest federally funded study on preventing violence among high-risk youth using VR. The work centers on Elevate VR, an evidence-based mental strength program developed through Arche XR. It immerses youth in real-world scenarios such as peer conflict, cyberbullying, and firearm safety, and it trains them to build mental resiliency and de-escalate conflict.

"Elevate VR is brief, affordable and easy to deploy in hospitals, schools and justice settings," said Thomson, director of research for the Injury and Violence Prevention Program at the VCU Health Trauma Center. "It was built with input from youth with lived experiences to ensure it is meaningful and relevant."

The randomized controlled trial will enroll youth who have recently survived violence, along with their caregivers. Participants complete the program before hospital discharge and are followed for six months, when risk of reinjury or retaliation is particularly high. If successful, the study could help establish a scalable, cost-effective model for reducing firearm violence nationwide.

Just weeks after the NIH award, Arche XR announced another pivotal advancement: a new partnership with T-Mobile for Education to bring its mental health suite to schools and youth-serving organizations across the country. The collaboration combines Arche XR's clinical programming with T-Mobile's 5G infrastructure, enabling distribution in low-connectivity areas and real-time outcomes data collection.

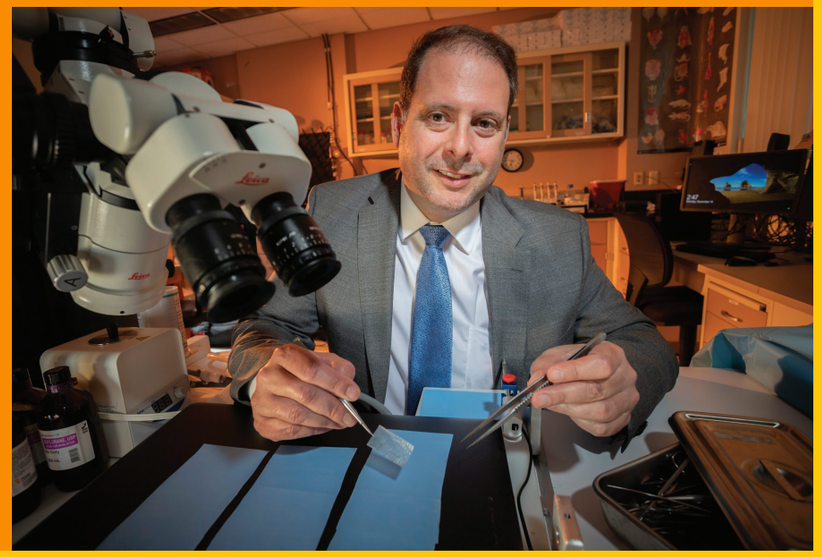
Early Arche XR data show dramatic results, including a 60% reduction in aggressive behaviors and an 80% increase in social-emotional development. All surveyed users reported it as a better use of their time than traditional therapies, and many said it improved their mental health and relationships.

"Imagine a teenager being excited to improve their mental health," Thomson said. "That's the potential we have here: getting youth necessary mental health care in a way that's engaging, stigma-free and affordable. It has the power to make a real difference."

With mental health needs among adolescents rising sharply, the ability to intervene at scale is critical. Arche XR programs can operate offline, require minimal staffing and run on commercially available headsets. Just one device can serve around 1,000 students annually.

Before Arche XR's national expansion, VCU TechTransfer and Ventures worked closely with Thomson to secure copyright protection and structure licensing agreements.

"This is not just about developing new technologies — it's about changing outcomes for young people," said Brent Fagg, assistant director for innovation at TechTransfer and Ventures. "By supporting innovators like Dr. Thomson, we're helping ensure that university research makes a tangible difference in people's lives."



VCU hand surgeon's Nerve Tape revolutionizes nerve repair nationwide

COMPANY:
BIOCIRCUIT TECHNOLOGIES

Developed by VCU hand surgeon Jonathan Isaacs, M.D., Nerve Tape is a biologic wrap that streamlines peripheral nerve repair using embedded microhooks instead of traditional sutures. The FDA-cleared device, backed by BioCircuit Technologies, completed a successful rollout in 2024. Today, it has been used in roughly 6,000 surgeries, with sensory innervation for breast reconstruction being the largest area of adoption. "Feedback from surgeons has been overwhelmingly positive, and we anticipate strong continued growth," Isaacs said. Through federal Department of Defense and National Institutes of Health funding, he and his team are exploring added uses including peripheral nerve repair and oral surgery.

