

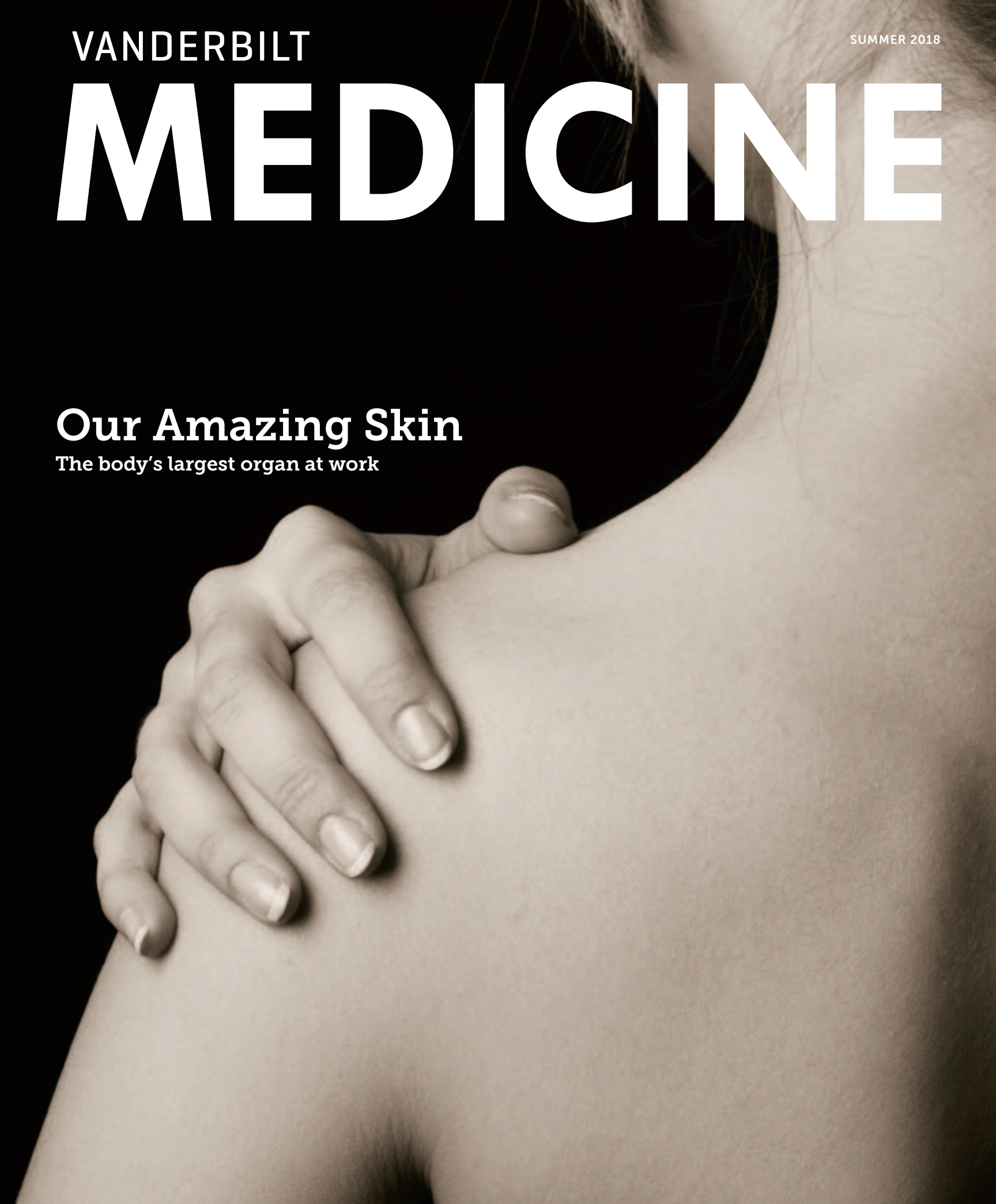
VANDERBILT

SUMMER 2018

MEDICINE

Our Amazing Skin

The body's largest organ at work



**SCENE
ON CAMPUS**

Chesley Ekelem receives her white coat from Jeff Balser, MD, PhD, at the traditional White Coat Ceremony for incoming School of Medicine students.



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BIOLOGY AND THE BEAT

Miriam Lense, PhD, works with Wesley Ladd in the Music Cognition Lab, which explores the role of rhythm in language development and developmental disorders.



ON THE COVER

Skin is the human body's largest organ and our body's fiercest protector, an impervious shield that plays a major role in keeping us alive.

ONLINE EXTRAS

-  **Body Check**
Jed Kuhn, MD, talks about taking care of the NHL Nashville Predators
-  **Personalized Skin Care**
Noah Kelly, 6, visits the staff that cared for him after he was burned over 40 percent of his body.

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VANDERBILT MEDICINE

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Tradition and progress mark the start of a new academic year



Summer marked the beginning of another exciting academic year when we welcomed a host of students and advanced postdoctoral trainees to the Medical Center. It is a time of renewal, optimism and excitement for the future.

In July we introduced 96 medical students during the annual Convocation and White Coat Ceremony. Our residency and fellowship training programs welcomed 331 new house staff. More than 400 nursing students were welcomed to the Nursing School by Dean Linda Norman in August. In September 112 new PhD students were welcomed by Basic Sciences Dean Larry Marnett during this year's Simple Beginnings Ceremony.

These individuals join us with amazing academic credentials, an impressive array of talents, and histories of altruistic service to others.

Our medical students were selected from a pool of more than 5,700 applicants from 34 states, eight foreign countries and 54 undergraduate schools. Among this year's class, 60 percent participated in at least one transition year before starting medical school, gathering valuable experiences as diverse as performing research at the National Institutes of Health, working for a major health care information technology company and volunteering at senior care facilities, among other activities.

Our residents and clinical fellows entered more than 90 ACGME accredited training programs across all our clinical departments and several other training programs at VUMC. They come to us from more than 100 U.S. schools of medicine and 27 international medical schools.

Members of the class joining the School of Nursing are from 38 states and two foreign countries, bringing VUSN's current student body to just over 800. This year's PhD students come from eight countries, 35 states and two territories. The largest group — 57 students — is entering graduate school through the Interdisciplinary Graduate Program, allowing each to choose among 11 outstanding disciplines after an initial year of immersion.

And our dual-degree programs continue to flourish and grow, with 14 new students pursuing MD/PhD degrees and four enrolled in the Medical Innovators Development Program (MIDP), a new four-year PhD-to-MD curriculum tailored to engineers and applied scientists.

Reflecting our strategic direction, making diversity and inclusion intentional, 20 percent of our medical students belong to groups that are underrepresented in medicine and health care. The highest number and percentage of underrepresented minorities in our school's history entered our residency programs in July. It is our goal to train and nurture these talented individuals in an atmosphere of respect and engagement for everyone, and we hope many will eventually join us as faculty and staff, leading us in the future.

Arriving students were welcomed to the newly renovated Annette and Irwin Eskin Family Biomedical Library and Learning Center, which opened after an extensive, yearlong renovation with infrastructure improvements and technological updates to match the ongoing evolution of medical education.

Supported by a visionary gift from the Eskin family to Vanderbilt University in honor of Dr. Irwin Eskin, a 1945 graduate of the University and 1948 graduate of the School of Medicine, the renovation includes improvements to the overall library services spaces on the ground floor, serving all faculty, students, and trainees, as well as providing modernized educational program and administrative space for medical students on the upper floors. This renovation is designed to complement how learning takes place under our innovative medical student curriculum, and students are enjoying this engaging and adaptable space.

We are grateful to the Eskin family for their legacy of generosity to Vanderbilt to passionately support training for future generations of physicians and scientists. There is an article with more information about this transformative new space on page 8 of this issue.

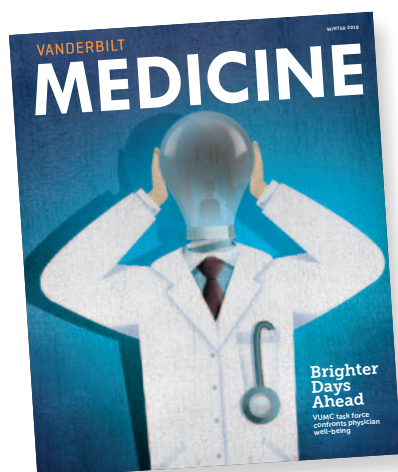
The Medical Center is once again alive with students, eager to embrace our rich traditions and progressive environment, working in tandem to provide a unique and treasured academic experience. ■

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*:

LIFE GOES ON

My son, 7-month-old Connor, just had his ventricular septal defect repaired. Thanks to Dr. Christian and her team.

– *Casey Clement*

Nadia was the first patient at VCH to receive the “Berlin heart” device on a one ventricle heart. It saved her life and allowed her to wait

on a donor heart. She is five years post-transplant and doing well. So thankful for our hospital and the entire cardiology team.

– *Suha Dabit*

My nephew received a new heart at Vanderbilt almost one year ago in April. He is doing great and we are so thankful for the donor family’s precious gift and the staff at Vanderbilt.

– *Cindy Vance*

Congratulations... and the best team ever is at Vanderbilt Heart Institute.

– *Margie Taulbee*

ALUMNI PROFILE: MARY AUSTIN

I love seeing how your life has evolved. Good to have known you then and now see all you have accomplished.

– *Traci Logsdon Chenoweth*

Incredible. Love this story.

– *Jenn Grovatt Neal*

Another Vanderbilt Health rock star!

– *Elizabeth Clark*

HOME AWAY FROM HOME

I am so thankful for all the doctors, residents

and employees of Vanderbilt. We are so blessed to have such talent. It would take me all day to list the positive people who have saved our lives and made them better!

– *Beverly Carrington Wall*

Wow. What a beautiful family you have to support you in this way. So happy for this opportunity for you.

– *Cheryl Steensma*

Congratulations, Eric. You are an inspiration to many.

– *Andrea Owens-Romero*

INFECTIONS: INVISIBLE THREAT

Congrats to Dr. Talbot, Vicki and the team. They are the best.

– *Claudette Lancaster Fergus*

Just another reason to love and utilize Vandy.

– *Beverly Carrington Wall*

Congratulations. Happy for Vanderbilt, my favorite hospital.

– *Carolyn Bain Ray*

Data analysts and biostatisticians — the unsung heroes!

– *Lisa Renee*

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



[monkeytrent](#) @Vanderbilt University Medical Center

New flowers garnish the old quadrangle. #vanderbilt #vandygram #redbuds #Nashville



[vumedicine](#) @VUSM

Our Day of Service last Saturday was a huge success with our med students volunteering @2harvestmidtn, Earth Matters, and Shade Tree Garden! #vumc #vandymed #medstudents #shadetreeclinic



[vumedicine](#) @VUSM

Ready to run the St. Jude Rock 'n Roll Marathon on this gorgeous day! Good luck to all the runners! #RNRNashville #vandymed #vumc



A man with a beard, wearing a dark blazer over a light blue shirt and khaki pants, stands at a podium on a stage. He is smiling and holding a small book or card. A microphone is positioned in front of him. The background is dark with some blue lighting on the left.

A CLOSER LOOK

Fourth-year medical student Jacob VanHouten celebrates Match Day with his wife Courtney. They are now at Yale University for his preventive medicine residency.

Family's transplant journey a study in overcoming barriers

There are no words for liver transplantation in Somali refugee Aniso Haji's native language.

As a translator meticulously selected words to describe the medical procedure that would ultimately save the life of Haji's youngest daughter, Fatuma Abdikadir, members of the pediatric liver transplant team at Monroe Carell Jr. Children's Hospital waited anxiously.

Haji spoke no English and was not able to read or write in Somali. That, combined with significant cultural barriers, meant this case was going to be a challenge.

"It was so important that we were able to communicate every single detail about Fatuma's case, the transplant as well as the care she would require after the surgery," said Carly Bhave, nurse practitioner and pediatric liver transplant coordinator at Children's Hospital. "We needed to make sure that she would have the optimal medical management.

"A lot of times, we in the medical field are all about outcomes and numbers and labs. We had to stop and focus on this child, her mother and how best to communicate. Before we can take care of a patient medically, we have to get on their level and get a good handle on where they are," Bhave said. "Because we took that time to peel back the layers and work through how to approach this situation and devise ways to best teach her how to care for her daughter, we made it work."

Fatuma Abdikadir was diagnosed with biliary atresia, a life-threatening liver and bile duct disease that occurs in infancy and is the most common reason pediatric patients need liver transplantation.

"I was afraid she might die," said Haji, through an interpreter. "Most of the time she wasn't eating, she wasn't moving around. She vomited a lot and had a lot of diarrhea.

"We did not understand what was going on. The doctors talked to us, but we were not sure about anything. We did not know what the right thing to do was. It was such a difficult time. We had never heard of this. Members of our community had never heard of this. We were all very unsure and I was very scared about what to do."

With biliary atresia the bile becomes trapped and damages the liver, which leads to scarring and makes it difficult for the organ to remove toxins from the blood. Over time the toxins increase, leading to liver deterioration.

Aniso Haji holds her daughter, Fatuma Abdikadir, who received a liver transplant at Vanderbilt last year.

JOE HOWELL



"It was so important that we were able to communicate every single detail about Fatuma's case, the transplant as well as the care she would require after the surgery. We needed to make sure that she would have the optimal medical management."

A Kasai procedure is typically the first treatment surgeons perform in an attempt to restore bile flow from the liver into the intestines.

The surgeon removes a portion of the liver where the bile ducts are normally and directly connects a portion of the small intestine to the liver to drain the bile. Unfortunately, it is not always a cure.

For Fatuma that was the case. A liver transplant was her only option.

Through the use of video remote interpreting, pictures and innovative teaching methods, Haji became comfortable with the idea of a transplant and learned how to care for her daughter after surgery.

Fatuma's success is heralded as a team effort.

"Fatuma could have easily escaped the opportunity for a transplant because of the multiple cultural, communication and social barriers," said Lynette Gillis, MD, assistant professor of Pediatrics and medical director of Pediatric Hepatology and Liver Transplantation at Children's Hospital. "It was amazing the lengths that the team took to educate and ensure her mother was comfortable. It's great to see the confidence she exudes."

"And to see Fatuma — she's a medical mission trip that happened at Vanderbilt."

Seth Karp, MD, H. William Scott Jr. Professor and chair of the Section of Surgical Sciences and director of the Vanderbilt Transplant Center, was part of the team to consent the family for transplant.

Every transplant has its difficulties, he said, for different reasons. He applauded the team for pushing through the roadblocks to provide the best outcome.

"It is important for us to recognize, as clinicians, that health care is not monolithic," said Karp, who holds the Ingram Chair in Surgical Sciences. "People look at health care in very different ways. It is our job to understand other peoples' sensitivities around health care issues as well as recognize and appreciate cultural differences."

"The language and cultural barriers were challenging," Karp said. "This family came from a country where a transplant has never been performed. They have no frame of reference. But together, we bridged the gap. And now their little girl is happy, playful and doing well."

April 30 marked the one-year transplant anniversary. It was Fatuma's third birthday.

"This year we want to celebrate in a big way," Haji said. "We are going to have a party and she will be happy. We have so much hope for her." ■ *Jessica Pasley*

Research Round-up

Restoring silenced voices

A swarm of cicadas that left thousands of insect carcasses across the Vanderbilt University campus in 2011 is leading to transinstitutional research at the Vanderbilt Institute for Surgery and Engineering (VISE) and Vanderbilt University Medical Center to develop a surgical planning tool to help restore speech for people with vocal fold paralysis.

Haoxiang Luo, PhD, brought some of those cicadas back to his Computational Flow Physics and Engineering Laboratory and created a model of their wing movements. Luo and his VUMC collaborator, Bernard Rousseau, PhD, MMHC, found similarities in the way the cicada wings moved and the movement of human vocal folds, leading them to wonder how the model might be used to improve surgical techniques for paralyzed vocal folds.

This has culminated in the National Institutes of Health awarding a five-year, \$2.4 million research grant to a multidisciplinary Vanderbilt team to design a software tool to help surgeons develop more precise surgery plans for the most common surgical intervention for unilateral vocal fold paralysis, type 1 laryngoplasty.

