VANDERBILT

# MEDICINE

WINTER 2018

## Brighter Days Ahead

VUMC task force confronts physician well-being


**SCENE ON CAMPUS**

An early January snowfall caught Nashville by surprise and blanketed the Vanderbilt campus.

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**INNOVATION**
In 1991, Kelly Wright, MD, left, and C. Wright Pinson, MBA, MD, second from left, performed Middle Tennessee's first liver transplant. In 2017, the Vanderbilt Transplant Center performed its 2,000th.

SUSAN URMY

## ON THE COVER

More than half of the physicians in the United States report symptoms of burnout. A VUMC task force is addressing the issue and studying ways to improve physician well-being.

## ONLINE EXTRAS

**Published**
Two Vanderbilt University School of Medicine students recently had essays published in JAMA's recurring feature "A Piece of My Mind."

**In her own words**
Alumna Mary Austin, MD'00, born with spina bifida, discusses life as a pediatric general surgeon.

## DEPARTMENTS



## FEATURES

VANDERBILT MEDICINE

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# The Importance of Physician Wellness

Today, medicine is putting more focus than ever on patients' social, behavioral and psychological dynamics, as it is clear these factors are not only major drivers of health, but in many cases are even more consequential for longevity and quality of life than their medical care. As we center on these issues, considering our own house — the psychological wellness of the clinician workforce — is receiving attention that is long-overdue.

Burnout, a phenomenon all too familiar to healthcare professionals of all kinds, has reached epidemic proportions, with more than 50 percent of physicians in the U.S. reporting professional burnout. Mounting evidence indicates a profusion of stressors are taking their toll. The rapid pace of industry disruption and the ever-increasing burden of regulatory compliance are causing lost productivity, risks to mental and physical health, eroding quality and safety, diminished patient satisfaction, staff turnover and lost revenue. At the extreme, our profession is experiencing unacceptably high rates of depression, early retirement and suicide.

At stake is nothing less than the "joy of work" that clinicians bring to their patients — joy that is inextricably linked to emotional well-being, and the satisfaction we experience from careers dedicated to caring for patients.

Not surprisingly, studies show that clinicians overwhelmingly report that relationships with patients are the most satisfying feature of their practice. Leading stressors are the clerical tasks tied to ever-increasing regulatory overhead and billing compliance, a sense of erosion of clinical autonomy, and a growing feeling that healthcare is becoming a commodity.

Analyses conducted by the American Medical Association and the Mayo Clinic found that more than half of all physicians are now experiencing at least one symptom of burnout, with specialists on the frontlines at the highest risk. A recent report by the Blue Ridge Academic Health Group, a study group of academic health center CEOs, offers one of the first systematic attempts to quantify the economic impact of clinician burnout (physicians, nurses and other healthcare professionals), which amounts to as much as $150 billion a year, or 4.7 percent of the nation's annual healthcare expenditure.

Recognizing the enormity of this issue, it's time we put a great deal more energy into building a working environment that better manages these stressors and supports clinician resilience. As you'll read in the cover story for this issue of *Vanderbilt Medicine*, we aim to play an important role in this much-needed paradigm shift.

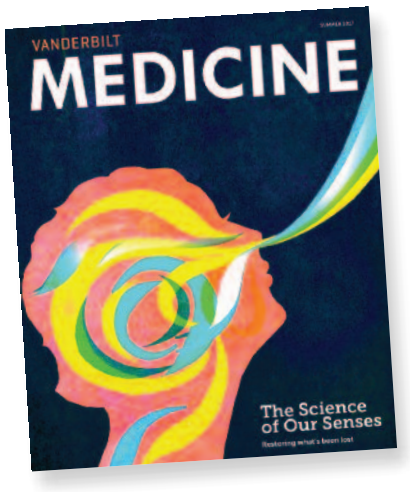
Since early 2017, a 16-member multidisciplinary group, the VUMC Task Force for Empowerment and Well-being, has been performing the important work of identifying practical steps that will enable us to be proactive rather than reactive — to take control of these issues.

We owe our patients and ourselves nothing less. ■

**Jeff Balser, MD, PhD**
*President and CEO, Vanderbilt University Medical Center*
*Dean, Vanderbilt University School of Medicine*

# CONVERSATIONS AROUND THE MEDICAL CAMPUS

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




**Comments on the Summer 2017 issue of *Vanderbilt Medicine:***

### CRACKING THE IMMUNE SYSTEM CODE

I love the work happening here and I appreciate all the research.
*– Lynn Johnson*

I sure hope you are successful! I am immune compromised...if not a help for me, others later on. Thanks.
*– Shirley Braswell Bennett*

Wonderful...since the immune system is the key to the body's well-being.
*– Antoinette Berrange Bradley*

### HIDDEN FIGURE- HAROLD JORDAN, MD

I love this man. Was fortunate to have worked with him several times. Dr. Jordan was a great psychiatrist and a perfect gentleman. I learned so much from him.
*– Judy Sykes*

He always listened to what the techs said about his patients. He is awesome. Congratulations, Dr. Jordan.
*– Kevin McLemore*

Congratulations to a great, caring doctor and man.
*– Bob Carlton*

### STUDY USES CHILD'S OWN IMMUNE SYSTEM AGAINST TYPE 1 DIABETES

That would be a breakthrough of gigantic proportions.
*– Ed King*

Oh Vandy, you never fail to amaze me.
*– Debra R Grant Kessinger*

My grandson was diagnosed with type 1 in 2011 at VCH; so I hope this study proves helpful to everyone.
*– Don Mary Henry*

### CHILDHOOD ILLNESS INSPIRES SISTERS' PURSUIT OF MEDICINE

Y'all are some inspirational humans. Keep up the great work!
*– Tyler Deming*

**JOIN THE CONVERSATION**
Post comments to our website: mc.vanderbilt.edu/vanderbiltmedicine or email kathy.f.whitney@vumc.org or on Facebook: facebook.com/VanderbiltUniversitySchoolofMedicine

**Find us on instagram at social.vanderbilt.edu**


Vanderbilt University School of Medicine @VUSM
**Caroling on the ward tonight for patients and their families!**


vumedicine @Vanderbilt University School of Medicine
**Congrats to Batson College for winning College Cup 2017 and to all the colleges for a great weekend! (pics by Dr. Michael Pilla)** #batson #chapman #gabbe #robinson

vumedicine @Vanderbilt University School of Medicine
**Cheering on the Dores today! This is Hadley and her dad Ryan. Hadley is the granddaughter of Polly Case, who helps coordinate our Medical Innovators Development Program.** #AnchorDown

VUSchool of Medicine @VUSM
**Our fourth-year med students enjoying goat yoga in Nashville!**

## A CLOSER LOOK

(Left to right) Dietetic interns Brooke Capritto and Haleigh Hemond, medical student Saif Hamdan and chef Mark Rubin participated in a teaching kitchen educational session at Second Harvest Food Bank.


SUSAN URMY

# Patient's freak pancreas injury spurs rapid response

Macie Glover sprinted across the gym floor at school, tripped and crashed into a wall. In a bizarre sequence of events, she hit her head and arm and scraped her knees as the force of the crash propelled her whole body arching backward into a crescent shape.

"I hit the ground. I couldn't breathe. Whenever people asked what was hurting me, I said it was my stomach and my elbow. Everyone was worried about my head. My head never hurt, even to this day," said Macie, a 13-year-old freshman at Lawrence County High School.

CT scans of her head at a local hospital were clear. After persistent pain in her abdomen in the hours that followed, doctors performed another CT, this time of her stomach. The images revealed her pancreas had split in half. Macie was a ticking time bomb. What the Glover family thought would be an ambulance trip to Monroe Carell Jr. Children's Hospital at Vanderbilt quickly turned into a helicopter ride.

Vanderbilt LifeFlight arrived on that March 2017 morning to take her from Lawrenceburg to Children's Hospital, where the pediatric trauma team was awaiting her arrival. Her mother, Annette Glover, tearfully recalls the fear she felt as LifeFlight took off.

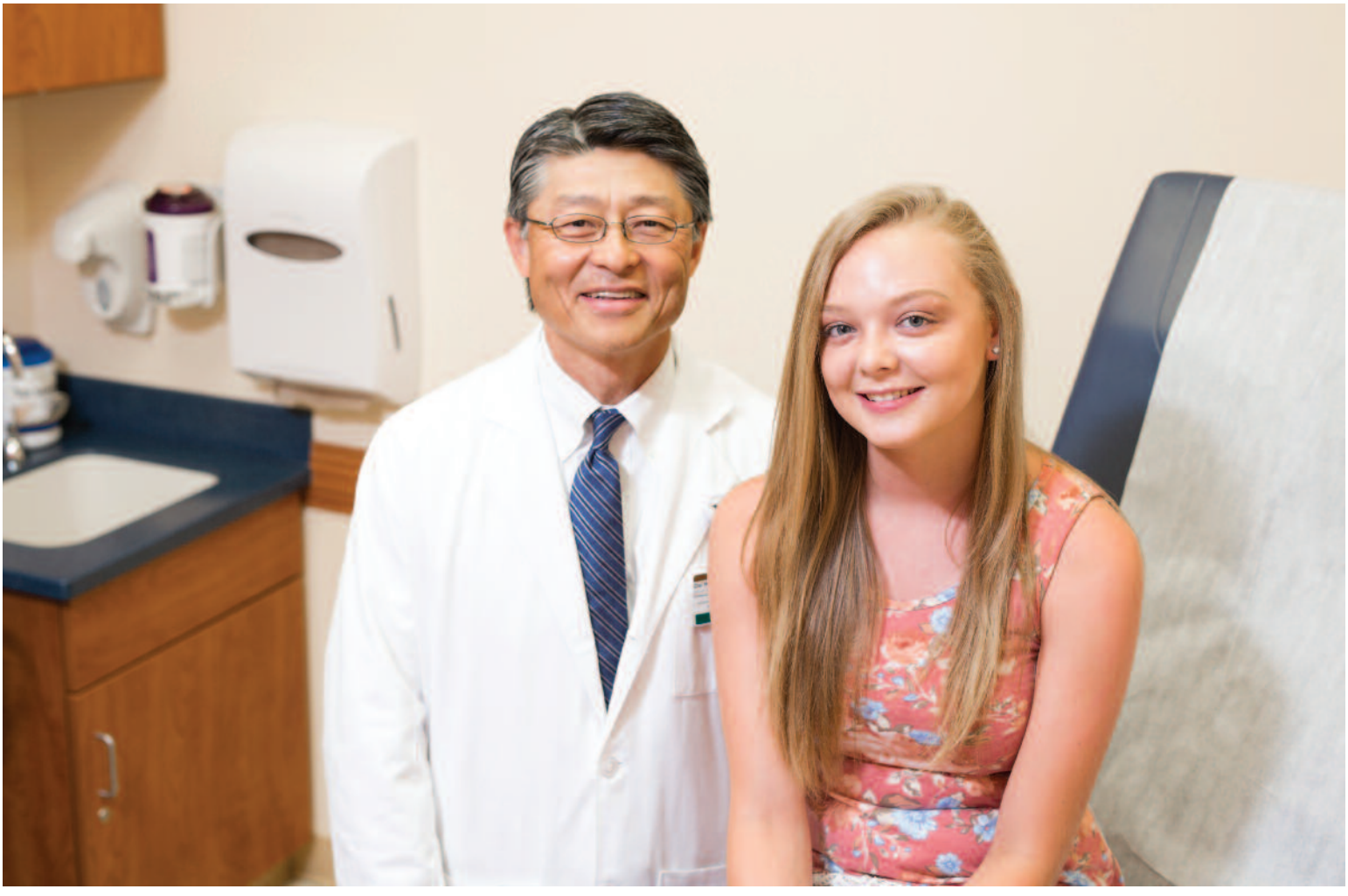
"When that helicopter lifted and they took off with her, that was the worst feeling of my life," Annette said. "From a past experience, we knew they would do everything they could for her."

In cases likes Macie's, the Children's Hospital Pediatric Trauma team is ready and waiting in the Emergency Department to treat pediatric trauma patients who have suffered a wide range of injuries resulting from various mechanisms. Injuries run the gamut, including all-terrain vehicle accidents, motor vehicle crashes, falls, gunshot wounds and bicycle wrecks, among others.

As a regional comprehensive pediatric facility, Children's Hospital is the only Level I Pediatric Trauma Center within 150 miles, providing specialty services for children from Alabama to Kentucky and across Tennessee.

Dai Chung, MD, director of Pediatric Trauma and chair of the Department of Pediatric Surgery, said the symptoms

SUSAN URMY



*Patient Macie Glover poses with Dai Chung, MD, during a recent follow-up appointment.*

"We knew Macie was in bad shape when she went in, but the extent of her injury was unbelievable. Dr. Chung talked us through all of it. He answered any questions we had. He was just awesome."

Macie experienced — severe abdominal pain and the inability to stand up straight — were classic signs of peritonitis (inflammation of tissue lining the abdomen) and a severe intra-abdominal injury.

"The clock was ticking. Her pancreas was completely torn in half," said Chung, the Janie Robinson and John Moore Lee Professor of Pediatrics. "It was getting close to 24 hours (post injury), a time when things can get unsettling, with a lot of edema and inflammation, and her internal organs start reacting. By 24 hours post injury, operating on the pancreas becomes tricky, and thereafter, it becomes more difficult by the hour, to a point where you run out of operative options."

As inflammation begins to set in and reactive enzymes release with the injury, blood pressure and other vitals become unstable and deteriorate.

The Trauma team had to quickly assess, stabilize and rule out that Macie didn't have any other unknown injuries before entering emergency surgery to remove part of her pancreas. Prior to surgery, the team also casted Macie's arm, which was fractured and had been splinted in Lawrenceburg.

"Knowing she had plenty of pancreas left, we made the decision to resect the distal part of the pancreas while avoiding any injury to the spleen. It requires very carefully teasing off of the blood vessels and tying them off," said Chung.

Four hours later, Chung met Annette and Keith Glover, pulling up a screen on his computer to detail Macie's injury and the surgery.

"We knew Macie was in bad shape when she went in, but the extent of her injury was unbelievable," Annette Glover said. "He talked us through all of it. He answered any questions we had. He was just awesome."

Macie was able to go home about a week after her surgery. While she has had to mend and deal with drainage issues with the pancreas, she has been able to start back with sports, and even made the high school basketball and softball teams.

"It's been a long journey, but we've had a good leader through this journey," Keith Glover said, referring to Chung.

Annette agreed. "We can never ever repay what he has done for her. He was so caring to her from the very beginning. Every time he has come in the room, he has been so good to her. He has treated her like his own." ■ *Christina Echegaray*

# Research Round-up

### Radiation and pulmonary fibrosis

Radiation-induced pulmonary fibrosis — tissue scarring that can permanently impair lung function — limits the delivery of therapeutic radiation doses to non-small cell lung cancer.

Michael Freeman, PhD, and colleagues are exploring the cell types and factors that contribute to the radiation-induced fibrotic response.

The investigators previously showed that loss of the transcription factor Nrf2 increases susceptibility to pulmonary fibrosis. They now show that thoracic (chest) radiation of mice causes a loss of alveolar type 2 cells and that this loss is enhanced in mice lacking Nrf2.

The researchers found that a specific stem/progenitor cell population was inhibited following radiation in mice missing Nrf2, and that alveolar type 2 cells in these mice were more likely to change into myofibroblasts — a cell type implicated in fibrosis.

The findings, reported in the November 2017 *Free Radical Biology and Medicine*, demonstrate that Nrf2 participates in stem cell mobilization and helps maintain the alveolar type 2 cell reparative process in injured lungs.

### A lipid's role in cell division

Proper cell division is a basic process critical to cell survival. A ring composed of actin filaments and myosin motor proteins pinches the cell apart, producing two daughter cells with equal amounts of cellular components.

Reporting in the *Journal of Cell Biology*, Kathleen Gould, PhD, Louise B. McGavock Chair, and colleagues characterized how this powerful contractile ring remains anchored to the plasma membrane allowing symmetric division.

Decreased amounts of the lipid family of phosphoinositides (PIPs) in the plasma membrane have been shown to cause cytokinesis defects. Despite this, how lipid levels could affect contractile ring function was unknown. PIP levels are regulated by a known set of proteins including Efr3 in Schizosaccharomyces pombe. When efr3 was knocked out in S. pombe, PIP levels were reduced in the plasma membrane. Interestingly, the cytokinetic ring slid away from the cell center, leading to asymmetrical division.

The work suggests that contractile ring anchoring may be dependent on a plasma membrane localized complex regulating PIP levels.

### Amoxicillin alone better choice for pediatric pneumonia: study

A combination of two antibiotics is often prescribed to treat community-acquired pneumonia in children, but a *JAMA Pediatrics* study is now showing that using just one of the two has the same benefit to patients in most cases.

Vanderbilt researchers report that amoxicillin alone, rather than combined with azithromycin, is just as effective and a better choice as it relates to efforts to curb antibiotic resistance.

One of the most commonly used antibiotics in pediatrics, azithromycin was prescribed to 12.2 million outpatients in 2013 and accounted for almost 20 percent of all antibiotic prescriptions for children in the U. S. ambulatory setting, according to an editorial accompanying the study.

"Combination therapy with azithromycin is unnecessary in most cases of pediatric pneumonia, both because the bacteria targeted by azithromycin are less common than other causes of pneumonia, including viruses, and the effectiveness of azithromycin has not been clearly demonstrated in prior studies," said lead author Derek Williams, MD, MPH, assistant professor of Pediatrics.

+BY THE NUMBERS

**11** Vanderbilt Health adult specialties were either nationally ranked or designated as nationally high performing in 2017-2018 *U.S. News and World Report's* Best Hospitals ranking

**55%** Of medical students took time off before matriculating in fall 2017

## Study explores nicotine patch to treat mild cognitive impairment

Vanderbilt University Medical Center (VUMC) is one of 29 sites participating in a national study to determine whether a daily transdermal nicotine patch will have a positive effect on attention and early memory impairment in older adults diagnosed with Mild Cognitive Impairment (MCI).

Paul Newhouse, MD, director of the Center for Cognitive Medicine at VUMC, is the national director of the study.

More than 8 million Americans are currently diagnosed with MCI, a condition that affects memory or other thinking skills. Recent evidence shows that adults with MCI are at a higher risk for subsequently developing Alzheimer's disease.

MCI is diagnosed when memory problems become more apparent than would be expected in normal aging. Symptoms include memory loss, problems with attention, and mild difficulties learning and retaining new information.

