VANDERBILT
MEDICINE
SPRING 2026

Warm Fleece Meets Cool Science

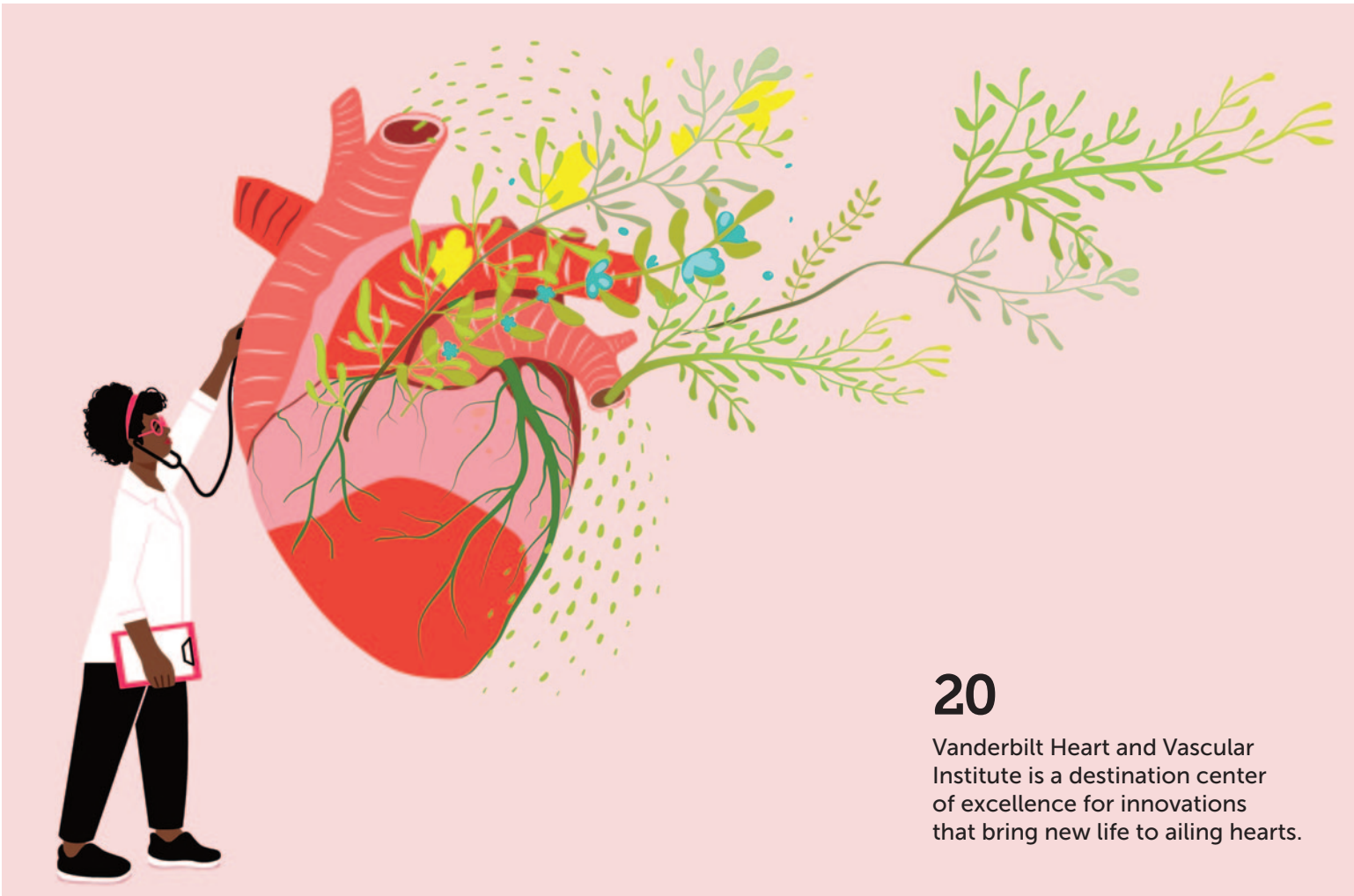
Alpaca-powered Nanobodies Kick-start Big Discoveries

SCENE ON CAMPUS

Vanderbilt University School of Medicine alumni returned to Nashville to take part in Sesquicentennial Celebration events in April 2025.

ANNE RAYNER

CONTENTS



20

Vanderbilt Heart and Vascular Institute is a destination center of excellence for innovations that bring new life to ailing hearts.

ON THE COVER

A field of fuzzy-faced alpacas is actually an outdoor laboratory advancing the science of nanobodies in detecting and treating human disease.

ONLINE EXTRAS

news.vumc.org/medicine-magazine

A Deep Field of AI Initiatives
Learn more about key Vanderbilt Health AI projects, collaborations and accolades.

Visit the Alpacas
Join scientist-farmers and their hooved partners by video.

DEPARTMENTS

FEATURES

VANDERBILT MEDICINE

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Achieving through innovation

DAVID BAILEY

When conventional paths close, the most remarkable breakthroughs often emerge from unexpected places.

I've been thinking about this as I reflect on the achievements Vanderbilt Health marked in the last few months — 960 organ transplants in a single year, more than any center in world history; our collaboration with Bayer to accelerate life-changing therapies; Vanderbilt Clarksville Hospital becoming our fourth regional medical center. These milestones didn't materialize from careful planning alone.

These milestones, just like those you'll read about in this issue, grew from something deeper: our willingness to push the boundaries of what is possible when faced with constraints.

Brian Wadzinski, PhD, associate professor of Pharmacology, embodies this spirit. When his protein phosphatase research stalled in 2010 and federal funding dried up, he could have scaled back his ambitions. Instead, he merged his scientific curiosity with his love of the outdoors, establishing an alpaca farm in Humphreys County. Today, that unconventional laboratory fuels nanobody research worldwide — from pandemic preparedness to treatments for children with Jordan's syndrome. "I had to think outside the box," he told us. What began as a response to limitation became a catalyst for discovery.

This same creative resilience runs through our Structural Heart and Valve Center, where 20 years of innovation transformed impossible choices into routine miracles. Patients like 79-year-old Dennis Carney, who now feels "like a 20-year-old" after a minimally invasive valve procedure, represent not just medical advancement but a fundamental reimagining of what cardiac care can be.

There's nothing accidental about these achievements. Transformative achievements must reach beyond traditional boundaries. They emerge when brilliant minds refuse limitations, when institutions invest in bold ideas, and when entire communities unite around healing. That's the Vanderbilt spirit you embody, and our community strives toward: the understanding that our greatest breakthroughs often begin precisely where conventional wisdom says they cannot.

Please know of my eternal gratitude for your steadfast partnership. ■

Jeff Balser, MD, PhD
President and CEO, Vanderbilt Health
Dean, Vanderbilt University School of Medicine

Update for *Vanderbilt Medicine* Readers

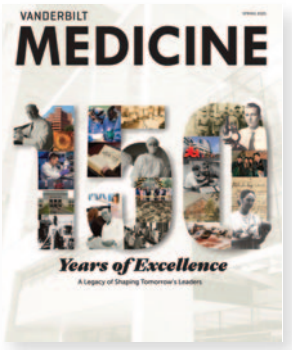
Vanderbilt Medicine has introduced a fresh publishing approach to better serve our readers. We're alternating between dynamic online-only issues and combined print/online issues. This allows us to share the latest news from Vanderbilt University School of Medicine and Vanderbilt Health in a timely, accessible and engaging way.

Please bookmark the new website so you can enjoy *Vanderbilt Medicine* anytime.

news.vumc.org/medicine-magazine

CONVERSATIONS AROUND THE MEDICAL CAMPUS

We want to hear from you! Connect with us on Facebook, X, YouTube, Flickr and Instagram.



Comments on the SPRING 2025 **issue of** ***Vanderbilt Medicine:***

MINUTES SAVED MEAN LIVES SAVED

We are so blessed to have this amazing network of first responders in our region poised to help saves lives by air or by ground transport. – ***Brenda Davis Frank***

Thank you to the pediatric LifeFlight team who saved my 1-month-old baby. Twice! He was a frequent flyer his first month of life. – ***Emma Howard***

A LEGACY OF SHAPING TOMORROW'S LEADERS

Unbelievable milestone! What an awesome achievement — 150 years. – ***Joeseph Crutcher***

Comments on the FALL 2025 **issue of** ***Vanderbilt Medicine:***

MADE IN THE SHADE ... TREE CLINIC

Huge hearts. Only words I can think of. One reason I'm so proud of the PEOPLE at Vanderbilt. It is about dignity and respect, and these amazing young physicians are the perfect embodiment of care for all. Thanks to those who so generously give from their hearts.
– ***Alex Robinson***

FROM INTERNS TO EXPERTS

My great grandfather, Cyrus Tyree, was part of the first class at Vanderbilt. His father was part of the first class at the Nashville School of Medicine, which later became Vanderbilt (Medical School). – ***David Lewis***

Editor's note: Nashville Medical School and Vanderbilt Medical School separated in 1895.

JOIN THE CONVERSATION
Share comments on *Vanderbilt Medicine* magazine via our website, news.vumc.org/medicine-magazine, or email the editor at jill.clendening@vumc.org.

QUOTABLE:

"It's a devilish virus because it can spread in so many ways, and it is so highly contagious ... It takes very few particles, between one and 10, to initiate an infection."

WILLIAM SCHAFFNER, MD, professor of Health Policy, on the spread of norovirus
"Today"
Dec. 26, 2025

"People may not know that it is happening and that this damage is being done to their blood vessels until something severe like a stroke happens."

CAROLYN CRONIN, MD, PHD, division chief of Vascular Neurology, on health risks when drinking excessive energy drinks
Self magazine
Dec. 11, 2025

"We're pretty clear that nicotine is not some smart drug or panacea for the normal range of human behavior and cognition."

PAUL NEWHOUSE, MD, director of the Vanderbilt Center for Cognitive Medicine, on false benefit claims related to nicotine
Salon
Jan. 9

Find us on Instagram at www.instagram.com/vumedicine

vumchildren
No scoreboard needed. This visit was a slam dunk. 🏀 Alex "Moose" Weekes from the Harlem Globetrotters stopped by to show our friends at Seacrest Studios a few jaw-dropping tricks. #vumchildren

vumcmedicineresidency
One of the MANY fun things to do in Nashville, pottery painting! Not only are they doctors … but artists too?! Impressive #vumcmedicineresidency

vumedicine
Our students are SEW talented. Just look at the scrub caps they made during yesterday's VMS Knits meeting! #vumedicine

A CLOSER LOOK

An air ambulance helicopter flies over a lacework of crystallized trees during the January winter storm that iced over the Vanderbilt campus.

ERIN O'SMITH

Jim Ayers Tower welcomes patients

Massive structure is first major addition to medical campus since 2009

On Oct. 1, 2025, Level 7 of the Jim Ayers Tower welcomed its first patients as the initial floor of 30 private, inpatient rooms opened in the new expansion tower adjoining Vanderbilt University Hospital (VUH).

The 495,000-square-foot structure that rises above 21st Avenue on the Vanderbilt Health Main Campus in Nashville is the largest facility expansion to date. Construction of the Jim Ayers Tower began in the summer of 2022 and is expected to be completed by early 2027.

The tower is named in recognition of James W. (Jim) Ayers, a prominent Tennessee banker, businessman and philanthropist, who died in April 2025, and his wife, Janet, in honor of their steadfast community leadership and longtime connection to the Medical Center.

"The opening of the first floor of the Jim Ayers Tower marks the culmination of a yearslong journey to add critically needed capacity to Vanderbilt University Hospital. This space reflects our ongoing commitment to care for people when they need us most, in a comforting setting that offers the most cutting-edge advances in care," said Jeff Balser, MD, PhD, President and CEO of Vanderbilt Health and Dean of Vanderbilt University School of Medicine. "We are grateful to Mr. and Mrs. Ayers, and to our community, for bringing this extraordinary new resource to fruition."

Expansive exterior windows fill the new unit with softly filtered, natural light, and honey-toned maple doors and architectural panels along the walls mirror design elements found across the Medical Center. These elements create a serene, visually harmonious environment — an intentional aesthetic echoed throughout the tower.

"We are so excited for the opening of the first of our six inpatient floors included in the new Jim Ayers Tower, a facility that honors Jim and Janet Ayers and their dedication to improving the health care and quality of life for Tennesseans," said Jane Freedman, MD, Deputy CEO and Chief Health System Officer for Vanderbilt Health. "The tower, reaching 16 stories into the sky, has been designed to deliver unrivaled care and health care services that match the nationally ranked expertise, exceptional patient care and innovative breakthroughs Vanderbilt Health is already well known for.

"Every single detail of the Jim Ayers Tower design has been strategically planned and completed with our patients and families first in mind. The technology and design innovations included in this structure will support our medical teams well as they continue to deliver the very best care to our community. We look forward to welcoming all to this remarkable facility as additional floors open in the coming months."

The Jim Ayers Tower construction and related renovations to adjacent facilities have been a significant undertaking for the Medical Center. In conjunction with the Jim Ayers Tower construction, 10 operating rooms were opened in the summer of 2025 in the South Tower of Medical Center East, the building adjacent to the new construction. The additional space will help meet the medical needs of Middle Tennessee's booming population. VUH, the region's largest tertiary referral center, already operates at more than 90% capacity year-round.

"We are incredibly grateful for and excited about the first inpatient unit opening in the Jim Ayers Tower," said Lee Ann Liska, MBA, President and Chief Operating Officer of VUH. "The additional beds will help us move patients even more efficiently from our emergency room and allow us to take critical inpatient transfers from our Regional Hospitals and other facilities.

"I want to personally thank our architects, planning, design and construction teams, operations and patient care leaders who have worked very hard over the past few years to bring this exciting project to fruition."

Depending on the final floor configuration, the Jim Ayers Tower will add 180 to 187 inpatient beds, along with additional radiology services, multiple specialty clinics and new administrative office space. Unfinished floors will allow further expansion of patient beds.

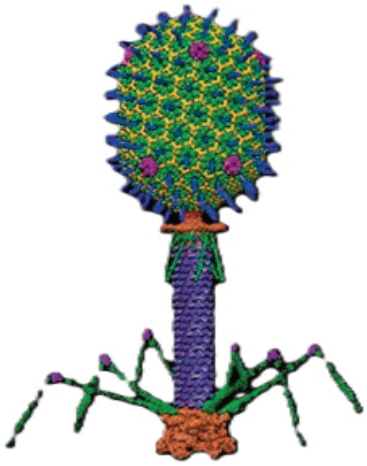
"We're also using this as an opportunity to consolidate related medical specialties on our medical campus that had become separated in different areas and even in different buildings as services were added through the years in the space that was available," Freedman said. "Certain services will be consolidated. This will benefit both our patients and their families, and our providers and staff."

The last major addition to VUH was completed in November 2009 with the opening of the Critical Care Tower, an 11-level expansion that added 102 patient beds and 12 operating rooms ■ *Jill Clendening*

Patricia Martin was moved to a new room on the morning of Oct. 1, 2025, to become the first patient in the Jim Ayers Tower.

DONN JONES

$20 MILLION GRANT SUPPORTS SWEEPING HUMAN VIRUS STUDY



VICTOR PADILLA-SANCHEZ, THE CATHOLIC UNIVERSITY OF AMERICA

T4 bacteriophage, a virus that infects the bacterium E. coli.

Aided by a five-year, $20 million research grant from the National Institutes of Health, a Vanderbilt Health research team will venture to characterize the role of viruses in human health and disease. The grant helps establish the Vanderbilt-coordinated Virus Characterization Center, or V2C2.

"Human viruses are largely understudied, with most research historically focusing only on pathogenic viruses that cause obvious clinical disease, while the vast majority of viruses that reside in us without causing disease remain poorly understood," said one of the project's four principal investigators, Suman Das, PhD, research associate professor of Medicine in the Division of Infectious Diseases.

Under the Human Virome Program, V2C2 will be one of five research centers seeking to characterize the human virome — the viruses in or on the human body. These centers will work in concert with research teams at other institutions with the goals of revealing interactions between the human host and the virome and developing tools, models and methods to interrogate and annotate the human virome.

"Our center builds on an estimable track record of virus research at Vanderbilt," said another principal investigator for V2C2, Ravi Shah, MD, the Gottlieb C. Friesinger II Professor of Cardiovascular Medicine. "V2C2 will seek to delineate the range of viruses that exist within human tissues and plasma — causing symptoms or not, passing through or persisting in the body, whether in human cells or in various constituents of the human microbiome. With our partners across the Human Virome Program, we hope to answer new and important questions concerning the role of viruses in human health and disease."

Additional principal investigators for V2C2 are Kari North, PhD, from the University of North Carolina at Chapel Hill and Susan Fisher-Hoch, MD, from the UTHealth Houston School of Public Health in Brownsville, Texas.

Other Vanderbilt Health researchers participating in V2C2 are Simon Mallal, MBBS, Jane Freedman, MD, Jennifer Below, PhD, Eric Gamazon, PhD, MS, Tina Hartert, MD, MPH, Seesandra Rajagopala, PhD, Ellen Wright Clayton, MD, JD, Bradley Malin, PhD, Meghan Shilts, MS, Suman Pakala, ME, Kristen Ogden, PhD, Staci Sudenga PhD, MPH, Bhuminder Singh, PhD, Christian Rosas-Salazar, MD, MPH, and Siyuan Ma, PhD.

V2C2 is supported by NIH grant U54AG089326. ■ *Paul Govern*

Research Roundup

Identifying cancer risk proteins to improve cancer prevention

Researchers at Vanderbilt Health and the University of Calgary have established an analytical framework integrating genomic, proteomic and electronic health record data to identify cancer risk proteins and therapeutics for cancer prevention.

Published in the *American Journal of Human Genetics*, previously unreported protein biomarkers and candidate drug targets were identified across six cancer types, and approved drugs with potential cancer preventive effects were highlighted.

Previous research has identified putative cancer susceptibility genes that could be regulated by these risk variants; however, most dysregulated gene expression has not been thoroughly investigated at the protein level.

To date, genome-wide association studies have identified several hundred genetic variants associated with increased risk for breast, colorectal and prostate cancer, and several dozen risk variants for other cancers, including lung, pancreatic and ovarian cancer.

The research was supported by the National Institutes of Health (grants R37CA227130, R01CA269589, R01CA297582).

Guidelines greatly reduce food allergy rates in children

A study in *Pediatrics* found that food allergy rates in children under 3 fell significantly after new guidelines were issued by the National Institute of Allergy and Infectious Diseases in 2017 — equating to nearly 60,000 fewer children with food allergies.