Telemedicine effective way to evaluate autism

Researchers at Vanderbilt University Medical Center have found that autism spectrum disorder (ASD) can be accurately diagnosed in young children via remote, telemedicine assessments, a method that could significantly increase access and reduce wait times for autism services.

In a first-of-its-kind study, the researchers compared the accuracy of rapid telemedicine evaluations to in-person evaluations for ASD and found that in most cases, remote evaluators could accurately identify

children with ASD with high levels of confidence.

These findings were released March 10 in the *Journal of Autism and Developmental Disorders* by Zachary Warren, PhD, Amy Nicholson, MA, Anna Pasternak, BSc, Neill Broderick, PhD, Jeffrey Hine, PhD, BCBA-D, and J. Alacia Stainbrook, PhD, BCBA-D.

Underappreciated role of brainstem in epilepsy

New research from Vanderbilt suggests that repeated seizures reduce brainstem connectivity, a possible contributor to unexplained neurocognitive problems in epilepsy patients.

The brainstem has been rarely studied in epilepsy because seizures typically originate in the temporal lobe or other areas of the cortex. Noting that people with temporal lobe epilepsy often lose consciousness even though the temporal lobe does not control wakefulness, Dario Englot, MD, PhD, surgical director of epilepsy at Vanderbilt University Medical Center, said he decided to focus on the region that does control wakefulness — the brainstem. He hypothesized that connectivity disruptions with the brainstem resulting from a history of seizures might play a role in diminished cognitive functions that are not related to the temporal lobe.

The research, published online May 30 in *Neurology*, is the first to investigate how epilepsy affects the ascending reticular activating system (ARAS) — circuitry that is responsible for regulating wakefulness — within the brainstem. Functional magnetic resonance imaging revealed that ARAS disruptions occurred, with decreases in circuitry being quantitatively associated with disease severity.

+ BY THE NUMBERS

\$3.3 million

Children's Miracle Network Hospitals
Telethon grand total support

3,606

Vanderbilt LifeFlight total missions
in FY'18



Saline Use On The Decline At Vanderbilt Following Landmark Studies

Saline, used in medicine for more than a century, contains high concentrations of sodium chloride, which is similar to table salt; Vanderbilt researchers found that patients do better if, instead of saline, they are given balanced fluids that closely resemble the liquid part of blood.

"Our results suggest that using primarily balanced fluids should prevent death or severe kidney dysfunction for hundreds of Vanderbilt patients and tens of thousands of patients across the country each year," said lead author Matthew Semler, MD, MSc, assistant professor of Medicine at Vanderbilt University School of Medicine.

"Because balanced fluids and saline are similar in cost, the finding of better patient outcomes with balanced fluids in two large trials has prompted a change in practice at Vanderbilt toward using primarily balanced fluids for intravenous fluid therapy."

The Vanderbilt research, published in *New England Journal of Medicine*, examined over 15,000 intensive care patients and over 13,000 emergency department patients who were assigned to receive saline or balanced fluids if they required intravenous fluid.

In both studies, the incidence of serious kidney problems or death was about 1 percent lower in the balanced fluids group compared to the saline group. ■ Craig Boerner

Renovated Eskind Biomedical Library re-opened

The Annette and Irwin Eskind Family Biomedical Library and Learning Center opened July 18 after a yearlong, \$12.9 million renovation with infrastructure improvements and updates to support the continuing evolution of medical education.

The construction project was designed to incorporate the University's research, learning and teaching goals and includes features that complement the School of Medicine's innovative Curriculum 2.0. It also meets LEED Silver certification standards.

"This project reflects Vanderbilt's immersive, collaborative brand of education and will support the learning needs of the next generation of physicians, nurses and biomedical scientists," said Provost and Vice Chancellor for Academic Affairs Susan R. Wentz. "The renovated library and learning center space will help keep Vanderbilt at the forefront of supporting biomedical research and medical education, and we are grateful to the Eskind family for their generous support."

The project was supported with a visionary \$6 million gift to Vanderbilt University from the Eskind family in 2016. Longtime Vanderbilt benefactor Annette S. Eskind and her two sons and their wives, Dr. and Mrs. Steven J. Eskind and Dr. and Mrs. Jeffrey B. Eskind, made the gift to continue the vision of the late Irwin Eskind, MD.

"This library, and Vanderbilt as a whole, meant a great deal to Irwin. The training of the next generation of physicians and researchers was his passion," said Annette Eskind.

Irwin Eskind, MD, was a 1945 graduate of Vanderbilt University, a 1948 graduate of the Vanderbilt University School of Medicine and a longtime member of the Vanderbilt board of trust. He was a clinical professor of Medicine, emeritus, at Vanderbilt and worked on the staffs of Vanderbilt and Saint Thomas hospitals.

"We are excited to have a new home for the School of Medicine's M.D. educational programs. Renovation of the library provides an innovative and adaptable environment for how our students learn today," said Jeff Balser, MD, PhD, President and Chief Executive Officer for Vanderbilt University Medical Center and Dean of the Vanderbilt University School of Medicine. "We remain grateful for the vision and generosity of the Eskind family as they continue to support initiatives that transform Vanderbilt's future."

Vanderbilt and the Nashville community have long benefited from the Eskind family's philanthropy. Dr. Eskind, who passed away in 2005, devoted enormous personal effort to enhancing the resources of Vanderbilt University and Vanderbilt University Medical Center. In addition to the biomedical library, he was instrumental in establishing the comprehensive Vanderbilt-Eskind Diabetes Clinic and the Annette Schaffer Eskind Chair at the Vanderbilt Kennedy Center. His sons jointly established the Irwin B. Eskind Symposium on Diabetes Care and Research in their father's honor prior to his death.

Vanderbilt medical students now call the renovated Eskind library and learning center their new home. Their learning hub moved from its longtime quarters in Light Hall to Eskind's second, third and fourth floors, which feature flexible, technology-enhanced classrooms, study spaces, a lounge and a rooftop patio as well as offices for administrators and staff. The ground and first floors are dedicated to library space, and the History of Medicine collection will be housed on the third floor.

"We are excited about this new space, which was specifically designed for our needs and supports the hands-on, team-based learning of our new curriculum," said Bonnie Miller, MD, MMHC, Senior Associate Dean for Health Sciences Education and Executive Vice President for Educational Affairs at Vanderbilt University Medical Center. "We fully implemented our new curriculum five years ago. Now, the layout of the space and the technology enhancements support the active, engaged learning that defines Curriculum 2.0." ■ Jan Read

+ BY THE NUMBERS

1,022

Resident physicians training at VUMC

\$8.1 million

National Cancer Institute grant to Vanderbilt University to study small cell lung cancer

Q+A

Jed Kuhn, MD, Kenneth D. Schermerhorn Professor of Orthopaedics and Rehabilitation, and **Paul Rummo, MD**, also a Vanderbilt orthopaedics expert, are the head team physicians for the NHL's Nashville Predators. With help from neuropsychologist Gary Solomon, PhD, and specialists in emergency medicine, plastic surgery, ophthalmology and dentistry, they keep Nashville's beloved hockey stars healthy and ready to perform at their best. Kuhn describes what the life of a Preds team doctor is like.

Q. What does a team physician do?

A. A team physician is available for the players, their families, the coaches and front office staff to help them with whatever medical needs they may have. He or she will do pre-season physicals, a post-season physical, and be available for any illnesses or injuries occurring during the course of the season. We generally are available during games, as that is when injuries are most likely to occur.

Q. How did you become a Predators team physician?

A. When Vanderbilt negotiated with the Predators 10 years ago to be the team's official health care provider, I volunteered to be the head team physician, with Paul Rummo. Prior to this, I was the head team physician for the University of Michigan ice hockey team, and the USA National Development Program in Ann Arbor, Michigan.

Q. When in the season do you start working with the team?

A. The season really is year-round. We have development and conditioning camps in early July for young prospects. The rookie camp is in early September. The regular camp starts about a week later. The regular season begins in October and runs through April, and then playoffs begin.

Q. Do you go to practices? Do you travel with the team?

A. As team physicians, we are available 24/7. We do not generally attend practices. Most injuries occur during games. We cover every home game during the regular season including the visiting teams as well. This is something that is across the entire league, so it reduces the travel burden on physicians. While not required, I usually will fly with the team to a few regular-season away games for fun. When the playoffs begin, we do travel with the teams.

Q. What's the most common medical issue the players experience?

A. Players get the same medical problems that most people get: colds, flu, GI distress (stomach ailments). The close environment of the players can lead to some interesting medical problems as well. A few years ago, the NHL had a mumps epidemic. Sleep deprivation is common in hockey players.

■ Maura Ammenheuser/Photo by Joe Howell





Study provides robust evidence of sex differences with Alzheimer's gene

The APOE gene, the strongest genetic risk factor for Alzheimer's disease, may play a more prominent role in disease development among women than men, according to new research from the Vanderbilt Memory and Alzheimer's Center.

The research confirmed recent studies that carrying the APOE ε4 allele has a greater association with Alzheimer's disease among women compared to men, and went one step further by evaluating its association with amyloid and tau levels.

The study published May 7 in *JAMA Neurology* adds to mounting evidence that the higher prevalence of Alzheimer's disease among women may not simply be a consequence of living longer.

Almost two-thirds of Americans with Alzheimer's are women.

The research, based on a meta-analysis of both cerebral spinal fluid (CSF) samples from study volunteers from four datasets and autopsy findings from six datasets of Alzheimer-diseased brains, is the most robust evidence to date that the APOE gene may play a greater role in women than men in developing Alzheimer's pathology, said Timothy Hohman, PhD, the study's lead author.

"We haven't fully evaluated sex as a biological variable. But there is good reason to expect in older adulthood that there would be hormonal differences between the sexes that could impact disease," he said.

The study looked at whether APOE in men and women was primarily associated with the amyloid pathway — the proteins that form plaques in the brain — or with the tau pathway — the proteins that form tangles in the brain.

The association with the amyloid pathway was the same in men and women. However, the APOE association was much greater for women with the tau pathway. This is opposite of what researchers expected because of APOE's established role in amyloid processing. ■ *Tom Wilemon*

+ BY THE NUMBERS

30 Inpatient rooms and seven observation beds in the newly renovated Medical Center East – North Tower

40,979 Surgical procedures performed at Vanderbilt adult hospitals in FY'18

CONCUSSIONS

With school back in session and fall just around the corner, the concern about sports-related concussions mounts. Concussion rates in children's sports are on the rise, even as participation drops. Head injuries, especially repeat concussions, pose serious threats to children because their brains are still developing.

CONCUSSION 101



Concussions are a type of traumatic brain injury (TBI) that can occur during any blow to the head or blows to the body that cause the head to move back and forth rapidly



Long-term effects of a concussion can add up, even from very minor blows



90% of concussions are not associated with a loss of consciousness or being "knocked out"

300,000

Number of high school sports-related brain injuries every school year

WHICH HIGH SCHOOL SPORTS ACCOUNT FOR THE MOST CONCUSSIONS?

40.5%
Football



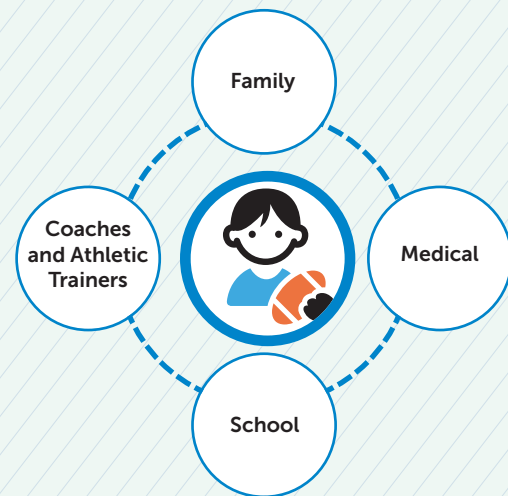
21.5%
Girls soccer



15.4%
Boys soccer



9.5%
Girls basketball



VANDERBILT SPORTS CONCUSSION CENTER (VSCC)

Vanderbilt has the only multidisciplinary sports concussion clinic in Tennessee. Our specialists include sports medicine doctors, neurosurgeons, neuropsychologists, physical and occupational therapists and certified athletic trainers.

18
Access points to VSCC providers

1,094
New patient visits

1,173
Total patient visits

10,000
Student athletes have immediate access to care in case of injury.

27
Middle Tennessee high schools provided with on-site care in case of injury during play.



SOCCER
Concussion rate for girls is 68% higher than for boys

VS



BASKETBALL
Concussion rate for girls is 293% higher than for boys

In My Life

JAKE RAMSEY

Second-year medical student from Santa Claus, Indiana

Graduated from Purdue University in 2016 with a Bachelor of Science in pharmaceutical sciences

The recipient of the Helen W. and Louis Rosenfeld Endowed Scholarship Fund and the Ethel and Louis Shivitz Scholarship

"I was a little anxious moving to the South for medical school because I worried that it would lack diversity, but luckily I was wrong. People are moving here in droves precisely because this city welcomes and celebrates diversity. I'm constantly finding new things to do, whether it be a new restaurant, shows to up-and-coming artists, or going for a hike. My first year at VUSM has been one of the best years of my life."

+

Photography by Anne Rayner



VUSM students volunteered to conduct blood pressure screenings at Nashville's Pride Festival.



Free music events abound in Nashville like Musicians Corner, which supports emerging artists.





Ramsey, right, and his boyfriend Oscar Montenegro and their dog, Pepper.



"I have about 20 different board games and about every two weeks or so I get together with a group of med students to play."



Ramsey and friends enjoy hiking Radnor Lake, a 1,332-acre park that offers wildlife viewing and hiking in an urban area just a few miles from campus.



Our Amazing Skin

The body's largest organ at work

Skin is the human body's largest organ accounting for 8 pounds and 2 square meters on an adult. It is our fiercest protector, an impervious shield that plays a major role in keeping us alive. Since a substantial portion of our immune cells live in our skin, it teaches our body to fight off infections. It regulates our body temperature, constantly cooling us, and protects us from the sun's harmful rays. It cleanses our body by secreting our toxins. It is the body's storeroom for water, fat and metabolic products. It helps our body maintain homeostasis — a stable, relatively constant internal environment.

Its importance cannot be overstated. We would dehydrate with even a small reduction in its ability to prevent evaporation of our internal water supplies.

"The skin is a very exciting, incredibly complex and diverse organ, which helps explain why there are more than 3,000 diseases of the skin. For me, as a physician-scientist, the skin is an endless source of curiosity and discovery. Take for example the recent astounding finding of olfactory receptors in the skin — who would have thought the skin has a sense of smell? The more details we learn about the function of the skin, the more we can help people when it's not working properly," said Eric Tkaczyk, MD, PhD, assistant professor of Dermatology and Biomedical Engineering.

PHOTOGRAPH BY [LISA SPINDLER/GETTY IMAGES](#)

Comfortable in Her Own Skin

Surgery boosts confidence after weight loss

BY JESSICA PASLEY

After undergoing gastric sleeve surgery for weight loss at Vanderbilt University Medical Center in October 2016, Denise Stevenson was ecstatic with the results, but she realized during a yoga class 10 months later that her weight loss journey was not over.

"I knew there was a good chance after a significant weight loss that I could have loose skin," said Stevenson, who shed 105 pounds in a year. "But the extra skin really impacted my confidence. Mostly I was very self-conscious that if I moved a certain way my skin would be exposed."

It was while attempting an inverted position during a yoga session that her worst fear was realized.

"I would describe my skin like liquid — it would just flow out from the edges of my clothing," she said. "If I laid on my side, it would puddle next to me. On this day in yoga class I was trying to kick up into a handstand; I nearly had a wardrobe malfunction."

"I knew right then I had to get my skin fixed."

Stevenson was one of 540 patients to undergo a bariatric surgical procedure at the Vanderbilt Center for Surgical Weight Loss that year.

"I have struggled with my weight all my life," she said. "I yo-yoed for years. And as I began to age, I realized that it was getting harder and harder to lose the weight. I didn't want to be sitting around with my knees hurting, with high blood pressure or diabetes because I was overweight. I wanted a good quality life and to continue being active."

In 2014 she tore her anterior cruciate ligament (ACL) while skiing and then broke her ankle in 2016 during a training run. Both injuries sidelined her from exercise, and she continued to gain weight.