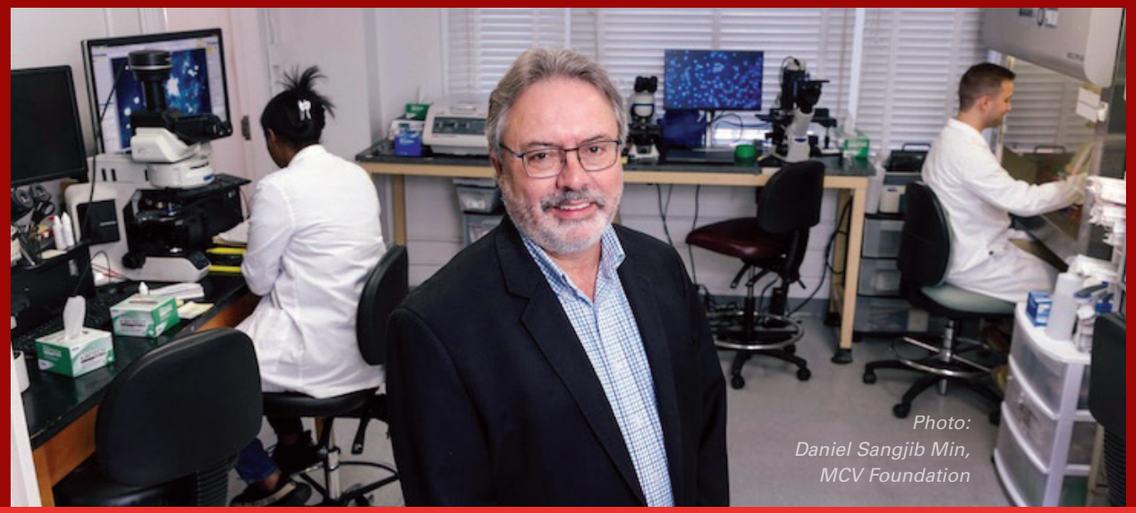


Photo: Daniel Sangjib Min, MCV Foundation

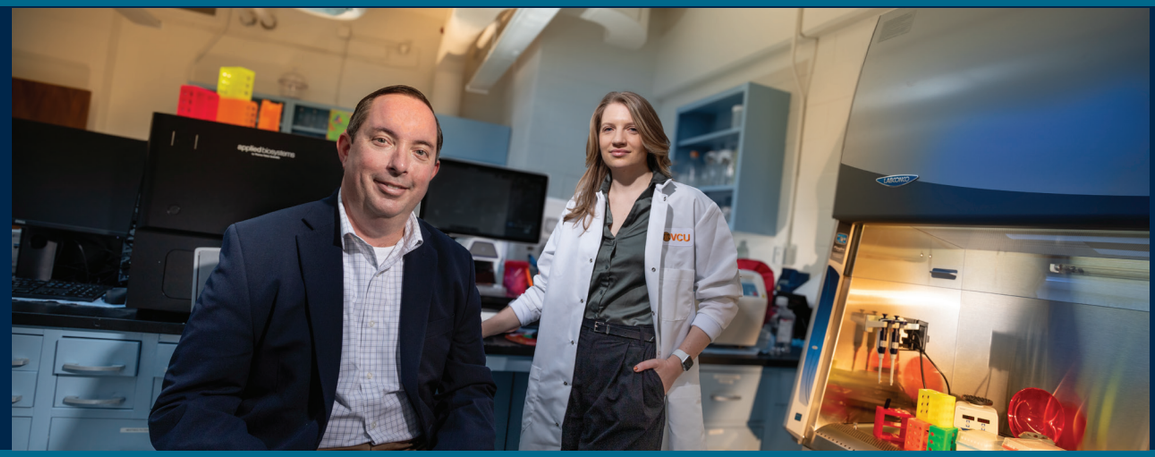
VCU lab closing in on human Lyme disease vaccine

STARTUP: CHIMERITOPE DX

VCU researcher Richard Marconi, Ph.D., is leading the multistage development of a human Lyme disease vaccine that has shown 100% efficacy in early animal studies. Building on the chimeritope technology behind North America's top canine Lyme vaccine that he developed, his team is working to create broad immune protection by fusing protein segments from multiple bacterial strains. The lab is also developing a next-generation point-of-care diagnostic test with NIH and philanthropic funding. "Without the financial support we would not have been able to make the key breakthroughs that have led to products that benefit patients," Marconi said.

Next-gen gene therapy for LGMD prepares for clinical trials

STARTUP: EVOLYRA



Evolyra Therapeutics, founded by VCU neurologist Nicholas Johnson, M.D. and Melissa Hale, Ph.D., is transforming treatment for Limb-Girdle Muscular Dystrophy (LGMD), a rare, progressive neuromuscular disease. While past gene therapies faced safety hurdles, Evolyra's second-generation platform is engineered to avoid liver toxicity while delivering full-length, functional genes directly to muscle tissue. The company has worked with over 500 LGMD patients and a deep bench of clinical experts to develop this treatment, which could affect tens of thousands worldwide. Partnering with VCU TechTransfer, Evolyra is advancing its potentially curative single-dose therapies toward clinical trials while moving forward with manufacturing and regulatory plans.