Monroe Carell Jr. Children's Hospital at Vanderbilt is a member of the Food Allergy Resource and Education (FARE) Clinical Network, a coalition of top food allergy centers dedicated to developing effective treatments and improving patient care.

Vanderbilt Health's Allergy and Immunology Clinic, a FARE Clinical Network Center of Distinction, works to improve the quality of life and health of individuals with food allergies through research, education and advocacy.

In 2024, the Consortium for Food Allergy Research awarded Vanderbilt Health a seven-year, $5 million grant to conduct food allergy research and establish a food allergy clinical research center.

Study finds super agers often have genetic advantages

The gene variant posing the greatest risk of late-onset Alzheimer's disease (AD) is APOE-ε4. A different variant of the same gene, APOE-ε2, is thought to confer protection against AD.

A study led by Vanderbilt Health researchers published in *Alzheimer's & Dementia, The Journal of the Alzheimer's Association* measured APOE-ε4 and APOE-ε2 in super agers — people ages 80 or older with cognitive function comparable to people 20 or 30 years younger.

Super agers were 68% less likely to harbor APOE-ε4, compared to individuals with AD dementia in the same age group. Super agers were also 19% less likely to harbor APOE-ε4 than were cognitively normal participants in the same age group.

Super agers were 28% more likely to carry APOE-ε2 than were cognitively normal controls, and 103% more likely to carry the variant than were participants with AD dementia age 80 or older.

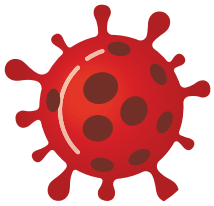
The study was supported by National Institutes of Health awards U24AG074855, U01AG068057 and R01AG059716.

+ BY THE NUMBERS

180 adult beds will be added to Vanderbilt University Hospital when the Jim Ayers Tower is finished in 2027.

44,000 square feet of space for operating rooms has been added at Medical Center East.

Long COVID study expands



Despite development of vaccines and therapeutics for COVID-19, millions of patients experience an often-devastating, post-acute infection syndrome known as long COVID (LC).

The public health burden of LC is estimated to be the largest seen from an emerging disease in the past century, yet there remain no effective interventions available to patients..

In 2024, Vanderbilt Health investigators received funding from the National Institute on Aging (NIA) for a Phase 3, multicenter, placebo-controlled trial to evaluate the efficacy of the immunomodulatory drug baricitinib for treating the persistent neurological and cardiopulmonary symptoms of long COVID.

Vanderbilt Health physician-scientist and senior author, E. Wesley Ely, MD, MPH, is the principal investigator for this LC trial, and patients were initially enrolled at Vanderbilt Health and collaborating institutions Emory University, University of Minnesota Twin Cities and University of California San Francisco.

The trial, REVERSE-LC, has now received funding from the National Institute of Allergy and Infectious Diseases (NIAID) to expand the study by working with the NIA to add 13 more enrolling sites throughout the United States.

"It is very encouraging that both NIH institutes, the NIA and NIAID, are partnering to get answers faster for those who are suffering," said Ely, the Grant W. Liddle Professor and co-director of the Critical Illness, Brain Dysfunction and Survivorship (CIBS) Center.

Learn more about the trial at reversinglongcovid.org. ■ *Jill Clendening*

GI SPORE grant renewed to advance colorectal cancer discoveries

A colorectal cancer research team led by Robert Coffey, MD, has received a prestigious Specialized Programs of Research Excellence (SPORE) grant renewal totaling $12.6 million from the National Cancer Institute for a five-year period.

The grant marks ongoing funding of the GI SPORE awarded to Coffey's team, which dates back to its inception at the Vanderbilt-Ingram Cancer Center in 2002. Vanderbilt-Ingram is one of only four cancer centers in the United States with GI Cancer SPORE funding.

SPORE grants are highly sought after because they show that a cancer center demonstrates scientific excellence, promotes collaboration, maintains robust research programs and merits substantial funding — factors that are key factors for an NCI designation as a Comprehensive Cancer Center.

"Our success is built upon clinical and basic investigators working closely together with patient advocates," said Coffey, Ingram Professor of Cancer Research, professor of Medicine and of Cell and Developmental Biology, and co-director of the Epithelial Biology Center.

Coffey, the grant's principal investigator, is joined by clinical co-leaders, basic science co-leaders, and patient advocates in projects targeting mechanisms of colorectal cancer progression: immune exclusion, MYC activation, and Wnt pathway activation.

"With this grant renewal, they are building upon years of rigorous and innovative research and are making great progress toward developing new therapies for gastrointestinal cancers that are recalcitrant to current treatment modalities," said Ben Ho Park, MD, PhD, the Benjamin F. Byrd Jr. Professor of Oncology and director of Vanderbilt-Ingram.

Immunotherapies such as immune checkpoint blockade inhibitors have proven effective for a number of cancers, including a subset of colorectal cancer, but not for the 85% to 90% of colorectal cancers that are microsatellite stable. The team will conduct a clinical trial to see if an investigational drug can spur response in microsatellite stable colorectal cancers when combined with the immunotherapy drug pembrolizumab.

Overexpression of the MYC gene is common in colorectal cancer, and the team will delve into whether a site on the protein WDR5 that plays a role in MYC action can be targeted for therapeutic benefit for patients with unresectable colorectal cancer. The investigators will lead a clinical trial to investigate the tolerability and antitumor efficacy of an experimental therapy developed in the last cycle of the SPORE award.

Activation of the Wnt pathway is a characteristic of colorectal cancer and has been notoriously hard to target without adverse toxicities. The Wnt-focused team will be developing a first-in-class inhibitor that could revolutionize the landscape of treatment for colorectal cancer due to its dependence on Wnt activation for establishment and progression. ■ *Tom Wilemon*

ISTOCKPHOTO.COM

+ BY THE NUMBERS

$22.13 billion contributed to local economy by Vanderbilt University and Vanderbilt Health.

25 years of federal funding for colorectal cancer research at Vanderbilt Health.

Q+A

Andreana Holowatyj, PhD, MSCI, leads a clinical and translational oncology research program at Vanderbilt-Ingram Cancer Center and Vanderbilt Health focused on cancers among younger adults — from the lens of reproductive health, cancer biology/genetics, and other challenges facing these patients. She is founder and principal investigator of the Preserving Fertility After Colorectal Cancer (PREFACE) clinical trial, which examines the broad impacts of early-onset colorectal cancer.

Q. **What should we know about the rise in early-onset cancers?**

A. Cancer is historically thought to be a disease of aging, but rates of early-onset onset cancers — those diagnosed before age 50 — are rising. We're seeing this across countries and economies worldwide. This includes breast, colorectal and endometrial cancers, and multiple myeloma. While we work to understand why, millennials and Gen Zers should learn red-flag signs and symptoms for different cancers and seek medical advice if experiencing them. Know your family cancer history. Don't put off seeing your doctor. Get recommended cancer screenings. Early detection is crucial.

Q. **Why have you focused your research program on early-onset cancers?**

A. I started in this field over a decade ago. In clinic as a student, I began seeing more young people facing a new cancer diagnosis, and at later disease stages. It was alarming and perplexing. As a millennial myself, I was in a perfect position to study this population. This experience really opened a door that I've been privileged to passionately pursue throughout my career.

Q. **Why are studies such as the PREFACE trial so vital?**

A. The increasing number of people diagnosed with early-onset cancers inevitably leads to an increase in the number of people surviving this disease. These are individuals diagnosed in their 20s, 30s and 40s who face unique challenges — fertility, body image, sexual health, finances and navigating decades of life after diagnosis. Research efforts like PREFACE are vital to understand how we meet each patient where they are and provide them with personalized care strategies along their cancer journey.

Q. **Is there promising work underway in early-onset cancers?**

A. Absolutely! As translational and team science continues to grow, there is an increased appreciation for how the combination of varied expertise and lenses can yield paradigm-shifting discoveries to detect and treat early-onset cancers sooner. We're also seeing momentum through partnerships with advocacy and research organizations, such as Fight Colorectal Cancer's Global Early-Onset Colorectal Cancer Think Tank and Stand Up To Cancer's Innovation Summit on early-onset cancers. These efforts are vital to fuel innovative ideas, spark collaborations and rapidly accelerate progress toward benefiting young adults who face early-onset cancer.

■ *Jill Clendening/Photo by Erin O. Smith*

VANDERBILT HEALTH

Taylor Swift, longtime friend of Monroe Carell Jr. Children's Hospital at Vanderbilt, is pictured here at the 2016 grand opening of the hospital's Seacrest Studios.

Taylor Swift spreads hope to Monroe Carell Jr. Children's Hospital at Vanderbilt with gifts

Taylor Swift has made a recent gift to Monroe Carell Jr. Children's Hospital at Vanderbilt to support the hospital's greatest needs as well as an additional gift to the Adolescent and Young Adult (AYA) Cancer Program.

Taylor's gifts will give leadership at Tennessee's largest pediatric hospital the flexibility to meet emerging needs as they arise and focus on areas that will make the biggest impact on the growing number of patients and families.

Taylor is an award-winning singer and songwriter, and in 2024 she became the first, and only artist ever, to win the Grammy Award for Album of the Year four times. She is no stranger to Monroe Carell. Taylor was on hand in 2016 to help open Seacrest Studios, the multimedia broadcast studio within the hospital, and has visited patients and families in the past on Christmas Eve.

Monroe Carell — Middle Tennessee's only freestanding children's hospital as well as the region's only comprehensive, nonprofit pediatric health care provider — serves more than 1,800 children and families daily.

The tremendous population growth across Middle Tennessee has meant continued, increased demand for pediatric health care services. Monroe Carell now has a footprint of more than 1 million square feet and 363 beds.

"We are so grateful to Taylor Swift for her generous gifts to Monroe Carell. She is a true partner as we strive to provide a brighter, healthier future for the children and communities we serve," said Juan C. Salazar, MD, MPH, chair of the Department of Pediatrics at Vanderbilt Health, James C. Overall Professor, and system pediatrician-in-chief for Monroe Carell.

"We are seeing continued increases in the number of patients and families who turn to us for care. This makes a difference for us all."

Taylor's gift to the AYA Cancer Program, which addresses the unique needs of patients with cancer between the ages of 15-25, will continue to support the integrated and highly specialized care that crosses the adult and pediatric disciplines of medicine.

"The future of adolescent and young adult cancer research and care is full of progress and possibilities because of the generosity of donors like Taylor Swift," said Debra Friedman, MD, MS, director of the Division of Pediatric Hematology and Oncology at Monroe Carell and holder of the E. Bronson Ingram Chair in Pediatric Oncology.

"Her gift enables our teams to personalize cancer care for the unique challenges these patients face, leading to improved outcomes."

The hospital is encouraging fans and supporters to "join Taylor" in contributing to support patients and families at Give.VanderbiltHealth.org/children.

For the fourth year in a row, Monroe Carell earned the distinction of being a Leapfrog Top Hospital for 2025, reaffirming the hospital's leadership in safety and quality nationwide.

One of only 15 children's hospitals to receive the Top Hospitals designation, the distinction adds to Monroe Carell's impressive performance-based honors for 2025.

Also in 2025, *U.S. News & World Report* ranked Monroe Carell among the nation's Best Children's Hospitals, naming it the No. 1 children's hospital in Tennessee and tied for first in the Southeast. ■ *Jessica Pasley*

+ BY THE NUMBERS

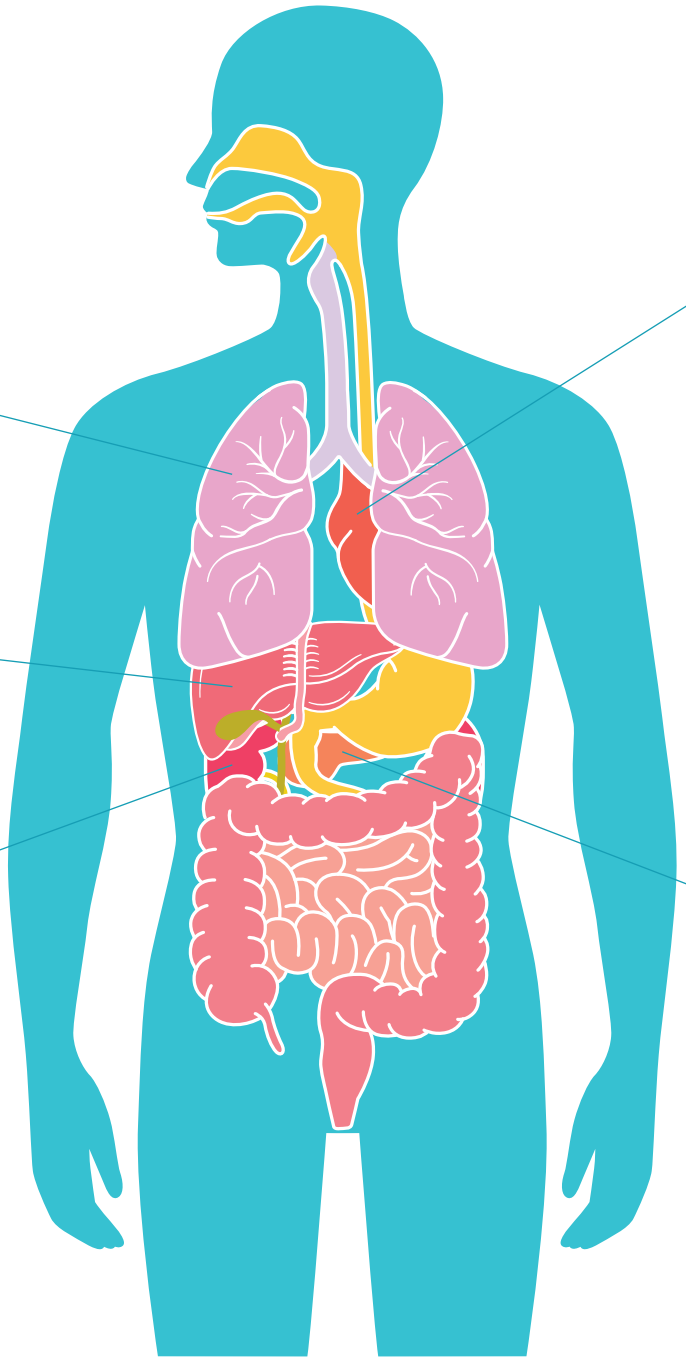
38 beds added at Monroe Carell Jr. Children's Hospital at Vanderbilt as 12th floor opened in 2025.

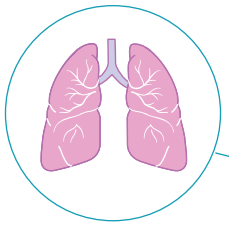
15 hours spent in a Vanderbilt Health OR for an open heart surgery and lung-liver transplant in 2025.

VANDERBILT TRANSPLANT CENTER

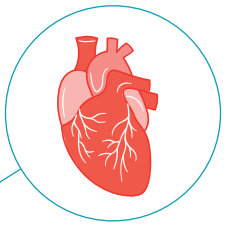
The Vanderbilt Transplant Center is now the largest transplant center in the country by volume, according to data from the United Network for Organ Sharing. VTC's heart transplant team set a new world record in 2025 for the second year in a row, performing 210 adult and pediatric heart transplants. While the VTC is doing an outstanding job, more than 100,000 people in the United States are waiting for a solid organ transplant, and about 13 people die each day waiting.

960 solid organ transplants were performed in 2025, **907** in the adult program and **53** in the pediatric program, the most ever done by a single center in one year in the United States.



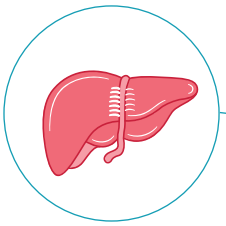


149
Adult lung transplants



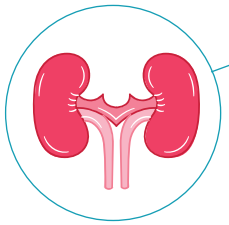
193
Adult heart transplants (3 were combined heart-lung transplants)

17
Pediatric heart transplants



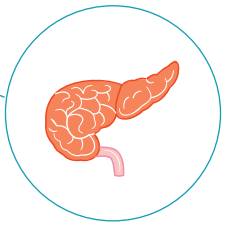
183
Adult liver transplants

18
Pediatric liver transplants



368
Adult kidney transplants (11 were combined kidney-pancreas transplants)

17
Pediatric kidney transplants



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Pediatric pancreas transplant (a first at Monroe Carell and in Tennessee, performed as part of a dual liver-pancreas transplant)

Who's on the transplant team?

Approximately **150** people make up a highly specialized, multidisciplinary team to work on a single transplant, including surgeons, anesthesiologists, nurse anesthetists, nurses, pharmacists, nutritionists, social workers and more.

In My Life

LESLIE GRISSIM, MA, CCLS

Facility dog coordinator, Monroe Carell Jr. Children's Hospital at Vanderbilt
Primary handler for Canine Clinicians team member Squid

Education: Master's degree in early childhood education/child life from Mills College and bachelor's degree in human development from University of California Davis.

Grissim, formerly a child life specialist at Monroe Carell, became the facility dog coordinator in 2020. She uses Squid to provide interventions to meet a patient's treatment goals. Squid lives with Grissim, joining a German shepherd named Sasha and an orange tabby cat named Pistachio.

SQUID, 8-YEAR-OLD LABRADOR/GOLDEN RETRIEVER MIX

An Assistance Dogs International-certified facility dog

Member of Canine Clinicians, the facility dog program at Monroe Carell

"When we leave Monroe Carell and Squid's vest comes off, he knows his workday is done. Just like humans, facility dogs need time to relax. We have a cue we give, 'Release.' If Squid wants to go lie down, that's fine. If he wants to go out and do zoomies with my other dog, then so be it. He's always supervised. It's also important that we work on new and familiar cues daily to keep his skills set intact. Squid's tasks are transitioned into fun activities we do with our patients."

Photos by Donn Jones and Susan Urmy

Grissim competed in high school and college sports. She later discovered Senior Olympics, a competition for adults over 50. She won a silver medal for powerlift in 2025.

Monroe Carell Cardiology Clinic patient Harper Rhody visits with Squid. Grissim and Nicole Van Dermeir, BSN, RN, watch the gentle interaction.

At home, Squid loves running through an agility course set up for him in Grissim's backyard.

Grissim winds up for a discus throw during a Senior Olympics competition. She competes in other events, including the 400-meter, javelin and shot put.

With the 2024 addition of Velour Vanderbilt, the Monroe Carell facility dog program now covers more areas, more efficiently. "It's important to recognize their strengths. Velour's peppy and loves to fetch. Squid is pretty chill and can sit still for a long time to provide patients support during procedures."