During the recovery in 2016, she caught an episode of "Dr. Oz" on bariatric surgery. She began researching the Vanderbilt program, completed an online questionnaire and attended an orientation for the surgical weight loss options, which include the Roux-ex-Y gastric bypass or the vertical gastric sleeve.

Stevenson, who weighed 240 pounds prior to the surgery, set a goal to lose between 80 and 90 pounds. Prior to surgery she wore size 18-20 clothing. Today she is a size 4.

"Once I reached a size that I was perfectly happy with, I wanted to make sure my weight was stable, my body was used to the weight loss and that I could maintain my weight."

In May 2018 Stevenson, 54, had a belt abdominoplasty or circumferential body lift, breast augmentation and breast lift.

Galen Perdikis, MD, FACS, professor and chair of the Department of Plastic Surgery, was Stevenson's surgeon. He sees multiple new patients monthly post weight loss.

"This specialty [skin repair] has grown over the past 15 years as weight loss surgeries have become safer and more prevalent," said Perdikis. "Our patient volume continues to increase and the patients span all ages."

Perdikis and his team remove excess skin from all parts of the body, but the most common skin repair procedures are the tummy tuck and breast surgeries. Most procedures are done on an outpatient basis or may occasionally require an overnight observation. Patients are evaluated carefully to ensure safety and the best outcomes possible.

"Our surgical weight loss center's team members are excellent and a big help to us," said Perdikis. "Once the patients come to us, they have already been informed and educated about the possibilities. After assessing them thoroughly in our plastic surgery clinic, we educate them about their options including what to expect the day of surgery and post operatively during recovery. Our team will also discuss the financial aspects of the non-covered procedures."

Insurance companies will not cover most skin removal surgeries unless there is a health issue that causes an interference in perineal hygiene or if skin rashes or infections occur because of the excess skin. Removing skin from the lower abdomen is the most commonly covered procedure for the above reasons, he said.

"For many of our patients who lost weight, the journey is not over. They have loved losing the weight but they hate all the loose skin. They feel like a trick has been played on them. Their bodies have been deflated with all the fat gone. They are excited to get to the next point and get rid of all the excess skin."

Stevenson said she was "absolutely giddy at times" over the change in her body since the skin removal procedure.

"This was kind of my final part of the journey," she said. "I don't have to

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For many of our patients who lost weight, the journey is not over. They have loved losing the weight but they hate all the loose skin.”



Denise Stevenson

worry about the shoulder-to-knee length Spanx anymore. I can wear prettier clothes and I don't look like I am carrying an inner tube around all day. But the biggest change for me post skin removal, besides being firmer in my clothes, is that I am not tentative about people touching me."

Prior to her skin repair, Stevenson said she felt "squishy" all over and didn't want people to feel the loose skin.

"I just kept my distance and tried to avoid allowing people to touch me. Not so much anymore."

She is also easing back into yoga, but said it's a slow process after surgery. She is jumping into other activities that her previous weight prohibited, such as hang gliding.

"There's a weight limit [for hang gliding] and I would not have

been able to do that before," she said. "I love being active. The weight loss has allowed me to do more and the skin repair returned my confidence.

"If someone has invested enough in themselves to have the weight loss surgery, and the excess skin takes away their confidence and keeps them from living a full life, then I would encourage them to take the final step. You've worked hard to get to that point and you deserve to live your best life," Stevenson said.

Seeing patients during the follow-up appointments is very satisfying, Perdakis said, smiling.

"These are some of the happiest patients and we get a lot of satisfaction from helping them. Surgery for them is a silver lining of a journey they have completed." ■

From Hurt to Healed

Collaboration key to wound care

BY JILL CLENDENING

Every year in the United States, an estimated 8 million people seek medical help for wounds that just will not heal, and at Vanderbilt University Medical Center the teams that care for these patients look beyond the wound to find the ‘why.’

A litany of issues can cause a poorly healing wound including severe trauma, burns, obesity, vascular diseases, lymphedema, diabetes, smoking, poor nutrition and a weakened immune system. And when a combination of these issues is present, the body’s natural ability to heal can be greatly impaired.

“At some institutions, a patient will see a wound care specialist and that’s the only medical provider they see for a chronic wound,” said Wes Thayer, MD, PhD, a plastic surgeon who was named VUMC’s Wound Care director in late 2017. “At Vanderbilt, we have a powerful system of referrals so we can take a much more comprehensive, coordinated approach to wound care.

“That’s important because wounds aren’t all the same. When we have a patient come to us with a chronic wound, we work quickly to identify the cause. Then, in addition to providing the highest standard of care for the wound, the appropriate topical product and dressing, as well as wound care follow-up, we can refer them to other specialists at Vanderbilt who can help manage the pathology that initially led to the wound or prevented its healing.”

If a wound hasn’t made normal progress toward healing, with restored function and mobility, after three months, it’s typically classified as a chronic wound. A chronic wound can greatly compromise an individual’s quality of life, impair movement and increase the risk of both localized and systemic infection, Thayer said.

In addition to impacting an individual’s health, chronic wounds are costly. In a 2018 study that analyzed 2014 Medicare reimbursements, a conservative estimate of the annual cost of treating chronic wounds for Medicare recipients alone was nearly \$32 billion. The study was published in *Value in Health*, the journal of The International Society for Pharmacoeconomics and Outcomes Research.

Because a team approach is vital for successfully treating chronic wounds and establishing preventive care to ward off future wounds, Thayer is working with other clinical leaders to establish a comprehensive, multidisciplinary wound care center at VUMC.

The care of a patient with a chronic wound, especially one that is the result of severe trauma or burn, can involve a large cast of

caregivers, such as trauma, plastic and orthopaedic surgeons, cardiologists, endocrinologists, nursing staff, physical and occupational therapists, nutritionists, psychologists and other care providers. The goal is to improve healing, prevent scarring, increase mobility and function, and provide long-term support as a patient heals.

These providers would be readily available and coordinated through the planned wound care center, Thayer said. In addition, the center would treat not just Vanderbilt patients, but would also serve as a referral center for a multi-state region. The center is still in planning stages, but he hopes to begin seeing patients no later than summer 2019.

“Most chronic wounds are associated with conditions more common in older individuals, including vascular disease and diabetes,” said Thayer. “Also, as our population ages, and we’re living longer, more seniors are undergoing surgery. Older patients are at higher risk of surgical site wound complications. We need to make sure we’re ready to meet the needs of this growing population.”

Complex wounds from burns

Severe burn injuries are complex and challenging to heal because they don’t affect the skin uniformly in severity, can also damage bones and internal organs, can cover large areas of the body, and can be caused by a wide range of environmental factors, said VUMC plastic surgeon Blair Summitt, MD, medical director of acute burn services.

And time is of the essence when working to heal open wounds caused by burns, he said. Without the skin’s shielding protection, burn wounds can quickly develop bacterial and fungal infections.

“You also have to get the burned tissue off or debrided, ideally no more than a week after the injury,” Summitt explained. “The burn itself can drive a multi-system inflammatory response in the body, so the goal is to get that dead tissue off and at least get temporary coverage on the wound.

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At Vanderbilt, we have a powerful system of referrals so we can take a much more comprehensive, coordinated approach to wound care.

➔ Cell signals that trigger wound healing are surprisingly complex

In a sharp and pointy world, wound healing is a critical and marvelous process.

Despite a tremendous amount of scientific study, many outstanding mysteries still surround the way in which cells in living tissue respond to and repair physical damage.

One prominent mystery is exactly how wound-healing is triggered. A better understanding of this process is essential for developing new and improved methods for treating wounds of all types.

Using an ultrafast, ultraprecise laser, a team of physicists and biologists at Vanderbilt University has taken an important step toward understanding the nature of these trigger signals. Their new insights are described in a paper titled “Multiple mechanisms drive calcium signal dynamics around laser induced epithelial wounds” published in October 2017 by the *Biophysical Journal*.

Previous research had determined that calcium ions play a key role in wound response. That is not surprising, because calcium signaling has an impact on nearly every aspect of cellular life. So, the researchers — headed by Professor of Physics and Biological Sciences Shane Hutson and Associate Professor of Cell and Developmental Biology and Chancellor’s Fellow Andrea Page-McCaw—targeted cells on the back of fruit fly pupae that expressed a protein that fluoresces in the presence of calcium ions. This allowed them to track changes in calcium ion concentrations in the cells around wounds in living tissue (as opposed to the cell cultures used in many previous wound response studies) and to do so with an unprecedented, millisecond precision.

The team created microscopic wounds in the pupae’s epithelial layer using a laser that can be focused down to



a point small enough to punch microscopic holes in individual cells (less than a millionth of a meter). The laser’s precision allowed them to create repeatable and controllable wounds. They found that even the briefest of pulses in the nanosecond to femtosecond range produced a microscopic explosion called a cavitation bubble powerful enough to damage nearby cells.

“As a result, the damage the laser pulses produce is quite similar to a puncture wound surrounded by a crush wound — blunt force trauma in forensic terms — so our observations should apply to most common wounds,” said first author Erica Shannon, a doctoral student in developmental biology.

— David Salisbury

“You have to come up with a long-term strategy to get the patient back to functionally living their life. The problem we often run into with patients who have very large burns is that we only have so much healthy skin remaining that we can use to make repairs.”

If a patient has unharmed skin available, that skin can be used as a graft or skin transplant to cover the burned areas. There are two types of autologous (from the same individual) skin grafts: split-thickness grafts in which just a few layers of outer skin are transplanted and full-thickness grafts, which involve using all the layers.

The graft is placed on the area needing covering and is secured by stitches or staples and a dressing. Recovery time for a donor site used for a split-thickness skin graft is quick — often less than three weeks. Full-thickness skin grafts take longer to heal, said Summitt. In a few days new blood vessels typically begin growing outward from the body into the transplanted skin in a process known as capillary inosculation.

If a patient has large burn areas, their unharmed skin is used as graft material first on the face, neck and hands for the least amount of scarring on the most visible parts of the body, he added.

If a burn site is larger than an individual’s remaining healthy skin, a technique called meshing can be used to enlarge a segment of donor skin to cover a bigger area, he said. Meshing involves running a harvested sheet of skin through a machine that cuts rows of

small slits in the tissue so it can expand, much like fishing net. The expanded, meshed tissue is secured in place over the open wound in order to spur new skin growth.

Because meshed skin tends to contract as the area heals, leading to restrictive bands of scarring, the healing must be monitored closely, Summitt said. Also, the meshing process can lead to an uneven skin surface once it heals. Laser treatments have become increasingly crucial in minimizing both the discoloration and uneven textures that can often occur after severe burns that require grafts, he added.

Cadaver skin or homograft can also be used as a temporary skin graft. Sterilized skin grafts from animals such as pigs, called heterografts or xenografts, can also serve as temporary biologic dressings to reduce infection and reduce fluid loss in the open wound.

The ReCell system, currently in clinical trials in the United States, is another innovation that may speed severe-wound healing, particularly burns. In the ReCell process, a graft of a patient’s healthy skin is processed into a solution that is then sprayed on the area of the body needing skin coverage. This treatment is already in use in England.

“A patient with very large burns is typically my patient for life,” Summitt said. “I’ll work with them for years trying to make things better for them.” ■

Melanoma Meets Its Match

Better options mean longer lives

BY TOM WILEMON

Two years after being diagnosed with metastatic melanoma that had spread to his brain, lungs and pancreas, Luke Simons just returned from a vacation in Alaska where he kayaked across the fjords with his wife Susan and watched the whales with their grandchildren.

It was a dream vacation, a miraculous recovery, and immunotherapy made it possible.

"As far as we know, I am clean and clear of cancer," Simons said. "Every quarter, I go for a scan to check. If the next one is clear, I will just have to go every six months."

Simons received infusions of pembrolizumab, an immunotherapy approved by the U.S. Food and Drug Administration (FDA) in 2014 and marketed as Keytruda. It's an antibody that blocks a protein that hides cancer cells from the immune system. It removes the armor around cancer so patient's immune systems can unleash T cells to attack the disease.

After Simons received his first four infusions of pembrolizumab following surgery to remove the brain tumor in 2016, the tumor in his lung shrank by half. After the next round, it shrank even more. The tumors on his pancreas disappeared.

Oncologists now have an expanding arsenal of new treatment options, immunotherapies and targeted therapies, for metastatic melanoma, a disease that previously came with a bleak prognosis. While melanoma accounts for about 1 percent of skin cancer, it causes a large majority of skin cancer deaths.

"There has been a huge amount of progress over the last five to seven years in the treatment of metastatic melanoma. We have

moved from essentially no treatments that had ever improved survival for patients to now having over 10 different treatments," said Douglas Johnson, MD, MSCI, clinical director of melanoma at Vanderbilt-Ingram Cancer Center and assistant professor of Medicine at Vanderbilt University. "It has been a remarkable amount of progress in the last few years."

Simons is an immunotherapy responder, but not all patients are. Johnson and colleagues are developing and testing new treatments as well as combinations of existing ones so more patients with metastatic melanoma can enjoy fuller lives.

"About 60 percent of patients will respond to the most aggressive immunotherapy regimen," Johnson said. "These are patients who previously would have had essentially no treatment options. Now, over half of patients are responding. The vast majority of these patients are still alive and doing well at three years, even five years, later. These patients are actually getting long-term and durable responses that are probably going to translate into a cure."

Long before his diagnosis, Simons and his wife Susan had a strong connection to Vanderbilt-Ingram, having provided philanthropic support for research on melanoma therapies that led to the treatment now benefiting him. His illness has strengthened the couple's commitment; Susan now serves on the VICC Board of Overseers.

Simons' diagnosis occurred in July 2016 when he had originally planned to take that Alaska vacation. It was a quirk of fate that changed those plans. He slipped on a slick hardwood floor and hit his head the day before he was supposed to fly out. Emergency room scans showed a lesion on his brain. Weeks later, after a biopsy following brain surgery revealed he had metastatic melanoma, he doubted if he would ever get to take his grandchildren to Alaska. But he held onto hope because Johnson told him he would be getting the same immunotherapy as former U.S. president, Jimmy Carter.



Luke Simons

DANIEL DUBOIS

New Treatments at a Glance

New treatments for metastatic melanoma fall into two categories: immunotherapies that spur patients' immune systems to attack the cancer and targeted therapies that block the molecules that allow the cancer to grow and spread.

Immunotherapies — Up to 60 percent of patients will respond to immune therapy. FDA-approved immunotherapies include pembrolizumab, nivolumab, talimogene laherparepvec, ipilimumab and nivolumab with ipilimumab. Survival rates have im-

proved so dramatically in some patients that many researchers think immunotherapies may cure metastatic melanoma, but the treatments have not been around long enough for their long-term effect to be quantified. Researchers are still trying to understand why other patients don't respond to immunotherapies.

Targeted therapies — Targeted therapies interfere with specific molecules involved in the growth and spread of cancers. Patients whose tumors express BRAF mutations, which comprise about half of people with metastatic melanoma, will respond to targeted therapies. Targeted therapies are

also available for the MEK mutation and the C-KIT mutation. FDA-approved targeted therapies include vemurafenib, dabrafenib, trametinib, dabrafenib with trametinib, cobimetinib with vemurafenib and imatinib. Two combinations of targeted therapies, dabrafenib with trametinib (for high risk stage III melanoma) and encorafenib with binimetinib (for metastatic melanoma), received approvals in 2018. While almost all patients respond to targeted therapies, over time they develop resistance. Researchers are focused on making the targeted therapies work longer, preventing resistance or overcoming it when it happens.

Carter also had metastatic melanoma that had spread to his brain, but he had fought back the cancer.

“That gave me the emotional incentive,” Simons said. “I had the attitude of ‘OK, let’s get on with it. It’s going to work.’ I didn’t really know what the odds were. It wasn’t a walk in the park, but that one story helped me more than anything.”

Not all patients with metastatic melanoma respond to immunotherapy, and researchers are looking for biomarkers that might explain why they don’t. One clue might be the number of mutations in a tumor.

“The more mutations a tumor has, the more foreign it looks to the immune system,” Johnson said. “Therefore, the more likely those patients are to respond to immune therapy. We can test this in the clinic to help guide how we treat patients.”