People participating in the Memory Improvement Through Nicotine Dosing (MIND) study will participate in 12 visits over a two-year period at one of the 29 sites.

"I am convinced that we will find a way to help improve early memory loss and make a real difference in people's lives. In this study, we have an inexpensive, widely available potential treatment," said VUMC's Newhouse, Jim Turner Professor of Cognitive Disorders and professor of Psychiatry and Behavioral Sciences.

Nicotine, a natural plant alkaloid, binds to very specific receptors in the brain that are important for thinking and memory and may have neuroprotective effects. People with Alzheimer's disease are known to lose some of those receptors. ■ *Nancy Humphrey*

# Symposium honors Moses' storied cancer research career

Members of the Vanderbilt University Medical Center (VUMC) community and others whose lives and careers have been influenced by legendary cancer investigator, educator and administrator Harold (Hal) Moses, MD'62, have endowed the Linda and Harold L. Moses, MD, Career Development Fund.

The fund will support the next generation of physicians, scientists and scholars, and was announced during a daylong research symposium held in October 2017.

Moses, a past chair of the Department of Cell Biology (now Cell and Developmental Biology) and founding director of Vanderbilt-Ingram Cancer Center (VICC), recently moved to emeritus status as a Vanderbilt faculty member and administrator.

Moses pioneered an entirely new area of cancer research when he described and purified a transforming growth factor known as TGF-beta. He and his colleagues determined that TGF-beta could both assist tumor growth by promoting the development of new blood vessels (angiogenesis), but also serve as a tumor suppressor, making this growth factor the "molecular Jekyll and Hyde of cancer."

Nearly every branch of cancer research has been influenced by this knowledge about the role of TGF-beta in human cancers and new research continues to build on this groundbreaking discovery.

During the research symposium, "TGF-beta: Discovery to Translation," an array of guest speakers from around the country who worked alongside Moses during his career or whose own research was influenced by Moses' findings, described the importance of his role in their lives.

"Our world is Hal-centric," according to R. Daniel Beauchamp, MD, deputy director of VICC. "He is a gravitational force that keeps us locked on this effort and this university." ■ *Dagny Stuart*

*Harold (Hal) Moses, MD, with his wife, Linda, right, and Jennifer Pietenpol, PhD, at a symposium honoring his illustrious career.*


STEVE GREEN

+ BY THE NUMBERS

**14** Number of retail health clinics within Walgreens that will be operated by a subsidiary of VUMC

**No. 5** VUMC's ranking among the top hospitals in the U.S. performing liver transplants, according to the *American Journal of Transplantation*

# Q+A

**Lawrence Marnett, PhD,** University Professor of Biochemistry, Chemistry and Pharmacology and Mary Geddes Stahlman Professor of Cancer Research, is Vanderbilt's first Dean of Basic Sciences, which comprises four biomedical science departments, eight centers and 18 research cores. Marnett was named dean in April 2016.

**Q.** Can you please describe a formative moment from your career in science?

**A.** After I earned my PhD in chemistry I went to do a post-doc in Stockholm in the lab that discovered prostaglandins. In my first week there I was measuring the oxygen content of a tissue extract and I added a little of the substrate for the enzyme that makes prostaglandins. The oxygen concentration just plummeted, telling me that in 15 seconds all the material I'd added had been converted to products. I remember thinking that organic chemists take months to synthesize prostaglandins, and I just made them in seconds. From then on I was hooked on biochemistry.

**Q.** What's distinctive about Vanderbilt's organizational structure for basic biomedical science?

**A.** Basic science departments are struggling at many academic medical centers, due to the pressures on clinical revenue. So at Vanderbilt the decision was made to move the basic sciences organizationally and financially into the University and structure the funds flow so there is a stable, predictable source of support for operations and investment. I think it was a brilliant move. Other institutions have considered this, but they haven't been able to pull it off.

**Q.** What dictates the direction of basic biomedical science?

**A.** I think first of all it's what the important questions are. A lot of basic science is driven by curiosity — people trying to understand how things work, but focusing on problems that are important for understanding health and disease. The other driver is technology; technological advances have completely changed the questions that we can ask and the speed at which we get answers.

**Q.** What's currently shaping basic biomedical science?

**A.** Certainly the ability to sequence DNA rapidly from patient material has transformed the way we can understand how certain diseases like cancer occur. That's a huge important trend. Revolutionary advances are enabling us to look at molecular complexes in their native state, even sometimes within a cell, and this helps us to understand their function. The ability to translate fundamental discoveries into a diagnostic reagent or a preventive or therapeutic agent is another trend; the technologies that used to be only in industry have now migrated into universities and academic medical centers, so it's possible to move from discovery to translation in a way that wasn't possible 25 years ago. And with CRISPR/Cas we've converted the machinery that bacteria use to fight off viruses into a tool that enables us to edit genes in their normal genomic location. We can knock out or change gene function, and this represents an extraordinarily powerful strategy for studying basic questions in biology and medicine. In fact, this same technology is moving toward clinical development.

■ *Paul Govern/Photo by John Russell*

JASON DAVIS/GETTY IMAGES

## Dolly's Children's Hospital visit highlights strong ties

*During her visit to Monroe Carell Jr. Children's Hospital at Vanderbilt, country music legend Dolly Parton took part in an on-air interview at Seacrest Studios that was simulcast to four other children's hospitals in the United States.*

To celebrate the release of her first children's album, "I Believe in You," legendary country music singer-songwriter Dolly Parton visited Monroe Carell Jr. Children's Hospital at Vanderbilt in October 2017 and performed songs from the album for patients, their families and hospital staff.

Parton specifically wrote the song "Chemo Hero" to honor one of her nieces, Hannah Dennison, who was treated for leukemia at Children's Hospital for four years, beginning in 1993.

"My niece Hannah was treated for leukemia here when she was 4. She's 29 now. She's a picture of hope, and she's my little Chemo Hero, which is one of the songs on the album I wrote for her. It was just a special day to be here at Vanderbilt because everybody took such good care of her when she was here," Parton said.

After leading the crowd in a sing-along performance of "Chemo Hero," Parton surprised the crowd by announcing a $1 million gift to Children's Hospital "in honor of my niece Hannah, my sister Rachel, Hannah's dad, Richard, and Dr. Naji Abumrad (Parton's Vanderbilt physician)."

"Today was a very wonderful day for us at the hospital," said Meg Rush, MD, Chief of Staff and Executive Medical Director of Children's Hospital. "Dolly has a special personal connection with the work we do every day because of her niece Hannah. Her experience, combined with Dolly's true passion to bring self-belief and hope to children through her music, truly came to life as Dolly visited the children in our infusion clinic." ■ *Jill Clendening*

+ BY THE NUMBERS

**$3.75 million** Five-year renewal grant was awarded to Vanderbilt Digestive Disease Research Center

**10** Monroe Carell Jr. Children's Hospital at Vanderbilt was one of 10 children's hospitals to be named a 2017 Leapfrog Top Hospital

# BioVU: Vanderbilt's DNA Databank

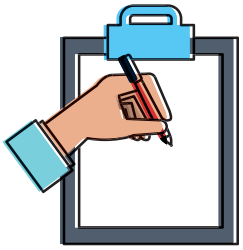
Now 11 years old, BioVU is one of the largest electronic health record (EHR)-based biobanks in the world at a single center.

1

**The BioVU consent form** is shown to patients at VUMC during check-in at outpatient clinics, describing the goals of BioVU and the research that supports it.

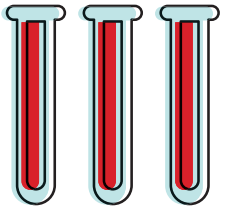
2

**The patient makes a choice** to participate or not in BioVU. They can change their decision at any time.



3

**To participate in BioVU,** the patient signs the BioVU consent form. If the patient does not want to participate, the form is saved without a signature and the decision is recorded.



4

**Blood tests are often ordered** by doctors to monitor or help diagnose illness. This is a normal part of clinical care.

5

**After clinical tests are done, sometimes blood is left over.** This blood is checked in the BioVU computer system to see if it can be banked for research from participating patients.

6

**If the left over blood can be banked, DNA** is separated and stored. To ensure patient privacy, BioVU also removes information that links the DNA to the patient or medical record.

7

**Researchers apply to access DNA and data in BioVU** to study how differences affect health and disease.

8

**BioVU collects about 500 DNA samples per week totaling over 250,000 DNA samples (February 2018).** Through BioVU, patients are helping researchers get closer to making discoveries that may improve how diseases are treated in the future — a benefit to all of us.

# In My Life

**NICOLE MCCOIN, MD'03, HS'06**

Vice chair of education and residency program director in the Department of Emergency Medicine, Harvard Macy Scholar, former VUSM course director and member of the Faculty Senate

A native Nashvillian, she graduated from Vanderbilt University in 1999 with a degree in Biology and Math.

"I believe that there is no such thing as a perfect balance. There are just too many competing interests and demands, yet practicing Emergency Medicine is a constant reminder that life is too short not to take advantage of all the wonderful experiences life has to offer. I do my best to set my priorities first every day – faith, family, friends, residents and patients, and health – and make sure I am spending my time on those things that are most important in my life."

+

*Photography by John Russell*

McCoin and her husband, Patrick, stroll Main Street in Franklin, Tennessee, with their children, Catherine, 10, James, 4, and Richard, 2.


"I picked up tennis just a few years ago — a great opportunity for me to spend some time with my friends and get some exercise."


McCoin, teaching the Emergency Medicine residents about emergent dermatologic complaints, says one of her greatest interests is resident education.


McCoin recruits residents from across the country, oversees their professional training and serves as a mentor. "I simply love my job."

"Emergency Medicine is a wonderful specialty. I see patients from all walks of life with all kinds of presenting medical problems. I love making the diagnosis and being with a patient in a time of need as someone who they can trust and count on."

# Brighter Days Ahead

*Task force shines light on physician well-being*

**It was like a switch flipped.**

One month, Ryan Bayley, MD'08, was practicing emergency medicine with the energy and joy he had experienced for years. The next month, his shifts had become drudgery.

It was the final year of his emergency medicine and EMS fellowship training in New York City. It was the last year of a pathway he had been on for 13 years, starting with several years working as a paramedic, followed by medical school at Vanderbilt, residency and fellowship.

"I was doing exactly what I had envisioned for myself, but I was physically struggling to recover between shifts, and the challenges of daily practice were wearing me down more than I expected," Bayley recalls.

"I attributed it to residency and fellowship being a pretty long haul and thought that things would improve once I was out on my own.

"And they just didn't."

Bayley was suffering from burnout, but he didn't recognize it.

*BY LEIGH MACMILLAN + ILLUSTRATION BY SIMON SHAW*

More than half of the physicians in the United States report symptoms of burnout — a syndrome of exhaustion, emotional detachment from one's work and reduced sense of personal accomplishment.

"There is a recognition nationally that there is a problem in medicine," says Reid Thompson, MD, William F. Meacham Professor and Chair of Neurological Surgery. "Whether burnout is a new problem is not clear, but what is clear is that it seems to be on the upswing."

Vanderbilt University Medical Center (VUMC) has established a task force to address the issue and seek ways to improve physician well-being. Thompson and Mary Yarbrough, MD, MPH, associate professor of Clinical Medicine and executive director of Faculty and Staff Health and Wellness, are co-leading the effort.

"I would argue that the institutions that will be successful going forward will be the ones that have addressed this problem head-on and have developed strategies to mitigate physician burnout," Thompson says.

## The problem of burnout

Although occupational burnout was described in 1974, and a psychological tool for assessing its symptoms was published in 1981, the first large-scale national study of physician wellness in the United States didn't happen until 2011.

That year, Tait Shanafelt, MD, and colleagues at the Mayo Clinic and the American Medical Association invited about 27,000 U.S. physicians to participate in a survey using the Maslach Burnout Inventory, a 22-item questionnaire that measures the three dimensions of burnout.

They found that among the 7,288 physicians who completed the survey, 45.8 percent reported at least one symptom of burnout. The highest rates occurred in specialties at the front lines of healthcare: emergency medicine, general internal medicine and family medicine.

Burnout was more common in physicians compared to working adults in other fields, and physicians were almost twice as likely as other workers to be dissatisfied with work-life balance.

Three years later, the situation was worse.

Shanafelt and his colleagues conducted another study in 2014 and found that among 6,880 physicians who completed the survey, 54.4 percent reported at least one symptom of burnout, an increase of nearly 10 percent compared to 2011. The percentage of physicians satisfied with work-life balance dropped almost 10 percent. Working adults in other fields had minimal changes in burnout satisfaction with work-life balance.

Other studies have linked physician burnout to higher rates of errors, infection and mortality in hospitalized patients.

"It's clear that physicians are strained," Yarbrough says. "The healthcare system and demands on physicians have changed dramatically in recent years.

"We have more pressures, more technology, more documentation, different ways that people are communicating with us, electronic medical records to navigate, quality metrics to meet, patients grading us. The list goes on and on, and there's a toll for each of these things."

Documentation requirements have become particularly onerous, says Thompson, with layers upon layers being added and nothing being subtracted.

According to a study published in the September/October 2017 *Annals of Family Medicine*, primary care physicians spend more than half of their workday interacting with electronic health record systems during and after clinic hours.

"All these things seem to be pulling us away from what brought us to medicine in the first place — the fact that we like taking care of patients," Thompson says. "More and more, we're not doing that. We're spending hours charting things — including late hours at home 'pajama charting.' That's not great."

## A paradigm shift in medicine

At Vanderbilt, the VUMC Task Force for Empowerment and Well-being, led by Yarbrough and Thompson, is tackling the issue of physician wellness. The 16-member multidisciplinary group opted for a name that reflected its desired focus.

"We want to find ways to empower physicians to take control of this issue," Yarbrough says. "What is it that physicians need in order to find meaning and enjoyment in their work? Our focus is on well-being and prevention."

The task force asked Vanderbilt physicians to complete an online survey with two questions:

"As a physician in the VUMC community, what do you need to do your best work and enhance your personal well-being?"

"If 10 reflects your optimal health and wellness and 0 reflects burnout or significant professional stressors or concerns, where do you place yourself on this scale?"

About half of VUMC physicians rated themselves below 5 on this scale, consistent with national findings on physician burnout.

"We're not immune from this problem at Vanderbilt," Thompson says.

The VUMC survey revealed broad themes that physicians identified in naming needs for their best work and personal well-being. The most mentioned needs included self-care, staffing support, leadership support and autonomy.

For its initial recommendations, the task force looked for enhancements that could happen relatively quickly. Some examples: adding wellness to the VUMC Credo, encouraging physicians to see their primary care providers, addressing childcare hours and addressing parking needs for on-call physicians.

Other recommendations will require more study of staffing needs, leadership training on wellness, guidelines for the meaning of time away from work and tracking implementation of changes.

## Call to Action

The National Academy of Medicine (NAM) announced in January that more than 130 organizations across the U.S. — including associations, hospital and medical systems, universities, and professional societies — have joined NAM in declaring their commitment to reducing burnout and promoting well-being among clinicians.

To provide an opportunity for organizations around the country to discuss and share plans of action, the NAM recently called for and has collected statements describing current work and future goals to reverse clinician burnout. By making a visible commitment to improving the well-being of clinicians, these groups join the NAM's Action Collaborative on Clinician Well-Being and Resilience as network organizations.

"We're starting a conversation and calling attention to these needs," Yarbrough says. "I think we're in the middle of a paradigm shift in medicine where we've got to step back and think about how we structure our practices. What are the things that we really need doctors to do, and what are the things that might better be done in other ways?"

Thompson envisions Vanderbilt leading the way to big changes in efficiency.

"I think the problem boils down to time and how our time gets eaten up by things that pull us away from the things that give meaning to what we do and to our lives," he says. "The task force is focusing on how we can make physicians' lives here much more efficient to buy back time for them."

That might mean adding scribes to the care team or leveraging technology to have an automated system taking notes in the background as physicians see patients.

"How can we invent that here?" Thompson says. "How can we be leaders nationally in developing strategies that empower physicians to get back to what they find joyful in their careers and in their lives?"

JOHN RUSSELL

## "I wondered what was wrong with me."

Faced with exhaustion and detachment during his final year of training, Bayley did what physicians do — he attempted to diagnose the problem.

He saw his general practitioner to test for endocrine disorders; he visited a sleep specialist; he consulted a psychiatrist.

"Even though I was apparently physically and mentally healthy, I was struggling to feel rested enough to show up at my next shift, and I had lost the sense of connection with patients and colleagues," Bayley recalls. "I wondered what was wrong with me and why all of the other residents and physicians seemed to be enjoying the work and having no difficulties."

He continued to suffer, devising ways to avoid the stresses of clinical practice and protect his limited energy, until he happened into an opportunity to work with an executive coach who specialized in burnout and fulfillment.

"The coach had never worked with a physician before, but he was willing and I was desperate."

Coaching — a structured process of reflection, goal-setting and skills development — made it possible for Bayley to "really step back and be fully conscious and objective about the things that were going on in my life," he says. "At that point, it became pretty obvious that I was experiencing burnout. I knew the triad of exhaustion, depersonalization and loss of efficacy, and I met those criteria."

Through mindfulness and other techniques, coaching helped Bayley develop skills to better manage the "inevitable challenges that come with practicing in the current healthcare system," so that he was able to practice emergency medicine again "and really enjoy the job."

He also re-prioritized his health and became more intentional about how he spent his time, particularly with his children, he says.

"I was able to balance my professional life with other areas of my life that had gotten neglected along the way."

Impressed with the impact coaching had on him, and now recognizing the same symptoms in physicians all around him, Bayley trained as a professional coach and began to coach physicians part-time while continuing to practice emergency medicine.

He now coaches physicians full-time and consults with healthcare institutions on physician well-being and performance. Bayley works

## Support for physicians

At Vanderbilt, physicians can turn to the Faculty and Physician Wellness Program, which was established nearly 20 years ago, for confidential psychological support.

About 6 percent of the faculty and physicians seek help annually for problems that are impacting their personal and professional lives, says Mary Yarbrough, MD, executive director of Faculty and Staff Health and Wellness.

"We have cases every single day," she says. "Through coaching or counseling, we help these individuals re-identify what is important to them and define steps they can take to get their joy back."

The American Medical Association offers a STEPS Forward series of online modules for practice improvement, including modules on improving physician resiliency.

Multiple studies have demonstrated the effectiveness of mindfulness in helping physicians combat the thoughts and feelings that contribute to burnout.