Columbia

WARM FLEECE MEETS COOL SCIENCE

Alpacas unlock the potential of tiny but powerful nanobodies

Brian Wadzinski, PhD, is an affable bear of a man, a generous soul who loves the outdoors, animals and children.

He's also an accomplished scientist, an associate professor of Pharmacology at Vanderbilt University who is driven by an insatiable curiosity to understand how nature works at the genetic, molecular and cellular levels, and how this knowledge can be applied to relieve the suffering of others.

About 15 years ago, Wadzinski's love of science and the outdoors converged. He began to explore the powerful diagnostic and therapeutic potential of nanobodies, engineered fragments of unique antibodies found only in the blood of sharks and a family of hooved mammals that includes camels, llamas and alpacas.

To ensure a steady and economical source of these remarkable proteins, he helped establish an outdoor "laboratory" for alpacas on a farm in rural Humphreys County, about 80 miles west of Nashville.

BY BILL SNYDER + PHOTOGRAPH BY DONN JONES

Today, the alpaca enterprise, known formally as Turkey Creek Biotechnology LLC, is fueling nanobody research across the Vanderbilt campus and around the world. Early studies suggest that alpaca-derived nanobodies can thwart formidable bacterial and viral infections, speed cancer diagnosis, and illuminate the origins of brain disorders including Alzheimer's disease.

Since he was a postdoctoral research fellow in the early 1990s, Wadzinski, 65, has studied the structure, function and regulation of protein phosphatase 2A (PP2A), an enzyme that plays important roles in numerous cellular functions including cell division, growth, metabolism and differentiation.

He continued his investigations after joining the Vanderbilt faculty in 1993. But by 2010, the research had stalled. Government funding was drying up. "I had to think outside the box — try to come up with something to keep me going," Wadzinski said.

That's when he heard about nanobodies, protein fragments about one-tenth the size of antibodies. They're quite stable and bind tightly to antigens, markers on the surfaces of invading microbes, other pathogens and our own cells — even inside the brain and other places antibodies can't go because they're too big.

About that time, Wadzinski and his wife, Claudia, purchased a cabin in the woods a few miles north of Waverly, Tennessee, for their boys, who loved to hunt and fish. "Wouldn't it be neat," he thought, "to be able to do some biotechnology out here, to merge this country environment with science?"

Ben Spiller, PhD, a research colleague and associate professor of Pharmacology at Vanderbilt, agreed that a homegrown enterprise could be more economical and provide more flexibility than buying antibodies from a biopharmaceutical company. The duo began exploring the possibility of keeping a herd of alpacas on the Wadzinskis' property.

A higher purpose

When neighbors Randy and Janet Litton, who harvest hay from their 318-acre farm down the road, heard about the plan, they offered the use of a barn, paddocks and some of their rolling pastures to house and care for the animals.

Their 31-year-old son, Edwin, died from cancer in 2011. "I want to help," Randy Litton said. "If I can keep somebody else from going through this, I'd like to do that. I want this project to succeed."

While Litton knows that nothing can bring his son back, there's something healing about putting the land upon which Edwin ran as a child to a higher purpose.

"You want to know where I see God?" he asked. "Look around. This is God."

Nanobody production at Turkey Creek Biotechnology begins with 18 inquisitive, furry, big-eyed creatures that weigh up to 150 pounds and stand 5 to 6 feet tall when fully grown.

Alpacas are normally gentle and pleasant animals except when they are competing for chow at feeding time. Then they will grumble, spit at each other (and any human who gets in the way), and sometimes bite.

Each has a name — Clover, Juliet Loiie, Sundae Surprise — and a distinct personality to match. "They're really cool animals," Wadzinski said with a chuckle.

Miracle, one of the first alpacas to participate in the research, died last year. She was close to 20, an old age for animals that generally live 15 to 18 years.

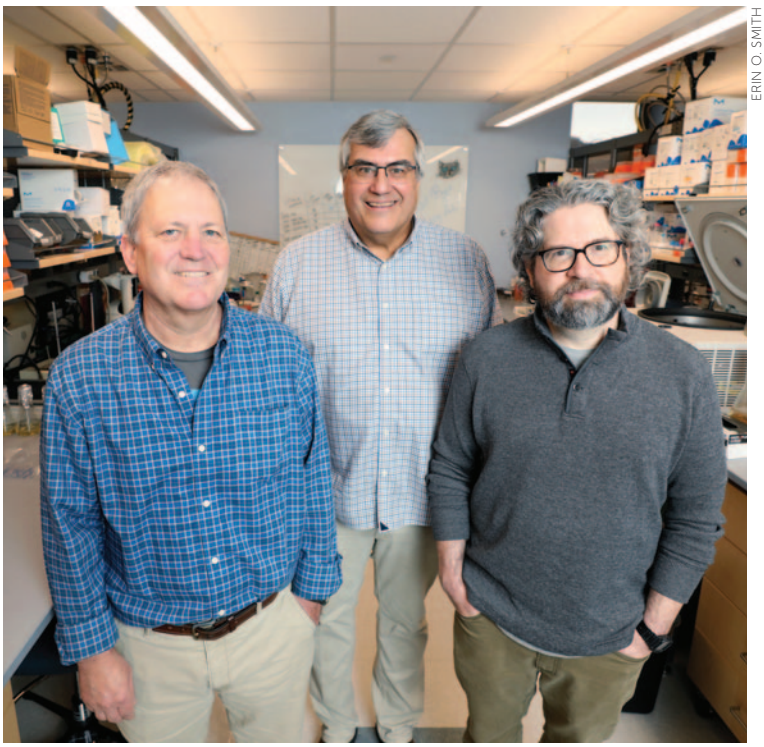
The study begins when the alpacas are injected with a harmless antigen from the pathogenic microbe, cell or molecule that is being investigated.

In response to the antigenic challenge, immune cells in the blood produce the near-ubiquitous four-chain antibodies found in mammals, reptiles, birds and some fish, as well as two-chain proteins, called "heavy chain" antibodies, that are unique to alpacas and their close relatives.

Dave Harville, the farm manager and the alpacas' primary caretaker, handles the injections and, two months later, transports the ani-

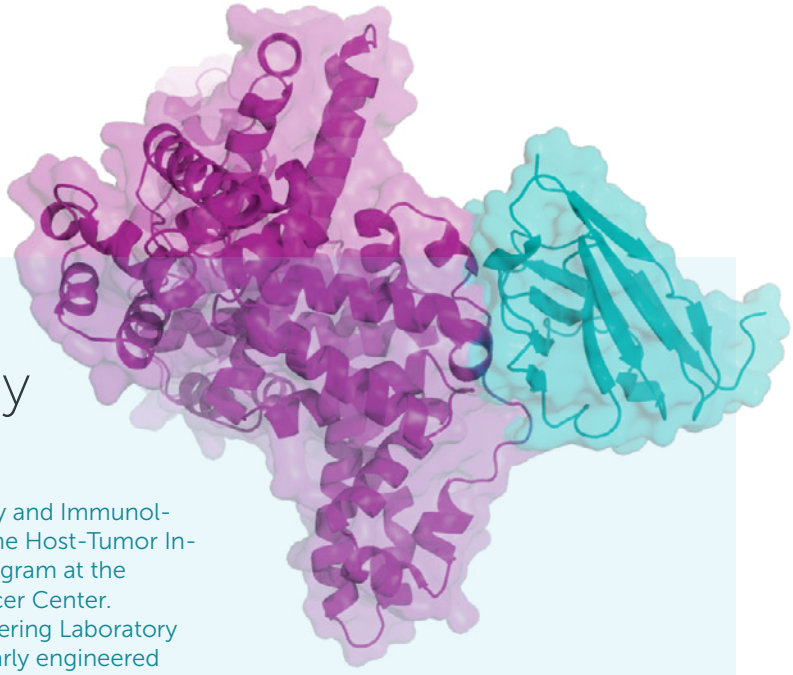
(Continued on page 18)

Ben Spiller, PhD, left, Brian Wadzinski, PhD, and Scott Bury, PhD, collaborate on research using alpaca-derived nanobodies.



ERIN O. SMITH

‘Hitchhiking’ nanobodies can boost cancer immunotherapy



Nanobody (blue) attached to an albumin molecule. Courtesy of the Wilson lab.

Tiny-but-powerful antibody fragments called nanobodies are showing promise not only as diagnostic probes and therapeutic molecules but also as drug-delivery vehicles.

At Vanderbilt University, for example, biomedical engineer John Wilson, PhD, and his colleagues have developed a nanobody that has the potential to enhance cancer immunotherapy.

Wilson’s team used a nanobody recombinantly expressed from a previously described nanobody domain. This nanobody targets serum albumin, the most prevalent protein in blood, which tends to accumulate in tumors. They attached a STING agonist — a molecule that can stimulate an antitumor immune response — to the nanobody.

In a preclinical mouse model, this “albumin-hitchhiking” nanobody delivered its STING agonist payload directly to its target. This triggered an immune response that inhibited the growth of breast and melanoma tumor cells, the researchers reported last year in the journal *Nature Biomedical Engineering*.

“Some drugs can’t get to the right place and in the right dose without some kind of helper,” Wilson said. “Nanobodies could be the helper for those drugs.”

Wilson has been interested in how engineering can improve human health since his college days at Oregon State University. He earned his doctorate in Bioengineering from Georgia Tech and, as a postdoctoral fellow at the University of Washington, developed molecularly engineered materials to deliver vaccines and immunotherapeutics.

At Vanderbilt since 2014, Wilson is professor of Chemical and Biomolecular Engineering, Biomedical Engineering, and Pathology, Microbiology and Immunology, and co-leader of the Host-Tumor Interactions Research Program at the Vanderbilt-Ingram Cancer Center.

His Immunoengineering Laboratory designs novel, molecularly engineered materials to detect, treat or prevent disease. His work is guided by the principle that the immune system must dictate therapeutic design requirements.

“We’ve been working with STING agonists for a decade,” Wilson said. “They will activate the same sort of (innate immunity) pathways that a virus might activate.

“The challenge is to get them where they need to go, and in the right timing. STING agonists without a carrier aren’t very effective, but engineering drug-delivery systems for them offers a solution for making them safer and more effective.”

With Blaise Kimmel, PhD, a postdoctoral fellow in his lab who had experience with nanobodies, “we started brainstorming,” Wilson said.

Normally the kidneys clear nanobodies rapidly from the bloodstream because they’re tiny, about a tenth the size of antibodies. But when bound to albumin, they circulate longer. “That gives you more shots on goal for getting it to where you need it to go,” he said.

Their small size enables them to get into tumors more effectively than antibodies, and they’re cheaper and easier to make. More research is necessary, however, before the hitchhiking nanobody that packs a wallop is ready for clinical testing in humans.

“Albumin gets us part of the way there, but we need another tool to make it more selective for the tumor,” Wilson said.

In their study, the researchers did this by integrating a second nanobody domain targeting the immunosuppressive protein PD-L1, which is expressed at higher levels in tumors. This had the effect of increasing the accumulation of the STING agonist in tumors, while blocking PD-L1, thereby increasing the effectiveness of the antitumor immune response.

While the Food and Drug Administration has not yet approved nanobodies for clinical use, in 2022, a nanobody targeting the inflammatory cytokine tumor necrosis factor was approved in Japan for the treatment of rheumatoid arthritis.

Wilson believes nanobodies have great potential for delivering all kinds of drugs to their targets. The application to cancer immunotherapy, he said, “is just the tip of the iceberg.”

Kimmel, a former PhRMA Foundation Postdoctoral Fellow in Drug Delivery in the Wilson lab, is now assistant professor of Chemical and Biomolecular Engineering at Ohio State University.

The research was supported by the National Institutes of Health, National Science Foundation, Susan G. Komen, Departments of Defense and Veterans Affairs, Vanderbilt-Ingram Cancer Center, and Vanderbilt University School of Engineering. ■ *Bill Snyder*

"We would never have done anything like this with monoclonal antibodies. They're too big … When Brian and Ben partnered in the alpaca farm, that gave us a whole new dimension that we just didn't have."

- LAWRENCE MARNETT, PHD

mals via livestock trailer to a veterinarian's office in Waverly, where blood samples are drawn. Wadzinski then drives the samples to Nashville for processing in his Vanderbilt lab.

Scott Bury, PhD, director of the Office of Animal Welfare Assurance at Vanderbilt, monitors the research as a member of the Institutional Animal Care and Use Committee, to ensure all federal rules and regulations regarding the use of animals in research are being followed.

From the blood cells that produce heavy chain antibodies, Wadzinski's lab isolates the genetic material encoding only the active, antigen-binding fragments. Spiller's lab uses molecular engineering techniques to clone and mass-produce the fragment targeting the antigen being studied.

"You take out of the DNA just the small fragment that encodes the binding element," Spiller explained. "Then we make large libraries of those and isolate the ones that have the characteristics we want."

From pasture to lab bench

To test their farm-to-lab approach, the researchers recruited Spiller's wife, Borden Lacy, PhD, the Edward and Nancy Fody Professor of Pathology and director of the Vanderbilt Center for Structural Biology. Her lab is developing vaccines and therapeutic antibodies against Clostridioides difficile, a notoriously resistant bacterium that infects the colon.

Toxins released by the bacterium trigger destructive inflammation that disrupts the colon's protective lining, causing chronic diarrhea and intestinal pain. Overuse of antibiotics exacerbates the problem. In older patients who are immunocompromised, on antibiotics, or hospitalized, a severe "C. diff" infection can lead to sepsis, multiple organ failure and death.

Lacy's team is using alpaca-derived nanobodies to better understand and neutralize the bacterial toxins and, ultimately, prevent recurrent C. diff infections.

Early, preclinical results are encouraging. The ability to screen for nanobodies in the lab that recognize defined protein epitopes — antigen "binding sites" — accelerates the discovery process and improves the success rate, Spiller noted.

For another proof of the alpaca concept, the researchers brought in Lawrence Marnett, PhD, the Mary Geddes Stahlman Professor of Cancer Research, University Distinguished Professor of Biochemistry and Chemistry, and Dean Emeritus of the School of Medicine Basic Sciences.

During his 37-year career at Vanderbilt, Marnett has applied structure-based approaches and medicinal chemistry to design selective inhibitors of the cyclooxygenase-2 (COX-2) enzyme to improve the treatment of inflammation and prevent cancers driven by overexpression of the enzyme.

His colleague, Jashim Uddin, PhD, research associate professor of Biochemistry, has attached fluorophores (molecules that fluoresce) to alpaca-derived nanobodies targeting COX-2. The goal is to improve early detection of colorectal cancer, a leading cause of cancer-related mortality in the United States. Earlier detection enables earlier treatment — and better outcomes.

"We would never have done anything like this with monoclonal antibodies," Marnett said. "They're too big … When Brian and Ben partnered in the alpaca farm, that gave us a whole new dimension that we just didn't have."

Currently Wadzinski and Spiller are collaborating with more than a dozen scientists at Vanderbilt and around the country to provide alpaca-derived nanobodies for multiple projects.

"A colleague in Minnesota has been making antibodies against all sorts of emerging viruses," including Ebola, Spiller said. "It's part of a national effort to be better prepared" for the next pandemic.

Recently, Ivelin Georgiev, PhD, the Louise B. McGavock Professor and director of the Vanderbilt Program in Computational Microbiology and Immunology, and his colleagues have adapted an antibody discovery tool they developed to speed the identification of antigen-specific nanobodies.

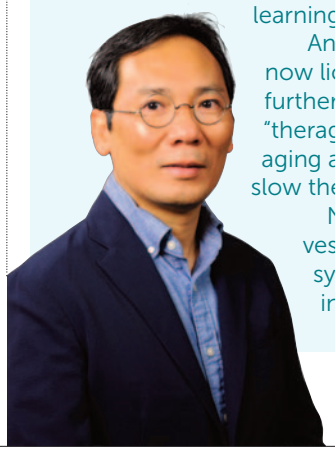
The high-throughput technique, called LIBRA-seq (Linking B-cell Receptor to Antigen Specificity through Sequencing), enables the simultaneous identification of nanobodies targeting several antigens of interest, as well as nanobodies that react against more than one antigen.

Nanobodies 'light up' Alzheimer's disease

Vanderbilt Health and Vanderbilt University researchers in a highly productive collaboration are engineering nanobodies, tiny fragments of unique antibodies produced by alpacas, to probe the mysteries of Alzheimer's disease.

In 2024 they reported that nanobodies labeled with a fluorescent dye cross the blood-brain barrier and "light up" toxic aggregates of amyloid proteins in the synapse, the tiny gap between nerve cells that enables neurons to communicate with each other.

In recent work, the researchers discovered a nanobody that neutralized these small synaptic aggregates in the hippocampus, a part of the brain important in memory and learning.



Wellington Pham, PhD

An Australian biotechnology company has now licensed their nanobody invention for further development and exploration of its "theragnostic" potential, both in diagnostic imaging and as targeted therapy to prevent or slow the progression of the disease.

Nanobodies are "a powerful tool to investigate the potential mechanism of synaptic dysfunction," which could be the initial step leading to neuronal death and

Turkey Creek Biotechnology does not receive any direct funding from Vanderbilt or the federal government. The alpaca herd is supported by the nanobody researchers themselves.

The return on their investment comes in the form of new grants and scientific publications that can take their research to the next level. "It's really helped rejuvenate my research program," Wadzinski said.

Guardian angels

About eight years ago, Wadzinski got a call from Jordan's Guardian Angels (JGA), a nonprofit organization based in Sacramento, California, that raises awareness and funds for research to benefit children born with Jordan's syndrome, a rare genetic disease that causes neurodevelopmental delays and which is often mistaken for autism.

"Jordan's syndrome turns out to be a de novo (spontaneously arising) mutation in a PP2A subunit, an enzyme that I've worked on through my whole career," Wadzinski said.

Founded in 2014, JGA supports a group of nine investigators across the country and one in Belgium who are studying the disorder and developing and testing various small molecule and gene therapy approaches to treat and perhaps even cure it.

A Phase 2 clinical trial is currently underway in the United States with patients with Jordan's syndrome to determine the safety and efficacy of an investigational drug to reduce inflammation and improve cognitive function.

After learning about Wadzinski's work, leaders of JGA invited him to join their research team and began to support his research. His role has been to develop tools for studying the disorder — antibodies and nanobodies that target the protein mutated in Jordan's syndrome.

The project has become very personal. Wadzinski and his colleagues have invited the families of children with Jordan's syndrome to visit the farm, and they've attended research updates during JGA family conferences.