Another clue might be a molecule biomarker called MHC-II. Research from Vanderbilt-Ingram Cancer Center (VICC) identified the molecule as a possible predictor of response to immunotherapy. A clinical trial at VICC will screen patients for the molecule. Johnson is working with Justin Balko, PhD, PharmD, assistant professor of Medicine, on the initiative.

“If patients are positive for MHC-II, they will get a new immunotherapy combination — nivolumab plus relatlimab,” Johnson said. “Relatlimab is not FDA-approved yet. It’s an experimental combination. If patients are negative, they are going to get the most aggressive currently-available regimen — nivolumab plus ipilimumab.”

VICC participated in another clinical trial that compared the effect of pembrolizumab in patients to pembrolizumab in combination with another immunotherapy, talimogene laherparepvec (T-VEC), a genetically modified virus injected directly into tumors on the skin or in the lymph nodes.

“That seems to work better than either treatment alone,” Johnson said. “T-VEC alone treats superficial tumors effectively but cannot reach internal tumors. However, it seems as though treating the superficial tumors actually makes the treatment of the internal tumors work more efficiently. Using the two drugs together allows you to stimulate the immune system in multiple complementary ways.”

Immunotherapies are not the only new treatments that have been shown to work better in combination. Targeted therapies — drugs that block the molecules that allow cancers to grow and spread — have also proven to be more effective in some melanoma patients. One combination approved in 2018, dabrafenib with trametinib, has been shown to dramatically decrease the risk of recurrence and improve the cure rate for patients with high-risk, stage III melanoma.

“The advantages to that approach are to avoid the really devastating complications of metastatic disease,” Johnson said.

At this point in time, surgery remains the treatment protocol for early stage melanoma.

“Early stage melanomas treated with surgery alone are certainly much lower risk, but they actually represent ultimately the majority of patients who develop metastatic disease because they are so much more common,” Johnson said. “That’s still a real gap in our knowledge of how to predict those patients who will develop metastatic disease and then try to prevent that with some of these treatments. That’s certainly a big area of research to look at the genes in the tumor, to look at the different proteins and to understand which patients are at the highest risk.” ■



Easier Access Key to Early Detection

The American Cancer Society estimates about 91,270 new melanomas will be diagnosed in 2018. About 9,320 people are expected to die of melanoma, the rates of which have been rising for the last 30 years. Vanderbilt’s Department of Dermatology has a few important initiatives in play to diagnose it and other types of skin cancer at their earliest stages.

A clinic just for skin imaging — Plans are underway to open a skin imaging clinic dedicated to evaluating skin lesions that will allow both new and return patients to get high resolution photographic images of suspicious skin lesions that will be reviewed by Vanderbilt dermatologists within a day or two. An assessment will be communicated back to patient in short order, says John Zic, MD, professor of Dermatology. “If we see something worrisome, we can bring the patient in quickly to perform a skin biopsy. On the other hand, if we suspect it’s a completely benign skin lesion, we can give the patient some reassurance right away rather than have them wait.”

An alternative to biopsy — Confocal laser scanning microscopy (CLSM or LSCM) is a technique for obtaining high-resolution optical images. The key feature of confocal microscopy is its ability to produce in-focus images of thick specimens, a process known as optical sectioning. Images are acquired point-by-point and reconstructed with a computer, allowing three-dimensional reconstructions of topologically-complex objects. Eric Tkaczyk, MD, PhD, director of the Cutaneous Imaging Clinic, is using CLSM to look deeper into the skin to get more information on suspicious moles or lesions. “Most of the time when you go to a dermatologist and there is something that you need to know exactly what it is, like a suspicious mole, I’d have to cut it out and make slides with it so we can provide a diagnosis with pathology. The confocal microscope is portable, and we place it on your lesion and obtain microscopic images that way, reducing the need for biopsy.”

Remote access — Vanderbilt dermatologists practicing at the VA have been using teledermatology for two years. Veterans have images of skin conditions taken at community-based outpatient clinics in Tennessee and Kentucky that are uploaded to electronic health records and reviewed by VA dermatologists in Nashville. Vanderbilt hopes to launch an outpatient pediatric teledermatology clinic soon. Children who present to the general pediatric clinic with skin conditions can have images taken that will then be uploaded to the electronic health record for pediatric dermatologist Sharon Albers, MD, to review. “This will increase access for patients, particularly those on TennCare, and allow feedback to the pediatrician quickly,” Zic said. “We are still working out details, but we are very excited about this. We hope to make it more convenient for parents so they don’t have to take an additional day off from work to come to the pediatric dermatology clinic to get an opinion on what’s going on with their child’s skin.”

A different direction for dermatology

Meg Chren, MD, takes the helm of the new department

JOHN RUSSELL



Mary-Margaret “Meg” Chren, MD, the Buchanan and Lancaster Professor and Chair of Dermatology, joined the VUSM faculty in January to become the inaugural chair of the new Department of Dermatology. Chren was formerly professor of Dermatology at the University of California, San Francisco (UCSF).

Q What is the advantage to establishing Dermatology as its own department?

As a department, we will be responsible for not only the quality and solvency of our clinical and educational activities, but for building and growing as a vital part of the larger Medical Center. So this transition is a business, organizational and conceptual change. In fact, this

fall we will come together as a department in a formal strategic planning process to articulate explicitly our vision, and how we want to move forward for the next five to 10 years.

Q What is the strategic vision for the department?

Our faculty are here because they are committed to the academic environment, and as a group we’ve been thinking a fair amount about what it means to be “academic.” I define it as a culture of inquiry and curiosity, and I hope we will build around that idea. We want to be firmly embedded in the institution’s clinical goals, the things that uniquely characterize Vanderbilt — exceptional quality of care and expanding to serve the region and the state. Teaching is extremely important; we have a sought-after residency and plans to expand with new educational opportunities such as tele-dermatology. Finally, we will build our research portfolio both in

basic and clinical research, which will be very exciting given the richness of the broader Vanderbilt investigative environment.

Q What intrigued you about dermatology early in your career?

I trained in internal medicine first and was an internist in a small practice outside of Boston. That experience was pivotal for me. It exposed me to the care of people with chronic conditions who are living with their illnesses. It also showed me the pleasures of practicing in a well-run environment so clinicians can focus on patients. I also learned I had the mentality of a specialist; I'm someone who does better focusing on one part of the human body and patient experience, so I knew I would specialize and do a fellowship. For me, a few pivotal patients with serious skin conditions shaped my career, and getting to know their dermatologists made me want to be as scholarly as they were.

Q How has dermatology evolved and been impacted by cosmetic advances?

In the past there was concern that an emphasis on cosmetic procedures might erode the mission of academic dermatology. In fact, these concerns were unfounded and academic dermatology is thriving. Our faculty and doctors-in-training want to care for people with all types of skin conditions that affect their health and well-being. Skin problems can affect patients in many ways. For example, a child may have very itchy eczema, or a woman with psoriasis of the hands may no longer be able to perform her job, or a man with skin cancers may need multiple surgeries. But in addition, skin conditions — because they are often visible — can also affect patients emotionally because of their effects on appearance. Caring for patients' cosmetic concerns is one way — of many — in which we can take better care of people with all types of skin conditions that affect their health and well-being.

Q What are your research interests?

After my dermatology residency, I did a research fellowship in clinical epidemiology and outcomes research. The vast majority of our dermatology patients have chronic conditions, and to improve our care we need to understand how to measure the outcomes of that care. I began by focusing on the patient's quality of life as an outcome for skin conditions. My group developed, tested, and perfected a quality-of-life tool for skin disease called Skindex, and we have used that tool to measure and compare outcomes of treatments for a variety of skin conditions. I'm very excited to continue this

work in the wonderful research environment at Vanderbilt. Our current studies focus squarely on the experience of a patient with a skin condition — how it affects his or her well-being — which we call the Skin Vital Signs. We have developed a user-friendly mobile tool to measure the patient's experience, and will learn if giving this information to clinicians in easy, quick ways can improve care. Stay tuned! ■

“We want to be firmly embedded in the institution's clinical goals, the things that uniquely characterize Vanderbilt.”

→ Science of the Skin

How the skin protects

Epidermis, the outermost layer of the skin, provides the critical protective barrier needed for terrestrial life. The process of epidermal barrier formation includes conversion of the essential fatty acid linoleate into skin-relevant oxidized lipids.

Two lipoxygenase enzymes, 12R-LOX and eLOX3, initiate this conversion pathway. An inactivating mutation in either enzyme leads to trans-epidermal water loss and the fish-skin symptoms of congenital ichthyosis. But how this oxidation pathway is completed was not clear.

In a study published in the *Journal of Lipid Research*, researchers evaluated candidate epoxide hydrolase enzymes that could participate in this conversion. They found that the enzymes EPHX2 and EPHX3 produce the end products of the 12R-LOX pathway in the epidermis, implicating their role in the formation of the mammalian water permeability barrier.

This work not only extends the basic understanding of a vital process for mammalian survival, it suggests a possible avenue for improving treatment of common skin barrier conditions such as atopic dermatitis.

Study tracks skin salt's role in blood pressure control

In findings published in the *Journal of Clinical Investigation*, investigators use genetic and molecular approaches in mice to demonstrate that salt metabolism in the skin is important for systemic blood pressure control.

In mice fed a high-salt diet, large amounts of salt accumulate in the skin. Immune system cells (mononuclear phagocyte system, MPS) sense

the sodium accumulation and activate a protein called TONEBP. This protein increases expression of the growth factor VEGFC by immune cells, which builds cutaneous lymph vessel capacity and enhances sodium and chloride clearance.

The study shows that elimination of the TONEBP gene in MPS cells prevented the VEGFC response to a high-salt diet and increased blood pressure. Likewise, blocking signaling through the lymph vessel VEGFC receptor inhibited the changes in lymph vessel density and resulted in salt-sensitive hypertension.

The findings support the idea that the immune and lymphatic systems in the skin work together to regulate electrolyte (sodium, chloride) composition and blood pressure. Defects in this regulatory system may be associated with salt-sensitive hypertension, researchers said.

New approach for staph-related skin abscesses explored

New multicenter research that includes Vanderbilt University Medical Center investigators could change treatment approaches to simple skin abscesses, infections often caused by *Staphylococcus aureus* (staph) bacteria.

The study, published in the *New England Journal of Medicine*, shows that adults and children who have simple abscesses 5 centimeters or smaller in diameter have higher cure rates if the abscess is drained in combination with antibiotic treatment, either trimethoprim-sulfamethoxazole (TMP/SMX or Bactrim) or clindamycin, compared to drainage alone.



My Tenuous Relationship With an Octopus

BY JONATHAN DALLAS + PHOTOGRAPH BY JOHN RUSSELL

EVER SINCE THIRD GRADE, the octopus has been my least favorite animal. Not that any octopus ever did anything to me; on the contrary, I've only seen one in an aquarium, and I'm sure it took no special notice of me, nor I of it. In fact, given their keen intelligence, octopi should actually command some notion of respect within the animal kingdom. That said, my mind has chosen to overlook this fact and focus instead on the image of a pale, purple, cartoon octopus silently staring back at me from the ceiling of a postoperative recovery room.

My story doesn't begin in third grade; rather, it starts when I entered the world. Born with proximal femoral focal deficiency (PFFD), a birth defect characterized by a shortened femur and dysplastic acetabulum, I have lived my entire appreciable life — from preschool to medical school — as an amputee. Given the number of letters in the name of my condition, it's safe to assume that it's relatively rare. Consequently, the typical conservative re-

sponse from many physicians was not to offer options, but to predict I'd never walk well.

As I grew up, the profound effects that PFFD would have on my life made themselves increasingly evident. Many stereotypical childhood goals, such as being an astronaut or playing in the NBA, were off the table (not that, at 5 feet 10 inches, the latter would've been there anyway). Even the little things that most people take for granted — fitting in the back seat of a car, learning to ride a bike, or walking through a store without being subjected to the incessantly curious eyes of a 5-year-old — provided their own inherent challenges.

And then I was introduced to the aforementioned octopus. At the age of 9, I underwent the third in a series of rotationplasties that have since allowed me to walk. At some point in the post anesthesia care unit, the team severely underestimated my analgesic needs. With pain searing through my hip and everyone hastening to get things under control, all I could do was stare at

the ceiling. On that ceiling, an octopus stared observantly back at me. As to why an octopus with eight “legs” adorned an orthopaedic hospital for patients with a general lack thereof, I will never know. But, focusing on the octopus, a number of questions ran through my mind. Why was this happening to me? Would I ever be normal? Was all of this worth it?

These are the questions I reflect upon when I consider where I want to go, what I want to do, and who I want to be. They are, in part, what drove me toward a career in medicine, toward a career in helping others with problems like my own. But to simply view my disability as a catalyst for a career choice is to ignore the countless obstacles, pains and failures that have accompanied it. These are experiences I wish I had never encountered, yet every cloud has a silver lining, and these experiences have affected my views regarding disability, patients and how I wish to approach clinical practice in the future.

Although I use it for the sake of communication, I do not, in and of itself, like the term disabled. I don’t wish to argue against its context because it would be a lie to claim that there was nothing I couldn’t do given my condition. The term emphasizes the entirely wrong aspect of a person with a disability, focusing on what he or she cannot do rather than on any other defining characteristic. This emphasis speaks volumes on the image of disability in society.

To this day there is a certain stigma — sometimes obvious, sometimes not — regarding disability. Society, with its use of the term disabled, demonstrates a fondness for characterizing people by their medical conditions. Ray Charles, one of the most talented musicians of his time, is known as a wonderful blind musician. The image of Stephen Hawking, one of the most impactful physicists of this era, is intimately tied to that of his assistive devices. None of these descriptors are inherently wrong; however, it is as if the lives of those who live with disabilities are defined first by their disability and only subsequently by the rest of their person.

What makes this emphasis negative is not the emphasis itself but the damaging stigma subconsciously tied to it. As a society, we often think that such a connotation does not exist, but the evidence says otherwise. During the last presidential election, controversy erupted surrounding the alleged public mocking of a reporter for his physical disability. In 2016, the movie “Me Before You” garnered significant backlash from various groups due to its portrayal of assisted suicide for someone living with a disability. Are these the types of statements that we want to make to the disabled community?

While this stigma may appear isolated to specific events, it has overarching effects on the people with disabilities. For all people of working age, able-bodied individuals have an employment rate approximately twice that of those who are not. Additionally, those with disabilities who are employed earn a significantly lower median salary than those without disabilities. Certainly, it could be argued that many jobs require a definite level of physical skill that some individuals with disabilities may not have. However, according to the “Americans With Disabilities: 2010” census report, education — which forms the foundation upon which many people build their careers — follows the same trend, even when only considering those with “non-severe” disabilities. This occurred in spite of the Individuals With Disabilities Education Act, which “[ensures] services to children with disabilities throughout the nation.”

But what do physicians and other health care professionals have to do with this? Admittedly, it is impossible for a group of people to change the subconscious outlook of a nation immediately. To be fair, health care professionals do more than most to help. We provide prosthetics to patients with amputated limbs, treat cerebral palsy with baclofen pumps, and administer disease-modifying therapies for multiple sclerosis. While these innovations have enormously improved the lives of many individuals, this is only half of the battle. Prosthetics don’t fix workplace discrimination. Baclofen pumps don’t absolve a lack of educational resources. Disease-modifying therapies, as useful as they are, don’t improve access to health insurance. Much of what we do, as a medical field, is targeted toward our patients’ medical conditions. In treating these conditions, we often forget to consider the rest of the patient’s life. Yet it is that aspect that often needs treatment the most.

“But to simply view my disability as a catalyst for a career choice is to ignore the countless obstacles, pains and failures that have accompanied it.”

Addressing this stigma is difficult, and it is (or should be) the subject of further debates about approaching patients with disabilities. As we treat underlying medical conditions, we must help return patients to “normal” life. In children, this means not only securing access to equal educational resources but also inspiring the personal confidence that they can succeed in school. For adults, this means not only ensuring that they are capable of working but also instilling the desire to contribute to society and the confidence that they can make a difference. In all cases, this means ensuring that the image of disability is secondary to that of someone’s accomplishments, aptitudes and character.