Yarbrough also points to the important role of the Center for Professional Health at Vanderbilt in providing programs for physicians from around the country related to disruptive behaviors and self-care. The center has also provided workshops at VUMC on well-being related to retirement and women's issues.

"While Vanderbilt has a strong foundation in managing high-risk physicians, we are expanding our reach to reduce burnout and stress even earlier," Yarbrough says. "The institution is promoting strategies at all levels that empower physicians to achieve excellence, establish institutional accountability for physician well-being and support physician self-care." ■ *Leigh MacMillan*

with physicians all over the United States, generally by phone or video conference two to four times per month for an average of eight months, although some clients require just a few sessions to work on a very focused challenge.

Coaching creates an objective and safe space for physicians to step back and work on themselves and their well-being, Bayley says. He helps his clients understand what is important to them, what is getting in the way, and how to make changes to reclaim control and satisfaction.

The work has given him insights into his own experience during his final year of training, he says.

"I'll think back and realize, oh, that behavior was really a manifestation of trying to avoid a difficult thought or feeling about work. When you're burned out, it's very easy to start focusing all of your time and effort on avoiding any further depletion. Life becomes about avoidance."

Take, for example, Bayley's experience in an emergency department during cold and flu season.

"You can imagine that a doctor has lots of difficult conversations about why a patient doesn't need antibiotics or doesn't need to be admitted to the hospital for a cold," he says. "Then that patient storms out of the ER calling you an idiot. That's depleting."

Bayley found himself speeding through exams of the "worried well" and prescribing antibiotics. In the moment, it felt like success: no arguments, no disgruntled patients, high throughput. But longer-term consequences soon kicked in: concerns about antibiotic overuse, not educating patients in a way that empowers them, not practicing good medicine.

"That really is a hallmark of burnout — when you're tangled in the difficult thoughts and feelings that are a normal part of daily medical practice and you start to spend your time and energy avoiding them, but you do so in ineffective ways," he says. "You're in a blind spot where 'problem-solving' actually fuels the problem, and eventually one of those actions catches up with you."

### Institutional culture change

The culture of medicine, Bayley argues, contributes to physician burnout.

"There's a hidden curriculum during medical training — all the behaviors and attitudes of senior physicians that pervade the profession," he says.

Ideals like service, responsibility, excellence and autonomy can have a dark side as they morph into obligation, being present for work but not fully functioning because of illness or other conditions, perfectionism, work compulsion and isolation.

"All these things together create a culture of people competing with each other to work harder: who gets in earlier, who stays later, who can push themselves the hardest, who's strong enough not to show any weakness," Bayley says. "The culture sets up barriers to admitting you need help and to seeking help."

Changing the culture to promote wellness is possible, Thompson says. He's done it in his department.

Thompson points to a trophy on the table in his office. It's a model skull — containing a softball — that is awarded to the winning team of neurosurgeons participating in an annual charity tournament in Central Park. The highly competitive event draws teams from all over the country. Vanderbilt's Department of Neurological Surgery won the tournament this year.

"We've been focusing on wellness with our residents, doing things like this tournament, whitewater rafting and camping, and we've achieved national recognition for our efforts," Thompson says. John Wellons, MD, professor of Neurological Surgery and director of the

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Vanderbilt is not immune to burnout, say task force co-chairs Reid Thompson, MD, and Mary Yarbrough, MD, but there are programs in place to help.

JOE HOWELL

## Student wellness a priority for VUSM

Brian Drolet, MD'09, has come full circle with the Student Wellness Program at Vanderbilt University School of Medicine (VUSM).

He helped start the program in 2006 during his time as a student, and he is now a participating faculty member.

"The wellness program grew out of the concept that in order to be a good doctor, you have to be healthy yourself," says Drolet, assistant professor of Plastic Surgery. "I think it's very important to train physicians early about good behaviors and patterns to take care of themselves so that they can take care of patients well."

Drolet helped to implement the vision of Scott Rodgers, MD, who was associate dean for Medical Student Affairs at the time.

"I can't truly take that much credit for it," he says. "I helped with the student side, as 'boots on the ground.'"

But student involvement in and ownership of the wellness program distinguishes the VUSM program from those at other institutions and is likely a reason for its success, says Amy Fleming, MD, MHPE, associate dean for Medical Student Affairs.

"The wellness initiatives come from the students, not from someone telling them what they need in order to be well or balanced," Fleming says.

Drolet watched the wellness program grow in its early years and is pleased that it is now embedded in the culture at VUSM.

"Being part of the culture is the primary success of the program; students realize that wellness is important," he says.

The Student Wellness Program includes three core components: the Advisory College Program, the Student Wellness Committee and a series of Wellness Retreats.

The Advisory College Program places students into four learning communities — colleges named for former deans. Each college has two dedicated faculty mentors and multiple faculty affiliate advisers and student affiliate advisers (senior students selected for the role).

The colleges provide a structure for mentorship (from both faculty and peers), small group discussion and social connection. They build camaraderie among students across all four years, particularly when they join forces in the annual "College Cup," an Olympic-style competition with athletic events, board game challenges and an iron chef-style competition among the events.

The Student Wellness Committee is student-run and includes five subcommittees that develop programs for body, mind, social, academic and community wellness. The wide variety of events offer a route to engagement for every student.


ANNE RAYNER

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College Cup 2017

"Everyone has different ideas of what it is to be balanced and have well-being in their professional and personal lives," Fleming says. "In considering all these different aspects of wellness, there will hopefully be events and programs that appeal to each individual."

Wellness Retreats — one-day events that are built into the curriculum — include programming and small group discussions focused on issues related to the stage of training. First-year students discuss "surviving versus thriving;" second-year students focus on "motivated abilities" to help discover their passion in medicine; third-year students talk about resilience and tools for dealing with job stresses, and fourth-year students reflect on their time in medical school and write the oath they will take at graduation.

"What we're doing this whole time — through the colleges, the wellness initiatives and the wellness retreats — is setting up relationships, among the students and between the students and the faculty," Fleming says. "We try to make our community real and supportive, and I hope that's helpful and protective for our students."

"We're doing all these things to support students, help them be well and to try to minimize the burnout that can start to happen in medical school," Drolet says. "Other schools may have similar activities, but not all of them clearly identify those activities with wellness.

"It's got to be front and center all the time, that wellness is as essential to the whole process of becoming a physician as anything else in medical school." ■ *Leigh MacMillan*

department's residency program, was invited to give a presentation about the wellness curriculum at the 2017 meeting of the Society of Neurological Surgeons, which includes program directors and department chairs from every academic medical center in the country.

"I know that you can change the culture if you start talking about well-being, thinking about it, modeling it and holding people accountable," Thompson says. "If your focus is a culture of well-being, there's a lot of good that comes from that."

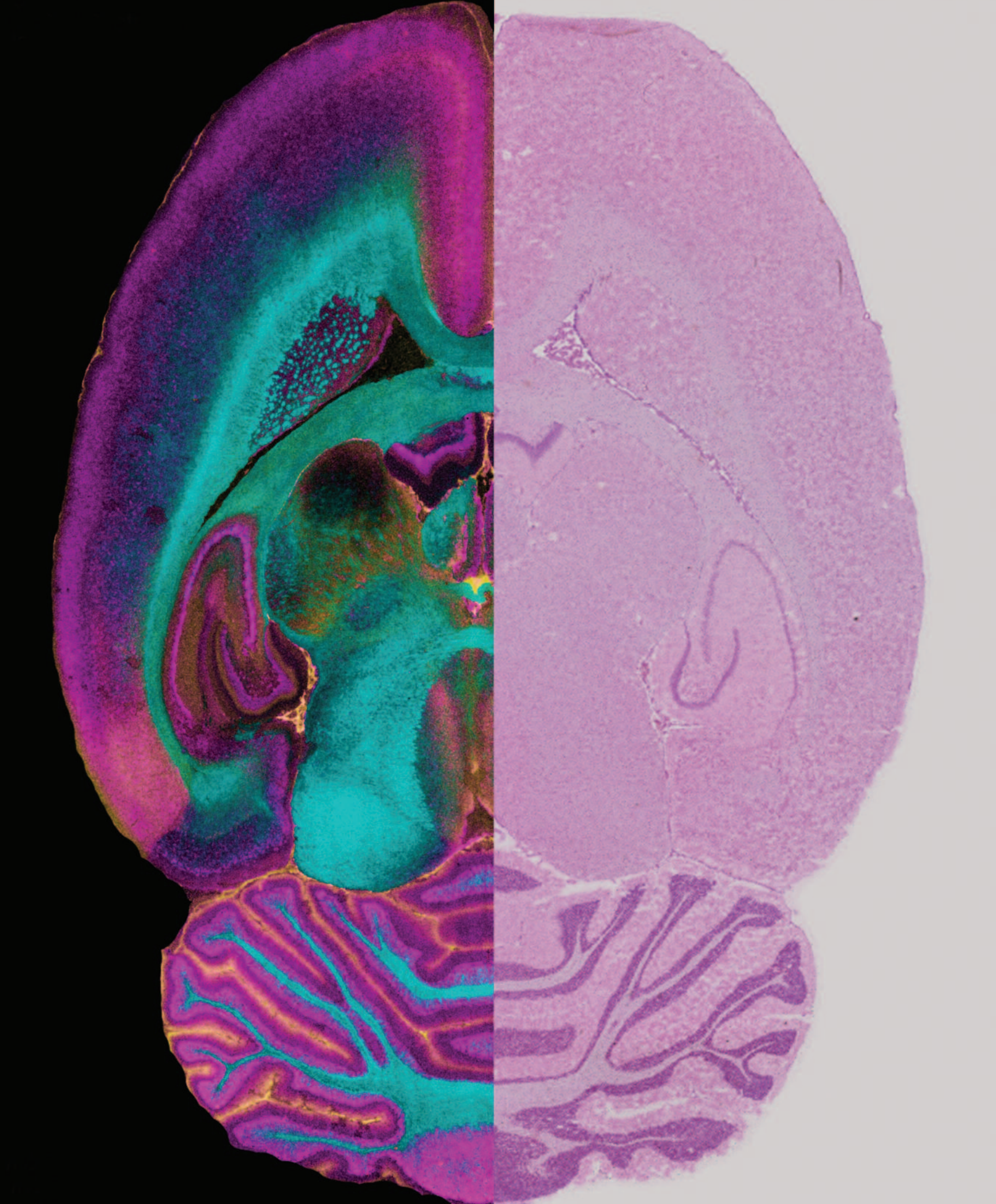
An institution promoting a culture of wellness would address issues in self-care, child care, eldercare, pay and other areas of concern that arise, Yarbrough says.

It might mean that departments have a chief wellness officer and that department meetings include discussion of wellness initiatives, Thompson adds. It could mean that in addition to focusing on clinical work, research and teaching, mentorship of residents and young faculty might include a focus on wellness — a "fourth leg" of mentoring.

"That happens in pockets, but if it happened institution-wide, that would move the dial to the goal of becoming that place where people want to come and where they want to stay."

Thompson says he's honored to be part of the VUMC task force and that its work may be the most important of his career.

"The direction that things are heading with this alarming rate of physician burnout makes it critical to develop strategies to mitigate that, to turn it around. I think it will be a lasting contribution." ■



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(Left) High-spatial resolution mass spectroscopy reveals in bold colors the distribution and concentration of different lipids based on their molecular weight in a rat brain.

# Up Close and Personal

*Advances in imaging science bridge gap between molecules and man*

Recent advances in imaging technology are enabling scientists to "see" how molecules, cells and tissues are put together — and work together. These unprecedented views of life down to the minutest level are yielding radical new insights into the causes, treatment and prevention of disease.

At Vanderbilt University and Vanderbilt University Medical Center (VUMC), a long-term commitment to imaging science has nurtured an expertise and technological prowess matched by only a handful of the nation's leading universities and academic medical centers.

*BY BILL SNYDER + IMAGE COURTESY OF RICHARD CAPRIOLI, PHD*

Researchers in the Center for Molecular Probes and Department of Chemistry, for example, are developing new radiopharmaceuticals — tracers — used in positron emission tomography (PET) to improve detection of cancer and other diseases. "Our efforts literally bridge molecules to man," said center director Charles Manning, PhD.

Across the Vanderbilt campus, researchers are applying high-resolution light microscopy and cryo-electron microscopy to generate amazingly detailed pictures of cell structures and the complex molecular "machines" that do the cell's work. At the brink: image fusion, a brilliant combination of existing techniques that has the potential to transform medical practice.

"Seeing leads to understanding," said Lawrence Marnett, PhD, dean of Basic Sciences and the Mary Geddes Stahlman Chair in Cancer Research in the Vanderbilt University School of Medicine.

Thanks to the latest imaging technology, "Vanderbilt scientists can determine the three-dimensional structures of molecular machines then watch them operate in intact cells, tissues or people," Marnett said. "This helps us understand how they function in normal cellular physiology and what goes wrong in disease.

"Each of our imaging technologies operates at the state-of-the-art," he said. "They have been implemented by Vanderbilt scientists who are defining the frontiers of their fields. The breadth and depth of our capabilities are awesome. This is a tremendous resource for our researchers, clinicians and patients."

## Precision medicine

The development of Vanderbilt's imaging infrastructure owes much to Trans-Institutional Programs (TIPs), a series of far-sighted grants that support cutting-edge research and infrastructure development. Part of the University's $50 million strategic investment in interdisciplinary research, the annual TIPs initiative was launched in 2014.

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This confocal microscope image shows a Tuft cell (green) in the intestinal epithelium. Tuft cells are rare host defense cells that respond to infection in the gut.

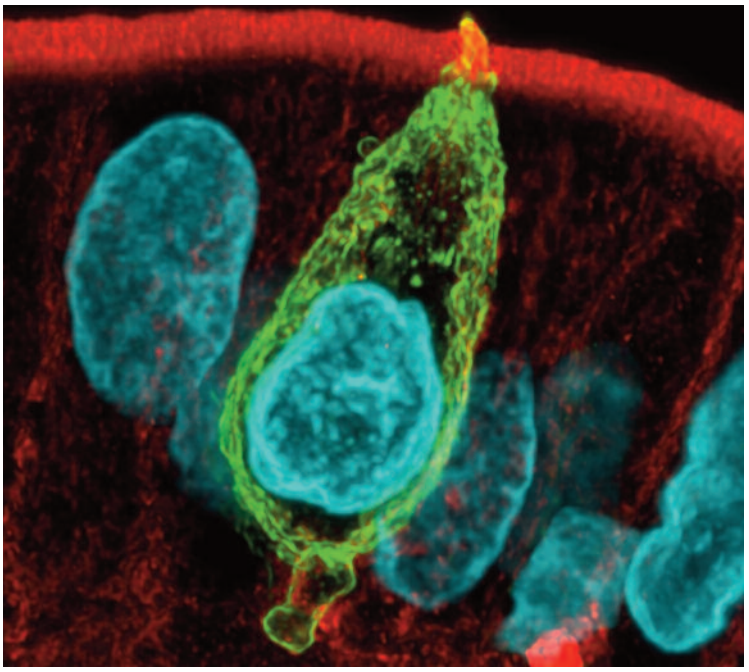

IMAGE COURTESY OF MATTHEW TYSKA, PHD

A 2015 TIPs grant is aiding development of high-field magnetic resonance imaging (MRI) for advanced neuroimaging at the Vanderbilt University Institute for Imaging Science. A 2016 grant is supporting the search for novel antibodies and the design of next-generation vaccines by the Vanderbilt Vaccine Center and Center for Structural Biology.

Another 2015 grant is supporting development of small, microfluidic-based reactors that enable "on-demand" production of inexpensive, single-patient doses of new PET imaging agents, a radical advance that is pushing forward the frontier of molecular imaging in clinical settings.

"We have about a dozen investigational radiopharmaceuticals in clinical trials at Vanderbilt," said Manning, the Ingram Professor of Cancer Research.

One innovative PET tracer called FSPG detects tumors by their increased rate of glutamine metabolism. Using a "theranostics" approach, Manning and his colleagues are testing a drug in animals that blocks glutamine uptake. By labeling the drug with an imaging isotope, they can see where it goes.

The goal is precision medicine — matching patients with the right therapy and monitoring outcomes with PET. "If used appropriately," Manning said, "PET can reduce the cost of healthcare because we can make better decisions about the diagnosis and the treatment the patient should get."

## Machines of life

A second revolution brewing at Vanderbilt is the application and refinement of cryo-electron microscopy (cryo-EM). The 2017 Nobel Prize in Chemistry was awarded to the developers of this groundbreaking technique, which enables researchers to directly visualize biomolecules and molecular complexes.

For decades, X-ray crystallography has been the gold standard for visualizing the structures of proteins at the atomic level. But it's not perfect. Some molecules and complexes will not crystallize and the crystalline environment sometimes induces artifacts.

In the past few years, cryo-EM solved these problems and set off a revolution in the field. Single molecules and molecular complexes can be directly observed without any need for crystallization.

That's important, said Walter Chazin, PhD, Chancellor's Professor of Medicine and director of the Center for Structural Biology, because it's these protein complexes, what he calls "machines of life," that are key to understanding and developing more effective treatments for diseases like cancer.

"What's happened in cryo-EM in the last five years has just been a stunning development in science," added Charles Sanders, PhD, the Aileen M. Lange and Annie Mary Lyle Professor of Cardiovascular Research and associate dean for Research. "And we're just getting started on this."

Already the next-generation cryo-EM is on the market, and Vanderbilt is in line to get one, thanks to a TIPs grant awarded in 2017. Called the Titan Krios, the instrument sells for more than $6 million. It will be delivered to Vanderbilt in the fall.

"We really have to have this technology here," said Borden Lacy, PhD, the Edward and Nancy Fody Professor of Pathology who is studying a bacterial toxin associated with diarrheal illness. "We have an excellent instrument, but the Titan Krios is bringing (image) stability and automation we don't have."

## Molecular mapping

A third imaging revolution at Vanderbilt has to do with super-resolution light microscopy.

Before 2011 light microscopes used by Vanderbilt scientists were limited to a resolution of about 200 nanometers. That's not sharp enough to pick up individual molecules within cells, which might be only a few nanometers across.

Thanks to a computational advance called STORM (Stochastic Optical Reconstruction Microscopy), scientists now can calculate the size and location of molecules in cells and tissues.