Individuals with Jordan's syndrome are an "awesome" inspiration, Wadzinski said. "Getting to know them has been the biggest motivation behind the research I've been doing."

Every spring, the alpacas' thick fleece is sheared. A local mill spins the fiber into yarn, which a team of women knits into hats, scarves and stuffed toy alpacas.

The silky toy products are auctioned online to help support JGA-sponsored research. Most of the alpaca hats have been knitted by local volunteer Louann Young and given to patients at the Vanderbilt-Ingram Cancer Center. "They can bring a little happiness to somebody who's going through a hard time," Wadzinski said.

Some of the transformed fleece was Miracle's.

"In a lot of ways," he said, "this project turned out to be a miracle because it worked." Plus, outside activities — the hats, networking in the community — all of it has been a "wonderful, jaw-dropping experience."

Perhaps, he mused, this journey from basic research to an alpaca farm and back to the lab again shows how serendipity and "outside-the-box" thinking can change the world for the better. ■

tissue atrophy in Alzheimer's disease, said Wellington Pham, PhD, a leading expert in molecular probe design at Vanderbilt.

Pham, professor of Radiology and Radiological Sciences and Biomedical Engineering, co-led the study with Brian Wadzinski, PhD, and Ben Spiller, PhD, associate professors of Pharmacology. The study was undertaken in 2020, at the height of the COVID-19 pandemic, and successfully completed with support from multiple research institutes at Vanderbilt.

According to long-held theory, Alzheimer's disease arises from the accumulation of amyloid plaques and neurofibrillary tangles that kill nerve cells. Recent evidence suggests, however, that soluble amyloid-beta oligomers (SAβOs), toxic aggregates of protein fragments, accumulate in the synapse prior to plaque formation and disrupt cognitive function.

The project began in an "outdoor laboratory" of alpacas in rural Humphreys County, Tennessee, that supports nanobody research at Vanderbilt and around the country. One of the animals was immunized with an antigen, a protein marker of the SAβO molecule, to stimulate an immune response against it.

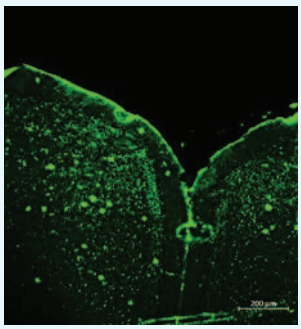
Two months later, the researchers collected blood samples from the animal and from its unique, "heavy-chain" antibodies, used molecular engineering techniques to isolate and amplify the amino acid sequence of an antibody fragment that specifically binds SAβO.

The resulting nanobody, when labeled with a fluorescent dye, illuminated the precise locations of SAβO in brain tissue from a mouse model of Alzheimer's disease. This suggests that, when injected intravenously, the nanobody could enable "precision in vivo molecular fingerprinting of SAβOs for early detection," the researchers concluded.

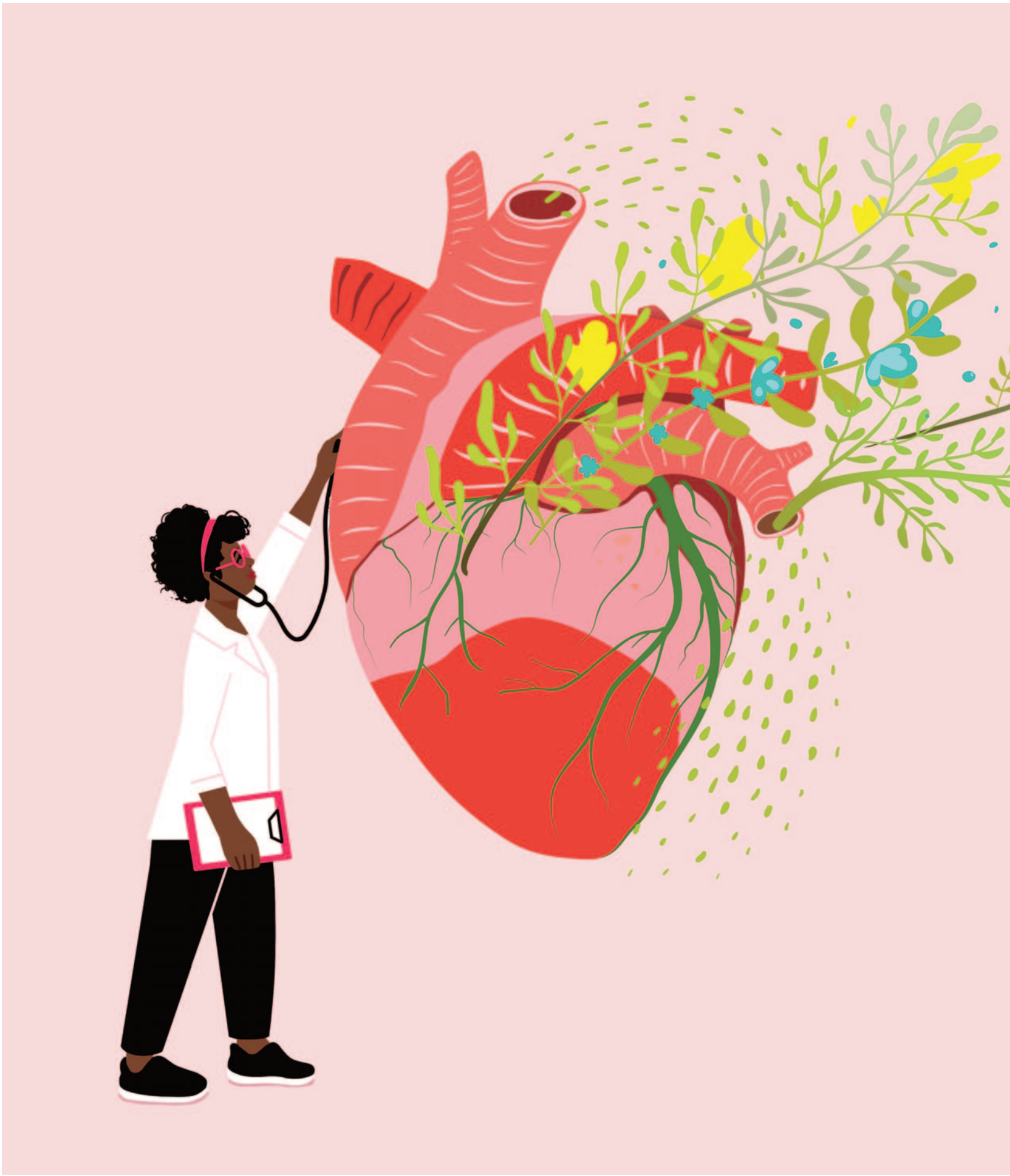
The researchers acknowledged the support and assistance provided by the Vanderbilt University Institute of Imaging Science, Vanderbilt Brain Institute, Vanderbilt-Ingram Cancer Center, and Vanderbilt Institute for Clinical and Translational Research.

The project was partially supported by a grant from the National Institute on Aging (R01AG061138). ■

Bill Snyder



Nanobodies labeled with a fluorescent green dye detect amyloids in brain tissue in a mouse model of Alzheimer's disease. Image courtesy of the Pham lab.



RENEWED LIFE FOR FAILING HEARTS

Medical team brings hope with innovative artificial valves, clinical trials

Carole Stover of Cookeville, Tennessee, had always been healthy and active, but not long ago she wasn't herself.

"The fatigue was just unbelievable," she said. "I got to where I was sitting down all day. I would come home during the day … and just sit down in a chair and go to sleep. And that was not like me because I never took naps."

Her cardiologist discovered the trouble: She was suffering from tricuspid valve regurgitation, a serious condition that occurs when the tricuspid valve on the right side of the heart doesn't close fully, allowing blood to flow back into the body. Fixing her problem has historically required open heart surgery, a risky procedure for an 85-year-old.

But there was another way. Her cardiologist referred her to the Vanderbilt Heart and Vascular Institute (VHVI), where a multidisciplinary team of clinicians is using novel, minimally invasive therapies to place artificial valves. The procedures avoid the need for open heart surgery, and patients typically spend just one night in the hospital after the transcatheter procedures.

BY MATT BATCHELDOR
ILLUSTRATION BY ADOBE STOCK/DIANA DUREN

VHVI's clinicians are at the vanguard of two decades of research that has revolutionized the treatment of serious heart valve disease.

Previously, the standard treatment has been either open heart surgery, which carries higher risk and a long recovery, or medications, which are modestly effective or ineffective. Many patients are also considered too high risk for open heart surgery. Left untreated, these heart valve diseases can lead to heart failure and death.

By contrast, today's minimally invasive procedures use a catheter to place a small device in the valves to reduce the opening and prevent the backflow of blood. The procedures are relatively quick and painless compared to surgical alternatives, and patients typically require a significantly shorter stay in the hospital to recover.

"That allows us to expand markedly the population that can be treated because we can now treat those high-risk patients with a much less invasive procedure," said Brian Lindman, MD, MSCI, medical director of the Structural Heart and Valve Center and associate professor of Medicine.

The Structural Heart and Valve Center at VHVI has numerous options for artificial valve devices, both Food and Drug Administration-approved devices and clinical trials for new ones. Kashish Goel, MBBS, associate professor of Medicine and director of Transcatheter Heart Valve Interventions at Vanderbilt Health, goes over the options with patients to find the best fit.

Dennis Carney, a professional photographer in Nashville, said he felt so good after his trans-catheter tricuspid valve replacement that he began to wonder why he even needed to stay in the hospital a couple of nights (it was for observation).

"Everything is like I'm back to brand new," Carney said. "It's just a whole miracle. I am so thrilled with that valve. I'm really tickled with Dr. Goel's surgery. He was incredible at it. And we felt like it was almost a flawless operation."

Kashish Goel, MBBS, left, collaborates with Brian Lindman, MD, MSCI, and others to create a one-front-door process, giving patients the opportunity to meet with experts in the same room, at the same time.

Minimally invasive, catheter-based devices are now available to treat aortic, mitral and tricuspid heart valve disorders. Transformative innovation over the last few decades has changed the landscape and treatment options for patients with heart valve disease with numerous devices approved and many others in development and testing.

VHVI is a destination center of excellence for artificial valve devices and treats patients from across Tennessee and surrounding states. It earns that reputation by the number of clinical trials underway (18 as of this writing), the high volume of procedures and excellent outcomes.

"When I think about our program, what I think sets us apart is that it's not only truly expert care, but an individualized approach for every patient," said Melissa Long, MSN, RN, valve program coordinator.

The breadth of the clinical trials at Vanderbilt Health and the deep expertise and research interests of the heart valve team have made the valve center a destination for patients. The center's leaders are published authors and noted leaders in the transcatheter heart valve space.

"Most of the patients who come here can be offered a therapy that is either available commercially or through a clinical trial," Goel said. "Because we participate in several early feasibility studies, patients also have access to treatment options that are only available at a handful of centers in the United States."

The Structural Heart and Valve Center follows a multidisciplinary, team-based approach from initial evaluation to the procedure to post-procedure follow-up. The goal is personalized, precision medicine.

"We have a one-front-door process for our patients with heart valve disease," Lindman said. "During their first visit, patients have the opportunity to meet with experts in heart valve disease from both cardiology and cardiac surgery in the same room, at the same time. We are trying to make this very tailored, so the right person gets the right therapy at the right time by the right clinicians."

Next is diagnostic testing, when clinicians take a close look at the patient's anatomy to see what procedures are feasible. Clinicians work to understand the patient's goals and preferences throughout a shared decision-making conversation.

Most of the testing is finished on the same day, Goel said, which is especially beneficial for patients who come a long way to get care. They don't have to make as many visits.

The conversation among clinicians doesn't stop there.

"Every week we have a valve conference where we're discussing and reviewing every patient, considering their risk factors and examining their anatomy to really hash out what seems to be the best option for each patient," Lindman said. "Alongside commercially available devices, we are also considering clinical trials for which a particular patient may be well suited."

Lindman said clinical trials offer newer artificial valves that may have distinct advantages over existing approved ones, allowing patients to get access to a therapy earlier or differently than the current standard of care.

DONN JONES

Goel noted that patients are still evaluated for surgical options and many times a surgical approach, other than a noninvasive procedure, may be preferred for an optimal outcome.

"This points to the benefits of having a one-front-door approach that centers on the heart valve disease itself rather than referring for a specific procedure," said Tarek Absi, MD, associate professor of Cardiac Surgery and surgical director of the Structural Heart and Valve Center.

"Patients get input from a multidisciplinary group of experts who aim to understand the patient's goals and preferences but integrate this with the patient risk and anatomy to present options and make a treatment recommendation."

If patients do need a transcatheter procedure, their hospital stay is minimal. They come in the morning for the procedure, which takes one to two hours, Goel said. Ninety-five percent of them will go home the next day.

"Usually in a week they're back to their normal life," Goel said. "We see them for another visit in 30 days to make sure the valve and everything else is good. Overall, this recovery is markedly shorter and easier than open heart surgery."

"Our heart valve program exemplifies true collaboration and forward-thinking, patient-centered care," said Colin Barker, MD, director of the Section of Interventional Cardiology and associate professor of Medicine. "From our physicians and nurses to our dedicated staff and supportive institutional leadership, every member of the team plays a vital role in delivering exceptional outcomes.

"We are proud of the unified commitment to innovation, compassion and excellence that allows us to provide the highest quality care for every patient we serve."

Stover recently completed months of cardiac rehabilitation. She said she can feel a marked difference since her procedure.

"Most of the time, I can tell my energy level is much, much better," she said. "I do for myself all the time, and I'm pretty active, and so I think I'm doing well."

Carney said much the same.

"It also has given me so much energy," he said. "I feel like a 20-year-old. I'm 79. So, to feel like you're in your 20s, and to be as old as I am, is pretty incredible." ■

Will Terry's family is excited about the planned inpatient pediatric rehabilitation services.

A Place for Healing

Monroe Carell Jr. Children's Hospital at Vanderbilt's planned pediatric inpatient rehabilitation unit will be first of its kind in Tennessee.

BY CHRISTINA ECHEGARAY + PHOTOGRAPH BY DONN JONES

Nearly six years ago, Will Terry defied the odds. A kick-scooter accident during a family vacation in Florida left him with severe brain bleeding.

Unconscious and intubated, he was flown by a fixed wing air ambulance back home to Nashville, where a dedicated neurocritical care team at Monroe Carell Jr. Children's Hospital at Vanderbilt fought to save his life.

Will, who was 9 years old at the time, spent 21 days in the critical care unit, intubated for most of that time, and once awake, another 15 days in a step-down unit. He had survived a severe traumatic brain injury, but his recovery journey was far from over. He needed intensive pediatric inpatient rehabilitation. There was just one problem: Nashville, and even the entire state of Tennessee, had no dedicated pediatric rehabilitation unit or facility. The closest option was hundreds of miles away in Atlanta.

Currently, children in Tennessee must travel out of state, hours away from home, to receive the intensive inpatient rehabilitation care they need, often creating significant hardships and burdens on families.

Soon that will change. Monroe Carell leaders announced in July 2025 plans to create Tennessee's first inpatient pediatric rehabilitation unit to keep children closer to home while recovering from life-altering illnesses or injuries.

"Monroe Carell and Vanderbilt Health have really incredible resources here, including comprehensive medical care and a great therapy and rehabilitation team," said Elizabeth Martin, MD, MPH, MHS, medical director of Pediatric Rehabilitation and assistant professor of Physical Medicine and Rehabilitation. "But by not having a dedicated physical unit and all the specialized support that it provides, we have a significant gap in the higher acuity rehabilitation care that our children in Tennessee need. So, to finally be able to fill that gap and really show the full potential of all that Monroe Carell can offer as children are healing through the rehabilitation process is really exciting."

The announcement about the pediatric inpatient rehabilitation unit is welcome news to Catherine Terry, Will's mom.

"When we first heard the announcement, I felt overwhelming gratitude. What once felt like a painful gap in our state's care is now becoming a reality for other families," Catherine Terry said. "No parent should have to choose between being present for their child and holding their family together at home. My hope is that this unit becomes a place not just of physical healing, but of dignity and hope — where every child has access to the care they need, regardless of circumstance."

Inspired by their family's own journey, the Terrys helped raise awareness in the community about the need for these services close to home.

"I often think about how fortunate we were to be able to go to Atlanta at all," Catherine Terry said. "I cannot stand to think of having to make the decision to not go because of affordability or the inability to keep working and care for a child. That has been our reason for helping to create an inpatient rehabilitation facility for children at Monroe Carell. No parent should have to make that decision, and a child's long-term success should not depend on a parent's financial resources or ability to work remotely."

Looking back, Catherine Terry says having inpatient pediatric rehabilitation services close to home would have made all the difference.

"It would have meant that our family did not have to uproot our entire lives to make this work," she said. "Will and his siblings would have been in a familiar setting surrounded by people who know and love them. It would have been less of a financial and mental health burden on all of us."

Filling a critical gap

At Monroe Carell, at least one child is waiting to go out of state for inpatient rehabilitation daily, and annually, there are more than 100.

"What makes inpatient rehabilitation so meaningful is that recovery can begin immediately, without families having to uproot their lives …"

– MICHAEL WOLF, MD

Given current barriers, roughly half of patients recommended to receive inpatient rehabilitation are able to get these vital services, and most who do receive services are over 13 years old. For patients who are able to receive inpatient care, 80% of them must travel out of state, and 20% are old enough to have inpatient care at an adult facility.

The new inpatient pediatric rehabilitation unit and program — the first and only in Tennessee for children 13 and younger — will be housed on the eighth floor of Monroe Carell, which will be named in honor of Kathryn Carell Brown. Brown, a Monroe Carell Advisory Board member, is the daughter of the hospital's namesake, Monroe Carell Jr., and his wife, Ann Scott Carell.

Design plans for the unit are underway, with construction estimated to begin fall 2026; the work is expected to take about a year.

The unit is expected to include: 12 patient rooms; a gym and spaces for activities of daily living for patients; and physical therapy, occupational therapy, speech therapy and psychological support services all within one dedicated space.

The unit will have the latest equipment and advancements to provide the comprehensive care needed, as well as therapeutic wraparound services and supports like psychologists, occupational therapists, physical therapists, speech therapists, child life specialists, facility dogs, nutrition services, music therapy and school programming.

Physical rehabilitation, a crucial part of the healing process, helps restore lost skills, like walking and eating, and can make all the difference in a child's recovery and potential to live a full life. Rehabilitation can last weeks or even months.

The new pediatric rehabilitation unit will allow for continuity of care, with many children like Will continuing on to Monroe Carell's outpatient pediatric rehabilitation.