My image is, despite my best wishes, intimately tied to my medical condition. Among strangers, I am not a medical student, or an engineer, a researcher or a college graduate — I am just an amputee. But I suppose that, in my own mind, I feel somewhat the same way. I will always face challenges, both old and new. These challenges are central to what defines me as an individual, and they have shaped me both as a person and a professional. I am often reminded of the questions that ran through my head while staring at the octopus above me, just as I reached the age at which I could understand what lie ahead. I will never have an answer as to why I was the one afflicted with PFFD but, whether a simple genetic mutation or part of God’s larger plan, it doesn’t matter. I will never be “normal,” in the strictest sense of the word. But was it all worth it?

I am not thankful that I was born with a disability. I do not celebrate it, nor is it something that I would wish upon anyone else. That said, it is the proverbial hand I was dealt, and there’s no arguing with the dealer. All I can do is face it, move forward and take lessons from my experiences that I would not have learned otherwise. These lessons have shown me the challenges that thousands of patients face each day. It is these challenges, and the stigma involved, that we must actively address as a medical community to continue to improve the lives of those living with disabilities. Then, and only then, can we truly say that we have provided the best possible care. ■

Jonathan Dallas is a Vanderbilt medical student. This article originally appeared in JAMA. 2017;318(19):1867-1868. doi:10.1001/jama.2017.15711. Copyright 2018 American Medical Association. All rights reserved.

Researcher Miriam Lense, PhD, works with Liam Bazemore in the SeRenade program for a study about music and cognition.



BIOLOGY AND THE BEAT

The intriguing relationship between rhythm
and language development



Kate Margulis has been passionate about music all her life. But it wasn't until she came to Vanderbilt to earn a master's degree in speech and language pathology that she realized she could marry that passion to her undergraduate research in developmental psychology and language and, as a result, help children learn language skills.

Margulis spent two years as a lab coordinator at the Temple University Infant & Child Lab where she worked on projects studying interrelations among language, play and spatial skills before coming to Vanderbilt where she was introduced to Reyna Gordon, PhD,

the lead author of a 2014 study that found an intriguing connection between rhythm and grammar in children.

Through a series of tests conducted with colleagues at the Vanderbilt Kennedy Center, Gordon, assistant professor of Otolaryngology and Psychology and director of the Music Cognition Lab in the Department of Otolaryngology, found that children who did well on music tests tended to also excel in their spoken language abilities. The research could have multiple uses, such as taking rhythm into account when evaluating communication skills in children with developmental language disorders.

BY MATT BATCHELDOR + PHOTO BY JOHN RUSSELL

“

care a lot about preserving music as part of public education

and as something that is accessible to all children, and I think research is an important part of making sure it stays in children's lives,” Margulis said. “My goal is to better understand the way music can help people, and the way music can boost the skills children are developing. I want the rest of the world to value music and to prioritize it as a valuable part of education, and I think that to do that we all need to understand its effect better.”

Vanderbilt students are making an impact in this fast-developing field of research. Just three years after securing \$200,000 in foundational Trans-Institutional Program (TIPs) funding from Vanderbilt University, the Music Cognition Lab is branching out from that initial research and pushing into two new areas — the genetics of music and language and the possibilities of deploying music to improve social engagement of children, including those with autism. These new projects have been fundamentally defined by interdisciplinary collaboration and have also given Vanderbilt students the opportunity to participate in groundbreaking research.

Additional resources were provided by the Department of Otolaryngology, Vanderbilt Kennedy Center and the Curb Center for Art, Enterprise and Public Policy.

GENETICS OF MUSIC AND LANGUAGE

Together with other students and faculty, Margulis developed an algorithm to identify cases of language disorder in de-identified medical records using both Vanderbilt's Synthetic Derivative, a database containing clinical information derived from Vanderbilt's electronic medical record, and linked data in BioVU, Vanderbilt's bank of de-identified DNA samples.

The algorithm is one step toward advancing understanding of why and how language abilities vary in the population, complementing other work pursued by the group on the genetics of music skills. Taken together, these studies could answer fundamental questions about the communication abilities of the human mind. And it all starts with genetics.

“We can use genetics to understand the underlying biology better,” said Nancy Cox, PhD, Mary Phillips Edmonds Gray Professor of Medicine and director of the Vanderbilt Genetics Institute. “That makes it possible to consider new ways of developing treatments for conditions and diseases.”

Musical rhythm and speech have patterns that could be harnessed to bolster communication for individuals with language disorders. The hope of the research is to discover whether there are certain genes that may trigger language impairment and whether those genes are also involved in rhythm, explained Stephen Camarata, PhD, professor of Hearing and Speech Sciences and Psychiatry and Behavioral Sciences. Then those genetic markers could be tested in prospective studies with patients with language difficulties to better understand their shared impact on development and disabilities.

From there, precision-medicine approaches could be developed, Gordon said. Researchers could apply new knowledge about the biology of rhythm and language to better identify language impairment in children and provide a new tool for individualizing language treatment.

The research exemplifies Vanderbilt's proud history of interdisciplinary collaborations. “It's very exciting,” Camarata said. “You have this unique collection of very talented researchers in different areas of expertise viewing these domains from an innovative perspective.”

Cox said linking genetic data to the electronic medical records — nearly 250,000 samples — offers the opportunity for a much larger sample size than traditional studies that recruit patients. The database is already being used for multiple other studies.

“Applying these methods and resources in a unique way is emblematic of Vanderbilt's leadership in this research area,” Gordon said. “We are thus enhancing not only the work here, but the progress of the field through collaborative work with our national and global research partners.”

“In the original TIPs, genetics wasn't a focus,” added Miriam Lense, PhD, research instructor in Otolaryngology. “It was a really amazing opportunity to link up, collaborate and bring students in to train them in what's really cutting-edge, breakthrough research.”

MUSIC AND SOCIAL ENGAGEMENT

The Music Cognition Lab is also making a push into autism research in two separate studies, in partnership with the Treatment and Research Institute for Autism Spectrum Disorders, Nashville Symphony Orchestra, Nashville Opera, and Borderless Arts Tennessee, the state organization on the arts and disability. The studies gained the program recognition as one of four 2018 National Endowment for the Arts (NEA) Research Labs, which comes with a \$150,000 award.

“We are looking at really broad factors of how we can use music and study music to impact social engagement, emotional well-being and community inclusion for individuals both with and without autism and other developmental disabilities,” said Lense, who is the principal investigator in the studies. “We are bringing together people with different areas of expertise to bring new perspectives to the field of music cognition.”

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(l-r) Reyna Gordon, PhD, Katherine Margulis, Miriam Lense, PhD, and Chloe Vaughan



JOE HOWELL

The studies will involve faculty from different specialties across campus. Mark Wallace, PhD, dean of the Graduate School at Vanderbilt University and Louise B. McGavock Professor of Hearing and Speech Sciences, is lending his expertise in sensory processing. Elisabeth Dykens, PhD, the Annette Schaffer Eskind Professor of Psychology, Psychiatry & Behavioral Sciences, and Pediatrics and co-director of the Vanderbilt Kennedy Center University Center of Excellence on Developmental Disabilities, lends expertise in psychopathology and individuals with intellectual and developmental disabilities, especially those with genetic syndromes.

The first NEA study involves parents and preschoolers with and without autism. Standardized assessments track different types of social communication behaviors, and eye tracking and movement analyses are used to determine how children engage with people doing different types of musical activities. They may watch videos of music classes, or children playing or parents singing.

Parents and children also make music together in the SeRenade (Social and Rhythmic Engagement for Autism Spectrum Disorder) Program. SeRenade, designed by Lense and recent graduate Sara Beck, PhD'18, is a 12-week series of parent/child music classes, where parents learn techniques and strategies for supporting their child's social engagement and positive behavior. "It's a really unique training environment for the students and a really unique setting for families, even compared to commercial music programs, because those don't necessarily include the sort of parent training and inclusive elements that our class does," Lense said.

The second NEA study is a national questionnaire study to assess music engagement, social development and emotional well-being in children and their families with and without developmental, medical and mental health conditions. Findings from the research will inform the development of community engagement and therapeutic practices related to musical activities.

In addition to the research, the lab will host quarterly Music Research Forums to promote the development and refinement of the lab studies and develop a Music Engagement Toolkit and online training modules to build capacity for arts organizations and musicians who work with children with developmental disabilities.

Lense has also received a \$474,000 grant from the National Institute on Deafness and Other Communication Disorders (NIDCD), part of the National Institutes of Health (NIH), to focus on infant-directed speech and singing — how children respond to the ways parents sing or talk to them. The study includes infants who are at a higher risk of developing autism because they have an older sibling with it. Researchers use techniques such as eye-tracking and acoustic analyses to quantify interactions. "We're looking at how parents and infants interact and how parents speak and sing to their infants to socially engage with them and how their infants respond," Lense said.

Student involvement has also been a key part of the music and social engagement work. Rita Pfeiffer, who graduated with a master's degree in speech language pathology last year, continues to participate in the parent/child classes in addition to working as a speech-language pathologist for Williamson County Schools. She has also contributed to prolific publications that have come from the Music Cognition Lab, publishing an article on social motor coordination during adult-child interactions in the journal *Annals of the New York Academy of Sciences*.

The publication was an offshoot from her master's thesis examining the feasibility of measuring the timing of movements during social interactions of preschoolers interacting with adults.

"Specifically, we want to examine how children and their parents move during social interactions, how their movements may differ between musical versus non-musical social play, and whether we might see differences in movements for children with neurodiverse profiles (i.e., Autism Spectrum Disorder)," she said. "I cannot express enough how rewarding this project has been to know that we have been able to benefit the community and families from our research, and that I could contribute to the endeavor of making Nashville a more inclusive, and musical, city."

Pfeiffer, Margulis and other student trainees in the lab have also performed in the annual Scientific Salon event, showcasing their musical talents and research progress.

Ron Eavey, MD, Guy M. Maness Professor and chair of Otolaryngology and director of the Vanderbilt Bill Wilkerson Center, hailed the progress of the program that the Department of Otolaryngology enabled.

"Otolaryngology is a specialty that focuses on the organs of communication," he said, "Music is one form of communication. We are thrilled to see that Reyna and Miriam are being recognized for their work and for the significant influence that music has on everyone's lives." ■

The Program for Music, Mind and Society

The Music Cognition Lab is a part of the Program for Music, Mind, and Society at Vanderbilt, a collaborative network of researchers, scientists, artists and students, working together to accelerate the understanding and impact of music on individuals and society. This network harnesses the teaching and research resources of the Vanderbilt School of Medicine, Peabody College, College of Arts and Science, School of Engineering and the Blair School of Music.

The Program's 2017-2018 Booster grant initiatives have fueled the rapid growth of research that cuts across many disciplines, including psychology, neuroscience, medicine, education and music performance. Recently-awarded Program Booster grants span topics from animal models of music-related behavior (bird song and mouse vocalizations) to new studies of expertise in musical notation. Other Vanderbilt seed projects funded by the program have provided new evidence for the role of musical engagement in enhancing interpersonal social interactions, in addition to new perspectives on how everyone's musical traits relate to their ability to communicate. These new research directions are helping establish Vanderbilt as a cutting-edge international leader in research on the biological basis of music.

A series of strategic initiatives has been developed by the Program's senior steering committee: Jay Clayton, PhD, director of the Curb Center at Vanderbilt; Elisabeth Dykens, PhD, co-director of the Vanderbilt Kennedy Center University Center of Excellence on Developmental Disabilities; Ron Eavey, MD, Guy M. Maness Professor and chair of Otolaryngology and director of the Vanderbilt Bill Wilkerson Center; Mark Wallace, PhD, dean of the Graduate School at Vanderbilt University and Louise B. McGavock Professor of Hearing and Speech Sciences, and Reyna Gordon, PhD, director of the Music Cognition Lab.



Hailey Walley

HAPPY, HEALTHY, WHOLE

At a 20-week ultrasound Lindsey and Jeremy Walley were excited to learn the gender of their first-born child.

Their elation that it was a girl was met by a sudden quiet and serious look from the ultrasound technician, who then whisked them to another room for a meeting with their obstetrician-gynecologist. The couple knew something must be wrong.

That's when they learned about the omphalocele — a birth defect in which the intestines and other abdominal organs grow outside the abdomen through a hole in the belly. The organs are covered only by a thin, translucent membrane. The Walley's baby had a giant omphalocele containing her liver and intestines. A unique collaboration between an orthotics company and a dedicated doctor gave the little girl and her parents a reason to smile.

BY *CHRISTINA ECHEGARAY* + PHOTO BY *BRANDI WOLFRAM*

"We had never heard of it," Lindsey said.

"At the time we were blown away. No one in our family had ever had anything like this, and we were the first ones to have a baby who had a birth defect."

About 775 babies in the United States are born each year with an omphalocele, accounting for about one out of every 5,386 births, according to the Centers for Disease Control and Prevention.

The Walleys, who live in Cookeville, Tennessee, were referred to Monroe Carell Jr. Children's Hospital at Vanderbilt where Lindsey underwent detailed anatomic ultrasounds and scans of the baby, whom they named Hailey, to help define the extent of the omphalocele.

At 31 weeks into her pregnancy, Lindsey started having contractions. Hailey had dropped into the birth canal. After a weekend in the hospital and medicine to stop the contractions, Lindsey went home, only to return 24 hours later when her water broke.

Because of the risk to the omphalocele, Hailey was delivered via cesarean section Jan. 11, 2017, at 32 weeks and quickly taken away to the Neonatal Intensive Care Unit.

Jeremy and Lindsey had to wait four days before they could finally hold her for the first time.

"I was very scared to hold her," Lindsey said. "I was scared to see the omphalocele when she was born and to see her on the ventilator and with IVs. That's not how you picture seeing your first-born child."

Due to her underdeveloped lungs and added pressure from the omphalocele, Hailey was put on a ventilator and eventually graduated

to oxygen through a continuous positive airway pressure (CPAP) machine for preemies.

"That was one of our largest problems — the underdevelopment of her lungs due to prematurity and being on the ventilator and the CPAP. Besides the omphalocele, that was one of our major obstacles to overcome," Jeremy said.

To help protect the omphalocele after birth and prepare for her eventual surgery, Harold "Bo" Lovvorn III, MD, associate professor of Pediatrics and Pediatric Surgery, painted the thin sack with a cream called silvadene, which is typically used to help burn victims heal. Over time, Hailey's skin would begin to grow and as she grew, doctors could start gently pushing the sack into the abdominal domain.

"If we as physicians don't take a proactive approach to contain the sack, it will mushroom, and there is no way to put it back in there," Lovvorn said.

After 64 days in the NICU, Hailey was finally able to go home on oxygen support. The Walleys had wondered if there was a way to cast the 'O,' as her parents dubbed it. They didn't know how they would transport Hailey in a car seat without a seat belt rubbing against the sack. Hailey began in a special recombinant car seat then graduated to a Jefferson car seat, which reroutes the straps around her belly.

The 'O' protector

While omphaloceles are rarely fatal, they often require multiple surgeries as the baby grows to properly place the organs back into the abdominal cavity. Worried about risk of infection and possible rupture of the "O," the new parents wondered about a way to protect it and allow Hailey to be a typical baby.

Lovvorn, in his research, came across a new innovative and experimental orthotic device, a brace of sorts that covers the omphalocele and compresses it over time so that only one repair surgery is required. The Walley's journey had already been a long haul, as they worried about the omphalocele but also lung development issues Hailey had due to prematurity.

"We had become aware of a prosthetic device made in Boston that would keep the sack from growing larger, with the concept that the baby will grow around the sack, but also that you can gradually compress and reduce the contents back inside," said Lovvorn.

The Walleys agreed to try the device for their little girl.

On a follow-up visit with Lovvorn and after consults with Kaitlynn Pung, a resident at Nashville-based Bulow Orthotics and Prosthetic Solutions, the Walleys received a custom orthosis for Hailey when she was about 4 months old. Because Boston Orthotic and Prosthetic fabricated the original brace for a previous omphalocele patient, they fabricated a custom device for Hailey based on measurements and a CAD scan obtained by Pung.