"You can build maps of where all the molecules are," said Matthew Tyska, PhD, scientific director of the Cell Imaging Shared Resource (CISR), the Cornelius Vanderbilt Chair and professor of Cell and Developmental Biology.

STORM and another technique called SIM (Structured Illumination) are offered through the Nikon Center of Excellence for live-cell imaging at Vanderbilt, one of six in the country.

The center opened in 2016 with financial support from the medical school's Department of Cell and Developmental Biology and the office of the Dean of Basic Science and with technical support from Nikon.

A newer method, called light-sheet microscopy, uses a thin plane of light to rapidly "section" extremely large biological samples. The resulting three-dimensional information can then be reconstructed in a computer.

Installed in December 2017, Vanderbilt's $340,000 LaVision Ultramicroscope II "greatly expands our ability to image fluorescent signals in large volumes of brain and other tissues," said Richard Simerly, PhD, the Louise B. McGavock Professor in the medical school's Department of Molecular Physiology and Biophysics.

Simerly was recruited in 2016 from the University of Southern California and is developing a neuro-visualization core.

Researchers in the Schools of Medicine and Engineering and in the College of Arts and Science are now working on the next technological advance — lattice light-sheet microscopy. It will enable scientists to perform long-term, high-resolution imaging over time down to the molecular scale — minutes-long "movies of life," Tyska said.

A TIPs grant awarded in 2017 is supporting the effort to build the new microscope, which is not yet commercially available.

Anita Mahadevan-Jansen, PhD, the Orrin H. Ingram Professor of Biomedical Engineering, is the grant's principal investigator (PI). Tyska and Shane Hutton, PhD, chair of the Department of Physics and Astronomy in the College of Arts and Science, are co-PIs.

## Disease signatures

Despite all the recent progress, clinical imaging techniques including MRI cannot "see" beyond the millimeter level. But it's at the micron to molecular scale where disease occurs. "Somehow we're going to have to figure out a way to close that gap," Simerly said.

That's where a fourth research revolution at Vanderbilt comes in: imaging mass spectrometry (IMS) and image "fusion."

IMS, developed at Vanderbilt in the late 1990s by Richard Caprioli, PhD, and his colleagues, is essentially a "molecular microscope" that can measure the distribution, spatial rearrangement and alteration in expression levels of proteins, lipids and other biological molecules.

In 2015, Caprioli's team reported the first "image fusion" of mass spectrometry and microscopy, a technological tour de force that allows scientists to see the molecular make-up of tissues in bright-field microscopic resolution.

"We're now coming up with (molecular) signatures for disease," said Caprioli, the Stanford Moore Professor of Biochemistry and director of the Mass Spectrometry Research Center. The technique can identify cells that look normal under the microscope but which already are transforming into cancer.

Caprioli predicts image fusion will have a huge impact on anatomic pathology and surgery. In removing a kidney tumor, where should the surgical margin be? In other words, how much tissue should be removed to minimize the chance for recurrence? Image fusion can help.

Timothy Cover, MD, professor of Medicine and of Pathology, Microbiology and Immunology, who is studying bacterial toxins, is looking forward to adding image fusion to his armamentarium of research tools.

"I think all of these things will be complementary," he predicted. "One of the things Vanderbilt is doing very well is staying competitive in multiple imaging areas."

Simerly agreed.

"We have some of the best cell imagers in the world here," he said, "and we are also strong in whole brain imaging. We are well positioned to narrow the gap and improve the predictive value of clinical imaging.

"I think it'll definitely happen," Simerly said. "The question is when." ■

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In this positron emission tomography (PET) scan fluoro-thymidine (FLT) tracer detects enhanced DNA synthesis in rapidly dividing rectal cancer cells (spot at bottom, middle). Rapid DNA synthesis in healthy bone marrow and normal uptake of the tracer by the liver and clearance by the kidneys can be seen as well.

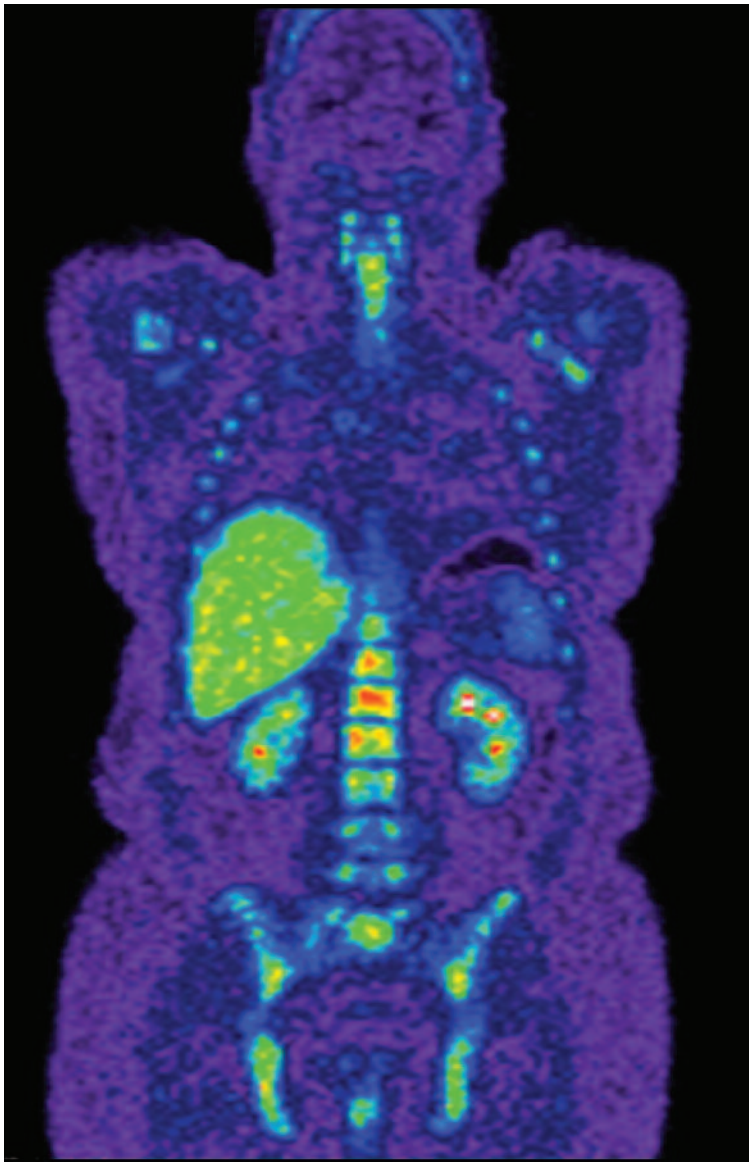

IMAGE COURTESY OF CHARLES MANNING, PHD

Ahmya Calloway

# Life Goes On

## Innovation in multi-organ transplants means more lives saved

Ahmya Calloway, 13, had end-stage renal failure that impacted her heart function. The Chattanooga, Tennessee, native had been cared for at Monroe Carell Jr. Hospital at Vanderbilt since she was 2 years old.

Medication was the first thing Calloway's doctors tried, but over time her health declined to the point that she needed hemodialysis. Soon after it was begun, Calloway's heart began to fail. She needed a new heart and kidney.

In May 2016, the teenager became Vanderbilt's first pediatric dual heart/kidney transplant recipient. At the time of her transplant, United Network for Organ Sharing data show there had been just 41 heart/kidney transplants in children younger than 18 performed in the United States since 1988.

*BY JESSICA PASLEY + PHOTOGRAPH BY DANIEL DUBOIS*

"It is very rare for children to receive a simultaneous heart and kidney transplant," said Calloway's pediatrician Kathy Jabs, MD. "We have had patients who received a heart transplant who needed a kidney later in life, but never at the same time. Ahmya was our first, and she is doing wonderfully."

## Excellence in innovation

The Vanderbilt Transplant Center (VTC) has experienced many "firsts" over the last couple of years. The longest continuously running transplant program in the Southeast, VTC was established nearly 30 years ago as a multidisciplinary, full-service center for transplantation. The center has made significant advances in education and research and dramatically changed the lives of thousands of patients and their families.

At the core of the center's success is innovation, a key theme of the charter written in 1989. Lauded for outcomes and patient care, the center's ability to offer state-of-the-art advances continues to be central to its mission — to propel and direct organ transplantation, research, medicine, technology and education into the future while securing its place as the recognized leader and national authority of multi-organ transplantation.

"We have come a long way since the inception of the program and we continue to integrate the newest innovative and technological solutions in our practices to help us care for our patients," said Seth Karp, MD, H. William Scott Jr. Professor and chair of the Department of Surgery and director of the Vanderbilt Transplant Center. "As we grow, our ability to perform cutting-edge research and technology increases.

"Innovation to me is anything that helps patients that hasn't been done before. We are poised to continue our efforts to combine emerging science with clinical delivery."

Vanderbilt performs about 450 solid organ transplants a year. The center's adult clinical program comprises kidney, pancreas, combined kidney/pancreas, heart, lung, combined heart/lung, liver, combined heart/liver and combined heart/kidney. The center's pediatric clinical program comprises kidney, liver, heart transplantation and dual organ transplant.

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Seth Karp, MD, is the director of the Vanderbilt Transplant Center, one of the largest organ transplant programs in the Southeast.

JOE HOWELL

Not only does the Transplant Center offer the most novel therapies and technology available, it also incorporates patient support services in areas that include psychiatry, ethics, pharmacy, infectious disease, social work, quality of life and return-to-work. These programs have played a critical role in helping move the center forward and served to set it apart from peer institutions.

"We are a center for training and education," said Ed Zavala, administrator for VTC. "We recognize the value of treating and supporting our patients as a whole person, which goes beyond the actual act of transplantation.

"We know we can save lives; we have the technology and skills to do that. What we also focus on is the quality of a patient's life after transplant. How can we make their lives better? It starts even before they begin the transplant process and we work with them beyond that to help them gain a normal level of quality of life."

## Ex-vivo perfusion

For decades the miracle of organ donation has relied on an ice cooler to preserve and transport an organ from donor to recipient.

Until now.

Vanderbilt is participating in two separate clinical trials testing novel preservation and transport devices for both hearts and livers. Both studies have the potential to revolutionize transplantation.

The trials will use devices to keep the organs functioning during transport from the donor to the recipient by mimicking the human body. The revolutionary devices continuously perfuse warm, oxygenated, nutrient-rich blood and nutrition to the organ to optimize function.

"Ex-vivo perfusion is the next big thing in heart transplantation," said Ashish Shah, MD, director of Heart Transplant and Mechanical Circulatory Support. "The idea is to expand the donor pool. Opening up the criteria for heart donors will do two things: get people transplanted faster because the geographical area has increased with the removal of the time constraints; and secondly, it allows us to create new knowledge in this innovative field of organ reconditioning and resuscitation."

Currently, surgeons work to transplant a heart within four hours after it has been harvested from the donor's body. VTC is one of nine centers across the United States to participate in the EXPAND Heart Pivotal Trial using a device by TransMedics called the Organ Care System (OCS). The device has the ability to increase the amount of time that a heart can be maintained outside the body in a condition suitable for transplantation, providing surgeons the opportunity to assess the heart's function outside the body and allow for resuscitation, which could potentially improve function after removal from the donor.

"What if we could use this platform to repair hearts?" asked Shah, who holds the Alfred Blalock Endowed Directorship in Cardiac Surgery. "When I look at this technology I am inspired by the extraordinary possibilities of what this holds for the future of transplantation.

"At Vanderbilt we ask and try to answer the relevant questions. If you don't have a group of people who are thinking in those innovative ways or thinking about innovation, you are just doing heart transplants."

Like the heart, VTC's liver program will also test a novel therapy using the OrganOx metra® device, which has the capability of preserving the liver for up to 24 hours outside the body, unattainable with standard preservation methods.

Vanderbilt is among 15 centers, and the only institution in Tennessee,

enrolling patients in an investigational, randomized and controlled nationwide study.

"I believe perfusion is the future of organ transplantation," said Sophoclis Alexopoulos, MD, chief of Vanderbilt's Division of Hepatobiliary Surgery and Liver Transplantation. "This technology has the potential to increase the donor pool as well as maximize recipient outcomes.

"There are so many future possibilities that this kind of technology can bring. The potential to modulate or modify ex-vivo organs, the potential capability of rehabilitating damaged livers for transplantation and the possibility of modulating the immune profile of the livers to facilitate compatibility issues."

## A chance to grow up

Bret Mettler, MD, assistant professor of Cardiac Surgery at Monroe Carell Jr. Children's Hospital at Vanderbilt, envisions a bright future for children requiring cardiac transplantation utilizing different sources of technologic advancement.

"In pediatrics, we often utilize existing technology, most often designated for much larger patients, and modulate it into therapies that can work for children," he said. "It's what we have been doing for years within the field of mechanical support as a bridge to transplantation.

"At Vanderbilt we are fortunate to have one of the largest mechanical support programs in the United States. Our partnership with our adult mechanical support program has been instrumental in maximizing benefits for our patient population."

While the lack of research and design dollars for new advancements in pediatric heart transplantation continues to be one of the biggest barriers to innovation, Mettler said there is good news on the horizon.

One novel therapy that is showing promise is ABO-incompatible heart transplants. Children's Hospital performed the state's first procedure in 2013. It has done five to date. The procedure — reserved for children 2 years old and younger who have not yet developed significant levels of anti-ABO antibodies — helps a transplant recipient tolerate an organ from a donor whose blood type is incompatible.

In the past, children listed as ABO incompatible for heart transplants were at the "bottom of the list" in terms of matching with a donor. But recent outcomes showing improved survival rates have sparked growing interest in the technique and a reallocation strategy for patients who can receive this type of heart transplant.

Mettler said he is buoyed by the prospect of two additional advancements: the creation of a new heart/liver transplant program for patients with congestive hepatopathy and a new device trial for pediatric heart failure patients.

"If you want to talk about where we are pushing the envelope for our kids, we are starting a true heart/liver transplant program for children," said Mettler. "Roughly 20-30 percent of our congenital heart volume is made up of patients who have a single ventricle physiology and over time leads to congestive hepatopathy."

The program, the first in the area, will cater to patients with congestive hepatopathy, a backup of blood in the liver, resulting from heart failure. This disorder eventually causes cirrhosis of the liver with some patients requiring a combined heart/liver transplant.

The need for circulatory support devices for small children with advanced heart failure, most of whom will need a heart transplant, is substantial and has been growing over the past decade.

Vanderbilt was the first in Tennessee to implant the Berlin Heart, a smaller version of left ventricular assist devices (LVADs) used in adults. The life-saving device is the first of its kind for small infants and children and buys patients time until a donor heart can be found. A plastic tube attaches to the heart and major vessels to divert blood briefly from the body to a pumping chamber that rests outside the body. The pump gives the blood a stronger push than the heart can muster to deliver oxygen and nutrients needed by the brain and vital organs to sustain life.

"What we also focus on is the quality of a patient's life after transplant. How can we make their lives better?"

## Building the team beyond surgeons

The infrastructure of the Vanderbilt Transplant Center (VTC) allows for an interdisciplinary environment that creates a culture of teamwork and enhanced communication among all members of the transplant service, said Ed Zavala, administrator for VTC.

The complex nature of transplantation requires significant attention to all aspects of transplantation, including business and administrative issues. Vanderbilt's focus on ancillary transplant personnel has led to three unique training programs — a transplant pharmacist post graduate year 2 (PGY2) residency, a transplant administrator fellowship and a nurse practitioner fellowship.

VTC, in partnership with the Department of Pharmacy, established the PGY2 residency program in 2006. The program is in high demand from pharmacists that desire specialty training.

Vanderbilt continues to be the only center in the country with a transplant administrator fellowship. It was started in 2011. The nurse practitioner training program began in 2017 and offers a one-year fellowship to prepare nurses to provide quality, evidence-based patient care.

VTC also offers multidisciplinary research opportunities that incorporate pharmacists, nurses, nurse practitioners, social workers and dietitians.

"It's a unique approach," said Zavala. "It's not just physician-led or driven by the surgeons. It's a collaborative effort among the entire team and an integral component in the continued success of the Transplant Center."

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Ex-vivo perfusion will advance heart transplantation, says Ashish Shah, MD.

ANNE RAYNER

## BY THE NUMBERS

Over the years the Vanderbilt Transplant Center (VTC) has seen tremendous growth in all of its programs.

In 1962, the first cadaveric kidney transplant was performed. As one of the largest and oldest kidney transplant programs in the country, VTC has performed more than 5,600 kidney transplantations since the program's creation.

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In 1985, the center performed its first heart transplant. In 2017, the center celebrated transplanting its 1,000th heart.

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The liver program was created in 1990. One of the largest programs in the Southeast, VUMC has performed more than 2,000 liver transplants.

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VUMC is home to the second busiest heart transplant program in the country and ranked No. 1 in the Southeast region for volume for its combined adult and pediatric procedures, according to data released by the Organ Procurement and Transplant Network.

The adult liver program is ranked fifth in the country in volume.

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The combined adult-pediatric liver transplant program is tied for sixth in volume.

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Vanderbilt is credited with the first lung transplant in Tennessee in 1990 and for the Southeast's first combined heart/lung transplant in 1987.

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VUMC recently performed its first pediatric dual heart/kidney transplant in 2016. According to United Network for Organ Sharing data, there have been just 41 heart/kidney transplants in children younger than 18 performed in the United States since 1988.

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In 2017, VTC performed its first adult heart/liver transplant joining a few other centers nationwide.

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Since its inception, the center has performed more than 9,000 transplants, including: 5,600 kidney or kidney/pancreas; 1,083 heart; 467 lung or heart/lung; and 2,043 liver.

But the need for additional support led to the creation of a continuous flow device that is set to be tested this year. Vanderbilt is one of the 16 sites for the PumpKIN (Pumps for Kids, Infants and Neonates) trial. The pump, the size of a paper clip, is fully implantable and supports the circulation of infants and children with advanced heart failure.

### Lifesaving collaboration

The advancements among the various transplant programs at Vanderbilt give Karp pause and he quickly credits the many team members working to progress transplantation, quality of patient care and outcomes. Among those included in his accolades are members of the transplant teams at the VA Tennessee Valley Healthcare System (VA).

"At Vanderbilt we are honored to collaborate with the outstanding physicians at the VA to deliver state-of-the-art care to our nation's veterans," said Karp. "We are the only center in the country that offers bone marrow, liver, kidney, heart, and multiple solid organ transplants to VA patients. We are extraordinarily proud of the trust the VA has placed in our clinical programs over many years."