Will still works with his outpatient physical therapists, and when he's not, he loves animals — especially elephants — and wrestling, Catherine Terry said.

"His strength, coordination and confidence have grown tremendously over the past few years," she said. "His recovery has been steady, and his perseverance has been extraordinary, but what stands out most is his joy and determination. He truly embodies what recovery can look like when a child is given the right support."

Pediatric inpatient rehabilitation can be needed after a child has suffered a severe illness or trauma that impacts activities of daily living and requires more intensive therapies and support to regain lost functions or abilities.

Michael Wolf, MD'12, director of Neurocritical Care in the Division of Critical Care Medicine at Monroe Carell, sees firsthand the challenges faced by children with traumatic brain injury who require intensive pediatric inpatient rehabilitation after hospitalization.

He calls the upcoming inpatient rehabilitation unit at Monroe Carell "a huge win."

"This is a game changer for our patients and for children all across Tennessee," Wolf said. "In critical care, our first priority is helping children survive the most life-threatening injuries. As they begin to turn the corner, the focus shifts to recovery. What makes inpatient rehabilitation so meaningful is that recovery can begin immediately, without families having to uproot their lives or leave the hospital and teams they have come to trust. By bringing neurocritical care and inpatient rehabilitation under one roof, we can maintain continuity and give children the strongest possible path toward long-term recovery."

A community unites

To make the vision for a pediatric inpatient rehabilitation unit a reality, a campaign cabinet led the effort to raise awareness for the need and to garner philanthropic support for the project. The cabinet members are Kathryn Carell Brown, Shelly and Jeff Colvin, Allison DeMarcus, Larisa Featherstone, Caren Gabriel, Tracey and Sean Henry, and Michelle Kennedy.

The unit will be made possible because of the support of many generous individuals, families and businesses in the community — including the Carell family, Cal Turner Jr., Walmart, Mariel and Bucky Ingram, Joe Galante and the Junior League of Nashville.

While gifts to launch construction have been secured, additional philanthropy will support programming and staffing in the unit.

For cabinet members Shelly and Jeff Colvin, the need for the pediatric inpatient rehabilitation unit was personal.

During a storm in 2020, a 75-foot oak tree fell on Jeff and their then 3-year-old son, Judge Colvin. Both required lifesaving intensive care followed by inpatient rehabilitation.

Judge was routed to Monroe Carell, as he was in a coma and had suffered a traumatic brain injury. At the same time, Jeff was in an intensive care unit at Vanderbilt University Hospital with multiple injuries, including a broken back.

When Judge woke from his coma, he needed inpatient rehabilitation, which meant moving to Atlanta, since no pediatric inpatient rehabilitation services exist in Tennessee.

"As campaign cabinet members, it fills Jeff and me with such encouragement and pride to see how Nashvillians and Tennesseans statewide have stepped up to help make this rehab unit a reality," Shelly Colvin said. "It's been incredibly inspiring to sit with other members of the campaign cabinet and brainstorm different ways to get the word out to our respective networks and witness how everyone truly came through, from our music community and corporate donors to private citizens. People truly wanted to help and understood that it was just the right thing to do for our kids."

Inspired to advance this effort even further, the Colvins also established a nonprofit, the Out of the Woods Foundation, and made a philanthropic gift to the campaign to help more children like Judge.

Judge, now 9, is thriving.

"Judge's recovery has been remarkable, and we want every child to have that same chance," Shelly Colvin said. "Our Out of the Woods Fund is committed to providing ongoing support for inpatient rehab, which feels like the most meaningful way to give back to the community that swiftly came to our aid in our time of need."

This inpatient rehabilitation project will help children across the state and has the support of the Children's Hospital Alliance of Tennessee, which includes Monroe Carell, East Tennessee Children's Hospital, Children's Hospital at Erlanger, Le Bonheur Children's Hospital and Niswonger Children's Hospital. ■

RAGING OR AI?

Vanderbilt Health thoughtfully transforms data into precision care

BY PAUL GOVERN
ILLUSTRATION BY ADOBE STOCK/DIANA DUREN

Vanderbilt Health researchers are at the forefront of efforts to integrate artificial intelligence into health care and biomedical research.

They've published recent studies demonstrating how AI can reduce clinical alert fatigue, accelerate drug repurposing, improve patient communication, diagnose rare diseases, predict treatment responses, and generate therapeutic antibodies.

"Part of our mission at Vanderbilt is to develop and implement innovative AI methods, frameworks and tools to advance data-driven, precision health care and biomedical discovery, all while remaining committed to ethical and legal guidelines," said Peter Embí, MD, MS, professor of Biomedical Informatics and co-director of the department's ADVANCE Center (AI Discovery and Vigilance to Accelerate Innovation and Clinical Excellence). "Vanderbilt's collaborative teams of clinicians, data scientists and basic science researchers are uniquely positioned to apply generative AI, predictive modeling, machine learning and advanced data analytics to our clinical and operational systems, as well as to advance the foundations of biomedicine.

"As an institution, we are well connected to and often play a leadership role in AI-related networks and initiatives that help inform our strategy and path forward in this rapidly developing field. As part of this transformation, Vanderbilt teams of scientists and operational experts gather critical data to better track and ensure AI's positive impacts on health care, informing both our practice and the advancement of this work nationally and internationally," said Embí, who holds the Directorship in Biomedical Informatics.

The following is a collection of AI studies and funding awards from the past two years, spanning clinical decision support, computational biology, mental health screening, cancer care, and infectious disease prevention. This work reflects millions of dollars in federal funding and involves collaborations across multiple disciplines aimed at a common goal of using AI to improve patient outcomes and advance medical knowledge.

AI can help patients craft better portal messages

Reporting in the *Journal of the American Medical Informatics Association,* Siru Liu, PhD, Adam Wright, PhD, and colleagues explored using large language models to help patients craft more effective messages to health care providers through patient portals.

In a blinded test, their custom-trained model, CLAIR, produced follow-up questions for patients with similar clarity and concision and higher utility than actual follow-up questions written by care team members. The idea is that before patients hit "send," AI could prompt them to clarify their portal messages.

Such a tool could streamline communication and improve care efficiency by reducing back-and-forth messaging. The team previously established that AI is better than doctors at responding to patient messages. They plan to evaluate the clinical impact of implementing AI-guided patient messaging.

AI flags suicide risk in neurology clinics to spur conversations

Reporting in *JAMA Network Open,* Colin Walsh, MD, MA, and colleagues tested whether their machine learning-derived Vanderbilt Suicide Attempt and Ideation Likelihood model (VSAIL) could effectively prompt doctors to screen patients for suicide risk. At three neurology clinics, the system flagged 8% of arriving patients as having relatively high risk for a suicide attempt in the next 30 days. Interruptive alerts triggered by the model led doctors to conduct suicide risk assessments 42% of the time, compared to just 4% with passive alerts.

"Most people who die by suicide have seen a health care provider in the year before their death, often for reasons unrelated to mental health," Walsh said. "But universal screening isn't practical in every setting. We developed VSAIL to help identify high-risk patients and prompt focused screening conversations."

AI RECRUITED TO LOWER BLOOD CLOTS

A yearlong randomized clinical trial involving all Vanderbilt Health adult inpatients is testing whether AI can help reduce blood clots that form inside blood vessels during hospitalization, or hospital-acquired venous thromboembolism (HA-VTE). A machine learning-derived risk model analyzes 25 variables commonly found in electronic health records, including vital signs, laboratory results, medical history and procedures like central line placement. In validation studies, the model correctly ranked patients by risk 89% of the time — considered excellent performance as prognostic models go.

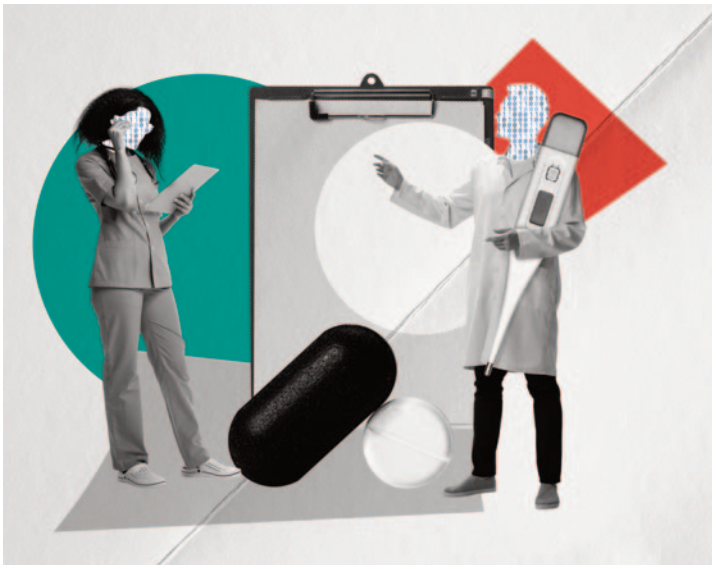
"Despite decades of research and numerous risk prediction tools, preventing HA-VTE remains a challenge as even a single case might do great harm," said the trial's lead investigator, Colin Walsh, MD, MA. "Our AI-driven approach doesn't require doctors to manually calculate risk scores or enter any data. Instead, it works quietly in the background, analyzing patient data in real time and alerting clinicians only when action is needed." Results are expected in 2027.

WHEN AI WRITES BETTER THAN DOCTORS

Reporting in the *Journal of the American Medical Informatics Association,* Siru Liu, PhD, Adam Wright, PhD, and colleagues found ChatGPT-3.5 and ChatGPT-4 outperformed doctors in answering patient questions sent via patient portals.

In a blinded test, four primary care doctors rated actual responses from doctors and responses from AI programs to questions about bladder infections, sleep issues, back pain prescriptions, flu symptoms, blood in stools and COVID-19. Judging involved four categories: empathy, accuracy, usefulness and responsiveness.

The intent behind the study is to develop AI to write first-draft responses that doctors would use to speed their work. Primary care doctors typically spend 1.5 hours per day processing patient messages.



Large language models show phenotyping promise

Wei-Qi Wei, MD, PhD, Chao Yan, PhD, and colleagues reported in the *Journal of the American Medical Informatics Association* that large language models can help generate electronic health record phenotyping algorithms. They tested ChatGPT-4, ChatGPT-3.5, Claude 2 and Bard (now Gemini) for generating algorithms for Type 2 diabetes, dementia and hypothyroidism. Three experts evaluated the algorithms, finding ChatGPT-4 and -3.5 significantly outperformed Claude 2 and Bard.

"Developing EHR phenotypes demands substantial informatics and clinical knowledge. It's an intricate process that limits the pace of research," Wei said. Testing on data from over 80,000 patients showed mixed performance compared to gold-standard expert-developed algorithms.

"These AI models show exciting capabilities, but they're not yet ready to generate expert-level phenotyping algorithms, certainly not right out of the box," Wei said. "We believe they can help jumpstart the process, allowing experts to focus more on fine-tuning rather than starting from scratch."

Expanding AI-powered chart abstraction of vital information

Daniel Fabbri, PhD, and Christine Micheel, PhD, secured a one-year, $2 million extension of their Advanced Research Projects Agency for Health award for an AI-guided platform for extracting and organizing critical information from unstructured clinical notes and reports in medical records.

The platform has already been spun into a commercial venture called Brim Analytics and is being used around the country to support clinical research, cancer registries and health initiatives. Over the past year, more than 120 research and clinical teams at Vanderbilt Health used Brim to perform chart abstraction for applications from surgical planning and cancer registries to orthopaedic research.

"Brim has quickly become part of our intelligence system infrastructure at Vanderbilt," said Health IT leader Neal Patel, MD, MPH.

• • •

AI platform maps tissues in 3D

In *Nature Methods,* Tae Hyun Hwang, PhD, and colleagues published validation of iSCALE, an AI platform for imaging gene expression. The platform produces high-resolution maps of cellular landscapes across tissue sections.

The demonstration used postmortem tissue samples from patients with gastric cancer and multiple sclerosis. The authors wrote that their findings show "the utility of iSCALE in analyzing large tissues by enabling unbiased annotation, resolving cell type composition, mapping cellular microenvironments and revealing spatial features beyond the reach of standard spatial transcriptomic analysis."

"This work fundamentally reimagines how we can scale spatial biology to clinically relevant samples," Hwang said. "Instead of testing thousands of points across a slide, we can now learn from just a few regions and generate a molecular map of the whole tissue. That changes the equation for translational science and diagnostics."

PREDICTING WHO BENEFITS FROM CANCER IMMUNOTHERAPY

In a research partnership with GE HealthCare, Travis Osterman, DO, MS, and colleagues published results in the *Journal of Clinical Oncology Clinical Cancer Informatics* showing that AI models predicted patient responses to immunotherapy with 70% to 80% accuracy. The models use routinely collected electronic health record data like diagnosis codes and medications.

"We focused primarily on this routinely collected structured data to build predictive models with the goal that these models would be able to be implemented in any clinical setting," Osterman said.

GE HealthCare is evaluating plans to commercialize the models for pharmaceutical drug development and clinical support. The researchers said the methodology has potential for use in other areas such as neurology or cardiology.

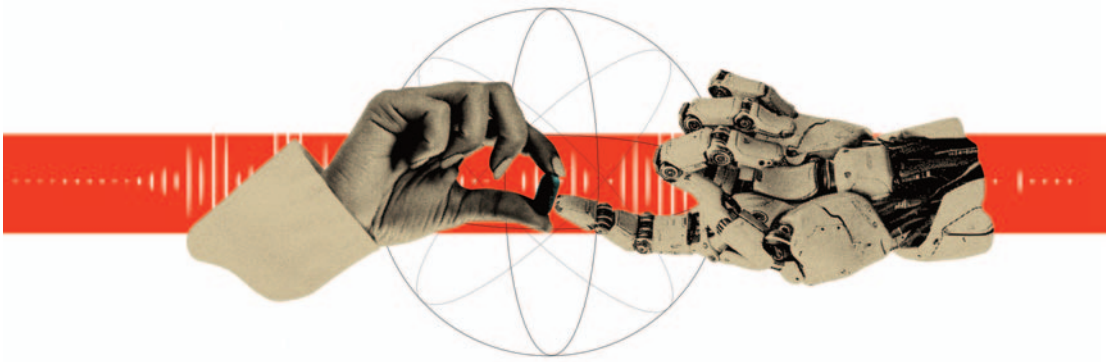
Making health chatbots safe and empathetic

Susannah Rose, MSSW, PhD, and Zhijun Yin, PhD, received up to $7.3 million from the Advanced Research Projects Agency for Health to build the Vanderbilt Chatbot Accuracy and Reliability Evaluation System (V-CARES). Using mental health as a demonstration case, the system will focus on detecting hallucinations, omissions and misaligned values in AI-generated responses on critical health topics.

"We chose screening and treatment for major depression and generalized anxiety disorder because, from a safety and reliability standpoint, these chatbots pose a number of lingering challenges and unresolved questions," Rose said.

The project will combine human expertise with advanced computational techniques.

"We will pursue a novel multiexpert ensemble learning framework," Yin said, "integrating various AI models and human expertise to achieve accurate detection of potential issues in chatbot responses."



ChatGPT finds drug candidates for Alzheimer's

Reporting in *npj Digital Medicine*, Chao Yan, PhD, Monika Grabowska, Wei-Qi Wei, MD, PhD, and colleagues used ChatGPT to identify existing drugs that might help patients with Alzheimer's disease. They prompted the chatbot to suggest and then confirm 20 drugs for Alzheimer's disease, repeating this exercise 10 times.

Analyzing medical records from Vanderbilt Health and the *All of Us* Research Program, they found three of the suggested drugs were associated with lower Alzheimer's risk across both datasets: losartan with 24% reduced risk, metformin with 33% reduced risk, and simvastatin with 16% reduced risk.

"LLMs like ChatGPT speedily accomplish a form of extensive literature review, which has become infeasible for humans to perform alone," Wei said.

Designing novel antibodies against emerging viral threats

Ivelin Georgiev, PhD, Perry Wasdin, PhD, and colleagues reported in *Cell* that a so-called protein language model could design functional human antibodies against existing and emerging viral threats. Training their generative monoclonal antibody model on previously characterized antibodies against a known avian influenza strain, the researchers generated antibodies against a related strain.

"This study is an important early milestone toward our ultimate goal — using computers to efficiently and effectively design novel biologics from scratch and translate them into the clinic," Georgiev said. "Such approaches will have significant positive impact on public health and can be applied to a broad range of diseases, including cancer, autoimmunity, neurological diseases and many others."

Georgiev received an award of up to $30 million from the Advanced Research Projects Agency for Health to develop AI technology for creating novel antibodies.

Dual technologies for cancer care

Tae Hyun Hwang, PhD, helped develop two AI technologies for improving cancer care. A framework described in *Nature Communications* integrates deep learning with a microscopic 3D imaging technique called holotomography to generate digitally "stained" images from tissue samples.

The noninvasive technique preserves tissue integrity, ensuring compatibility with downstream molecular assays, and has potential beyond cancer diagnostics.

"This technology fundamentally redefines how we visualize and analyze tissue architecture, moving from traditional two-dimensional views to full 3D microenvironment mapping at the subcellular level," Hwang said.

A second technology, MSI-SEER, identifies patients who will benefit from immunotherapy that might otherwise be missed. As described in *npj Digital Medicine,* the tool uses standard pathology slides to better predict microsatellite instability, a condition where cancer cells have numerous errors in short, repeated DNA sequences.

Mining mortality data from the web

Reporting in the *Journal of Medical Internet Research*, Mohammed Ali Al-Garadi, PhD, Ruth Reeves, PhD, and colleagues used natural language processing to collect mortality information from crowdfunding platforms, web-based obituaries and memorial websites.

Quick, low-cost collection and processing of this information and its linkage with patient records could aid large-scale health research, medical device safety monitoring, and timeliness of public health measures.

Some 8.1 million retrieved documents were analyzed. An open-source large language model (Meta's Llama-13) performed on par with nurses trained as research assistants in understanding and annotating raw information.

Using AI to keep patients receiving obesity treatment engaged

You Chen, PhD, and Gitanjali Srivastava, MD, received $1 million from Lilly to study and address gaps in obesity care. The project will analyze electronic health records, survey patients and clinicians, and use AI to identify why many patients discontinue obesity treatment.

"Obesity is a chronic, relapsing condition that requires ongoing management, yet too often it's treated episodically," Chen said.

Findings will feed a multiagent AI system — physician, nurse, dietitian — that will generate ideas for consideration by panels of clinicians, informaticians and patient representatives. In the second year, the team will design and implement a patient-facing mobile app.