"We got in touch with Boston O and P and the person who handled that case, and they were eager to help," said Pung. "I had to make major brace design adjustments in the first couple of months as the 'O' began to shrink. I also attended her bimonthly follow-up appointments with Dr. Lovvorn at which time I took progress measurements and determined if we were still moving in the right direction. This case really highlights how important it is to have interdisciplinary care and to work with a patient's physician to ensure the patient receives the best care."

The Walleys felt more comfortable once Hailey had the brace. They started seeing immediate results.

"It was amazing. The 'O' changed shape. Every time I took it off it

+ Pediatric surgeon Bo Lovvorn, MD, checks on Hailey following surgery to repair her omphalocele, a rare birth defect that causes the internal organs to develop outside the abdomen.

SUSAN LURMY



“We are extremely thankful for the people here — everyone from the nurses who took care of her, to the physicians, to the surgeon. We couldn’t have had a better surgeon for her.”

was a different shape,” Lindsey said. “It started as an oval shape from head to toe and this device was trying to compress it in. (At visits) Lovvorn would come in and manipulate it and press it back down to the abdomen to see if she could handle it.”

Hailey could tolerate more tummy time, aided by a special O-shaped pillow her mom created out of memory foam so it had a hole for where her brace would sit. Throughout the process, Pung continued to adjust the device to keep the sack compressed.

“Hailey needed a device that could compress her omphalocele while allowing her to just be a baby without limitations,” Pung said.

Typical Toddler

In November 2017, Lovvorn performed a successful repair surgery on Hailey, putting her organs back into her abdominal cavity and closing it up.

Jeremy said that initially they thought it would be 18-24 months before surgery could be done, but the device allowed the surgery to happen sooner. “The device helped us to do this in a one-and-done surgery versus multiple surgeries,” he said. “We were very happy and have been impressed with the care along the way. We are extremely thankful for the people here —everyone from the nurses who took care of her, to the physicians, to the surgeon. We couldn’t have had a better surgeon for her.”

At a recent visit to Children’s Hospital, Hailey waves around a Mickey Mouse doll, putting it in her mouth as she squirms in the lap of her dad. She’s clearly eager to be on the go, and finds her way to her mother.

Hailey, wearing a blue printed dress and white leggings, has had a long journey in the first year and a half of life.

Lovvorn says Children’s Hospital is uniquely positioned to walk this journey with families and handle complex case due to the specialty care it offers and he hopes Hailey’s successful outcome can help other children born with omphaloceles.

“We have expertise in prenatal care, both diagnostic and therapeutic, and our postnatal care is excellent in neonatology and all the supportive services. We have a group of critically-thinking surgeons who are experts and well-read and aware of innovative techniques out on the horizon and who are trying to stay current with progress. This brace is not a widely known technique. It’s new and emerging, but if one reads and stays current on the literature, eventually you’ll find something that works.” ■



What is omphalocele?

Omphalocele, also known as exomphalos, is a birth defect of the abdominal (belly) wall. The infant’s intestines, liver or other organs stick outside of the belly through the belly button. The organs are covered in a thin, nearly transparent sac that rarely is open or broken.

As the baby develops during weeks six through 10 of pregnancy, the intestines get longer and push out from the belly into

the umbilical cord. By the 11th week of pregnancy, the intestines normally go back into the belly. If this does not happen, an omphalocele occurs. The omphalocele can be small, with only some of the intestines outside of the belly, or it can be large, with many organs outside of the belly.

Other Problems

Because some or all the abdominal (belly) organs are outside of the body, babies born with an omphalocele can have other problems. The abdominal cavity, the space in the body that holds these organs, might not grow to its normal size. Also, infection is a concern, especially if the sac around the organs is broken. Sometimes, an organ might become pinched or

twisted, and loss of blood flow might damage the organ.

Occurrence

The Centers for Disease Control and Prevention (CDC) estimates that each year about 775 babies in the United States are born with an omphalocele — in other words, about one in every 5,386 babies. Many babies born with an omphalocele also have other birth defects, such as heart defects, neural tube defects and chromosomal abnormalities.

Causes and Risk Factors

The causes of omphalocele among most infants are unknown. Some babies have omphalocele because of a change in their genes or chromosomes. Omphalocele might also be

caused by a combination of genes and other factors, such as the things the mother comes in contact with in the environment or what the mother eats or drinks, or certain medicines she uses during pregnancy.

Recently, CDC researchers have reported important findings about some factors that can affect the risk of having a baby with an omphalocele:

- Alcohol and tobacco use (more than 1 pack a day)
- Certain medications such as selective serotonin-reuptake inhibitors (SSRIs) taken during pregnancy
- Obesity or being overweight before pregnancy



Global Good

Neurosurgeons share skills in Tanzania

BY TOM WILEMON + ILLUSTRATION BY CHRIS NICKELS

Street vendors sell caskets along the road that leads to the hospital in Mwanza, Tanzania. It's a stark reality, this expectation of death distilled into an image, then seared into memory. Reid Thompson, MD, can't forget what he saw, and he doesn't want to forget.

"When you walk out of the hospital and come down the hill, lined up on the street are all these people selling caskets," said Thompson, the William F. Meacham Professor of Neurological Surgery and chair of the Department

of Neurological Surgery at Vanderbilt University Medical Center. "There is a thriving casket business right outside the hospital. That's because people go to the hospital to die."

They die from many diseases, but they especially die from head injuries, brain tumors, infections and hydrocephalus that could be survivable if Tanzania had more neurosurgeons.

Tanzania is one of several low- to middle-income nations with a scarcity of neurosurgeons. The Vanderbilt University Medical Center International Neurosurgery Program is helping medical personnel in some of these nations improve care. It's a new program that operates on a shoestring budget with VUMC staff using vacation time and sometimes paying their own airfare.

"One of the real challenges for us is how do we do that in a sustainable way — sustainable in a sense that it does not just become us going over and doing a few surgical cases — but develop an opportunity to be involved in educating neurosurgeons in those areas."

Thompson traveled to Tanzania last summer along with two VUMC colleagues, neurosurgeon Christopher Bonfield, MD, and E. Haley Vance, DNP, APRN, a pediatric nurse practitioner with expertise in neurological surgery. Between stops in Mwanza and Zanzibar, they performed 19 surgeries.

Colleagues went to other countries to share their expertise. Michael Dewan, MD, MSCI, worked in Uganda last year, while Ahilan Sivaganesan, MD, traveled to Sri Lanka.

The physicians, who plan return trips, say they learn as much as they teach.

"They don't have the same tools that we have here so we can be doing a case that I would think is fairly simple here, but it turns into something much more complex over there," said Bonfield, director of the International Neurosurgery Program.

“They teach me how to open up skulls and repair spina bifida in patients, among other things, with instruments that I wouldn’t have thought of or used in that way before. There have been a few times in the operating room here that I needed to do something else — that maybe something wasn’t working — then I thought back and remembered I had seen people do it a different way. It’s still safe. It’s just different.”

He said the work also hones his patient analysis skills.

“Without CT scans and MRIs and all that other technology that we use here, it makes you examine the patients even more and think about what is wrong with them on a more fundamental level,” said Bonfield, who started doing neurosurgeries internationally seven years ago and has done work in three nations. “It boils neurosurgery down to its most basic elements.”

Dewan, who has been to Uganda multiple times, is part of a research group that is working to quantify the shortage of neurosurgeons internationally and devise a logistics system for better utilization of expertise. While the work is a humanitarian mission, he agrees with Bonfield that neurosurgeons learn new approaches, citing the work of Benjamin Warf, MD, a professor of Neurosurgery with Harvard Medical School who devised a new surgical procedure for hydrocephalus while working in Uganda. Warf, a mentor to Dewan, was awarded a MacArthur Fellowship in 2012 for his work. But the primary objective is to share expertise with physicians in countries with severe shortages of neurosurgeons.

“It is important to teach and train local surgeons in this skill set so that ultimately when you get back on the plane and fly back you’re leaving something permanent there and something that is more sustainable,” Dewan said.

Dewan has authored articles in medical journals about this topic. Only 25 percent of the population in sub-Saharan Africa has access to neurosurgical services within a two-hour window, according to an article published January 2018 in *World Neurosurgery*. Another article published April 2018 in *Journal of Neurosurgery* estimated that about 23,300 additional neurosurgeons are needed to address more than 5 million patient cases that go unmet annually in low- and middle-income countries. A gross disparity exists in Africa and Southeast Asia, where large geographic treatment gaps exist, he wrote.

Sivaganesan went to the war-affected Tamil homeland in the northeast of Sri Lanka, where a shortage of neurosurgeons was exacerbated by an ethnic conflict from 1983 to 2009 — a war that sent most of his family fleeing from their homeland.

“It is very satisfying and fulfilling to realize that Vanderbilt has given me a very specific skill set and knowledge set,” Sivaganesan said. “To be able to go to a part of the world that has a special place in my heart and be able to transfer some of that knowledge and skill set is very empowering.”

He recalled one conversation with a physician in Sri Lanka in particular.

“Every piece of information I was telling him, he was soaking up like a sponge,” Sivaganesan said. “I could tell it was going to affect the care of patients the very next week.”

This summer, Thompson, Bonfield and Vance plan to return to Tanzania but they will stagger their service times and bring more team members to have a bigger impact.

“My favorite thing about working in Africa is the people,” Vance said. “They are truly amazing. It is an honor for me to meet them during a time of great need and be able to provide care that they otherwise might not receive.”

The people there are incredibly resilient, waiting days for the surgery they need in less than ideal hospital environments, Thompson said.

He recalled doing surgery on a patient with a brain abscess, a man who had suffered a fracture on the frontal sinus that had become severely infected. He went to bed worried with the image of street vendors selling caskets on his mind.

“I didn’t sleep a wink all night,” Thompson said. “I was really fitful and worried about him. I was worried that he might have a hemorrhage or something terrible.”

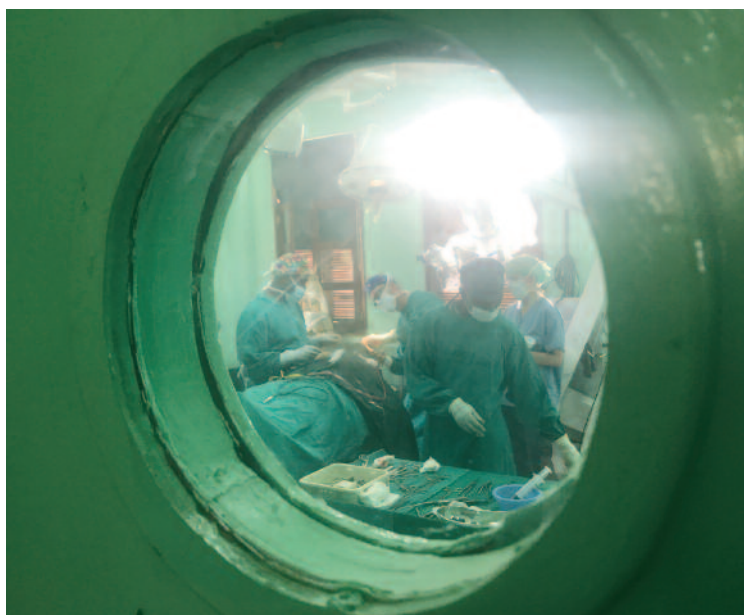
The abscess was so bad it took up about a quarter of his brain.

Thompson then pointed to a photo on his phone and said, “This is him standing up the next day, walking around.” ■

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Top: Reid Thompson, MD, and the local neurosurgery team remove a brain tumor at Mnazi Mmoja Hospital in Zanzibar.

Bottom, left to right: Thompson, physician assistant Amanda Wright, and Scott Zuckerman, MD, in surgery.



CHRISTOPHER BONFIELD, MD



ASH GALLERY

Alumni notes

1960s

Phillip Gorden, MD'61, BA'57, received the John Phillips Memorial Award as well as Mastership from the American College of Physicians, a national organization of internists. The award was presented at ACP's Convocation Ceremony in April. Gorden is a leading investigator in diabetes and lipid metabolism and former director of the National Institute of Diabetes and Kidney Diseases.

Walter Derryberry, MD, HS'66, was among five alumni of Tennessee Tech University honored for their service to their alma mater and their distinguished life's work at the university's 2018 Alumni Association Outstanding Awards and Recognition Banquet. Derryberry was among the first specialists to open a private practice in Cookeville, Tennessee.

1970s

Rob Meals, MD'71, is semi-retired as an orthopaedic hand surgeon. He occupies much of his time blogging at www.aboutbone.com and enjoys engaging in his specialty as it reflects on not only

health and science, but also on art, history, business and engineering.

Rick Davidson, MD'72, HS'77, BA'68, a founding member of the Student Health Coalition, revisited some of the communities in East Tennessee where he and other members of the volunteer rural health coalition worked in the early '70s, particularly the community clinic they started in 1974. That clinic is now a five-clinic operation based in Oneida with 14 providers that sees 50,000 patient visits a year and provides care for 50 percent of Scott County.

J. Robert Polk, MD'76, MPH, HS'79, retired in January 2015 and is now helping out with suicide prevention for the State of Idaho. He and his wife live in New Meadows, Idaho, and have two sons and five grandchildren.

Steve Hines, MD'77, HS'80, was selected by the students of UT Southwestern's Alpha Omega

Alpha Medical Honor Society's Gamma Chapter to receive its 2018 Volunteer Clinical Faculty award that recognizes a community physician who contributes with distinction to the education and training of clinical students.

Teresa Clark, MD'77, HS'78, was honored with the Jack A. Raines Humanitarian Award during a ceremony that took place in conjunction with the Medical Association of Georgia's 163rd House of Delegates meeting in Savannah, Georgia, in October 2017. The award is given to a physician for outstanding humanitarian contributions beyond the normal practice of medicine.

Jay Harolds, MD, HS'79, was named a Lifetime Achiever by the Marquis Who's Who, a publisher of biographical profiles. Harolds is a radiologist, residency director, medical student clerkship director and professor of Radiology at Michigan State University and Spectrum Health.

Aubrey Hough, MD'70, HS'75, FAC'81, was named a Lifetime Achiever by the Marquis Who's Who, a publisher of biographical profiles. Hough is emeritus professor at the University of Arkansas for Medical Sciences where he served as vice chair of the Department of Pathology.

Deborah Smith, MD'78, HS'81, has been a pediatrician in Vicksburg and Warren County, Mississippi, for the last 37 years. Her practice began at the Street Clinic and continues at the pediatric clinic at Merit Health River Region.

1980s

Arthur Fleischer, MD, HS'80, FE'81, FAC, has published the 8th edition of "Fleischer's Sonography in OB/GYN; Textbook and Teaching Cases," the most widely used reference in the world on this topic, with more than 2,000 images and international authorship.

Sam DeMent, MD'82, serves as adjunct professor in the Natural Sciences Department at Montreat College in Montreat, North Carolina.

G. Alexander (Zan) Fleming, MD, FE'82, BA'71, is CEO of Tolerion, a platform company with an auto-antigen technology aimed at autoimmune diseases. He continues as chairman of Kinexum, a strategic advisory firm he founded in 2002 after 12 years at the FDA. The firm has helped over 400

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

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companies. Fleming is a lay leader of his church, and he and his wife, Deborah, are both active in their historic village, Harpers Ferry, located 60 miles from Washington, D.C.

Tim Moore, MD'82, has been named chief medical officer for ADURO, Inc., the Human Performance company. With more than 20 years of health management experience, he will lead the innovation of ADURO's evidence-based practices in support of patients' journeys for total health and well-being.

Lee Payne, MD'83, is a Brigadier General in the United States Air Force, currently assigned as the Command Surgeon at Headquarters Air Mobility Command.

Sherry Galloway, MD'84, BA'80, is an emergency medicine physician at Saint Thomas Rutherford Hospital and the recipient of the 2018 ATHENA Award, which recognizes an individual who excels in her profession, gives back to the community and helps raise other leaders, especially women.

Howard Walpole Jr., MD, MBA, HS'85, is the vice president of Medical Affairs at Northeast Georgia Health System. He is also beginning a three-year term as treasurer of the American College of Cardiology.

Richard (Dick) Johnston Jr., MD'89, BA'85, was again voted one of the three most outstanding sports medicine orthopaedists in greater Atlanta. His daughter, Keillor, is a Vanderbilt University undergraduate.