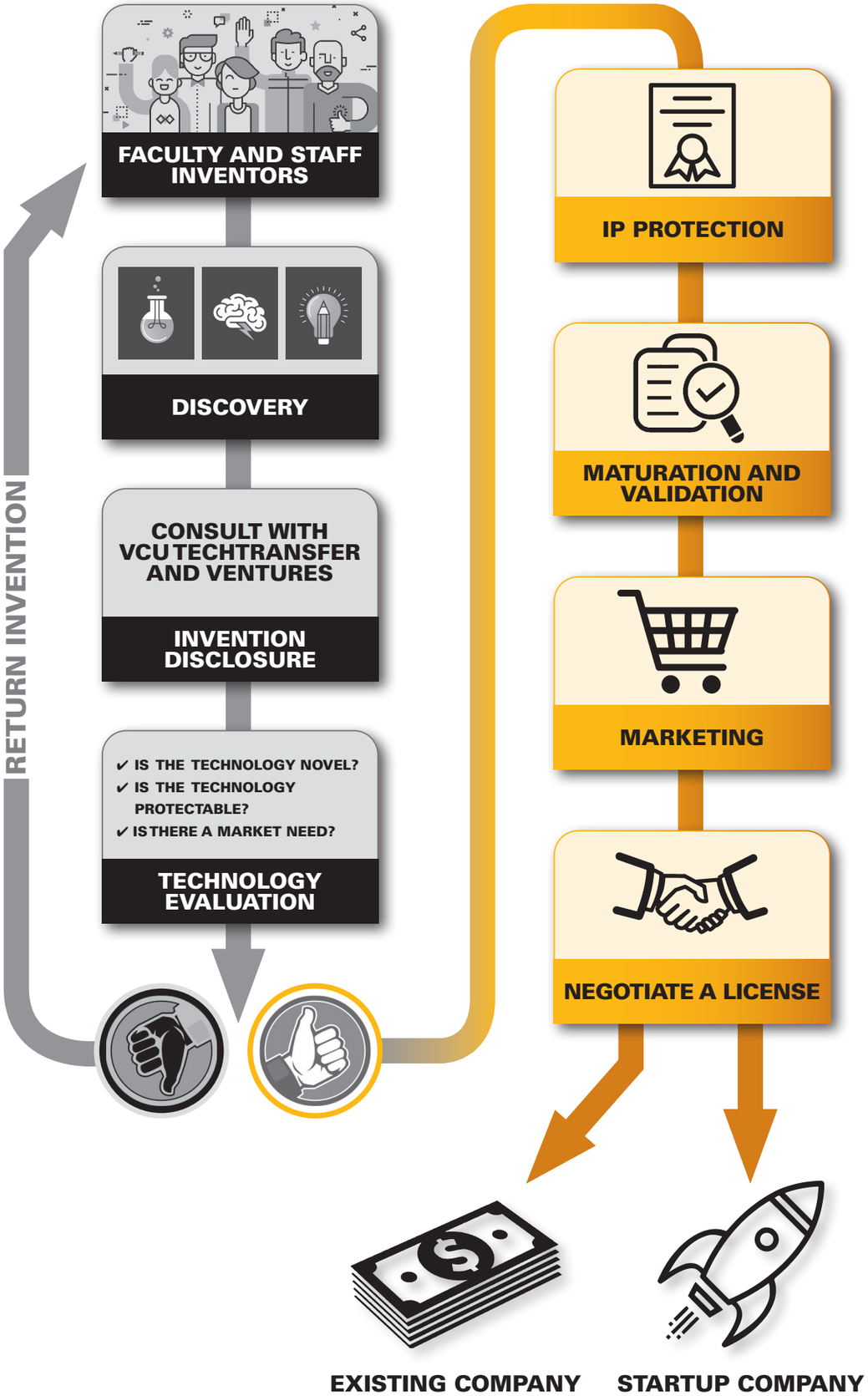
Precise nasal models designed as critical tools for drug makers

STARTUP: 3DINHALE

Photo: VCU College of Engineering

3DInhale, a VCU-born startup founded by mechanical and nuclear engineering professor Laleh Golshahi, Ph.D., is transforming respiratory drug development with anatomically realistic nasal airway models. Built from computed tomography (CT)-derived geometries across age groups, the platform enables precise, region-specific deposition analysis that traditional in vitro tools cannot match. "Our goal is to look at where the drug lands in the nose, because the location of delivery can determine how well the treatment works and how easily patients can stick with their treatment plan," Golshahi said. 3DInhale's models can help manufacturers de-risk drug formulations, strengthen generic drug applications and accelerate innovation.