In 2017, the dual organ heart/kidney transplant using hepatitis C-positive organs for a disease-free patient was a first for VTC. Traditionally organs infected with hepatitis C, the most common blood-borne infection, would only be offered to patients who also have the disease. If the organ was not suitable for that patient population, it would be discarded.

VTC had already demonstrated the ability to transplant and manage both liver and hearts from a hepatitis C-positive donor into a non-positive recipient with successful outcomes due largely to the advances in anti-viral drug therapies that cure hepatitis C (HCV).

It was a concept learned from the VA, said Joseph Awad, MD, chief of transplantation at the VA. He said the ability to transplant hepatitis C organs into a non hepatitis C patient was a game changer for his program in 2016.

"Hepatitis C has been a major issue for the past 20 or so years," said Awad. "It's only been in the last three to four years with the availability of great new medications and it has changed everything. The use of these new antiviral drugs is helping to eradicate HCV, extend the lives of patients already transplanted with HCV, reduce the demand for livers and open up transplantation for more people."

The Nashville VA, home to the largest transplant center in the country, has blazed a trail in the use of telehealth as a way to provide care to its patients from around the country. The opportunity to consult with patients prior to travel to the VA hospital has allowed for more efficient visits as well as the ability for team members to identify patients who are not acceptable transplant candidates, which saves on unnecessary travel and time for the patients.

But one of the greatest innovations, according to Awad and VA colleague and cardiologist Henry Ooi, MD, is the relationship that began decades ago between the two campuses. Both physicians are part of and work closely with the transplant program at Vanderbilt.

Situated adjacent to VUMC, the Nashville VA is one of a few facilities nationwide to provide transplants for veterans. Modeled after VTC, the Nashville VA is also the only comprehensive transplant center in the VA system, providing all of the most common transplants – kidney, heart, liver and stem cell.

"The collaboration between the two entities has been lifesaving for our patients," said Ooi, medical director of the advanced heart failure and heart transplant program at the VA.

"Much of what we are able to accomplish, we do in concert with Vanderbilt. We are the only VA heart transplant center that offers dual organ transplants. Our survival rates and outcomes are above the national average. Our shared care model, our proximity and relationship with Vanderbilt are all a part of what makes our transplant program successful," said Ooi.

The longstanding relationship between the two campuses is a source of pride for Karp. He said the collaboration has provided veterans access to the transplant services at Vanderbilt while enriching the educational opportunities for the center's medical students and fellows.

As an academic medical center, Karp said innovation is present in most every aspect of the transplant center's programs. A few areas Karp is focused on include: treating kidney transplant patients with significant obesity; liver regeneration research and having a voice in the national debate in liver allocation which could potentially change the way the UNOS distributes livers that would negatively impact patients listed at Vanderbilt and across the Southeast.

"Our goals are to take outstanding care of our patients and help lead advances in transplant practice, training and research," said Karp. "We are always thinking about ways to improve this field in a significant way. Sometimes that is through treatment options, technology, relationships, research and advocacy, but at the center of all of this is the patient." ■

## More than Milestones

Top: Jimmy Moore, VUMC's longest living heart transplant recipient (1986), recently reunited with surgeons Walter Merrill, MD, left, and William Frist, MD; At age 71, Rex Patton is the oldest patient to undergo a heart/kidney transplant at VUMC; Middle: Bonnie Davis, with Tom DiSalvo, MD, left, and Walter Merrill, MD, was the first female heart transplant recipient in 1986; Khris Downing received a kidney from his sister after her death; Michael Wilcher received a rare dual heart/liver transplant in 2017; Bottom: Julie Damon was VUMC's first liver transplant patient in 1991; Savannah Parks received the first dual organ transplant using hepatitis C positive organs for a disease-free patient in 2017.

Protecting patients from infection is the top priority for Tom Talbot, MD, MPH, and Vicki Brinsko, MSN, RN.

# INVISIBLE THREAT

## *Sleuths seek stealth-like microbes*

*BY JILL CLENDENING + PHOTOGRAPH BY JOHN RUSSELL*

**Every day, a team** of epidemiologists, infection preventionists and data analysts report to work at Vanderbilt University Medical Center (VUMC) with a mission: to track invisible trails of microscopic clues, dissect data, analyze lab results, pore over patient medical records and ferret out possible hiding places of disease-causing microbes that could lead to dangerous infections.

Sometimes their search leads to surprising locations such as construction zones, which are plentiful on the sprawling medical campus.

Trading a microscope for a protective hardhat, Vicki Brinsko, MSN, RN, director of Infection Prevention, joins a construction crew surrounded by scaffolding and gets to work, with one goal in mind: patient safety.

"We actually do have our own construction hats, and we go on 'construction rounds' several times a week," Brinsko said. "We visit major project sites where you see the huge cranes outside and smaller reconstruction

projects where, for example, they're adding a new doorway. We're involved in all of it, making sure that these construction teams — whether it's a contracted construction company or our own facilities management employees — follow the same rules to protect our patients."

If it seems surprising that infection prevention specialists are involved in construction, it shouldn't be. The Infection Prevention team at VUMC, which includes six epidemiologists, eight infection preventionists (IPs) and a data analytics team, is involved at every step of construction, from planning to final punch list. They examine issues such as if the proposed system of air handling is suitable, whether materials are easy to disinfect and if construction dust is well contained so it won't harm patients.

"There are many things that happen at a medical center that you may not directly connect to infection risk and that are not part of any mandated report," said Chief Hospital Epidemiologist Tom Talbot, MD, MPH. "There is no one out there asking how well we monitor construction projects, but it's important. Similarly, if a new medical device is brought into the Medical Center, we have to make sure there is no unintended consequence. We ask how the device is cleaned and if it might spew anything into the air that people could inhale. We focus not just on the institution's Pillar Goals and ensuring that the reports that everyone sees outside of these walls look good; all of these other things that can potentially cause harm are important, too."

### "We're fixers"

The role of infection prevention at hospitals and healthcare facilities has been increasing steadily in the United States, especially in the years following World War II as new discoveries in microbiology and immunology led to better understanding and reduction of healthcare-associated infections (HAIs).

In 2014, the Centers for Disease Control and Prevention (CDC) released results from its Healthcare-associated Infection (HAI) Prevalence Survey, and the results were staggering. On any given day, one in 25 hospital patients contracted at least one HAI. In 2011, an estimated 722,000 Americans developed HAIs in U.S. acute care hospitals, and about 75,000 hospital patients with HAIs died during hospital stays. HAIs cost the healthcare system nearly $6.5 billion annually, according to the CDC.

In 2008, Congress mandated that the Centers for Medicare and Medicaid Services (CMS) stop providing payments to hospitals for the treatment of "reasonably preventable" infections acquired by patients during hospitalizations. In 2010, Congress incorporated HAI prevention into the value-based purchasing program of the Affordable Care Act, leading to even greater accountability for healthcare facilities.

Changes in the regulatory landscape that mandate HAI reporting have also raised the importance of detection and response to HAIs. And in the past decade, electronic surveillance systems have enabled infection preventionists to more quickly identify infections and the presence of multi-drug resistant organisms, resulting in improved patient safety and rapid initiation of infection control measures.

The epidemiologists, infection preventionists and data analysts on the Infection Prevention team are part of the Quality, Safety and Risk Prevention (QSRP) office at VUMC so they work closely with other QSRP staff members, as well as other teams throughout the Medical Center campus that directly impact patient care and safety.

"We're like the CSI (Crime Scene Investigation) for Vanderbilt," laughed Talbot. "Well, I guess we're more like a mini-CDC for the hospital. People that go into this field, well, we're fixers. We want to fix everything, but we also have to realize that we're not empowered to fix everything. We are the experts that support the people on the front line that can get in there and fix anything that needs to be fixed."

Talbot and his team are well aware that every infection statistic is much more than a number on a spreadsheet. The number represents an individual — someone's parent or child — and successful infection prevention saves lives. Not only does the team investigate suspected infections, they also educate medical staff, develop and enforce infection control policies, and measure the effectiveness of ongoing infection control efforts.

They pay attention to the story the data tell and are watchful for any unusual illness that could signal an outbreak or a new type of infection. But they are also closely connected to the much more personal aspect of infection prevention. They check on medical staff members' patient care practices, participate in medical rounds in patients' rooms and attend unit meetings so care teams can tell them directly what's working and what needs more attention.

While there is much about their jobs that can appear routine, there are times when a rapid, but well-thought out, response can contain a potential outbreak, detouring what could have escalated into a health crisis into an isolated incident. Minutes can mean the difference between life and death, especially when it comes to highly contagious and antibiotic-resistant infections. Members of the Infection Prevention team are on call 24 hours a day, seven days a week, and can be consulted by anyone working on the frontline of patient care.

In 2014, when there was a threat of the deadly West Africa Ebola Virus Disease (EVD), the VUMC Infection Prevention team, working in conjunction with the CDC and with several internal VUMC groups, reacted quickly, communicating detailed information to clinicians on how to evaluate patients for Ebola and what to do if Ebola was suspected, including how to isolate patients. The Medical Center ran multidisciplinary drills to teach clinicians how to safely put on, take off and dispose of coveralls, gloves and face shields.

"Each time we have a major event, we learn a lot," Talbot said. "We're fairly nimble. We have great support teams and partners, and we have regular event drills to practice our response. We're a big place, so it's somewhat like steering an ocean liner, but we do a good job. We also have people on our staff like Bill Schaffner (VUMC's first Hospital Epidemiologist and frequent national spokesman on infectious diseases), Vicki and myself, who are linked up closely with national experts, so we can see if we need to change anything we're doing.

"Since I've been in this role, there have been a couple of big keystones. There was SARS (severe acute respiratory syndrome) in the early 2000s and the H1N1 pandemic of 2009-2010. We learned a lot from SARS, we did a lot of preparations, and we thought we were ready. Then Ebola shows up, and we had to develop a plan of action for that. What's worth learning from all of these is that you'll get hit quickly by things that are not what are expected at all. The ability to adapt is invaluable."

**Minutes can mean the difference between life and death, especially when it comes to highly contagious and antibiotic-resistant infections.**

## HAIs AT A GLANCE

Although significant progress has been made in preventing some infection types, there is much more work to be done. On any given day, about one in 25 hospital patients in the United States has at least one healthcare-associated infection (HAI).

The CDC's annual National and State Healthcare-Associated Infections Progress Report (HAI Progress Report) describes national and state progress in preventing HAIs. Among national acute care hospitals, the most recent report (2014 data, published 2016) found:

- 50 percent decrease in central line-associated bloodstream infections (CLABSI) between 2008 and 2014
- No change in overall catheter-associated urinary tract infections (CAUTI) between 2009 and 2014
- However, there was progress in non-ICU settings between 2009 and 2014, progress in all settings between 2013 and 2014, and even more progress in all settings toward the end of 2014
- 17 percent decrease in surgical site infections (SSI) related to the 10 select procedures tracked in previous reports
- 17 percent decrease in abdominal hysterectomy SSI between 2008 and 2014
- 2 percent decrease in colon surgery SSI between 2008 and 2014
- 8 percent decrease in hospital-onset *Clostridium difficile* (C. difficile) infections between 2011 and 2014
- 13 percent decrease in hospital-onset methicillin-resistant *Staphylococcus aureus* (MRSA) bacteremia (bloodstream infections) between 2011 and 2014

*Source: Centers for Disease Control and Prevention*

### National Recognition

Sustained success in infection prevention is a big reason VUMC was honored in 2017 as the first hospital system in the nation to receive the Association for Professionals in Infection Control and Epidemiology (APIC) Program of Distinction designation. The designation is the culmination of an intense review by an APIC survey team that observed infection prevention practices at Vanderbilt University Adult Hospital and Monroe Carell Jr. Children's Hospital at Vanderbilt, as well as numerous off-site locations.

APIC is the leading professional association for infection preventionists in the United States, with more than 15,000 members. APIC's Program of Distinction designation measures excellence in existing infection prevention policies and procedures and ongoing quality improvement efforts, as well as compliance with federal regulations.

"We're incredibly honored to be the first institution in the country to receive this designation," said Talbot. "One of the big things the surveyors cited was that it is not just the Infection Prevention team that contributed to the effectiveness of our infection prevention programs. This achievement validates our institution-wide dedication to patient safety, our collaboration and teamwork, and every individual's effort in implementing and consistently following best practices to prevent healthcare-associated infections."

Because VUMC is an American College of Surgeons-verified Level 1 Trauma Center, the Medical Center cares for critically injured individuals — everyone from gunshot victims to those in serious car accidents. VUMC patients also include those with compromised immune systems especially vulnerable to infection, such as patients receiving cancer treatment and organ transplants. This means the numbers of infections can tend to be higher here than other medical centers that don't serve these complex patients, but that is not a "fall back" excuse, Talbot said.

"When you look across all hospitals, who we take care of is different," he said. "We do take care of the sickest of the sick patients. We always aim for zero infections, but can we get there? The good thing is that our focus on the prevention of infections is everywhere in our Medical Center, from public reporting to payments. That's been a really positive part of our culture here at Vanderbilt because it's really driven resources to the right places to do the right thing and to reduce all preventable harm."

VUMC's healthcare-associated infection (HAI) rates overall are trending in a positive direction, Talbot said. For example, from 2009 to 2017 (estimated with six months of data in 2017), central line associated blood stream infections (CLABSI) in the intensive care units (ICU) were reduced by 79 percent, and non-ICU CLABSIs were reduced by 71 percent. From 2010 until 2017, there was an estimated 61 percent increase in the healthcare worker influenza vaccination rate. From 2009 until 2017, there was an estimated 81 percent increase in hand-hygiene compliance.

"The entire VUMC organization demonstrated commitment to actively integrating infection prevention into routine patient care practices," said Terrie Lee, RN, MS, a member of the APIC Program of Distinction survey team. "We noted that Infection Prevention and Quality have been working collaboratively to address issues in a highly successful manner. There were also obvious forward-thinking, 'wow!' moments identified when we reviewed their methods of instrument reprocessing (high-level disinfection and sterilization), as well as the surveillance and data management system, antibiotic stewardship program, and their unit for care of patients with highly infectious diseases."

### Success Story

A spike in surgical site infections among patients who had colorectal surgeries, a population that is already at higher risk for infection due to the nature of the surgeries, spawned a successful infection prevention initiative at VUMC that has since guided the perioperative procedures for other types of surgeries.

A colorectal SSI task force began meeting twice a month to solve the problem. They reviewed scientific literature and examined other institutions' practices.

Lack of consistency in how surgeries were handled, from before patients went into surgery until they were released home, seemed to be a key factor playing into the increasing infections, said Senior Quality and Patient Safety Advisor Barbara Martin, MBA, RN, who was part of the taskforce.

"It wasn't that we weren't doing things right, it was that we weren't doing things in a standardized fashion," she added. "If (infection preventionist) Mary DeVault and I both have the same idea about

## DIGITAL DETECTIVE

Not so long ago, when patients' laboratory reports came back to Vanderbilt University Medical Center (VUMC) indicating the possible presence of serious infections, Infection Prevention team members would print out the reports and divvy them up so they could visit the Medical Center's clinical floors to investigate each case.

"We were printing off hundreds of lab reports each morning and cutting them apart into piles to distribute to each infection preventionist (IP)," said Vicki Brinsko, RN, MSN, who joined the Infection Prevention team in 1986 as the nursing director of Infection Control. "We would then take these piles of cut-up paper inside alphabetized folders with us when we did our rounds."

An internally developed infection surveillance platform known as VIPER streamlined that process, bypassed the scissors and brought the infection prevention team into the 21st century.

"Instead of cutting up 'paper dolls,' we can focus on initiatives that concentrate on preventing patient harm and keeping our patients safe."

VIPER stands for the Vanderbilt Infection Prevention Electronic Resource. It was first launched in 2008 through a collaboration between HealthIT and the Department of Infection Prevention. When VIPER was developed a decade ago, the team decided there was no data surveillance product on the market that met VUMC's needs, so they built their own.

VIPER quickly analyzes data and runs algorithms to determine if the data indicates a troubling infection. This triggers the Infection Prevention team, which can then work with clinicians to quickly put any needed infection prevention and patient isolation measures into action.

"VIPER scans through laboratory results for VUMC patients to identify positive cultures for antibiotic-resistant and epidemiologically important organisms, and positive cultures or laboratory tests for reportable, communicable pathogens," explained Ted Anders, one of VIPER's original architects.

VIPER also identifies patients with suspected healthcare-associated infections (HAIs), including central line-associated bloodstream infections (CLABSI), catheter-associated urinary tract infections (CAUTI), surgical site infections (SSI), and ventilator-associated events (VAE).

VIPER integrates clinical data, including vital signs such as temperature and blood pressure, from a patient's electronic medical record (EMR) with laboratory results. It also includes the patient's location history — exactly where they've been moved within the hospital during their stay. Those cases that match the Centers for Disease Control and Prevention (CDC) criteria for an infection are flagged for the infection preventionists to investigate more closely, including visiting the clinical floor to examine the patient and consulting with the nursing staff. VIPER pulls all the information together in one view for the infection preventionist so they don't have to search for the data they need to make their assessment.

VIPER also simplifies the regulatory, state, and CDC reporting of HAIs. For example, VIPER generates data the Infection Prevention team then submits to the CDC's National Healthcare Safety Network (NHSN), a national healthcare-associated infection tracking system. The system also provides data for in-house reporting, including information patient care units use to measure their progress, all the way up to data to support Pillar Goals requested by Medical Center leadership, said Jim Rickwa, an Infection Prevention business intelligence developer.

"VIPER really shows its usefulness when you consider what a hospital is required to do, both internally and externally," Rickwa said. "Externally, we have to submit information about the hospital to CMS (the Centers for Medicare & Medicaid Services). We also need to submit information to the state for community health reasons, and then we also need to understand how the hospital is doing internally for our own patient safety and hospital management.

"VIPER does a lot of the legwork for an infection preventionist," Rickwa added. "Any algorithm or rules that a computer can perform, we let the computer bring it all together and make the relationships it can to save the IPs from having to do that. Then they can focus entirely on the clinical aspect of patient safety." ■ *Jill Clendening*

doing something, but we implement it in different ways, then we're going to have different outcomes."

A surgical care bundle, or a defined set of practices to improve outcomes, was developed and implemented for colorectal surgeries. Elements included pre-surgery bowel preparation and oral antibiotics, using chlorhexidine gluconate cleansing wipes before surgery, the replacement of gowns/gloves in the operating room once the bowel is surgically closed, maintaining a set level of oxygenation, controlling glucose levels, and using wound protection after surgery.