Robert Means, MD'83, FE'89, dean of the Quillen School of Medicine at East Tennessee State University, and **Bonnie Miller, MD, HS'86, MMHC'16, FAC**, Senior Associate Dean of Health Science Education and Executive Vice President of Educational Affairs at Vanderbilt, were named by Tennessee Gov. Bill Haslam to the Tennessee Commission on Pain and Addiction Medicine Education. The commission was established by executive order as part of the TN Together plan to help end the opioid epidemic.

Jenny Franke, MD'87, HS'94, has been named the new chief clinical officer by Lourdes Hospital for Mercy Health's Kentucky Region. She comes to Lourdes from Jennie Stuart Medical Group in Hopkinsville. She is board certified by the American Board of Urology.

Thomas A.S. Wilson Jr., MD'87, serves as a member of the board of directors at ProAssurance



Dear Vanderbilt University Medical Alumni,

Vanderbilt Medical Alumni Reunion 2018

Our next biennial VUSM Reunion, Oct. 11-13, is fast approaching. Reunion festivities will begin on Thursday morning, Oct. 11, with a golf outing at Richland Country Club, followed by an evening welcome reception and awards program at the Country Music Hall of Fame and Museum. This year we will honor our 2018 VMAA Distinguished Alumni Award recipients, David M. Gershenson, MD'71, and Kathryn M. Edwards, MD, FAC '80-present, in addition to our 2018 Distinguished Service Award recipient, Katherine (Kitty) Davis Murfree. On Friday, Oct. 12, there will be CME opportunities, Quinq class inductions (classes of '68 and '69), luncheons for all alumni, walking tours and evening anniversary class parties. Saturday, Oct. 13, Reunion activities include student presentations, as well as a tailgate and football game (VU vs. University of Florida). To learn more about VUSM Reunion 2018, please visit our VMAA website which will be continuously updated during the coming months: www.medschool.vanderbilt.edu/alumni; or call the VMAA office with your Reunion questions: (800) 288-0266.

VMAA Welcomes New Board Members

The VMAA welcomes the following newly elected board representatives whose four-year terms will begin at Reunion 2018: Michael J. Fowler, MD, FE'01 (Endocrine Society); Stephanie C. Kurita, MD, FAC (Radiology Society); Roman E. Perri, MD, HS'01 (Brittingham Society); Mark E. Rawls, MD, HS'10, BE'02 (Christie Society); Kyla P. Terhune, MD, HS'11, EMBA'16 (Scott Society); Jerry J. Jaboin, MD, HS'10 (Roentgen Society); Vernon A. Rayford, MD'09 (Young Alumnus Representative); Brenessa Lindeman, MD'09 (Southeast); Airron L. Richardson, MD'04, MBA'05 (Northeast); Samer S. Hasan, MD/PhD'94 (Northeast); Rear Admiral Paul D. Pearigen, MD'87 (Far West); Robert L. Rosenfeld, MD'94, MA'73, HS'99 (Far West). In addition, Ryan Byrne, MD, and Claude Pirtle, MD, will join the board as the house staff representatives. Fourth-year class president Will French will serve as the new student representative.

Worthy of Note News

Hearing from you is one of the most enjoyable aspects of my role with the VMAA. Please take a moment to submit your "Worthy of Note" news for our next edition of *Vanderbilt Medicine* magazine. Send your news and photographs to medalum@vanderbilt.edu; fax to (615) 936-8475; or mail to VUMC, 21st Avenue South and Medical Center Drive, MCN D-8212, Nashville, Tennessee 37232-2106.

We hope to hear from you soon.

Best Wishes,

Ann H. Price

connect with us ...



VMAA WEBSITES:

medschool.vanderbilt.edu/alumni
reunion.vanderbilt.edu/medicine



ALUMNI PROFILE: SHARAT KUSUMA, MD

+
photo by Chris Schmauch
written by Bill Snyder



SNAPSHOT

FAMILY

Wife, Brooke, a nurse practitioner, and their son Kieran, 1.

VUSM MENTORS

Bonnie Miller, MD, and the late Robert Collins, MD, and R. Michael Rodriguez, MD

SCHOLARSHIP

Supported as a student by the Donald E. Pearson Award

FAVORITE RECENT BOOK

An American Sickness: How Healthcare Became Big Business and How You Can Take It Back, by Elisabeth Rosenthal

Medical Visionary

Sharat Kusuma, MD, MBA'02, BA'97, grew up in Albany, Georgia, and comes from a family of doctors. His father is a gastroenterologist, and his brother is a Vanderbilt-trained plastic surgeon.

Kusuma chose orthopaedic joint replacement surgery as his clinical specialty.

"The way you can immediately affect the gait and mobility of patients is incredibly gratifying," he said.

After residency training in at the University of Pennsylvania, Kusuma did two fellowships, one at Rush University Medical Center and the other in bone-conserving hip and knee replacement in Birmingham and Nottingham, United Kingdom.

In 2009 he set up practice at OhioHealth in Columbus, Ohio, where he performed about 400 surgeries a year, and participated in implant design, robotic surgery and outpatient joint replacement programs. Kusuma also lent his surgical expertise to hospitals in South Africa, India, Ecuador and Peru.

Patients in these countries received the same hip and knee replacements as U.S. patients. Yet, "we'd treat them with acetaminophen and ibuprofen alone after surgery for pain control and they'd do amazingly well," he said. "It really taught me how much we're overtreating pain in the post-operative setting in America using opioids."

By 2014 Kusuma was ready for a new challenge. That's when the training he'd received in Vanderbilt University's joint MD/MBA program proved to have significant value.

In the spring of 2002, he was one of the first three students to graduate from the dual-degree program established by the School of Medicine and Owen Graduate School of Management. Kusuma entered the program after his third year of medical school and completed both degrees within five years.

"I received fantastic education on health care economics at Owen," Kusuma said. In particular, U.S. Rep. Jim Cooper, D-Tennessee, who taught health care management, "really influenced my thinking early in my career."

In 2014 Kusuma left full-time orthopaedic practice and become a health care expert at McKinsey & Company, a top global management consulting firm that advises health care organizations, including hospital systems, biotech companies, and state and national governments.

In summer 2017, Kusuma started a new job at Apple's world headquarters in Cupertino, California, on the Health Projects team, developing clinical applications for consumer electronics.

"Our current (health care) system practices episodic and reactive care," he explained. "But if remote wearables allowed patients to share heart rhythms and steps, which are tracked every day by smartwatches, they and their doctors could interact better remotely and they could make day-to-day changes to improve their own health. It's the day-to-day things that patients do that really affect their long-term outcome," Kusuma said.

Corp., where he served as director since 2012. Wilson is a board-certified neurosurgeon with Neurological Associates, P.C., in Birmingham, Alabama.

1990s

Jordan Asher, MD'90, HS'93, FAC'04, is the chief clinical officer of Ascension Care Management. He previously served as the physician network executive for Saint Thomas Health. Asher also writes the blog "The Positive Contrarian."

Mark Earnest, MD'90, PhD, completed his 25th year on the University of Colorado School of Medicine faculty where he serves as division head of general internal medicine. He and his wife, Julie, have two high school-age children.

George Hutton, MD'96, was recently named vice chair for clinical affairs in the Department of Neurology at Baylor College of Medicine where he also holds the Linda and John Griffin Endowed Chair in Multiple Sclerosis.

M. Kevin Smith, MD'90, PhD'91, HS'97, MMHC'11, FAC, is the 2018 president of the Nashville Academy of Medicine and practices general internal medicine at Vanderbilt.

Jill Moses, MD'91, and Annie Nodestein Moon, MSN'03, were recognized by the Association of American Cancer Institutes, in partnership with the Centers for Disease Control and Prevention and the American Cancer Society, for exceptionally high rates of human papillomavirus vaccination (82.7 percent) in the Navajo Area Indian Health Service Unite in Chinle, Arizona. Moses is director of the Division of Public Health, Chinle Service Unit, Indian Health Service.

John Warner, MD'92, CEO of UT Southwestern's University Hospitals, has been appointed to lead UT Southwestern's patient care enterprise for the medical center. He will oversee the medical center's clinical health operations including the medical group practice delivering care in about 80 specialties to more than 100,000 hospitalized patients, 600,000 emergency room patients, and about 2.2 million outpatients a year.

Greg Martin, MD'94, HS'98, FE'01, was elected secretary of the Society for Critical Care Medicine. He has served on its board for five years. He spoke at the Healthcare Innovation symposium in Atlanta and gave a keynote lecture in Lima, Peru. He designated Master Clinician for Emory's Department of

Giving in Action

+
Honoring their son's
legacy



+
Rick Ferrini, right, with his parents, Vino and Divya, brother Neil, and sister-in-law Caroline

Two new scholarships at Vanderbilt University — one at Vanderbilt Law School, the other at the School of Medicine — have been named in honor of alumnus Rick Ferrini, JD'11. Divya and Vino Ferrini of Dallas have pledged \$1 million to establish both the Rick V. N. Ferrini Law Scholarship and Rick V. N. Ferrini Medical Scholarship in memory of their oldest son, an accomplished attorney who died March 10, 2017.

"We wanted to do something in memory of Rick that would honor him and make him proud," said Vino Ferrini, president of the Texas-based leather footwear company Ferrini USA. "His time at Vanderbilt was very special to him, and these scholarships will give that same opportunity and experience to others. We also want to support research on depression, which so many struggle with, as did our son. It is a disease like any other, and we want to see the stigma removed for those who suffer with it and their families."

A graduate of the University of Colorado at Boulder, Rick Ferrini began his legal career in Washington, D.C., after earning his law degree from Vanderbilt in 2011. For the next five years he served as an assistant attorney general in the Office of the Attorney General for the District of Columbia, where he defended D.C. government agencies and individual employees at all levels of government in a variety of civil lawsuits. In 2016, he returned to his hometown of Dallas to serve as counsel to his family's company, Ferrini USA.

The Rick V. N. Ferrini Law Scholarship was created in appreciation of the far-reaching impact that Vanderbilt Law School had on Ferrini and his career. The need-based scholarship will be awarded to entering first-year law students and provide financial support throughout their time at the school.

"We're very thankful for this gift from Rick's family," said Chris Guthrie, dean and John Wade-Kent Syverud Professor of Law. "We are proud to have had Rick as a student at the law school, and we are so grateful to his parents and brother for honoring him in this way. In the face of the indescribable grief that accompanies the loss of a child, they have done something here that will honor his memory and make a big difference in the lives of many future law students."

The Rick V. N. Ferrini Medical Scholarship meanwhile will provide need- or merit-based support for MD or MD/PhD students at Vanderbilt's School of Medicine. Particular preference will be given to need-based students with an interest in the behavioral neurosciences.

"I want to express my appreciation to the Ferrini family for this generous and thoughtful gift in Mr. Ferrini's honor," said Jeff Balser, MD, PhD'90, President and CEO of Vanderbilt University Medical Center and Dean of the School of Medicine. "Philanthropic support for scholarships is essential to our mission and has a lasting effect, affording deserving individuals who are passionate about helping others through careers in medicine and science to fulfill their dreams." ■

Debbie Settles

Giving in Action

+
Paying it forward



+
Tom Brown, MD, and his wife, Susan

You could say Tom Brown's future was set at an early age. His English teacher took one look at his handwriting and told him, "You better be a doctor."

While more drove him to medicine than his hard-to-decipher handwriting, Brown, MD'69, BA'65, has worked as a cardiologist for Iowa Heart Center for more than 40 years.

Now, Brown and his wife, Susan, have established the Susan E. Sober Brown and Thomas Milburn Brown Jr., M.D. Scholarship. Brown, who also currently serves as Reunion chair for his class, said they made this commitment as a way to pay it forward.

"I didn't realize it at the time, but so many people helped me as a student," Brown said. "My scholarship was a particular relief to me and my wife, who worked as a schoolteacher in East Nashville to help put me through medical school. I also remember how difficult it was for my fellow classmates who didn't receive scholarship support."

Another motivation for their commitment is Vanderbilt's "family-like culture," which helped the Browns form life-long friendships. But it's not just their experience back in the late '60s that made them want to give back. They also have seen how medical school debt shapes health care.

"For a variety of reasons, doctor salaries in Iowa aren't as competitive as other states," Brown said. "When doctors graduate with significant debt, it makes it all the more difficult to recruit them to our state. My wife and I want to do what we can to help fix this challenge."

The Browns previously made gifts to the 1969 School of Medicine Class Scholarship. Colby Wollenman, VUSM Class of 2020, is a current beneficiary of the class's generosity.

Like the Browns, Wollenman noted the school's supportive environment. "Everyone takes care of one another," Wollenman said. "For example, Dr. Eli Zimmerman, one of my professors and the neurology clerkship director, memorized every students' name before classes started, addressing us by our names from day one. That type of care drives me to do the same and underscores how important qualities of respect, kindness and thoughtfulness are in a leader."

Of course, the Class of 1969 is another example of this caring community, pitching in together to help give a Vanderbilt education to new generations of students.

"Because of the Browns, I can enjoy everything that medicine, Vanderbilt and Nashville have to offer without the looming stress of financial debt," Wollenman said. "They are an enormous part in making medical school some of the best years of my life."

Through this kind of legacy, alumni like Brown and his classmates are not only helping ensure the future of medicine is bright, they are caring for their Vanderbilt family, now and in the future. ■

Becca Jensen

Medicine. Martin's wife, **Stephanie Martin, MD'94, HS'99, FAC'00**, started a new medical practice in Atlanta: Performance Orthopaedics and Sports Medicine. Their son, Forrest, is a sophomore at Emory University.

Luke Moix, MD'94, lives in Marin, California, with his wife and three children and has a private psychiatry/psychoanalysis practice in San Francisco. He recently co-founded a health care company, This American Doc.

Patrick Denton, MD'95, has been appointed to the McLeod Health Board of Trustees. Denton is a sports medicine specialist in Florence, South Carolina. Denton serves as the orthopaedic team provider for Francis Marion University and Florence School District One.

Richard Hatchett, MD'95, BA'89, moved to the UK where he is serving as the CEO of the Coalition for Epidemic Preparedness Innovations, a nonprofit organization funded by the Bill and Melinda Gates Foundation, Wellcome, and six sovereign nations to support the development of vaccines against epidemic diseases.

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

Anderson Collier, MD'98, FAC'09, BS'94, professor of Pediatrics, has become the new division chief of Pediatric Hematology-Oncology at the University of Mississippi Medical center.

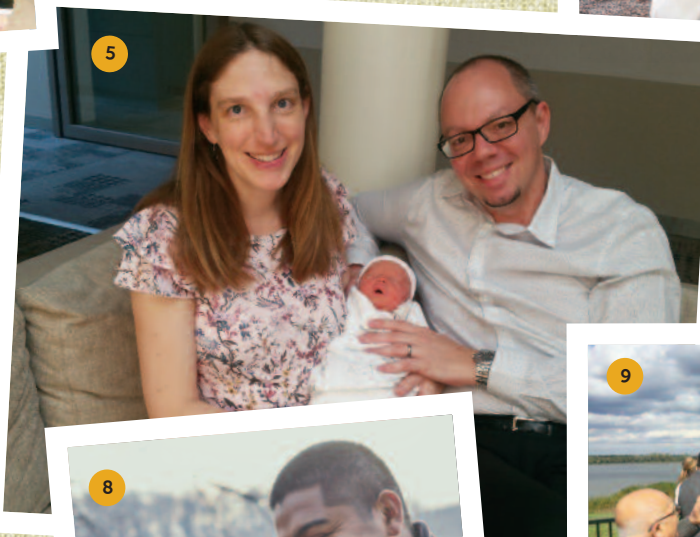
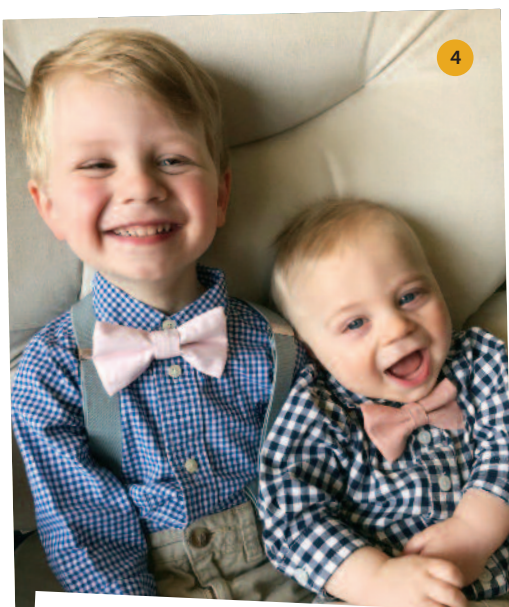
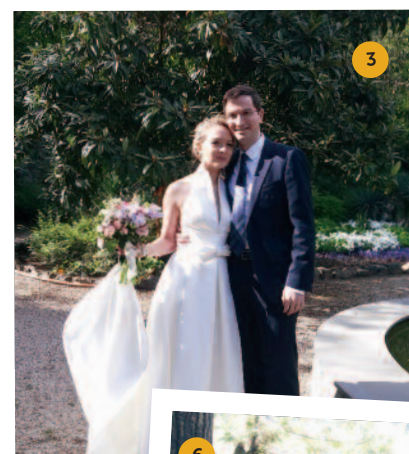
2000s

Stephen Parodi, MD, HS'00, has been elected chair of the board of the Council of Accountable Physician Practices, a coalition of visionary American multi-specialty medical groups and health systems. Parodi is the associate executive director of the Permanente Medical Group.