"Medicine has evolved, and we need to adapt to new technological advances while catering to patient needs," Srivastava said. The researchers said their human-AI collaborative methodology could extend beyond obesity care.

CREATING SYNTHETIC HIV PATIENTS FOR RESEARCH

Bryan Shepherd, PhD, and Bradley Malin, PhD, received a five-year, $4 million grant from the National Institutes of Health to create hundreds of thousands of simulated HIV patients to aid longitudinal observational studies. Synthetic data created by the team will be made public.

"We think simulated data can greatly benefit HIV research, particularly in international settings where data sharing is becoming more complicated. … The rate of discovery is being impeded by sensitivities around HIV and legitimate privacy concerns," Shepherd said.

Using generative AI, the team will attempt to mimic patients from two large multinational HIV research cohorts numbering more than 500,000 people living with HIV.

"Sharing observational datasets is essential to enabling new hypotheses leading to potential cures," Malin said. "Findings from our lab and others point to patient simulation as an alternative to typical patient de-identification methods that reduce data fidelity and research utility."

Shortening the diagnostic odyssey for rare diseases

Cathy Shyr, PhD, Rizwan Hamid, MD, PhD, and colleagues reported in *JAMA Network Open* that large language models (LLMs) successfully identified diagnoses for patients in the Undiagnosed Diseases Network.

"In some cases, the diagnostic odyssey for patients with rare disorders — the time from symptom onset until diagnosis — lasts for more than 10 years," Hamid said.

They assessed whether LLMs can identify final diagnoses for UDN patients based on clinical summaries. Compared to the historical human clinical review rate of 5.6%, the LLMs achieved diagnostic rates of 13.3% (ChatGPT 4o) and 10.0% (Llama 3.1 8B). Cost per case ranged from zero to 3 cents depending on the model.

SO MUCH MORE THAN FUN AND GAMES

College Cup showdown transforms friendly competition into lifelong connections

BY JILL CLENDENING
PHOTOGRAPHY BY CHAD DRIVER, ANNE RAYNER, AND TERRY WYATT

As the medical students in the Vanderbilt University School of Medicine Class of 2029 began their formal training in 2025, friendly, competitive banter between the students was already flying.

It wasn't about who would ace their first Foundations of Medical Knowledge courses. It was about who would claim ultimate bragging rights at the much-anticipated College Cup.

This annual Olympics-style showdown brings together all students in VUSM's four advisory colleges for a week filled with athletic feats, skillful challenges, artistic contests and raucous team spirit. The action kicks off with an opening ceremony and spirit competition, where the medical students proudly wave the brightly colored banners of their advisory colleges, perform choreographed dances, and toss out challenges.

From an Iron Chef-style cook-off and participation in the Shade Tree Trot 5K to basketball, soccer, board games, video games, pumpkin carving, poetry challenges and more, the competition is fierce — but fun. At the end of the spectacular competitions, points are tallied, and the members of one college hoist the coveted College Cup trophy, an enviable honor until next year's rematch.

"College Cup is a foundational core of our medical student wellness program and has occurred annually for almost two decades," said Amy Fleming, MD, senior associate dean for Medical Student and Alumni Affairs. "The competitive events build strong relationships and camaraderie among the students across all four years, as well as important relationships between the students and faculty (who also participate). It is incredible to watch the college teams come together full of joy, dedication and energy.

"College Cup is embedded in our culture here, and students look forward to it all year. It is a good reminder for them that medical school isn't just about filling their minds with new knowledge; it's also a time to build lifelong friendships, focus on their health and well-being, and develop resilience for dealing with stress and reducing burnout. College Cup is a catalyst for all of this."

The College Cup began in 2007, spearheaded by Scott Rodgers, MD, then associate dean for Medical Student Affairs and faculty sponsor of the VUSM Student Wellness Committee, which organizes the event. Rodgers said the message of College Cup is "that students should strive to take good care of themselves. This means such things as forming new friendships, exercising and pursuing hobbies."

While it all looks like fun and games, College Cup is so much more. Team-oriented, multidisciplinary care is the heart of today's heath care model. Building camaraderie and trust early in the medical school experience establishes connections that strengthen the four-year experience and paves the way for future collaborations that benefit both physicians and their patients.

Kyle Maas, a third-year medical student who was a co-organizer for College Cup 2025, said the event is the perfect opportunity for first-year medical students to connect with more advanced students they otherwise might not see very often. Maas is a member of Robinson College.

"I remember my first year, and it was so fun getting to see all the upperclassmen," he said. "It was a great way to get to know more people and to feel like I was part of the Vanderbilt community as a whole. This year, I was helping lead it, so I saw things from a different perspective. It was cool to be a part of bringing that same experience to the incoming first years."

Shannon Lester, MD, assistant professor of Clinical Medicine in the Division of General Internal Medicine and Public Health, is a faculty mentor for Robinson College. She's also a 2014 graduate of VUSM, so she's experienced College Cup from different perspectives as well.

"This is really such a special and impactful Vanderbilt University medical school event," she said. "After attending a recent conference about learning communities, I realized just how special Vanderbilt is in the way we do things — how embedded the learning communities are and how important those relationships are among the students and between students and faculty. That's really a pillar of the Vanderbilt University medical school culture."

College Cup rivalry is kick-started during College Reveal, an orientation event in late July during which first-year medical students are ceremoniously sorted into advisory colleges. It's much like how new Hogwarts students are sorted into rival houses in "Harry Potter." Each advisory college has two dedicated faculty mentors and multiple faculty

First-year medical student Priscilla La, an enthusiastic member of Gabbe College, waves the college's banner during the 2025 College Cup opening ceremony and spirit competition.

affiliate advisers and student affiliate advisers (senior students).

Medical students are sorted into one of four advisory colleges named for former VUSM deans:

Batson Advisory College, named after Randolph Batson, MD, Dean from 1963-1975. Batson's mascot is the phoenix, and the signature color is blue.

Chapman Advisory College, named after John E. Chapman, MD, Dean from 1975-2001. Chapman's mascot is the dragon, and the signature color is green.

Gabbe Advisory College, named after Steven Gabbe, MD, Dean from 2002-2008. Gabbe's mascot is the lion, and the signature color is red.

Robinson Advisory College, named after George Canby Robinson, MD, Dean from 1920-1928. Robinson's mascot is the raven, and the signature color is yellow.

The advisory colleges provide faculty mentorship, advising and peer connections for students to help foster a sense of belonging and to form supportive learning communities throughout the four-year medical school experience.

Participating in the College Cup events allows the medical students to appreciate aspects of each other that otherwise might be unseen in the classroom and clinical spaces.

"Everyone had such complex lives before medical school, and we only ever see each other in the medical school setting," said third-year student Katlyn Knox, a member of Batson College and one of the 2025 co-organizers. "It's really cool to see people that are former college football players or soccer players play in the punt, pass and kick event or the soccer. Even the art — you'd never know that someone is so good at art until they're helping with the pumpkin carving or the speed art. Everyone gets to showcase their individual talents."

Tori Tong, fourth-year medical student and member of the ultimately victorious Gabbe College, said the strong connections formed with the advisory college mentors have been invaluable.

"The mentors are important in creating that really supportive community," she said. "They help with the curricular side of things, as well as the wellness and social aspect of medical school. Just knowing that every medical student comes in having point people they can turn to is really reassuring and is an amazing resource."

Tong plans to complete a plastic surgery residency after graduating, and she said experiences like the College Cup, paired with her VUSM education, have her well set for the future.

"This is an incredible institution that helps build not only your professional identity within the field of medicine, but also helps you develop into a well-rounded, well-balanced human. So, once you become a physician off in the world, you have a long, sustainable career."

C.J. Plummer, MD, assistant professor of Physical Medicine and Rehabilitation, is now in his third year of serving as a Gabbe College mentor. He also happened to sink a winning shot during the 2025 basketball competition, helping Gabbe College break a dry spell and bring home the College Cup. But to him, the biggest reward is in the growth he sees in the medical students he mentors.

"This is my favorite part of my job; I consider it a blessing to be able to work with our students in the way that we do — to be a part of the wellness and professional development aspects of their journey," he said. "And to be able to do that through their entire matriculation as they go through the different phases of FPR (Foundations of Physician Responsibility) is amazing. This has served as professional development for me as well, as I work with these amazing attendings who are fellow college mentors, and I learn from the students through their experiences." ■

1
Chapman College members, with mentor Dena Ibrahim, MD, front and center, give a fierce performance during their spirit skit.

2
Blue-clad Batson College members show their spirit.

3
Donald Brady, MD, VUSM Executive Vice Dean for Academic Affairs, Amy Fleming, MD, Senior Associate Dean for Medical Student and Alumni Affairs, and Kimberly Vinson, MD, Associate Dean, prepare to judge a competition.

4
Gabbe College mentor C.J. Plummer, MD, and members of the college welcome fledgling members to the fold during the College Reveal ceremony.

5
High-flying athleticism is displayed during the Chapman versus Batson Ultimate Frisbee game.

Trans-Atlantic partnership builds on already established exchanges

Vanderbilt deepens collaboration with Charité–Universitätsmedizin Berlin

BY JILL CLENDENING + ILLUSTRATION BY DIANA DUREN

Vanderbilt Health has long had close ties with Charité–Universitätsmedizin Berlin — one of Europe's top university hospitals — including numerous joint research studies.

To further strengthen this cooperation, Vanderbilt Health has signed a memorandum of understanding (MoU) with Charité with the goal of increasing collaboration in medical education, clinical research, digital health and translational science.

"This agreement formalizes and adds structure to the collaborative relationship we have enjoyed with Charité for several years now. By strengthening these ties with such a distinguished international partner, we are advancing our mission to impact health care on the global stage," said Jeff Balser, MD, PhD, President and Chief Executive Officer of Vanderbilt Health and Dean of Vanderbilt University School of Medicine.

The partnership builds on established exchanges and collaborations, as well as joint working groups between Vanderbilt partners, the Berlin Institute of Health at Charité and the German Heart Center at Charité. As evidence, over the past five years there have been approximately 240 scholarly articles published that include both Vanderbilt Health and Charité faculty as authors.

"This is an exciting development for us, and we are eager to forge new collaborations, initiatives and exchanges with Charité that will greatly benefit our faculty, trainees and students," said Donald Brady, MD, Executive Vice President for Educational and Medical Staff Affairs at Vanderbilt Health and Executive Vice Dean for Academic Affairs at VUSM. "We had been interested in finding the right international, collaborative partner for quite some time.

"We wanted to take the time to find the right institutional partner with whom we clearly see depth to the relationship and a strong future. This is the right time and the right partner. Our institutions already share a strong relationship built over many years, and by combining our strengths and learning from one another, we will continue to enhance health systems, advance medical education, and drive critical research forward," Brady said.

The MoU lists possible opportunities for collaboration including exchanges on medical education and curriculum development; joint exchange programs such as clinical and research rotations for students; joint interdisciplinary research exchange programs and staff exchange opportunities at all levels; best practice exchange for implementing networking models; best practice exchange covering digital health; and AI-driven projects and more.

In addition to the MoU, Charité leaders and Brady, acting in his role with VUSM, also signed a student exchange agreement enabling clinical rotations abroad for medical students from both institutions. Per the agreement, the purpose of the trans-Atlantic exchange is "to introduce students to the host educational system, its conditions and practices at the host institution, and to strengthen the students' knowledge and practical skills." The student exchanges would occur during the participants' final year of medical education.

"Charité and Vanderbilt not only share a commitment to excellence in research, patient

care and education, we also share the conviction that global collaboration is essential for the future of medicine," said Charité Chief Executive Officer Heyo Kroemer, MD. "At a time when geopolitical uncertainty risks pulling countries apart, this partnership demonstrates that scientific exchange and trust can build important bridges."

"The signing of the MoU and the student exchange agreement is a significant step toward intensifying our partnership," said Charité Dean Joachim Spranger, MD. "The education and training of future health professionals will be critical in shaping medical research and patient care on both sides of the Atlantic. Together we will advance biomedical research, support young talent, and strengthen the digital and clinical transformation of our health care systems."

The collaboration was formalized during a visit to Berlin in 2025 by Brady and Marie Martin, PhD, MEd, Associate Vice President of Global Initiatives at Vanderbilt Health. Their visit included meetings with Charité colleagues to discuss strategic initiatives such as curriculum development, joint research priorities and digital health solutions.

In a guest lecture on Vanderbilt's personalized medical school curriculum, Brady emphasized the shared educational philosophies of both institutions and addressed key questions regarding the future of medical training in the age of artificial intelligence.

"As AI becomes integral to clinical practice, medical education must evolve just as rapidly," said Brady. "Our partnership with Charité allows us to share approaches to training future physicians in an AI-enabled health care environment and to learn from each other's innovations as we prepare the next generation for what lies ahead. The commitment of Drs. Kroemer and Balser to this relationship demonstrates its depth."

Brady noted that the seed for the formal collaborative relationship between the two institutions was planted many years ago when Kroemer and Balser worked together in the lab of leading Vanderbilt Health researcher Dan Roden, MD. In early 2024, executive leaders from Charité came to Tennessee to meet with top Vanderbilt Health leaders in health system operations, research, health policy, IT and informatics.

Prior to the signing of the agreements, virtual meetings involving leaders from the two institutions occurred for several months to investigate shared opportunities in three areas: clinical, research and education.

"With this partnership in place, students can more easily advance their knowledge of the world, their cross-cultural understanding and trans-Atlantic collaborations."

Marie Martin, PhD, MEd

One of the priorities will be developing new strategies for academic medicine of the future. Both VUSM and Charité have transformed their medical school curricula in recent years, and there is a commitment from both groups to evolve and innovate as the health care landscape and related technologies continue to shift.

During their recent visit, Brady and Martin also met with leaders from Charité's research areas to explore opportunities for joint projects. The institutions share strengths in neuroscience, infectious diseases, cardiology, oncology, pulmonology, population health and disease prevention.

"Charité is interested in our electronic heath record system, and there was also great interest around BioVU — what does that look like at Vanderbilt and the possibility of starting a similar database and working together on that," Brady said. "There was also a lot of interest in biomedical informatics and data science and Vanderbilt's rich history there and what might be developed together."

Vanderbilt's BioVU — one of the world's largest biobanks — links de-identified biospecimens with electronic health records, offering exceptional potential for collaborative studies in precision medicine, genomics and personalized therapies. Both universities additionally maintain strong programs in global health research and education.

Martin said bringing students from both institutions together for collaborative learning opportunities will allow them to better appreciate and understand different perspectives, provide greater opportunities to innovate, and encourage thinking globally rather than just considering the reality in front of them.

She said ideally, the formal partnership will also plant similar seeds for future international collaborations among participants like the partnership that began years ago with the meeting of two, gifted young men in the Vanderbilt lab of Roden — the genesis for the current partnership.

"With this partnership in place, students can more easily advance their knowledge of the world, their cross-cultural understanding and trans-Atlantic collaborations," Martin said. "It can be incredibly transformative.

"Our institutions have already achieved a great deal together, but the MoU gives us a framework to think even bigger. By connecting our teams, our students and our research infrastructures, we can accelerate discoveries that improve health not only in the United States and Germany, but globally." ■

Leaders from Charité–Universitätsmedizin Berlin and Vanderbilt University School of Medicine hold the newly signed memorandum of understanding.

PHOTO PROVIDED BY CHARITÉ – UNIVERSITÄTSMEDIZIN BERLIN

Alumni notes

MD: VUSM CLASS • HO: HOUSE OFFICER • FE: FELLOW • FAC: FACULTY • BA/BS: VU CLASS

1960s

Armie Harper, MD'63, participated as a volunteer surgeon during a three-week sight-saving mission in Ghana in 2025, in partnership with Orbis International.

1970s

Lathan Edwards (Ed) Settle, MD'71, HO'71, retired Dec. 1, 2025, after 52 years as a practicing physician at Baptist Health Medical Group Family Medicine.

Lowell Anthony, MD'79, HO'79, FE'82 & '85, was awarded the 2025 Lifetime Achievement Award from the North American Neuroendocrine Tumor Society.

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Email VMAA at medalum@vanderbilt.edu with alumni updates and photos.

1980s

Lewis Schrager, MD'81, released his debut novel, "The Radical Radiance of the Fishing Fly," in which a logical medical researcher, David Nichols, is drawn into the world of fly-fishing in Alaska by his brother, Larry, who has cancer.

Keith Harmon, MD'82, received the Earl G. Young MD Physician of Excellence Award at the annual meeting of Park Nicollet/ Methodist Hospital/ Health Partners in Minneapolis. This is a lifetime achievement award, recognizing clinical excellence, innovation and leadership.

Mace Rothenberg, MD, HO'82, was named a founding member of the Scientific Advisory Board of Calidi Biotherapeutics Inc.

Jeff Deaton, BS'79, MD'83, director of the Atrium Health Wake Forest Baptist Center for Fertility and Reproductive Surgery in Winston-Salem, North Carolina, has published a book, "When Waiting Becomes Life: Encouraging Stories and Medical Advice from the Heart of an Infertility Doctor."

Thomas (Thom) Mitchell, MD, HO'84, received the Council Meritorious Service Award from the American College of Emergency Physicians for being an outstanding leader in emergency medicine.

Denise Raynor, MD'84, released her novel, "Birthing Pains," in January 2026. The historical fiction focuses on Laura Hampton, a new OB-GYN, trying to improve women's health care in rural North Carolina in the late '80s.

Gregory (Greg) Davis, BA'83, MD'87, HO'87, was installed as the 2025-2026 President of the American Society for Clinical Pathology during the society's annual meeting.

1990s

Michael Chang, BS'83, MD, HO'92, was promoted to Chief Physician Executive at the University of South Alabama in 2025, adding to his current role as System Chief Medical Officer. In his new role, Chang is responsible for clinical strategy, physician practice performance, safety and quality.

William (Bill) Altemeier IV, BE'86, MD'92, has been appointed the Endowed Chair in Pulmonary Diseases Research at the University of Washington.

Paul Boone, MD, HO'93, '94 & '95, has joined FryeCare Physicians Network as a board-certified neurosurgeon.

James Andrew Conrad, MD'94, has joined St. John's Health as a surgical specialist. With over 30 years of experience as a general surgeon, Conrad has dedicated his career to providing exceptional surgical care throughout Colorado.

Arjun Srinivasan, MD'96, was appointed the Deputy Chief Medical Officer at the Joint Commission in November 2025. He has more than 25 years of experience in infectious diseases, public health, and quality measurement and improvement.