"We started this with every case in colorectal in early 2013 and by June 2013, we had proved that it worked," said Timothy Geiger, MD, director of Colon and Rectal Surgery. "Every member of the team is critical when it comes to preventing infection, and this was a very collaborative effort between administration, infection prevention, nursing, anesthesia and surgery. This is a nice realization of the fact that from the minute a patient hits the clinic door until the minute they're discharged, every part of that hospital visit affects their outcome."

Talbot agrees that one of the most significant factors for success when it comes to infection prevention is having a team that understands the value of every action and is willing to be accountable.

"You have to have people that you partner with that will take the ball and run with it," Talbot said. "We have the knowledge, the guidelines and the expertise, and we can reach out to peers, but if that receiver on the other end isn't accepting, then it's not going to happen. You might get a little success, but you're not going to get sustained success." ■

**"This achievement validates our dedication to patient safety, our collaboration and teamwork, and individual effort in implementing and following best practices to prevent healthcare-associated infections."**

General surgery resident Eric Quintana, MD, his wife, Elissa, and their niece, Ellena.

# Home away from home

BY NANCY HUMPHREY + PHOTOGRAPH BY JOHN RUSSELL

ERIC QUINTANA, MD, COMES FROM A CLOSE and large extended Hispanic family in New Mexico – his paternal great-grandparents had 17 children; and he has three siblings and 30 first cousins. Quintana is the only member of his family to become a doctor, or to graduate from college.

In June 2017, when he became a first-year general surgery resident at Vanderbilt University Medical Center (VUMC), it was the first time he had left New Mexico and his family for an extended period of time. He had left the state only for brief work trips before, so leaving those he loved behind for at least five years of training was a tough decision.

"Family is a very core element to who I am and who my family is," said Quintana, 38. "My path to medicine has been very long and nontraditional."

He started medical school at the University of New Mexico (UNM) when he was 33. Two medical school mentors encouraged him to look outside of New Mexico for his residency. "They said 'you need to go somewhere else, see a new system, and see the way they do things that might be different from the way we do it here. You can always come back to New Mexico where you already know the way we do things, but if you don't, you can take New Mexico with you.'"

## The long path to an MD

Quintana wanted to be a physician from early in his life. His great-great-grandmother was a curandero, a Mexican healer, who used herbs and roots from the field to make potions and salves. He watched as his family physician, James Houle, MD, established relationships with his patients in addition to taking care of their healthcare needs. "When we got sick he knew exactly what to do. I admired the way he could figure out what was wrong with us, but he also knew about what we were doing in school or in sports. He was like part of the family."

In high school Quintana took advantage of all the gifted classes available to him, then was offered an internship with a community mentor during his sophomore year. He was matched with a Child Life consultant at the University of New Mexico Children's Hospital and worked there several hours a day for three to four days a

week. Shortly after, he was referred to a unique program that allows high school students to earn a high school and nursing degree at the same time.

In 1998, shortly after he graduated from high school, his daughter, Joann, was born, and he soon became her single parent. After practicing in pediatrics, medical-surgical and ICU care, he was offered a job providing wound care at a large rehabilitation facility. He was promoted to assistant director of nursing at the facility, then director of nursing, while he gradually worked on and completed his bachelor's degree at UNM.

"I wanted to make sure I'd be there for Joann, so I put off going to medical school. I really enjoyed those years. Looking back, I'm really glad I took the time to be there in her life."

When his daughter started high school, he left the rehab facility and taught nursing at a community college. Going to medical school was still his plan, but he knew he couldn't do it just yet. "My philosophy was I could take what I had learned, the years of experience I had and my beliefs, and teach a new generation of nurses coming straight out of the gate," Quintana said.

He supplemented his income by also working as an emergency room nurse at Presbyterian Rust Medical Center for three 12-hour shifts a week. In 2010, he was given the New Mexico Center for Nursing Excellence Award. Now married, Quintana's wife, Elissa, asked him why he wasn't in medical school. "I said, 'I have to pay the mortgage. I have to pay the bills. I have to get Joann back and forth to school and volleyball.'"

Elissa told him that she could take on extra shifts as an emergency room nurse to support their family, and reminded him that Joann would soon be driving, and Quintana decided he'd finally apply to medical schools. First, he had to complete some pre-med courses and take his Medical College Admission Test. He applied to six medical schools, including the University of New Mexico, where he was accepted and began medical school at age 33.

For the first two years of medical school he continued to work at Presbyterian Rust Medical Center as a clinical nurse educator and a relief charge nurse, but during the third year of medical school and its clinical rotations, he had to reduce his work hours. Also during medical school, he and his wife took in 3-year-old Ellena, Quintana's niece who had been placed in the Colorado foster system. He and Elissa had to undergo a home study and training to be foster parents, and they were given primary custody of Ellena, now 6.

## Choosing a specialty

Quintana was leaning toward emergency medicine during medical school, but during a general surgery rotation, he "fell in love" with being inside the operating room. "I love taking care of surgical patients and being able to see a problem and fix it right then and there. You see results in real time."

He also enjoys learning about his patients during conversations at the bedside. One encounter during his general surgery rotation in medical school reinforced his desire to pursue general surgery.

"I took care of a patient with a large tumor in his stomach. He couldn't eat or drink. He said all he wanted was to be able to enjoy his grandkids," he said. Quintana and the surgical team performed a very complex surgery on the man, restoring his ability to eat and drink and giving him back some quality of life. "I saw him during his follow-up visit and he thanked me for giving him time with his grandkids. The ability to give someone back their life and additional time they would have lost is very rewarding to me."

But while he could finish an emergency medicine residency in three years, he would have to commit to five or six years in general surgery. "I re-approached my wife and said 'what if I had to do a five- or six-year residency?' But she's so supportive, she said, 'I'd rather you do something you're going to love for the rest of your life, instead of doing something just to get it done quickly.' So I switched my focus to general surgery."

During his fourth year of medical school, he quit work to focus on residency interviews. He had 113 programs on his initial list, and whittled it down to 56. He was invited for 19 interviews and chose 13 to visit.

"I was very excited to get the invitation from Vanderbilt," he said, adding that his mentors at UNM had told him it would be a great fit. "During my first lunch here with some research residents, it was apparent that Vanderbilt offered a family environment and there was a collegial relationship among residents."

Quintana spent the afternoon at VUMC with John Stokes, MD, a general surgery resident, who took him to the operating room to observe a surgery. "When we walked into the OR, there were two surgeons at the table. The way the senior surgeon (Christina Bailey, MD) talked to the junior surgeon (Suzie Lee, MD) blew me away. She (Bailey) was very patient and was going through the case (removing part of a colon) methodically and walking the junior surgeon through her thinking. Then Bailey scrubbed out and Stokes scrubbed in with Quintana still observing. "The senior surgeon was so patient. She just walked him through the surgery and I saw his confidence level soar through the roof. They didn't know who I was or where I was from. This wasn't a show for me. This level of teaching has to come from a higher (leadership) level."

He called Elissa from the Nashville airport after his interview and said "I think I've found our new home." He was invited back for Second Look Weekend, observed more surgery and selected Vanderbilt as his No. 1 choice for Match Day.

In 2017, after Match Day, Quintana become a grandfather. Joann gave birth to a daughter, Azaleyah. Preparing to leave New Mexico and his family would be one of the hardest things he's done in his life.

"Everyone in my huge family is in New Mexico. Leaving my family behind is more than just leaving my daughter and granddaughter and parents. It's leaving my grandparents, cousins, nieces, nephews — all of whom I'm very involved with. Telling them I was going to be gone five, six, seven years was difficult."

## A new city, a new life

Nashville has been a great choice for his family, Quintana said. Elissa is a night nurse in VUMC's Emergency Department, and her mother moved to Nashville with them to help care for Ellena.

As Quintana nears the end of his internship year of residency at Vanderbilt, he isn't sure what the future holds. Interested in surgical critical care and surgical oncology initially, he has also found colorectal surgery appealing and enjoyed his transplant rotation as well. All would require additional training. He said he and Elissa will decide after his training whether to go back to New Mexico, stay in Nashville or go elsewhere.

"I love surgery. When I was a kid I took apart my dad's drill to figure out how it worked inside. I rebuilt an engine two or three times. If a heater is broken, I take it apart and fix it. I've always had a knack of wanting to solve a puzzle, to solve a mystery and fix it with my hands. Being at the operating table is a whole different experience. When you step up there, the world just disappears and you have this immense focus directly on that patient." ■

# Alumni notes

## 1950s

**Wike Scamman,** MD'57, and his wife, Diana, were honored at a reception celebrating his retirement. The 85-year-old pathologist served for many years as laboratory and medical director of several northeast Kansas community hospitals and at one time served as the Shawnee County coroner.

**SEND US YOUR NEWS**

Email Ann Price, MD, at medalum@vanderbilt.edu with alumni updates and photos.

## 1960s

**Gordon Gill,** MD'63, HS'64, BA'60, chairs the San Diego steering committee of the American Academy of Arts and Sciences, one of the oldest learned societies in the country. Gill is emeritus professor of Medicine and of Cellular Medicine and former dean of Science at the University of California San Diego.

**Robert Carey,** MD'65, FE'72, dean, emeritus, and professor of Medicine at the University of Virginia School of Medicine, was co-chair of the 2017 American Heart Association (AHA)/American College of Cardiology Guideline for the Prevention, Detection, Evaluation and Management of High Blood Pressure in Adults unveiled at the AHA Scientific Sessions in Anaheim, California, in November 2017. This was the first comprehensive hypertension guideline since JNC-7 in 2003.

**Frank Black,** MD'67, has written a memoir, "Happiness is a Fat Gecko – The Life and Times of a Missionary Doctor," that details his years in Tanzania in a bush hospital.

**Ray Burk,** MD'68, HS'70, FAC'14, retired in 2014 as emeritus professor of Medicine at Vanderbilt.

## 1970s

**Joseph Beavo Jr.,** PhD'70, is the recipient of the 2018 Julius Axelrod Award in Pharmacology given by the American Society for Pharmacology and Experimental Therapeutics.

**Steve Goldstein,** MD'70, BA'66, is semi-retired. He received the Lifetime Achievement Award from the American Society of Echocardiography in 2015 and has been invited to speak at the World Congress of Echocardiography in Bulgaria in 2018.

**Bob Mahley,** MD, PhD'70, HS'71, who first began studying the apoE protein at Vanderbilt in Virgil LeQuire's lab, reports that the protein offers a promising target for defeating Alzheimer's disease and is the basis for a startup biotech company, E-Scape Bio, Inc., which recently raised $63 million in startup funding.

**Aubrey Hough Jr.,** MD'70, HS'75, was promoted to inaugural university system professor at the University of Arkansas Medical System, a title conferred by the board of trust on individuals considered important participants in research and intellectual life. His undergraduate alma mater, Hendrix College, awarded him an honorary Doctor of Sciences degree in 2016. In February 2017, he retired from the Mae and Anderson Nettleship Endowed Chair in Oncologic Pathology.

**Dan Dillon Jr.,** MD'72, HS'77, BA'68, is an assistant professor of Neurosurgery in the Department of Neurosurgery at the Medical College of Georgia and is the director of the Stroke Program and the Neurosciences Center at Aiken Regional Medical Center in Aiken, South Carolina.

**Ben Kibler,** MD'72, FE'74, HS'77, BA'68, has authored the book "Disorders of the Scapula and Their Role in Shoulder Injury: A Clinical Guide to Evaluation and Management" (co-edited by Aaron Sciascia). **Jed Kuhn**, MD, FAC, and **Brent Morris,** MD, HS'13, contributed chapters to the book.

**Cynthia Bowman,** MD'74, is a pathology laboratory director in the Baystate Health System in Springfield, Massachusetts. She and her husband, David, are the new grandparents of a baby girl.

**R. Bruce Williams,** MD'75, HS'77, BA'71, was inaugurated as the 35th president of the College of American Pathologists (CAP). He has been a CAP member for 40 years, holding leadership roles in the organization for the last 25.

**Joe Little,** MD'77, HS'80, BA'72, reports that his daughter, Elizabeth Little, BA'07, finished a pediatric residency at Seattle Children's Hospital in 2016. She is working for an Alaskan native health-

care cooperative in Anchorage, representing the fourth generation of Vanderbilt physicians in the family and the third to practice pediatrics: **Ernest Goodpasture,** MD, FAC'55, BA'1908, **Joseph Little**, MD'43, FAC'69, BA'40, and **Joseph Little III**, MD, HS'80.

**Sue Andrews,** MD'78, is the medical director of the Beersheba Springs Medical Clinic, a not-for-profit medical facility established by and for the community of Beersheba Springs, Tennessee.

**Ann Price,** MD'78, HS'81, FAC, BA'71, has been named to the board of directors for Siloam Health, a charitable clinic for the uninsured.

# 1980s

**Winn Chatham,** MD'80, received the Distinguished Clinician Scholar Award from the American College of Rheumatology at the 2017 ACR Annual Scientific Session.

**Wayne Poll,** MD'81, was named CEO of Enlyton Ltd., effective October 2017. Poll is founder of Minimally Invasive Devices, Inc., a venture capital firm in central Ohio.

**Craig Morgan,** MD'81, of Huntington, West Virginia, made a gift to establish the Willard J. Morgan and Craig M. Morgan Graduate Studies Endowed Scholarship through the Southeast Missouri University Foundation. The scholarship honors his father and acknowledges his service to the university.

**Brad Meyers,** MD'81, BA'76, has been promoted to colonel in the United States Air Force. He joined the 115th Medical Group of the 115th Fighter Wing of the Wisconsin Air National Guard in 2011, and for the past six years has served on the CERFP, a Department of Defense and Department of Homeland Security domestic disaster response force.

**Russ Howerton,** MD'83, HS'84, was named senior vice president at Wake Forest Baptist Medical Center, effective July 2017. He previously served as the chief medical officer of its Integrated Health System.

**William Stuck,** MD, HS'84, retired after 31 years of service to medicine and cardiology, most recently with Columbia Heart in Columbia, South Carolina. He plans to pursue his interests in travel, running and hiking.

**Chris Payne,** MD'86, was elected chair of the Worldwide Fistula Fund board of directors. He

Dear Vanderbilt University Medical Alumni,

**Vanderbilt Medical Alumni Reunion 2018**

Our next biennial Vanderbilt University School of Medicine (VUSM) Reunion 2018 will be held Oct. 11-13 with Vanderbilt University's Reunion and Homecoming celebration. All VUSM medical alumni are cordially invited to attend. VUSM special anniversary classes (see chart below) will celebrate with class parties on Oct. 12. Check our VUSM Reunion website for updates including reunion hotel blocks and class party news: http://reunion.vanderbilt.edu/medicine.

**Reunion 2018 Special Anniversary Classes**

| **VMAA President & Reunion Chair** | | **Thomas W. Nygaard, MD** |
|---|---|---|
| **Special Anniversary Class Celebrants** | | **Class Chair (s)** |
| Quinq Plus | 1967 and earlier | Newt Lovvorn, MD |
| 50th | 1968 | James S. Price, MD |
| | | J. William (Bill) Nuckolls, MD |
| | 1969 | Bill Anderson, MD |
| 45th | 1972 | Frederic T. Billings III, MD |
| | 1973 | John H. Dixon, MD |
| 40th | 1977 | Benjamin F. Byrd, MD |
| | 1978 | Curtis L. Baysinger, MD |
| 35th | 1982 | Carl R. Hampf, MD |
| | 1983 | Mark C. Adams, MD |
| 30th | 1987 | Ted Chambers, MD |
| | 1988 | Thomas S. Johnston, MD |
| 25th | 1992 | Chace T. Carpenter, MD |
| | | Kenneth J. Carpenter, MD |
| | | Lee A. Fentriss, MD |
| | 1993 | Astrid Jain, MD |
| 20th | 1997 | Sara Fletcher Patterson, MD |
| | 1998 | Laura L. Lawson, MD |
| 15th | 2002 | Sara Habibian, MD |
| | 2003 | Morgan F. McDonald, MD |
| | | Kristin Martel, MD |
| 10th | 2007 | Adam S. Pitts, MD |
| | 2008 | Jon Kropski, MD |
| 5th | 2012 | Scott Zuckerman, MD, MPH |
| | | Rachel Apple, MD |
| | 2013 | Michael Casner, MD, MA |

An abbreviated Reunion 2018 schedule of events can be found at reunion.vanderbilt.edu/medicine.

Ann H. Price

**connect with us ...**

**VMAA WEBSITES:**
medschool.vanderbilt.edu/alumni
reunion.vanderbilt.edu/medicine

+
*photo by Chris Schmauch*
*written by Kathy Whitney*

**SNAPSHOT**

SPECIALTY
Emergency Medicine

FAVORITE BOOK
"Perfume: The Story of a Murderer" by Patrick Suskind

HOBBIES
Surfing, biking, hot yoga, running

LITTLE KNOWN FACT
31 years clean and sober

FAVORITE VUSM MEMORY
Walking through an empty hospital corridor, my classmates and I crossed paths with a lone man dressed in black. I recognized him and said, 'Good morning, Mr. Cash,' and Johnny Cash politely replied in his iconic gravelly voice, 'Good morning.'

# Coasting to the finish line

Prentice Steffen, MD'86, grew up in Enid, Oklahoma, the son of a general surgeon and a homemaker. As a college student at the University of Oklahoma he took up cycling, a sport that would allow him to travel the world, cross paths with Lance Armstrong and put him at the center of the doping controversy that plagued the sport for more than a decade.

Eager to expand his world view, Steffen left Oklahoma for Nashville when he was admitted to Vanderbilt University School of Medicine. An orthopaedic surgeon helped secure a position for Steffen at the 1986 Road World Cycling Championships in Colorado Springs, Colorado. "That was a big break for me early on. I got to do pre-season evaluations, which hooked me up with some people in the sport," he said.

As an Emergency Medicine resident at Highland General Hospital/UC-San Francisco, Steffen worked as a member of the medical staff for several races including the Tours DuPont and the Tours de Trump. From 1993 to 1996, he was the physician for the team that would ultimately be known as U.S. Postal Service, which became Tour de France winner Lance Armstrong's team.

"Emergency physicians take care of every type of injury; we have the training and experience to figure out anything," he said about caring for competitive cyclists. "I can take care of it 80 percent of time; for the other 20 percent, I know who to call for assistance, but the first five minutes to an hour is on me to figure out and get treatment started."