The VCU Technology Transfer Process



VCU Issued Patents

8/27/24 — **US Patent No. 12,071,410**

B. Frank Gupton, Ph.D., Saeed Ahmad, Ph.D., Hari Mangunuru, Ph.D., Nakul Telang, Ph.D.
High-yielding continuous flow synthesis of antimalarial drug hydroxychloroquine

9/3/24 — **US Patent No. 12,077,642**

Massimo Bertino, Ph.D., Sylwia Czlonka, Ph.D.
Polymeric aerogel composite and synthesis by ambient and freeze-drying

12/10/24 — **US Patent No. 12,161,862**

Jonathan Isaacs, M.D.
Devices and methods for repairing damage to a tissue

12/12/24 — **US Patent No. 2022204450**

Shunlin Ren, M.D., Ph.D.
Uses of oxygenated cholesterol sulfates (OCS)

12/24/24 — **US Patent No. 12,171,888**

Gary Bowlin, Ph.D., David Simpson, Ph.D.
Electrospun dextran fibers and devices formed therefrom

12/31/24 — **US Patent No. 12,179,266**

Hong Zhao, Ph.D., Ravi Hadimani, Ph.D., Lilly Balderson, Radhika Barua, Ph.D.
3D printed magnetocaloric devices with controlled microchannels and magnetic anisotropy and methods of making the same

2/4/25 — **US Patent No. 12,217,890**

Supriyo Bandyopadhyay, Ph.D
Subwavelength antennas, drivers, and systems

2/11/25 — **US Patent No. 12,221,406**

Shijun Zhang, Ph.D.
Compounds as NLRP3 inflammasome inhibitors and compositions and uses thereof

2/13/25 — **US Patent No. 10-2769405**

Youngman Oh, Ph.D., Melissa Qing Cai, Ph.D.
Treatment of diseases related to IGFBP-3 and its receptor

2/18/25 — **US Patent No. 12,226,423**

Shunlin Ren, M.D., Ph.D., Leyuan Xu, Ph.D.
Compositions comprising 5-cholesten-3, 25-diol, 3-sulfate (25HC3S) or pharmaceutically acceptable salt thereof and at least one cyclic oligosaccharide

3/4/25 — **US Patent No. 12,239,696**

Richard Marconi, Ph.D., Jason Carlyon, Ph.D.
Chimeric vaccine antigens for anaplasmosis

3/19/25 — **JP Patent No. 7653164**

Martin Mangino, Ph.D., Loren Liebrecht, M.D.
Compositions and methods for restoring or increasing tissue perfusion

4/8/25 — **US Patent No. 12,272,494**

Maryanne Collinson, Ph.D., Ahmed Farghaly, Ph.D.
Biofouling-resistant nanoporous alloys

4/30/25 — **EP Patent No. 3801643**

Matthew Hartman, Ph.D., Koushambi Mitra, Ph.D.
A near-IR activatable, fluorescent small molecule with dual modes of cytotoxicity

5/6/25 — **US Patent No. 12,291,621**

Massimo Bertino, Ph.D., Tyler Selden
Fabrication of aerogels and aerogel composites by ambient pressure sublimation of frozen solvents

6/9/25 — **US Patent No. 2025/04917**

Martin Safo, Ph.D., Yan Zhang, Ph.D.
Benzaldehyde compounds with direct polymer destabilizing effects to treat sickle cell disease

6/10/25 — **US Patent No. 12,325,863**

Paul Fisher, M.Ph., Ph.D., FNAI, Swadesh Das, Ph.D., M.Sc., M.Agg, Devanand Sarkar, M.B.B.S., Ph.D., Mitchell Menezes, Ph.D., Luni Emdad, M.B.B.S., Ph.D., Praveen Bhoopathi, Ph.D.
MDA-7/IL-24 variants and methods of use

6/10/25 — **US Patent No. 12,325,635**

Puru Jena, Ph.D., Hong Fang, Ph.D.
U-Carbon: A novel metallic and magnetic carbon material

6/24/25 — **US Patent No. 12,337,012**

Martin Mangino, Ph.D., Loren Liebrecht, M.D.
Compositions and methods for restoring or increasing tissue perfusion

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Grenova

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10+ Years of Impact

2,000+ *inventions*

2,500+ *patents filed*

$45M+ *licensing revenue*

300+ *patents issued*

$100M+ *startup funding*

250+ *licenses and options*

90+ *startups*

60+ *products to market*

TechTransfer and Ventures