Elisabeth Fowlie Mock, MD'97, MPH, was elected to the board of directors of the American Academy of Family Physicians, an organization representing 138,000 family physicians and medical students in

the United States. She is also a consultant for the Maine State Opioid Response initiative.

Josh Peterson, MD'97, MPH, FAC, professor of Biomedical Informatics and Medicine, director of the Center for Precision Medicine and Vice President for Personalized Medicine, was named chair of Vanderbilt Health's Department of Biomedical Informatics in January. He joined the Vanderbilt faculty in 2002.

Derek Abbott, MD'00, PhD'98, joined National Jewish Health as the Cecil and Ida Green Chair of the Department of Immunology and Genomic Medicine in July 2025.

2000s

Neal Patel, MPH'00, FAC, Chief Informatics Officer at Vanderbilt Health, has joined Heald, a tech-enabled platform redefining diabetes care, as a strategic adviser. Patel is recognized for his leadership in clinical innovation, care transformation and digital health strategy.

Charles Shieh, MD'02, has joined Holy Name, New Jersey's only independent Catholic health system, as a cardiovascular and thoracic surgeon.

Kyla Terhune, MD, MBA, HO'04, FE'07 & FE'08, EMBA'16, FAC, former associate dean for Graduate Medical Education for Vanderbilt University School of Medicine and Senior Vice President for Educational Affairs for Vanderbilt Health, was named the Senior Vice President for Education at the American College of Surgeons, effective Nov. 1, 2025.

Kevin Palka, MD, FE'05, has joined SSM Health Cancer Care as a board-certified hematologist and oncologist.

Anna Hemnes, MD, FE'06, FAC, professor of Medicine, director of the Division of Allergy, Pulmonary and Critical Care Medicine, physician-in-chief of the Vanderbilt Lung Institute and director of the Center for Lung Research, was chosen to serve as the 11th chair of the Department of Medicine and system physician-in-chief for Vanderbilt Health, effective Jan. 1.

Brian Nelms, MD, FE'06, has been named as Fisk University's Provost and Vice President for Academic Affairs.

Nitin Gupta, MD'07, was honored by the Crohn's & Colitis Foundation as the Premier Adult Healthcare Professional of the Year for his dedication to Atlanta's IBD community, specifically adults with Crohn's disease and ulcerative colitis.

Dear Alumni,

What a wonderful year of celebration and connection it was in 2025! Between our School of Medicine's 150th anniversary celebration last spring and the return to an annual Reunion program last fall, we were grateful to engage with many of you when you returned to Nashville for those milestone events.

Building on a wonderful year of engagement, 2026 is a year of exploration for us. We continue to strive for ways to expand and deepen our alumni engagement — both with you directly and connecting you with each other. We will partner with several of our Vanderbilt Health specialty society groups to host on-the-road events at conferences throughout the year and regional events in Denver and Philadelphia. We will also host our VUSM Reunion on Oct. 15-17, and look forward to welcoming classes that end in -1 and -6, with a special celebration for our 50th anniversary Class of 1976.

Engagement with VMAA isn't limited to event attendance. We hope that you received our mailer earlier this year, inviting you to complete our "2026 Alumni Engagement Survey." Your response to this survey is extremely important to us as we work with our Board of Directors to chart our path forward. Haven't completed it yet? Scan the QR code below. We'll be collecting responses until the end of April.

We hope 2026 brings you an opportunity to reconnect with the Vanderbilt Medical Alumni Association. We can't wait to see you!

Sarah Cochrane Woodall

Robert E. Lee Browning IV, MD'08, has joined AdventHealth Lake Wales as a general surgeon.

Philip Lammers, MD, FE'08, MCI'13, FAC, chief of Medical Oncology and medical director of Oncology Research for Baptist Cancer Center, recently became the first physician in Memphis and the Mid-South selected for the American Society of Clinical Oncology Leadership Development Program.

Brenessa Lindeman, MD'09, MEHP, associate professor of Surgery and Medical Education at the University of Alabama at Birmingham, was awarded a research grant from the American Board of Medical Specialties Research and Education Foundation.

2010s

Jason James, MD, HO'10, was named the Chief Medical Officer of Nexus Health Systems. In this role, he will lead clinical strategy and operations across Nexus' network of hospitals and residential treatment centers.

John Phillips, MD'10, was appointed Executive Vice President of Radiation Oncology Centers at Tennessee Oncology. He oversees the enterprise-wide radiation oncology service line, including clinical development, quality, research, radiopharmaceutical growth and strategic expansion.

Gerald (Jeb) Denny, MD, FE'12, MCI'15, has joined Medtronic, a global leader in health care technology, as Chief Medical Officer for its Acute Care and Monitoring business.

Saad Rehman, BA'13, MD'18, has joined the medical staff at Maury Regional Medical Center. He is associated with Vanderbilt Heart-Columbia.

2020s

Samuel Trump, MD'20, assistant professor of Gen-

ALUMNI PROFILE: JOSH DENNY, BS'98, MD'03, HO/FE, MS'07, FAC

Harnessing data for better health and health care

photo by John Russell
written by Leigh MacMillan

SNAPSHOT

FAMILY
Wife, Carolyn Denny, BA'00, MBA'05; and children, Noah, 18; Aaron, 16; Isaac, 13; and Katherine, 9

FAVORITE VUSM MEMORY
Rounding with William Stone, MD, at the Nashville VA Medical Center

HOBBIES
Running and working out with his children; coaching his sons' Science Olympiad teams with Carolyn; spending time with family

For Josh Denny, BS'98, MD'03, MS'07, a pivotal day during medical school set him on the path that would ultimately lead to his current position as CEO of the *All of Us* Research Program at the National Institutes of Health. *All of Us* is gathering health information from more than a million people to advance health research and precision medicine.

After starting his fourth year, Denny felt uncertain about his plans and asked to spend a day with several mentors he admired. With Anderson Spickard III, MD, MS, he saw patients and then helped interview computer programmers for a research project.

Computer science had been a hobby for Denny since middle school; he built computer systems, wrote software and competed on Vanderbilt University's programming team as an undergraduate (even though his major wasn't computer science). Spickard's project piqued his interest.

"I said, 'I think I could do this job, and it sounds like a lot of fun,' and that afternoon we hatched the idea for me to take a year off and do that research project," Denny said.

Leaders at Vanderbilt University School of Medicine were receptive and quickly made it possible for Denny to pursue this plan.

"I feel so fortunate to have been at Vanderbilt, where they were flexible about me doing something unusual. Not everyone would have been open to that," he said.

With another medical student, Denny built a natural language processing system and website to manage the medical school curriculum. Their product, KnowledgeMap, was adopted by VUSM and nine other schools.

"I came out of that year and knew what I wanted to do and why," Denny said. "It put me on the trajectory I've been on ever since of combining computer science with large-scale data generated by the health care enterprise to make discoveries, improve health care, and make life better."

During his internal medicine residency at Vanderbilt, Denny developed a system to capture notes from electronic health records (EHRs) and generate research alerts for several life-threatening conditions. He completed a fellowship and master's degree in biomedical informatics at Vanderbilt and joined the faculty in 2007.

Denny founded and directed the Center for Precision Medicine; led (with Dan Roden, MD, and others) the first studies that used EHRs for genomic discovery; served as the EHR principal investigator for BioVU, the largest single-site DNA biobank with linked EHRs; and helped launch the PREDICT program for adverse drug responses.

He helped draft the plans for what would become the *All of Us* Research Program and served as principal investigator of the Data and Research Center before joining the NIH as CEO of *All of Us* in January 2020.

"I tell trainees not to be afraid to do something that could really bend the curve on the rate at which we're able to discover and make a difference," Denny said. "It's now the default to use health records in research, and I think that's one of the legacies of our work — that we can improve health and health care by using the data."

eral Internal Medicine at the University of Wisconsin School of Medicine and Public Health, has been appointed medical director of the student-run MEDiC Southside Clinic. In this role, Trump will serve as mentor and adviser to the medical students on the clinic's administrative team and will oversee the clinical care provided at the clinic.

Andrew Kuhn, MD'20, was presented with the Herodicus Award at the American Orthopaedic Society for Sports Medicine annual meeting. The award is given for the best resident paper selected by the Herodicus Society, a nonprofit dedicated to advancing education and research in orthopedic surgery and sports medicine.

Jeffanie Wu Gayoso, BS'19, MD'23 and **Matthew Elmo Garcia Gayoso,** MD'23, were married in Lake Forest, Illinois, on Aug. 9, 2025.

Kimberly Bress, an MD-PhD candidate in the Medical Scientist Training Program at Vanderbilt University, was selected as the 2025 Vanderbilt Prize Student Scholar. She is interested in the application of neuroimaging technology to understand cognition and behavior in adults with neurodevelopmental differences.

Faculty Notes

Romney Humphries, PhD, FAC, director of the Division of Laboratory Medicine and professor in the Department of Pathology, Microbiology and Immunology at Vanderbilt Health, has been named the department's vice chair for Clinical Affairs, effective Jan. 1.

Kendra Parekh, MD, MHPE, FAC, associate professor of Emergency Medicine, has been named Vice President for Educational Affairs and Accreditation Council for Graduate Medical Education (ACGME)/National Resident Matching Program Designated Institutional Official (DIO) for Vanderbilt Health, and associate dean for Graduate Medical Education for Vanderbilt University School of Medicine, effective Dec. 1, 2025.

Anna Person, MD, FAC, professor of Medicine in the Division of Infectious Diseases at Vanderbilt Health, was named chair of the board of directors of the HIV Medical Association.

Juan C. Salazar, MD, MPH, FAC, Vanderbilt Health's new Department of Pediatrics chair, deliv-

Giving in Action
+ FIGHTING STUDENT DEBT

For Martha Presley Tran, BS'04, MD'10, JD'10, and Danny Tran, BS'04, their recent charitable commitment to Vanderbilt University is a way to extend the opportunities and support they received as Vanderbilt students, creating a clear path for the next generation of medical leaders.

"We are incredibly grateful to our family, who made our Vanderbilt experiences possible and are so supportive and loving," Martha said. "The ability to do something like this has very little to do with us and very much to do with the support we received. This is a way to pay that forward to a community we love; we owe a lot; and we hope to continue to engage."

The Nashville residents established the Presley Tran Family Scholarship, providing financial support to students at Vanderbilt University School of Medicine, with a preference for those from the Southeast region of the United States.

The Trans' deep connection to Vanderbilt began as undergraduates and continues decades later, as they introduce their children, Lela (7) and Oliver (10), to the place that has done so much to shape their lives.

Originally from western Kentucky, Martha was familiar with the university through family who had attended Vanderbilt. The oldest of eight children, Danny grew up in Louisiana and was drawn to Nashville's vibrant music scene and the university's multidisciplinary excellence. With scholarship support, he studied engineering and music. The two met while involved in Original Cast, a musical theater troupe for undergraduates, celebrating its 50th anniversary in 2026.

"Vanderbilt offers the opportunity to explore a wide range of interests, which helps build a more holistic person," Danny said. "Cultural and artistic experiences alongside the academic programs provide a well-rounded education as you begin your career and life."

His role as a software engineer for The Walt Disney Company embodies his own wide-ranging interests, representing the desire to unite technical skill and creativity. Martha, Chief Medical Officer at Alive Hospice and assistant clinical professor of Medicine at VUSM, sees firsthand the results of intentional interdisciplinary focus.

"When I started my MD/JD degree program, dual degrees were still unconventional, but now when I teach health policy at the business school (Vanderbilt's Owen Graduate School of Management), and in the course of my regular classes at the medical school, we consistently have a solid cohort of MD/MBA students, as well as other combinations," she said. "Vanderbilt actively seeks ways to integrate across disciplines."

Recognizing the increasing cost of becoming a physician, the Trans are providing scholarship funds to help alleviate financial stress for students motivated to stay in the Southeast to help fill the need for primary and specialty care practitioners. Eligible recipients include those pursuing MDs as well as dual degrees similar to Martha's.

"Having both grown up in the South, supporting students with similar backgrounds, encouraging them to practice in the region — those were all real motivators for us to make this gift," Danny said. ■ *Connie Harris*

Martha Presley Tran and Danny Tran

Giving in Action
+ ENDOWING A LEGACY

For Steven J. Eskind, MD, the connection to Vanderbilt University spans a lifetime and generations beyond.

From attending Vanderbilt football games as a child with his father, a Vanderbilt-trained physician, to his own decades-long career as a surgeon and educator, Vanderbilt has always been an integral part of his life.

His experiences set the foundation for the Eskind Chair in Surgical Education, which Eskind and his wife, Laurie, established in 2022 to support a faculty member in Vanderbilt University School of Medicine's Section of Surgical Sciences in the role of vice chair of Education or a comparable position in education leadership.

"We made this gift to encourage others to commit themselves to the tradition of excellence in education I value so deeply — the teaching of students and residents within this department," he explained.

Steven J. Eskind, MD, and wife, Laurie Eskind, with Christina Bailey, MD, MSCI, center, the first holder of the Eskind Chair in Surgical Education.

At the university's 2026 endowed chair investiture ceremony, the Eskind Chair in Surgical Education was officially awarded to Christina Bailey, MD, MSCI, associate professor of Surgery in the Division of Surgical Oncology and Endocrine Surgery and vice chair for Education for the Section of Surgical Sciences.

"She's a splendid recipient of this position," Eskind affirmed, noting that Bailey shares his dedication to teaching, having previously served as the residency program director at Vanderbilt.

After completing medical school at Tulane University, a general surgery residency at Vanderbilt Health, and a vascular surgery fellowship at Ochsner Clinic in New Orleans, Eskind returned to Nashville and practiced private general and vascular surgery at Saint Thomas Hospital for more than 30 years.

He then became the surgery clerkship director for the Vanderbilt University School of Medicine's Department of Surgery, where he led the required surgery rotation for all second-year medical students. Even after stepping down as director, he remains involved in all aspects of clerkship teaching.

"After working with so many Vanderbilt medical students, my perspective is solidified: They are incredibly savvy and inquisitive. I have seen many of them function as physicians after they graduate, and I am very proud of their skill and quality."

That sentiment between teacher and student is mutual. In 2022, Eskind was selected for the Robert D. Collins Award for Teaching Medical or Graduate Students or Practicing Physicians in the Lecture Setting given every two years by VUSM.

He was also honored by fourth-year Vanderbilt medical students in 2019 with the Thomas E. Brittingham, MD, Clinical Teaching Award, which recognizes exceptional teachers, mentors and role models.

Eskind's advice to potential donors is straightforward: Reflect on the impact Vanderbilt had on your own life.

"This is your opportunity to pay it back, to allow future graduates to achieve their goals." ■

Connie Harris

ered his inaugural State of the Department address Sept. 9, 2025, celebrating the success of his colleagues' work, and laying out his vision for the future. He was appointed Aug. 15, 2025.

Timothy Sterling, MD, FAC, professor of Medicine in the Division of Infectious Diseases at Vanderbilt Health, has received a five-year, $5.7 million grant from the National Institute of Allergy and Infectious Diseases to investigate the transmission of Mycobacterium tuberculosis.

H. Keipp Talbot, MD, MPH, FAC, professor of Medicine and Health Policy at Vanderbilt Health, was awarded the Infectious Diseases Society of America 2025 Anthony Fauci Courage in Leadership Award.

Losses

Susan Ann Buhrow, MD, FE'83, PhD'83, died Nov. 15, 2025. She was 69. Dr. Buhrow is survived by her husband of 35 years, Dr. Sidney Waldo (Wally) Whiteheart; two siblings; two children; and six nieces and nephews.

Donald Patrick Burney, MD, HO'70 & '77, died Nov. 23, 2025. He was 80. Dr. Burney is survived by his wife of almost 58 years, Charlotte; their three children; and two siblings. He was a hero grandpa to seven grandchildren.

Boyd Lee Burris, MD, HO'57, died July 6, 2025. He was 95. Dr. Burris is survived by his wife, Marcella; three children; and four grandchildren.

Robert Hanen Carnighan, MD'67, died Oct. 12, 2025. He was 87. Dr. Carnighan is survived by his wife of 40 years, Carol Wiedmer Carnighan; daughter; sister; and three grandchildren.

Janelle Lunette Cooper, MD'86, died July 19, 2025. She was 69. Dr. Cooper is survived by her wife, Kathleen Hanson (whom she married July 31, 2021); two children; four grandchildren; two sisters; Kathy's East Coast family; and very special friends.

Guy Nelson Copeland Jr., MD, HO'60, died Dec. 6, 2025. He was 89. Dr. Copeland is survived by two children; sister-in-law; and five grandchildren.

Alfonso Escobar, MD, HO'73, died Aug. 24, 2025. He was 83. Dr. Escobar is survived by his wife, Gladys Escobar Viveros, with whom he shared a 63-

Faces & Places

Want to see your photo here? Send high-resolution images to medalum@vanderbilt.edu.

1. Brenessa Lindeman, MD'09, MEHP, associate professor of Surgery and Medical Education and assistant dean for Graduate Medical Education at University of Alabama at Birmingham, was awarded a 2025 research grant from the American Board of Medical Specialties Research and Education Foundation. **2.** Runners of all ages participated in the 2025 Shade Tree Trot 5K, benefiting the Shade Tree Clinic. **3.** Hannah Kay, MD'22, and Tim Schurz, MD'22, welcomed baby Noah Hamilton Schurz on Dec. 8, 2025. **4.** Vanderbilt Medical Alumni Association (VMAA) Board President Elise Fallucco, MD'04, right, and Rear Admiral Paul Pearigen, MD'87, VMAA Board President-elect, left, enjoyed the 2025 Vanderbilt University reunion. **5.** Capt. Varun Menon, MD'20, and Sarah Woodall, senior director of the VMAA, enjoyed the VUSM Breakfast Tailgate ahead of Vanderbilt's win over Auburn. **6.** The VUSM Class of 1987 enjoyed a mini reunion along the Bourbon Trail in Kentucky in November 2025. **7.** Attendees, including Mary Beth Brocato, center, associate director of the VMAA, enjoyed the 2025 American Association of Physicists in Medicine Conference in Washington, D.C. **8.** Jonathan Perlin, MD, PhD, President and CEO of the Joint Commission Enterprise presented a talk and was awarded the Distinguished Service Award at the All-Alumni Dinner at the VUSM Reunion 2025. **9.** Members of the VMAA Board at their annual meeting in November 2025. **10.** André Churchwell, BS'75, MD, the Levi Watkins Jr., MD, Professor and professor of Medicine, Radiology and Radiological Sciences, and Biomedical Engineering, and senior adviser to the Chancellor in Outreach and Community Engagement at Vanderbilt University, delivered the 2025 Levi Watkins Jr., MD Lecture. **11.** Left to right, Sarah Woodall, senior director of the VMAA, Bradley Reinfeld, MD'23/PhD'22 and Amy Fleming, MD, senior associate dean for Medical Student and Alumni Affairs, enjoy dinner during the VMAA's New York City regional event on the new Vanderbilt campus. **12.** Donald Brady, MD, Executive Vice President for Educational and Medical Staff Affairs at Vanderbilt Health and Executive Vice Dean for Academic Affairs at VUSM, presented a talk on "The History of Medicine at Vanderbilt University" to celebrate the 150th anniversary.