In 1996, at the Tour of Switzerland, two well-known U.S. Postal Service riders approached Steffen and asked for information about administering performance-boosting drugs. After declining and then reporting the incident to the team's director, Steffen's contract was not renewed.

"Cycling has a terrible history in the area of performance enhancing drug (PEDs) use and it has cost many people dearly," said Steffen, who went on to work four seasons as team physician for Mercury Cycling before starting with the Garmin-Slipstream program. In 2008 he became the first American physician to care for a team competing in the Tour de France in its 100+ year history and has now worked seven Tours de France.

"Slipstream Sports and I were the first team to make that our primary mission, to eliminate the use of PEDs by creating a culture and ethic of anti-doping. Cycling has changed a lot through our efforts and those of other teams and cycling governing bodies," he said.

After traveling extensively with the team to Europe, Australia, Asia, South America and the Middle East, Steffen recently joined forces with a new up-and-coming American team, Rally Cycling, and is retiring from his Emergency Medicine practice at Dominican Hospital in Santa Cruz, California.

joined the organization in 2012, providing leadership as the organization expands work into new regions of the developing world.

**Timothy Givens,** MD'87, FAC'09, BA'83, was named vice chair for clinical operations for the Department of Pediatrics at the University of Colorado School of Medicine, effective Sept. 1, 2017. He lives in Denver with his wife, Patricia, formerly chief nursing officer at Monroe Carell Jr., Children's Hospital at Vanderbilt.

**Marshall Summar,** MD, HS'88, FE'90, FAC'10, BA'81, is the director of the newly formed Rare Disease Institute at Children's National Medical Center and runs the National Organization for Rare Disorders' first Rare Disease Clinical Center of Excellence. His wife, **Karen Summar,** MD, MSCI'08, FAC'09, is the health policy director for Sen. Chuck Grassley.

**David Lowry,** MD'88, was appointed chief medical officer at Caldwell UNC Health Care in Lenoir, North Carolina, effective August 2017.

**Rob Schreiner,** MD, HS'89, is executive president of Marietta, Georgia-based WellStar Health System and president of WellStar Medical Group with 100 physicians and 1,150 providers. Schreiner is a pulmonary and critical care physician with more than 20 years of executive-level experience.

**David Adcock,** MD'89, FE'02, has been named director of the Joseph M. Still Burn and Reconstruction Center's Laser and Reconstruction program at Merit Health Central in Jackson, Mississippi.

**Cliff Bogue,** MD, HS'89, has been appointed chair of the Department of Pediatrics at Yale, effective Aug. 1, 2017. Bogue is professor of Pediatrics (critical care) and had been serving as interim chair since 2015.

## 1990s

**Ted Ruff,** MD'90, has joined the medical staff of St. Anthony Shawnee Hospital in Midwest City, Oklahoma.

**Rick Barr,** MD, HS'91, MSCI'02, FAC'10, was named chair of the Department of Pediatrics and associate dean for child health in the UAMS College of Medicine, as well as pediatrician-in-chief for Arkansas Children's, effective Oct. 1, 2017.

**G. Lee Bryant Jr.,** MD'92, HS'98, is president of Allergy & ENT Associates of Middle Tennessee and chairman of the board of trustees for TriStar Summit Medical Center. He is a clinical instructor for the physician assistant program at Trevecca Nazarene University.

**Nicola Francalancia,** MD, HS'94, a cardiac surgeon, has joined Southcoast Physicians Group in Fall River, Massachusetts, as a member of the Cardiovascular Services program. Previously, Francalancia was a member of Chicago-based Cardiac Surgery Associates and chief of Cardiovascular Surgery at MacNeal Hospital in Berwyn, Illinois.

**Mary Taylor,** MD, HS'94, FE'98, MSCI'05, FAC'11, was named chair of the Department of Pediatrics at the University of Mississippi Medical Center, effective Dec. 1, 2017. Taylor is the first woman to hold the post.

**Liz Stephens,** MD'94, is the medical director for Providence Endocrinology East and West in Portland, Oregon, and medical director for Diabetes Education, associate director of CME at Providence Portland Medical Center. She and her husband, Peter, have two children, ages 10 and 12.

## Giving in Action
### + Finding heart in a lung transplant

Barbara Rosser Merz and Glenn Merz both lost spouses to a rare lung disease, but found each other and a renewed sense of gratitude.

When her husband, Vernon, received his lung transplant at Vanderbilt in 1997, Barbara Rosser started a support group for lung transplant families. The group met frequently, helped one another during difficult times and spoke to new transplant candidates. Glenn's wife, Joyce, received a new lung and joined the group in 1998.

"Little did I know that the people in that first lung transplant support group would become my best friends and the group would grow so large and help so many," Rosser Merz said.

After the death of Vernon in 2002 and then Joyce in 2003, their spouses found that they understood what the other had endured and each other's loss. Slowly their strong friendship grew into romance, and the two married in 2004.

"We felt like Vernon and Joyce were pulling strings from above, trying to make sure we ended up together," Rosser Merz said.

"When Vernon was close to dying, he kept telling me he wanted me to remarry Glenn. I told him I didn't want to hear any more about it. Vernon was best friends with Joyce who was also one of my best friends. We all went through so much together for so many years," she added.

Every life saved through organ transplant also means a life has ended. Vernon Rosser had reached out to his donor's family and learned that their 20-year-old son had been killed by a drunk driver. Rosser Merz said the parents felt comfort that others could live through their son's death.

"Vernon used to wonder why he got to live while another had to die. But there is no telling how many lives Vernon touched in the five and a half years after his transplant — through a warm hug, a ready smile and his enthusiastic promotion of organ donation which is needed by so many. It was his legacy," Rosser Merz said.

The Merzs' gratitude and the legacy of their spouses is expressed in the scholarship they founded for the School of Medicine, the Barbara R. and Glenn H. Merz Scholarship. Barbara and Glenn Merz also recently completed a book about their journey, "Our Story: The True Life Narrative of God's Plan for Us." The proceeds from the sale of the book go toward their scholarship fund.

Blair Stocks, VUSM class of 2018, is one of the grateful MD/PhD candidates supported by the Merz scholarship.

"I am so thankful for this gift of a medical education. I hope to lead a transplantation laboratory that unravels the biology of immune regulation to improve transplant outcomes. Upon completion of Vanderbilt's MD/PhD program, I plan to pursue a fellowship in transplant surgery followed by post-doctoral training in transplantation science," Stocks said.

Glenn Merz says that transplant recipients inspire people with their thankfulness for another day of life and take nothing for granted.

"Creating more doctors who can help improve the transplant process is our way of paying tribute to our spouses, who had so much to show us about how to really live and the power of faith and friends," Merz said. ■ *Debbie Settles*

## Giving in Action
+
### Tragedy begets generosity

Keith Nolop, MD'79, was a brilliant physician and researcher whose life was cut short in 2016 due to trauma from a bicycle accident.

To create something positive out of this tragedy and to commemorate his life as a physician-researcher, his brothers, Neil and Bruce, endowed the Keith Nolop, M.D. Scholarship at the School of Medicine through a $1 million estate gift.

"Even as a kid, Keith was interested in how things worked. He had the natural curiosity and brainpower to be a superb scientist. He had perfect grades all throughout school. His interest in science, and later biology, flourished when he attended the University of South Dakota where he earned his bachelor's degree and then Vanderbilt where he earned his medical degree. Our family felt it would be perfectly appropriate for us to donate part of Keith's estate to Vanderbilt to help support deserving MD or MD/PhD students at the School of Medicine," said Neil Nolop.

Graduating first in his medical school class, Nolop had a distinguished 25-year career in drug development. His discoveries included the allergy drug Nasonex, a groundbreaking melanoma treatment and other innovative cancer therapies.

"We are enormously proud of what Keith accomplished while working on drug development and cancer research, and we are confident that he would have been proud to support Vanderbilt through a scholarship in his name," Neil Nolop said.

Julian Genkins, class of 2018, is one of the recipients of the Nolop family's generous gift and plans to pursue a career in critical care medicine.

"The scholarship to Vanderbilt made my decision about where to attend much easier. I am not accumulating debt which has alleviated a lot of stress for me. This has allowed me to focus on learning, taking care of patients and being the best student doctor I can be while still having a balanced life. Also, it has allowed me to pursue the type of medicine that interests me instead of thinking about future income and debt," Genkins said.

Just like his benefactor, Genkins was always drawn to science.

"I have always loved science, so medicine appeals to me. I love teaching and helping others through science. Because I am an extrovert, I am drawn to a career with a lot of social interaction."

While friends remember Keith as a brilliant scientist with a kind heart and a zest for life, his scholarship recipients will remember him as the one who made their dreams of medical school a reality. ■ *Debbie Settles*

**Murali Chakinala,** MD'94, was promoted to professor of Medicine at the Washington University School of Medicine, Division of Pulmonary and Critical Care Medicine, where he's been on faculty for more than 15 years.

**Henry Wilson,** MD'96, recently completed a two-year term as president of the Virginia Society of Plastic Surgeons. Under his leadership, the VASPS has co-sponsored important Virginia health regulations promoting patient safety in office-based surgery and ethical promotion of board certification.

**Brian Edkin,** MD, HS'97, has joined Southcoast Physicians Group in Swansea, Massachusetts, as the medical director of the Total Joint Program. He previously specialized in adult hip and knee disorders at Tennessee Orthopaedic Clinics in Knoxville, Tennessee.

**Ted Teknos,** MD, FE'97, was named president and scientific officer of University Hospitals Seidman Cancer Center in Cleveland, Ohio, effective Oct. 1, 2017.

**Sharon Barwise,** MD, HS'98, a psychiatrist with VA Tennessee Valley Healthcare Mental Health in Nashville, has been named a 2017 Top Doctor Awards recipient.

**Todd Baker,** MD'98, whose daughter, Julianne, was born during his fourth year of medical school, reports that she is now a pre-med student at Johns Hopkins University. Baker is looking forwarding to celebrating his class's 20th reunion in the fall.

**Jim Lavelle,** MD'99, associate professor of Medicine at the University of Colorado Denver School of Medicine and medical director of the surgical intensive care unit at the Denver VA Medical Center, and his wife, Heather, and their daughter Emma welcomed a son, William, to the family in January 2017.

## 2000s

**Kevin Joseph,** MD'01, has been named chief medical officer for Cincinnati-based TriHealth. He will continue as the system chief quality officer.

**Adrienne Carmack,** MD, HS'03, joined Christus Good Shepherd Medical Center hospital and clinics in Longview, Texas, specializing in urology.

**Robin Hemphill,** MPH'04, FAC'08, has been named chief quality officer and safety officer at Virginia Commonwealth University Health.

**Theresa Larson,** MD'05, joined Cedar Valley Eye Care in Waterloo, Iowa, as a staff ophthalmologist.

**Celeste Hemingway,** MD'06, HS'10, MPH'13, BS'02, has been appointed program director for the Obstetrics and Gynecology residency program at Vanderbilt, and she has also been selected as an oral board examiner for the American Board of Obstetrics and Gynecology.

**Robert Riviello,** MD, MPH, HS'06, director of global surgery programs, associate surgeon, Division of Trauma, Burns and Surgical Critical Care at Brigham and Women's Hospital, and instructor in Surgery, Harvard Medical School, was selected to receive a $1 million endowed gift from the Steven C. and Carmella R. Kletjian Foundation to support his work in improving surgical care in developing nations.

**William Yi,** MD'09, has joined TriStar Medical Group Southern Hills Surgical Consultants in Nashville. Yi specializes in treatment of diverticulitis, gallstones, gastric ulcers and cancers of the breast, stomach and colon.

**Elizabeth Bigger,** MD, HS'09, joined the Massachusetts General Cancer Center at Emerson Hospital as a hematology/oncology physician.

## 10s

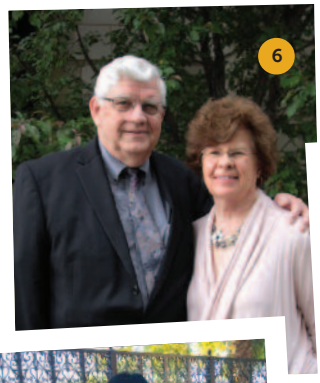
**Courtney Schadt,** MD'07, HS'11, is the residency program director for the Division of Dermatology at the University of Louisville, chief of Dermatology at the Veterans Administration Medical Center in Louisville and a member of the Graduate Medical Education Accreditation Subcommittee for the University of Louisville School of Medicine. She has three children: Charlie, Reyn and Freddie.

# Faces & Places

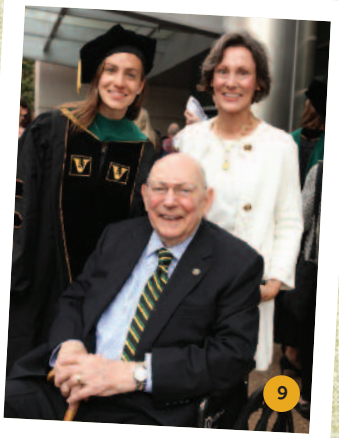
Want to see your photo here? Send high-resolution images to medalum@vanderbilt.edu.











**1.** Scott Hagan, MD'13, and Anna Hagan, MD'13, welcomed their first child, Penny Jane, Sept. 20, 2017. **2.** Tiffany Ballard, MD'10, and Rajesh Rao, MD, welcomed daughter Sri Lakshmi Grace on March 9, 2017. **3.** Kensey Pease, MD'16, and Nick Saltarelli, MD'16, were married July 1, 2017. **4.** Clark Kensinger, HS'17, FE'14, received the Resident Award for Exemplary Teaching at the American College of Surgeons meeting in October 2017 from ACS president, Barbara Bass, MD. **5.** Sue Andrews, MD'78, third from left, medical director of the Beersheba Springs Medical Clinic, is pictured here with volunteers, physicians and staff on opening day. **6.** Jim Terman, MD, HS'71, fully retired in March 2016. He and his wife, Nancy, celebrated their 56th anniversary in 2017. They have three children and four grandchildren, all in Minnesota. **7.** Kevin Liaw, MD'08, BS'04, got married Sept. 23, 2017, in Loudon, Tennessee, and his wedding party included VUSM classmates, from left: Milton Ochieng, MD, Aliana Davis, MD, Taylor Davis, MD, Liaw's wife, Katie, Liaw, David Young, MD, Andrew Miller, MD, and Paul Reynolds, MD. **8.** Brian Wasserman, MD'09, MSCI'14, HS'12, FE, and his wife, Allison Wasserman, MD'10, HS'14, FE'16, FAC, welcomed Serena Marie, born May 25, 2017. She joins big sister, Annabelle, 4. **9.** Three generations of VUSM graduates celebrated at the commencement of Frances Wright on May 12, 2017: Frances Wright, MD'17, (left) current pathology resident at VUMC; her mother, Ellen Wright, MD'81, HS'86, FE'87, FAC'00, BA '77; and her grandfather, W. Faxon Payne MD'48, HS'53, HS'60, FAC'02, BA'45. **10.** Michael Young, MD'09, HS'12, FE'15, and his wife, Eileen Duggan, MPH'14, HS'16, with their daughter CeCe, 3. **11.** Left to right: Jessi Solomon, MD'14, BS'10, Hannah Johnson, MD'16, Amy Fleming, MD, associate dean for Medical Student Affairs, and Grace Ho, MD'14, gathered at Ho's house in Boston in October 2017 for a Young Alumni Dinner. **12.** Jim Lavelle, MD'99, and his wife, Heather, with their daughter, Emma, welcomed a son, William, in January 2017.


+
*photo by Michael Starghill*
*written by Kathy Whitney*

**SNAPSHOT**

AFFILIATIONS
MD '00, HS '00 -'07

SPECIALTY
Pediatric general and thoracic surgery

FAMILY
Husband, Andras Heczey, MD, and three daughters, ages 6 years, 5 years, and 2 months

HOBBIES
Cycling, triathlons and travel with her family

VUSM MENTORS
James O'Neill Jr., MD, C. Wright Pinson, MBA, MD, and John Pietsch, MD

## Surgeon's career shaped by childhood diagnosis

As a pediatric surgeon, Mary Austin, MD'00, MPH'05, performs 300-500 wide-ranging cases per year. She is also part of a large team that does about 10-15 in utero repairs of myelomeningocele, the most common form of spina bifida, which is, coincidentally, the same problem she was born with.

"My diagnosis was a surprise to my mom and dad. When I was born, the doctors told my mom I may need braces to walk and potentially have great difficulty. I had none of that," said Austin, who was born with the opening in her lower back that was closed shortly after birth.

Although Austin has no outward signs of myelomeningocele, she does have neurogenic bowel and bladder, a condition caused by injury to the spinal cord that results in problems with bowel and bladder control.

"Initially, I was treated in Louisville, which led to challenges since I lived in rural Kentucky, about 80 miles from the hospital. At that time, there wasn't well coordinated care for patients with spina bifida," Austin said. "It was difficult for my parents living so far away. Also, I'm not sure there was a lot of knowledge about how to best manage my neurogenic bladder and bowel. This led to me getting pretty sick at times."

Austin said she always wanted to be a doctor, and for many years she wanted to be a pediatric neurosurgeon, influenced by her own medical history. She pursued this specialty through summer work and research, but during her third year of medical school she did a clinical rotation in trauma and critical care and "fell in love with the people, the patients and everything I got to do. At that point I knew I wanted to be a general surgeon."

She was encouraged and supported in her decision by James O'Neill, Jr., MD, emeritus professor of Pediatric Surgery.

"From the first day I met with him in his office, to this day, he has been one of the most influential people in my life. He was very supportive of me. I decided to stay on at Vanderbilt for my general surgery residency and received excellent training."

Austin, who neither hid her diagnosis nor talked openly about it during residency, did her fellowship in pediatric surgery and surgical critical care at Children's Hospital Los Angeles where she met her husband, Andras Heczey, MD, a pediatric oncologist. They have three young daughters and live a busy life in Houston, Texas, where Austin practices at the McGovern Medical School at the University of Texas Health Science Center and MD Anderson Cancer Center.

"I really love the connections that I have with our patients and their parents. You get to see your patients grow up and become a part of their lives. It's very special," Austin said of her surgical practice. "There is honestly no greater trust that one can give another person than to let them operate on their child."

**Michael Young,** MD'09, HS'12, FE'15, will complete his final year of interventional cardiology training at Massachusetts General Hospital in June. His wife, **Eileen Duggan,** MPH'14, HS'16, will be completing her two-year training program as the Stuart and Jane Weitzman Pediatric Vascular Anomalies Fellow at Boston Children's Hospital. She will then start her pediatric surgery fellowship in Montreal. Their daughter, CeCe, turned 3 in February.

**Tiffany Ballard,** MD'10, a plastic surgeon with Ann Arbor Plastic Surgery, and Rajesh Rao, MD, a retina surgeon, welcomed daughter Sri Lakshmi Grace on March 9, 2017.

**Marlon Joseph,** MD'11, and **Kara Brown**, MD'11, welcomed their son, Julian Brown, on July 3, 2017.

**Vinod Varki,** MD'11, BS'07, has joined Mercy Medical Center in Baltimore, Maryland, as a medical oncologist, specializing in solid tumor malignancies, multiple myeloma and lymphomas.

**Asmitha Sathiyakumar,** MD'12, BS'08, has joined Harbin Clinic Spine & Pain Management in Rome (Georgia) as an anesthesiologist.

**Brad Lindell,** MD'12, and his wife, Karen Lindell, JD'12, welcomed a daughter, Cora Lillian, on Oct. 27, 2017. Lindell is a PICU fellow at the Children's Hospital of Philadelphia.

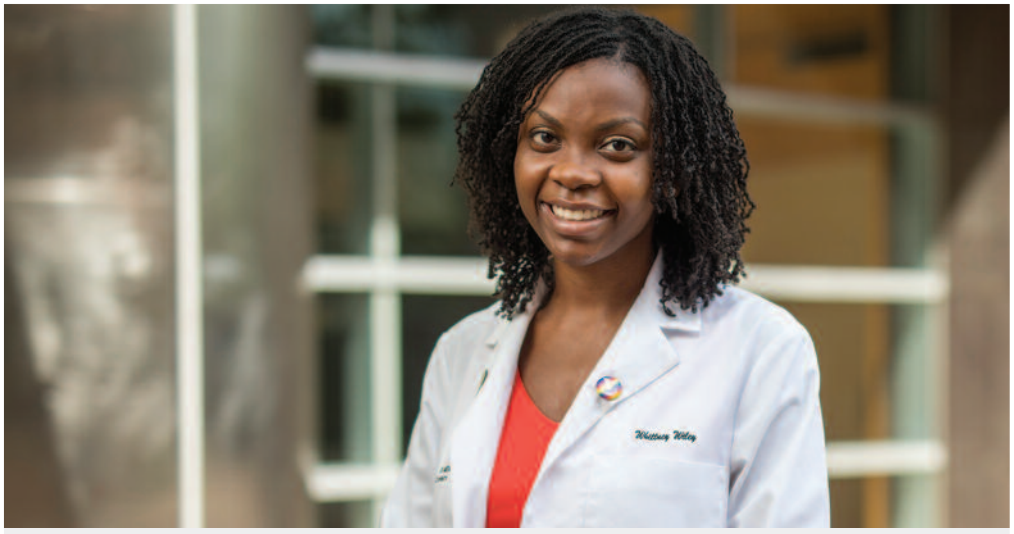
**Brandon Perry,** MD, HS'13, FE'15, has joined Holy Cross Medical Group in Fort Lauderdale, Florida. He is board certified in internal medicine and endocrinology and previously served as assistant professor in Clinical Medicine at Vanderbilt.

**Scott Hagan,** MD'13, a primary care physician at the Seattle VA, and **Anna Hagan**, MD'13, a hospitalist at Harborview Medical Center, welcomed their first child, Penny Jane, Sept. 20, 2017.

VMAA sponsored a VUSM young alumni dinner in Boston on Oct. 18, 2017, at the home of **Grace Ho,** MD'14.

**Althea Shelton,** MD, MPH'16, welcomed a son, Nathan Ryker, born Feb. 26, 2017.

**Kensey Pease,** MD'16, and **Nick Saltarelli,** MD'16, were married July 1, 2017, at the bride's family home in Ojai, California. They live in Indianapolis where both are residents at Indiana University, she in meds/peds and he in emergency medicine.



## CHANGING LIVES

**Growing up with a nurse for a mom, Whittney Wiley** saw that access to health care was not the same in poor communities. She decided to become a doctor to change that reality. A bequest from Grace McVeigh created the John E. and Judy Jean Chapman Scholarship, which gave Whittney access to a top medical education so she can pursue her dream.

To learn more about supporting scholarships for medical students, contact Steven Barnes, Associate Dean for Development, at vusmgiving@vanderbilt.edu or call 615-343-4474.

**Clark Kensinger,** HS'17, FE'14, received the President Award for Exemplary Teaching at the American College of Surgeons meeting in October 2017 from ACS president, Barbara Bass, MD.

# Losses

**Charles Albright,** MD'61, BA'57, died Aug. 6, 2017. He was 81. Dr. Albright is survived by his children, Elizabeth and Cynthia; and two grandchildren.

**Allen Anderson,** MD, HS'83, died Nov. 12, 2017. He was 67. Dr. Anderson is survived by his wife, Candy; children, Brian, David and Chris; and five grandchildren.

**Burton Bancroft Jr.,** MD'58, died Sept. 4, 2017. He was 87. Dr. Bancroft is survived by his wife, Evie; children, Cindy and Rick; and four grandchildren.

**John Blackburn,** MD'58, HS'59, BA'55, died Oct. 2, 2017. He was 83. Dr. Blackburn is survived by his wife, Donna; children, John, Sarah, William, Ginny, Ashley, Amy, Laura and Mary; 14 grandchildren and two great-grandchildren.

**Henry Blansfield,** MD, HS'49, died July 24, 2017. He was 93. Dr. Blansfield is survived by his wife, Lorraine; children, James, David, Catherine and Jane; and six grandchildren.

**Guillermo Cadena,** MD, HS'74, died Nov. 6, 2017. He was 83. Dr. Cadena is survived by his wife, Gladys; children, Fernando, Eduardo and Alberto; and six grandchildren.

**John Canby,** MD'54, BA'51, died July 15, 2017. He was 87. Dr. Canby is survived by his wife, Margaret; children, John Jr., Bob and Charlee; and four grandchildren.

**Leslie Herman Cavallaro,** MD '97, HS '00, died Dec. 28, 2017. She was 46. Dr. Cavallaro is survived by her husband, Vincent; mother, Laurel; father, Fred, and many extended family members.

**Nancy Clish,** MD'51, BA'48, died July 26, 2017. She was 89. Dr. Clish is survived by her children, Sarah and Jourdan.

**Dawson Conerly Jr.,** MD, HS'53, died Aug. 16, 2017. He was 92. Dr. Conerly is survived by his wife, Jane; children, Peggy, Stephen and Lynn; nine grandchildren and eight great-grandchildren.

**Phyllis Corbitt,** MD'52, HS'53, died Sept. 22, 2017. She was 93. Dr. Corbitt is survived by her children, Jeannie, Duvon and Doug; five grandchildren and seven great-grandchildren.

**Phil Davis,** MD'66, died Aug. 31, 2017. He was 79. Dr. Davis is preceded in death by his first wife, Ella, and is survived by his wife, Leanne; children, Mark, Diane, Debbie and Mike; four grandchildren, one great-grandchild, and extended family.

**Daniel Foley,** MD, HS'83, died Sept. 11, 2017. He was 66. Dr. Foley is survived by his wife, Laurie; children, Lillian, Brooks, Gregory and Evan; stepsons Justin and Nathan; and seven grandchildren.

**Franklin Thomas Fowler,** MD'43, died Sept. 10, 2017. He was 100. Dr. Fowler's autobiography, "From There to Here: The Story of a Missionary Child," is being published by LifeSpire of Virginia.

**Anneva Gates,** MD, HS'77, died in August 2017. She was 96. Dr. Gates was preceded in death by her first husband, William, and her second husband, Leslie. She is survived by children, William and Douglas; stepson L.A. and stepdaughter Ellen; two grandchildren and four step-grandchildren.

**Joel Hargrove,** MD, FAC'05, died Aug. 15, 2017. He was 80. Dr. Hargrove is survived by his wife, Stella; children, Deborah, Ladonna, Pamela, Samuel, Chris and Sarah; nine grandchildren and six great-grandchildren.

**William Hartley,** MD, HS '55, died Dec. 20, 2017. Dr. Hartley is survived by his wife, Barbara; children, William and Kristen; and one grandchild.

**Herman Jacob Kaplan,** MD '54, FAC '11, died Dec. 31, 2017. He was 92. Dr. Kaplan is survived by his wife, Irma; children, Debbie, Mark and Didi; and 10 grandchildren.

**Charles Lockert,** MD'62, BA'58, died Oct. 20, 2017. He was 80. Dr. Lockert is survived by his wife, Revonda Nance; children, Chuck, Cassandra and Brett; four grandchildren and three great-grandchildren.

**James Martin,** MD'59, MA'54, BA'49, died Aug. 28, 2017. He was 90. Dr. Martin is survived by his wife, Elizabeth; children, Jim, Julia and Ann; and seven grandchildren.

**C. Ashley McAllen,** MD'87, MPH, died Aug. 19, 2017. He was 56. Dr. McAllen is survived by his wife, Zemfira; and children, Matthew, Olesya, Robert and Angelina.

**Carolyn McKinley,** MD'50, MA'45, BS'44, died Sept. 24, 2017. She was 94. Dr. McKinley was preceded in death by her husband, George, and is survived by her children, George and Thomas, and two grandchildren.

**Robert Neubecker,** MD, HS'50, died Dec. 31, 2017. He was 91. Dr. Neubecker was preceded in death by his first wife, Mary Ben, and is survived by his children, Kendrick, Katherine, Robert, Cynthia and Laurie; six grandchildren and one great-grandchild; and his former spouse, Mary Hiles.

**John Nicholson,** MD'58, HS'59, BA'55, died Aug. 30, 2017. He was 83. Dr. Nicholson is survived by his wife, Judith; children, Lisa, Nancy, Brigid and Pamela; eight grandchildren and one great-grandchild.

**Edward Oldfield,** MD, HS'75,'80, died Sept. 1, 2017. He was 69. Dr. Oldfield is survived by his wife, Susan, and daughter Caroline.

**Landon Palmer,** MD, HS'71, died June 11, 2017. He was 91. Dr. Palmer is survived by his wife, Nell; children, Michael, David, Richard and John; 11 grandchildren and one great-grandchild.

**Rashmi Patwardhan,** MD, died Dec. 6, 2017. He is survived by his wife, Neena; children, Vilas, Kiran and Vivek; and two grandchildren.

**Terry Reese Sr.,** MD, HS'59, died Oct. 28, 2017. He was 87. Dr. Reese is survived by his wife, Kathleen; children, Christina, Travis, Katie, Taylor and Harold; 10 grandchildren and two great-grandchildren.

**Harold Roberts,** MD, HS'56,'59, died in September 2017. He was 87. Dr. Roberts is survived by his sons, Eric and John; and two grandchildren.

**Rob Roy,** MD'52, BA'49, died Oct. 6, 2017. He was 93. Dr. Roy is survived by his wife, Emma; children, Frances, Rebecca and Clare; and two grandchildren.

**Paul Scott,** MD'54, died July 18, 2017. He was 89. Dr. Scott is survived by his wife, Veldine; children, Lisa, Kenneth, Paula and Heidi; six grandchildren and three great-grandchildren.

**Calvin Shaffer,** MD'77, BA'73, died Sept. 25, 2017. He was 65. Dr. Shaffer is preceded in death by his wife, Faye, and is survived by his daughter Katheryn and one grandchild.

**John Skudlarik,** MD, HS'78, died Nov. 29, 2017. He was 70. Dr. Skudlarik is survived by his wife, Cathy; children Joshua, Chad and Hope; stepson, Greg; and nine grandchildren.

**Henley Smith Jr.**, MD'46, HS'48, BA'43, died Dec. 2, 2017. He was 95. Dr. Smith was preceded in death by his wife, Jane, and is survived by his sons, Henley, Pelham, Clinton and Perry, and nine grandchildren.

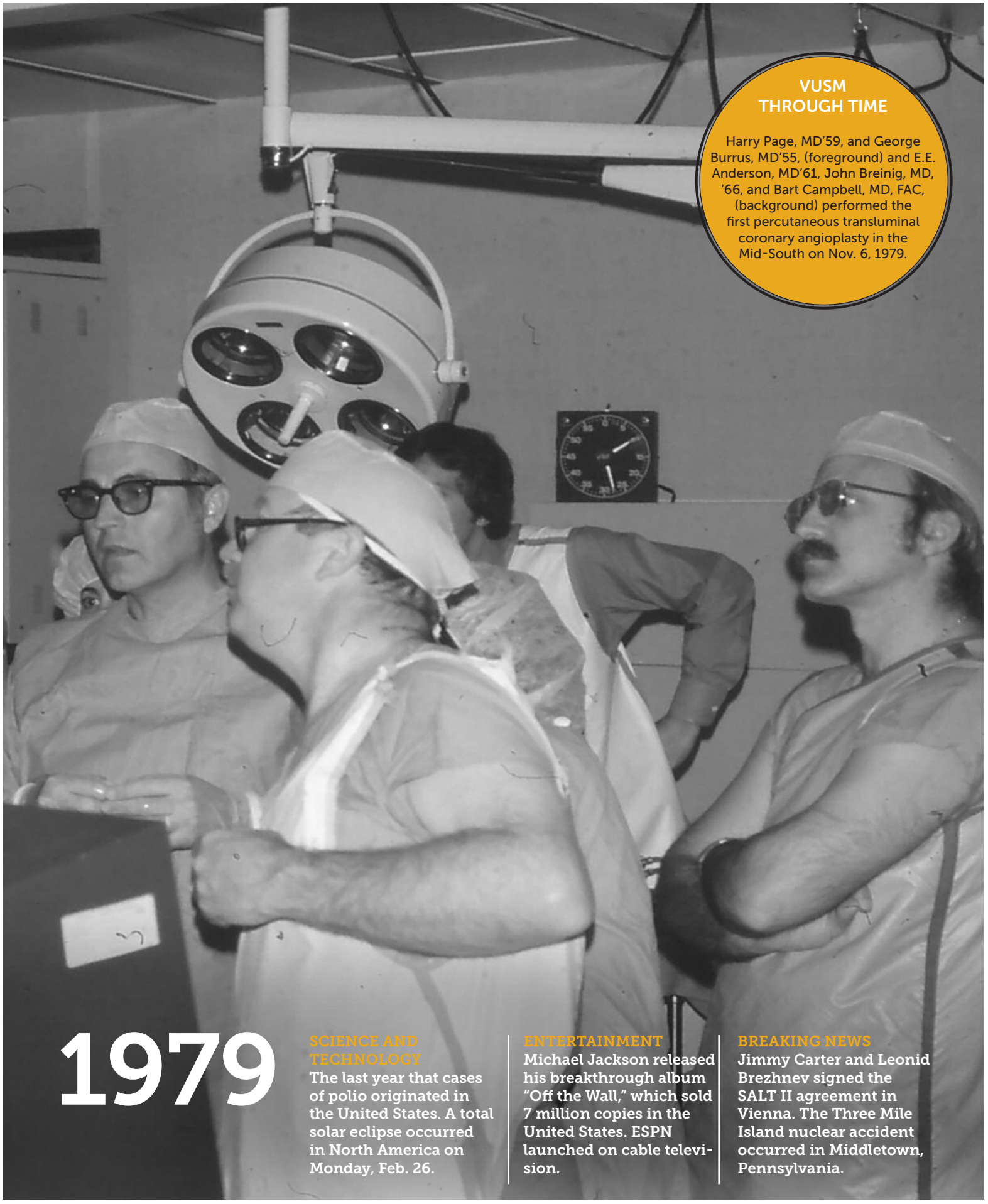
**Robert Snowden,** MD'69, died July 12, 2017. He was 73. Dr. Snowden is survived by his wife, Gwen; children R. Todd, Laurie, Ben, Kate and Ramona; and 10 grandchildren.

**Shannon Snyder, MD** '00, HS '04, FAC '05, died Jan. 11. She was 47. Dr. Snyder is survived by her husband, Oran Aaronson, MD, MMHC'12, HS'98; children, Liam and Talia, and parents Gayle and Harold Snyder, MD'60, HS'60.

**B. Preston Thomas,** MD, HS'73, died in November 2017. He was 73. Dr. Thomas is survived by his wife, Margy; stepchildren, Dave and Kate; and two grandchildren.

**Bob Thompson,** MD'65, HS'66, BA'61, died Aug. 23, 2017. He is survived by his wife, Olivia; and children, Mary Eleanor, Philip, Matthew, Ned and Guy.

R**on Tilford,** MD'80, HS'84, BA'76, died Oct. 19, 2017. He was 63. Dr. Tilford is survived by his mother, Rose, and many extended family members.



## VUSM THROUGH TIME

Harry Page, MD'59, and George Burrus, MD'55, (foreground) and E.E. Anderson, MD'61, John Breinig, MD, '66, and Bart Campbell, MD, FAC, (background) performed the first percutaneous transluminal coronary angioplasty in the Mid-South on Nov. 6, 1979.

# 1979

**SCIENCE AND TECHNOLOGY**

The last year that cases of polio originated in the United States. A total solar eclipse occurred in North America on Monday, Feb. 26.

**ENTERTAINMENT**

Michael Jackson released his breakthrough album "Off the Wall," which sold 7 million copies in the United States. ESPN launched on cable television.

**BREAKING NEWS**

Jimmy Carter and Leonid Brezhnev signed the SALT II agreement in Vienna. The Three Mile Island nuclear accident occurred in Middletown, Pennsylvania.

**VANDERBILT MEDICINE**
Vanderbilt University Medical Center
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Nashville, TN 37232-2106



# CULTIVATING TALENT

"Nearly everyone's life is touched in some way at some point by cancer," says **Katy Eby Beckermann,** M.D., Ph.D., chief academic fellow in the Division of Hematology/Oncology at Vanderbilt University Medical Center. "My main objective is to make a difference in the lives of patients and families who are fighting cancer."

Thanks to donors who have chosen to invest in the next generation of expert physician-scientists, Dr. Beckermann is able to pursue research focused on better understanding the biology of cancer and improving the efficacy of emerging immunotherapies.

Your support can help cultivate talent and fuel breakthrough discoveries. To learn more about giving to Vanderbilt University Medical Center, please contact Beth Jones at *b.jones@vumc.org* or (615) 936-1224.

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