ALUMNI PROFILE: ROBERT ROSENFELD, MA'73, MD'94

+
photo submitted
written by Danny Bonvissuto

Life took Rosenfeld from teaching and fighting fires to a rewarding career as an OB-GYN

Robert Rosenfeld, MA'73, MD'94, received his master's degree from the Kennedy Center at Peabody, now the Vanderbilt Peabody College, in 1973. Twenty-one years later, he received his medical degree from Vanderbilt University School of Medicine. According to Rosenfeld, what happened in between is "a little convoluted."

Rosenfeld first took a job as a special education teacher in the Jefferson County Public School system in Louisville, Kentucky, and lived with a friend he'd met at Camp Horseshoe in northern Wisconsin.

Two years later, Rosenfeld took a cross-country camping trip and landed in Palo Alto, California, where he lived with another Camp Horseshoe buddy. He got a job at a private school, then transferred to the Palo Alto public school system. There, his supervisor often mentioned another teacher he should meet.

"At an in-service, I saw her walk in the room," Rosenfeld said. "And that was my wife."

He and Rebecca married, vacationed in Northern California and explored the coastal community of Mendocino. They quit their teaching jobs, bought a home and a kite and toy store there, and had a son, Bradley.

The Rosenfelds' store was across from the volunteer fire department. Back then, the only way firefighters knew to rush to the firehouse was when a whistle was blown.

"The fire chief came into my store and said, 'You've got to join the fire department,'" Rosenfeld said. "I thought, he must think I'm really special. But then he said, 'Because you're across the street and can blow the whistle first.'"

Rosenfeld joined the fire department, and after being exposed to HIV during a rescue, he helped develop an EMT program. He took inorganic chemistry at a community college and loved it. They moved to Nashville, where Rosenfeld spent two years taking the science classes he needed to apply to VUSM. He was 38 years old.

Rebecca Rosenfeld received a full scholarship from Vanderbilt to pursue her second master's degree. She went on to work at Westminster School, now Currey Ingram Academy, and later became the head of the middle school.

Rosenfeld planned to be an emergency room physician. Then one day, while rotating through specialties, he was offered a chance to deliver a baby.

"I loved it," he said. "It was so cool. That's when I changed my mind."

After graduating and practicing in Nashville, Rosenfeld received a letter from the fellow camper and friend he'd lived with in Louisville decades before. He'd become a physician in Mount Vernon, Washington, and his practice needed an OB-GYN. The Rosenfelds moved back across the country in 2005, where he practiced until retirement in 2015. ■

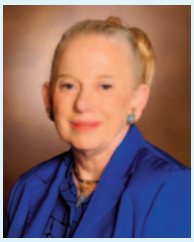
SNAPSHOT

FAMILY

Wife, Rebecca Rosenfeld, MS'92; son, Bradley Rosenfeld, MBA'13 (Owen Graduate School of Management); father, Louis Rosenfeld, MD'36, clinical professor emeritus of Surgery

LONGTIME VANDERBILT CONNECTION

Rosenfeld attended Peabody Demonstration School, now University School of Nashville, from first through 12th grade, and grew up on the Vanderbilt campus. "My father was a diehard fan," he said. "He dragged me to Vanderbilt football games every Saturday. I hope he was looking down during this magical year."



Judy Jean Chapman, MN, RN, professor emerita of Nursing, who led the Vanderbilt University School of Nursing as interim dean in 1982-1983, died Sept. 8, 2025, in Nashville. She was 83.

Mrs. Chapman, whose late husband, John Chapman, MD, was Dean of Vanderbilt University School of Medicine from 1975 to 2001, was an outstanding teacher who worked tirelessly to advance health care and the nursing profession on the local and national level.

She earned her Bachelor of Science degree in Nursing from Vanderbilt University in 1963, winning the Founder's Medal in Nursing that year for first honors in her class. In 1966, she received a Master of Nursing degree from the University of Florida.

During college, she worked as a staff nurse on the Vanderbilt hospital maternity ward before joining the Vanderbilt faculty as an instructor in Maternal-Child Nursing in 1966. In 1968 she married Dr. Chapman, who had come to Vanderbilt from the University of Kansas. In 1972, she was appointed associate professor of Maternal-Child Nursing with tenure in the School of Nursing.

year love story. He is also survived by three children; three grandchildren; three siblings; and many nieces and nephews.

Richard Lewis Foss, MD'70, died Aug. 26, 2025. He was 81. Dr. Foss is survived by his wife of 57 years, Evelyn; two children; and three grandchildren.

David Thomas Gilliam, MD, HO'75, died Oct. 20, 2025. He was 78. Dr. Gilliam is survived by his wife of 34 years, Rita Kerr Gilliam; and son.

Murray Heimberg, MD'59, died Nov. 17, 2025, two months before his 101st birthday. Dr. Heimberg is survived by two sons; two stepsons; two nieces; nephew; four grandchildren; and eight great-grandchildren.

David Hamilton James Jr., MD'51, died July 24, 2025. He was 99. Dr. James is survived by his wife of 70 years, Ann; 11 children; 21 grandchildren; and two great-grandchildren.

Doris Yvonne Kelsey, MD'62, HO'62, died Nov. 8, 2025. She was 88. Dr. Kelsey is survived by her sister; four nieces; two nephews; and her 14-year-old Lhasa apso that she described as "the best little dog on Earth."

Glenn Knox, MD, HO'87, died Jan. 9, 2025. He was 69. Dr. Knox is survived by his wife of 35 years, Alisa Kelsey Knox; two children; and numerous extended family members.

David Martin Lieberman, MD'49, died Oct. 28, 2025. He was 98. Dr. Lieberman is survived by his wife of 74 years, Elayne Schermer Lieberman; two children; six grandchildren and nine great-grandchildren.

Edward Litkenhous, BE'57, MD'61, HO'62, died Aug. 13, 2025. He was 90. Dr. Litkenhous is survived by his wife of 66 years, Caffey Smith Litkenhous; brother; two children; three grandchildren; and four great-grandchildren.

Shawna Cutting Malkoff, MD'07, died July 25, 2025. She was 47. Dr. Malkoff is survived by her husband, Michael; two children; mother; father and stepmother; sister; and other family members.

Bernard (Barney) Mathis Malloy, MD'54, HO'54 & '55, died Aug. 1, 2025. He was 96. Dr. Malloy is survived by three children; two grandsons; and his devoted caregiver and friend, Marie Jim Cabagnon.

Richard Hobson Morgan, MD, HO'61, died Nov. 7, 2025. He was 90. Dr. Morgan is survived by his wife of 67 years, Barbara Roser Morgan; four children; and 11 grandchildren.

Julian Lee Owen Jr., BA'55, MD'58, died Nov. 29, 2025. He was 92. Dr. Owen is survived by his wife of 64 years, Sophia; four children; and nine grandchildren.

Robert Carroll Owen, MD, HO'65, died Sept. 23, 2025. He was 88. Dr. Owen is survived by his wife of 62 years, Carole Lynch Owen; two children; sister; and many extended family members and friends.

Earl Q. Parrott, MD, HO'76, died Oct. 26, 2025. He was 77. Dr. Parrott is survived by his wife of 49

Annette Schaffer Eskind, civic leader, social worker and public school advocate, died July 13, 2025. She was 97.

Annette and Irwin Eskind, Annette's husband of 55 years who died in 2005, were ardent supporters of the Vanderbilt community, including the undergraduate school, the medical school, and Vanderbilt University Medical Center.

Among the Eskind family's many contributions were the establishment of the Vanderbilt Eskind Diabetes Clinic and the Annette Schaffer Eskind Chair at the Vanderbilt Kennedy Center.

They also provided a landmark gift toward the renovation and expansion of Vanderbilt's biomedical library. The Annette and Irwin Eskind Family Biomedical Library and Learning Center, which reopened in 2018, is a hub of education, medical information services and resources.

She is survived by her two sons, Steven Eskind, MD (Laurie) and Jeffrey Eskind, MD (Donna). Mrs. Eskind had five grandchildren, Michael Eskind (Kristin), Julie Galbierz (Andrew), David Eskind, MD (Megan), Matthew Eskind (Caroline, MD), and Sara Eskind. She had nine great-grandchildren. Nieces and nephews include Jonathan Schaffer (Elaine Shaver), Ellen Eskind Lehman and William Eskind.

years, Celia Watson Parrott; son; two aunts; three nieces; and a nephew.

Lawrence Huitt Parrott, MD, HO'60, died Oct. 24, 2025. He was 89. Dr. Parrott is survived by his wife, Joy B. Parrott; three children; and six grandchildren.

Don L. Pennington, MD, HO'68, died Aug. 4, 2025. He was 86. Dr. Pennington is survived by his wife, Patricia Kennedy Pennington; three sons; two granddaughters; sister; and numerous cousins, nieces and nephews.

John Callison Rawl, MD, HO'71, '73, & '74, died Aug. 24, 2025. He was 78. Dr. Rawl is survived by his wife of 57 years, Lynn Tate Rawl; daughter; four grandsons; sister; two brothers; and many nieces and nephews. He is also survived by his faithful Scottish terrier, Wellington.

Lloyd Douglas Richardson, MD, HO'76, died June 29, 2025. He was 77. Dr. Richardson is survived by three sons; foster son; brother; and three grandchildren.

Hayden A. Ross-Clunis III, MD'91, died Oct. 5, 2025. He was 65. Dr. Ross-Clunis is survived by his wife, Monica Green Ross-Clunis; two stepchildren; and two siblings and their families.

Herbert Howard Schaumburg, MD, HO'60, died Nov. 29, 2025. He was 93. Dr. Schaumburg is survived by his wife, Dr. Lucy L. Brown; daughter; and son-in-law.

Murray Wilton Smith, BA'60, MD'63, HO'63 & '69, FE'67, died Sept. 14, 2025. He was 87. Dr. Smith is survived by three children and three grandchildren.

Keith Walter Stampher, MD'81, HO'81, died July 21, 2025. He was 72. Dr. Stampher is survived by his wife, Lori; stepson; two children; two granddaughters; and three brothers. He also leaves behind two cats, which his wife is now obligated to give snacks.

Scott Stewart III, MD, HO'67, died July 27, 2025. He was 87. Dr. Stewart is survived by his wife, Andy; sister; two sons; three grandchildren; and two nieces.

Charles Daniel Stutzman, MD, HO'82, died Aug. 9, 2025. He was 77. Dr. Stutzman is survived by his wife, Marygrace Orff; two stepdaughters; and six grandsons.

Gerald Eugene (Jerry) Sullivan, MD'62, died Aug. 19, 2025. He was 87. Dr. Sullivan is survived by a sister, Angela Sullivan Anderson; two sons; three grandchildren; and six nieces and nephews.

Curtis Green Tribble, MD'80, died Sept. 6, 2025. He was 72. Dr. Tribble is survived by his wife of 33 years, Megan Tribble; five brothers; six children; and 13 grandchildren.

Jane Leslie Tyler, HO'81, died Dec. 12, 2025. She was 74. Dr. Tyler is survived by four children; two grandchildren; and two siblings and their families.

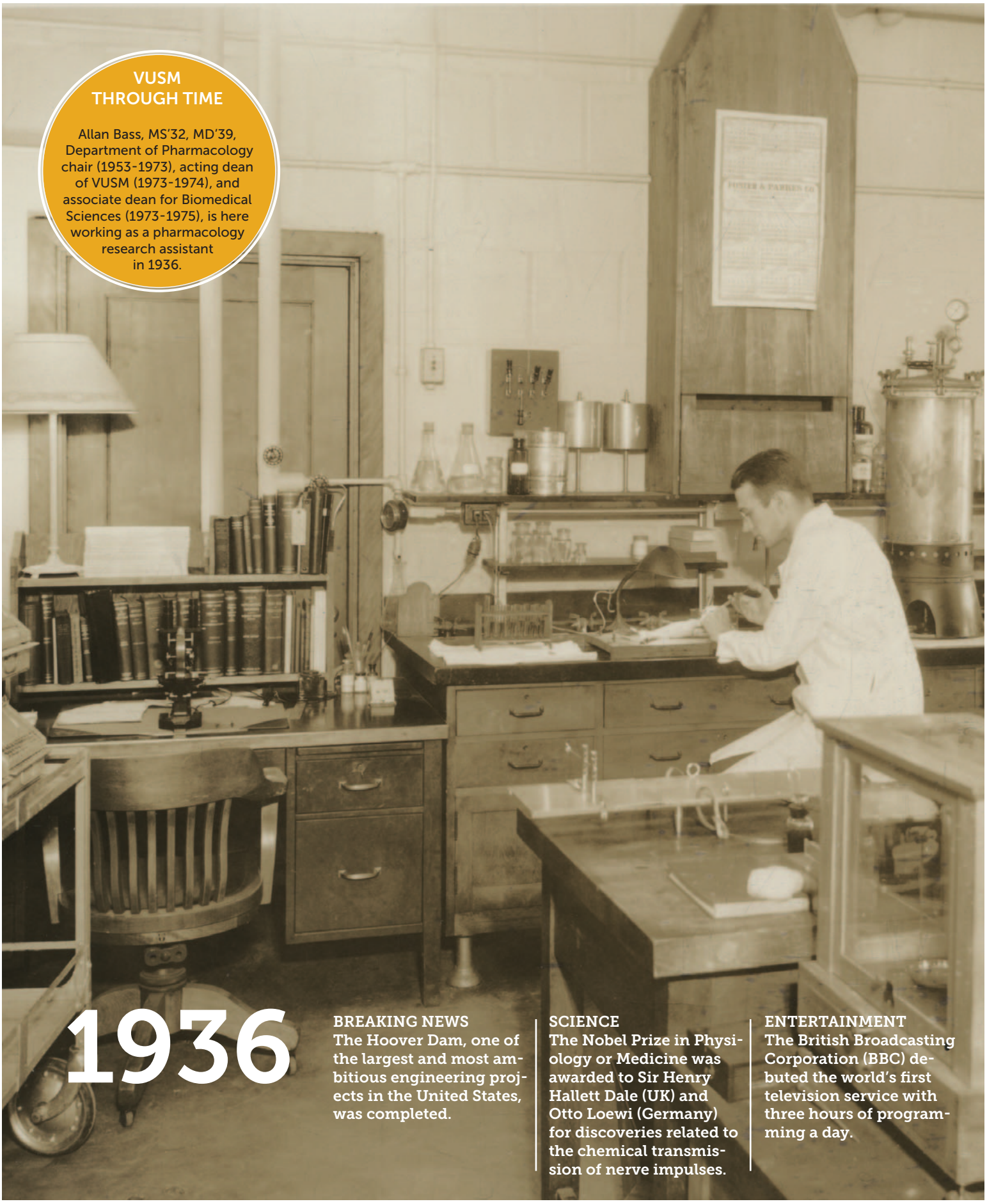
Arville Vance Wheeler, BA'57, MD'60, HO'60, died Sept. 2, 2025. He was 90. Dr. Wheeler is survived by three children; eight grandchildren; and six great-grandchildren.

George C. Hill, PhD, professor emeritus of Medical Education and Administration and of Pathology, Microbiology and Immunology, died Feb. 3. He was 86.

Dr. Hill recognized the need for representative medical staff and believed transforming how medical education recruited students would make medicine more accessible for all Americans. His storied career in biomedical research and medical education made him a perfect fit for Vanderbilt University School of Medicine.

He was preceded in death by wife Linda Hare, EdD; and son Brian. He is survived by twin brother, Washington Clark Hill; sister, Mary Ester Davis; and children, Yvette Hill Smith (Rick), Kevin Lewis Hill (Jill), and Nicole Y. Hare.

Dr. Hill is also survived by grandchildren, Spencer Hill Ray, Isabelle Cruz Hill, Tiassa Marie Ray, Alexandra Rosengard Hill, Lewis Grant Hill, Mary Kate Yaukey (Jason), and Kelly Anne Smith (Taha); three great-grandchildren; and many nieces and nephews. He is also survived by longtime partner, Catalina Flores; and former wife, Paula Hill.



VUSM THROUGH TIME

Allan Bass, MS'32, MD'39, Department of Pharmacology chair (1953-1973), acting dean of VUSM (1973-1974), and associate dean for Biomedical Sciences (1973-1975), is here working as a pharmacology research assistant in 1936.

VANDERBILT UNIVERSITY/HISTORY OF MEDICINE COLLECTIONS

1936

BREAKING NEWS
The Hoover Dam, one of the largest and most ambitious engineering projects in the United States, was completed.

SCIENCE
The Nobel Prize in Physiology or Medicine was awarded to Sir Henry Hallett Dale (UK) and Otto Loewi (Germany) for discoveries related to the chemical transmission of nerve impulses.

ENTERTAINMENT
The British Broadcasting Corporation (BBC) debuted the world's first television service with three hours of programming a day.

VANDERBILT MEDICINE

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PMB 407731
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Nashville, TN 37240

VANDERBILT
School *of* Medicine
Celebrating 150 *Years*

Vanderbilt medical students dream of helping others.

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By supporting scholarships at the School of Medicine, you are not just giving passionate students a world-class education. You are giving them the opportunity to dream big, to help countless patients and to **dare to grow** for the rest of their lives.

There's still time to support **Dare to Grow**, Vanderbilt's historic fundraising campaign that pushes the limits of what is possible.

By establishing or supporting a medical scholarship—whether through an outright gift, a pledge or a bequest—you are brightening the future of health care.

"You have made my dreams of becoming a physician-scientist possible. I will pay it forward through the care I put into my patients and research." —Alexandra Lombardo, School of Medicine, Medical Scientist Training Program, Class of 2031

"This scholarship made it possible for me to attend Vanderbilt, the medical school of my dreams since I was a little girl." —Elma Jashim, School of Medicine, Class of 2029

"Every patient I help is assisted by the scholarship you provided. Thank you for allowing me to pursue my dream of helping others through a career in medicine." —Daniel Larson, School of Medicine, Class of 2027

DARE TO GROW™

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