Paul DeFlorio, MD'01, is an active duty U.S. Air Force Lieutenant Colonel and has relocated from Wright Patterson Air Force Base, Ohio, to Dover Air Force Base, Delaware. He has assumed command of the 436th Aerospace Medicine Squadron. He and his wife, Amanda, have four children, Wyatt, Emmaline, Rhett and Dillon.

Faces & Places

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



1. Left to right: Captain (Ret.) Joel Lees, MD'79, HS'80, HS'85, Capt. (Ret.) Kathleen Fischer, MD'79, HS'85, Lt. Shira Paul, BA'11, Capt. Chris Culp, BA'83, Rear Adm. Paul Pearigen, MD'87, gathered at the Admiral Kidd Club on San Diego Bay for the Navy American College of Physicians meeting in January, continuing Vanderbilt's long affiliation with U.S. Navy Medicine. **2.** Paul DeFlorio, MD'01, and his wife, Amanda, have four children: Wyatt, Emmaline, Rhett and Dillon. **3.** Zurabi Lominadze, MD'12, BA'08, and Maia Tavazde were married April 21. Lominadze started a transplant hematology fellowship at Columbia University NY-Presbyterian in July. **4.** Michelle Kiger, MD'11, and her husband, Dave, welcomed their second son, James William, in September. **5.** Boris Pavlin, MPH, MD'03, and his wife, Karien Stuetzle, recently welcomed their first child, Calla Aurora. **6.** (left to right) Gerard Jenkins, MD'09, Randon Hall, MD'08, HS'12, and Yaw Sarpong, MD'08, met in Capilano River Regional Park in Vancouver, Canada, to hike the mountains and suspension bridges and to celebrate the 10-year reunion of the VUSM class of 2008. **7.** Kathryn Edwards, MD, FAC, left, received the Maxwell Finland Award for Scientific Achievement at the National Foundation for Infectious Diseases Annual Awards Dinner held in Washington, D.C., in May. Pictured with Edwards, from left to right, Maria Deloria Knoll, PhD, Kathy Neuzil, MD, MPH'98, HS'91, FE'92, Marie Griffin, MD, MPH, FAC, Natasha Halasa, MD, MPH'06, FE'04. **8.** Nataly Sumarriva, MD, HS'18, and Thomas Beck, PhD, FE'17, were married May 26 in Nashville. Sumarriva is an assistant professor of Clinical Psychiatry at Yale. Beck is an immunologist and pre-med student at Middle Tennessee State University. **9.** John Logan, MD'61, was honored for lifetime community volunteerism for his efforts and support directed at Henderson Riverfront redevelopment and many civic, professional and philanthropic efforts to improve the lives of citizens in Henderson, Kentucky, where he resides. **10.** Wesley Abadie, MD'03, HS'04, was recently deployed to Afghanistan at Craig Joint Theater Hospital.



ALUMNI PROFILE: JESSI SOLOMON SANDERS, MD

+
photo by Jonathan Kannair
written by Bill Snyder



SNAPSHOT

VUSM AFFILIATIONS

BS'10 (Vanderbilt Ingram Scholar), MD'14 (Canby Robinson Scholar)

VUSM MENTORS

Nathalie Maitre, MD, PhD, was my most influential mentor. Tyler Reimschisel, MD, Elise McMillin, JD, and Elisabeth Dykens, PhD, were mentors and role models.

FAVORITE VUSM MEMORY

My Batson Advisory College "family" and Monday evening runs with classmates and Dean Scott Rodgers

FAVORITE HOBBIES

Playing guitar and dobro, bike riding

A Champion for Children

Jessi Solomon Sanders, MD, has an affinity for children with chronic illnesses and special needs that began in childhood and helped shape her future as a resident physician in neurodevelopmental disabilities at Boston Children's Hospital.

She grew up in Cleveland, Ohio, and accompanied her mother, an advocate for children with behavioral disorders, to social events where she would meet and play guitar with children with myriad disabilities. Each summer she attended an overnight camp that included children with disabilities, and she was drawn to fellow cabinmates who had special needs.

"Over time I developed a talent for understanding and communicating with individuals of all ages with developmental disabilities and a passion for helping them," Sanders said.

During her freshman year at Vanderbilt's Peabody College, where she majored in special education and was a Vanderbilt Ingram Scholar, she volunteered to work with children with disabilities and was paired through the Best Buddies program with "an inspiring and tenacious young lady" with intellectual disabilities.

"Christy and I have been Best Buddies and best friends for the past 12 years," Sanders said, adding that the two enjoy one of her favorite hobbies together: tandem bike riding.

When Sanders matriculated to Vanderbilt University School of Medicine in 2010 as a Canby Robinson Scholar, she founded Best Buddies VandyMed, the first-ever medical school chapter of Best Buddies, and calls it her "proudest accomplishment."

"I am even more proud to know that it is still going strong. When I visited Nashville this winter, I had the privilege of attending the Best Buddies VandyMed holiday party as an alumna with Christy. That was an incredible experience, seeing the chapter thriving long after I had left."

Sanders' passion for children with disabilities has taken her around the world. In Nepal she volunteered at Community Based Rehabilitation, a childcare center for children with disabilities. In Ghana she volunteered at the Autism Awareness Care and Training Center and helped facilitate the creation of the first Best Buddies chapter there.

Along the way Sanders learned how important it is to young people and their families to be understood by their health care team.

"Hearing about their struggles and desires for specialized health care helped confirm my desire to become a physician serving this underserved population," she said. "I wanted to positively impact my patients and families with hope and guidance toward therapies that could enhance their child's life."

In Boston she is on the board of directors of Waypoint Adventure, a nonprofit organization that provides opportunities for individuals of all abilities to experience outdoor adventures that range from hiking to rock climbing.

Sanders met her husband, Mike Sanders, during her first year of residency. They share a love of tandem biking, even though he is 6'5" and she is 5'2". Last year, they rode their tandem bike from Geneva to Zurich. The couple married in July. Naturally, her Best Buddy, Christy, was by her side.

Wesley Abadie, MD'03, HS'04, remains active duty in the U.S. Air Force, recently deployed to Afghanistan to fill the otolaryngology/head and neck surgery billet at Craig Joint Theater Hospital.

Emily Graham Kurtz, MD, HS'05, FAC'16, has joined MPOWER Performance Institute, along with its affiliate Elite Sports Medicine & Orthopedics, as its medical director for MPOWER's Concierge Wellness Programs. She and her husband, William Kurtz II, MD, have three children and live in Nashville.

Laura Green, MD'02, has been named to the ACGME Review Committee for Ophthalmology effective 2019. She also begins a five-year term as the chair of the Committee for Resident Education of the American Academy of Ophthalmology.

Boris Pavlin, MPH, MD'03, and his wife, Karien Stuetzle, recently welcomed their first child, Calla Aurora. They live in Versoix, France, just across the border from Geneva, Switzerland, where Pavlin works as an epidemiologist for the World Health Organization's Health Emergencies Programme.

Carl Schmidt, MD, MSCI'04, HS'06, a surgical oncologist specializing in cancers of the liver, pancreas

Worthy of Note

Yaa Aboagyewa Kumah-Crystal, MD'08, HS'11, MPH'14, FE'14, leads the Vanderbilt electronic health record (EHR) voice assistant and is developing a natural language voice interface for the EHR. This interface will function like Amazon's Alexa or Apple's Siri. It allows providers to use normal speech to ask for information from the EHR such as "what was her last AIC?" Artificial intelligence, powered by Nuance Systems Inc, processes the user's question, and speech synthesis is used to provide a verbal response such as "Her AIC is 8.2. That is 2 percent higher than it was three months ago." "We hope to build a voice interaction layer for the EHR that will make finding information as easy as asking a helpful colleague," Kumah-Crystal said. ■

and stomach, has joined the West Virginia University Cancer Institute as chief of surgical oncology and surgeon-in-chief.

Natalie Curcio, MD'04, FE'07, MPH'07, HS'10, BA'00, was named among the *Nashville Business Journal's* 40 under 40 most influential people. Curcio is the president and founder of Curcio Dermatology. She also leads trips to Latin America to perform Mohs surgery to indigent people with skin cancer with no access to surgical care.

Benjamin Poulose, MD, MPH'05, HS'07, joined Ohio State University's Wexner Medical Center in August to serve as division director for general and gastrointestinal surgery. He formerly served as an associate professor in the general surgery division

at Vanderbilt. Poulose specializes in abdominal wall core reconstruction.

Mary Fleming, MD'06, spent six months on a volunteer assignment in Mutomo, Kenya, at Our Lady of Lourdes Mission Hospital where she provided both inpatient and outpatient services to the Mutomo community. She shares stories of her time in Kenya on her blog nomadobgyn.com.

Brenessa Lindeman, MD'09, is an assistant professor of Surgery and Medical Education at the University of Alabama at Birmingham where she also serves as an associate program director of the general surgery residency program and as the associate designated institutional official for the clinical learning environment in the GME office.

10s

Karl Bezak, MD'10, is pursuing a fellowship in hospice and palliative medicine at the Icahn School of Medicine at Mount Sinai for 2018-2019.

Michelle Kiger, MD'11, is working as a U.S. Air Force pediatrician at Wright-Patterson Air Force Base in Ohio and was promoted to major last year. She is a medical student clerkship director and started as the assistant residency program director this summer. She and her husband, Dave, welcomed their second son, James William, in September.

Brett Donegan, MD'11, BE'06, completed a fellowship in diagnostic neuroradiology at the University of Missouri-Kansas City in June and accepted a fellowship in endovascular surgical neuroradiology there in July.

David Marcovitz, MD'12, and Sabrina Poon, MD'12, completed fellowships in Boston in June and have returned to VUSM to join the faculty. Marcovitz will be working in the Department of Psychiatry, helping develop integrated care models for addiction treatment, and Poon will be working

Back in the Game

Leukemia sidelined Drew Estes—but after successful treatment, he's returned to the sport he loves.

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in the Department of Emergency Medicine while doing health services research on a K12 award. Their daughter, Maya, turned 2 in May.

Meredith Sellers Pelster, MD'13, BA'09, started a hematology/oncology fellowship at MD Anderson Cancer Center in Houston, Texas, in July and **Michael Pelster, MD'13**, BA'09, started a private practice as a Mohs surgeon and dermatologist in Pearland, Texas, a suburb of Houston.

Billy Sullivan, MD'13, M.Ed'13, HS, is chief resident in internal medicine at VUMC through June 2019.

Liz Berry, MD'14, HS'15, is joining the dermatology faculty at Oregon Health and Science University in Portland in September.

Losses

John Ball, MD, FE'71, died Feb. 4. He was 79. Dr. Ball is survived by his wife, Anne; children Cassandra, Cynthia and Jennifer; and six grandchildren.

Subhankar Bandyopadhyay, MD, FE'92, HS'93, died Feb. 9. He was 58. Dr. Bandyopadhyay is survived by his wife, Sati Nath; children Orunima and Anondo.

Jim Borland Jr., MD, HS'60, died Jan. 30. He was 85. Dr. Borland is predeceased by his son, Christopher, and is survived by his wife, Lee-Margaret; children James and Donia; and one grandchild.

Nath "Tom" Camp, MD, HS'72, died Jan. 21. He was 76. Dr. Camp is survived by his wife, Judy; children Nath and John; and nine grandchildren.

James Carratt, MD'57, died April 22. Dr. Carratt is survived by his wife, Harriet; children Evan, Peter and Christina; and four grandchildren.

Donald Catron Sr., MD, HS'90, died May 17. He was 79. Dr. Catron is survived by his wife, Marcella; children, Karen, Suzan and Gib; five grandchildren; and one great-grandchild.

Marvin Cohn, MD'61, HS'62, BA'58, died in February 2017. Dr. Cohn is survived by his children Caroline, Abigail and Adam.

John Collins, MD'56, BA'53, died Jan. 26. He was 85. Dr. Collins is survived by his wife, Susan; chil-

dren Lewis and Rob; and four grandchildren.

William (Bill) Fleet Jr., MD'58, HS'59'62, FAC'00, BA'55, died March 22. He was 84. Dr. Fleet is survived by his wife, Carolyn; children William, Catherine and Patricia; and eight grandchildren.

Robert Franks, MD'58, HS'61, BA'55, died March 23. He was 84. Dr. Franks is survived by his wife, Dorothy; children Deborah, Elizabeth and Robert; four grandchildren and one great-grandchild.

James Gammill, MD, HS'62, died Dec. 16, 2017. He was 92. Dr. Gammill is survived by his sister, Joan; niece Melanie; four nephews and several great-nieces and great-nephews.

Arthur Humphries Jr., MD, HS'54, died April 21. He was 90. Dr. Humphries is survived by his wife, Grace; children Ann, William, Aubrey and Helen; and five grandchildren.

William (Bill) Johnstone, MD, HS'69, died Jan. 9. He was 81. Dr. Johnstone is survived by his wife, Janice; children Mary Beth and John; and three grandchildren.

John "Jack" Judd Jr., MD'73, died Feb. 3. He was 70. Dr. Judd was predeceased by his wife, Patty and son John, and is survived by his children Patricia and John; and four grandchildren.

James Kelly, MD, HS'70, died Feb. 8. He was 74. Dr. Kelly is survived by his wife, Jan; and children James, Alexander and Erin; and grandchildren.

James "Jim" King Jr., MD'61, died March 26. He was 82. Dr. King is survived by his wife, Martha; children James, Elisabeth, Stacy and Gretchen; and eight grandchildren.

Jeffrey Kugel, MD, PhD, HS'84, died Dec. 25, 2017. Dr. Kugel is survived by his wife, Cheryl; children Gregory and Victoria; and five grandchildren.

Edmund Lawrence Jr., MD'72, HS'74, died April 30. He was 71. Dr. Lawrence is survived by his wife, Morgan; son Maximilian; and brother, William.

William Lowery Jr., MD, HS'59, died Jan. 9. He was 86. Dr. Lowery is survived by his wife, Debbie; son Joseph; one grandchild; stepson Christopher and two step-grandchildren.

Kevin McDonagh, MD, FAC'16, died Dec. 23,

2017. He was 59. Dr. McDonagh is survived by his wife, Leslie; his parents Thomas and Helen; and his siblings.

John Mims, MD, HS'58, died April 4. He was 97. Dr. Mims is predeceased by his wife, Mary, and is survived by his children Shelton, Rosemary and Emelyn; six grandchildren; and two great-grandchildren.

William O'Byrne III, MD, FE'09, died Feb. 28. He was 54. Dr. O'Byrne is survived by his brother James, sister Helen, nephew Christopher and niece Anne Marie Zukowski.

William (Bill) Preston Jr., MD, HS'64, died April 23. He was 85. Dr. Preston is survived by his wife, Jane; son William; and two grandchildren.

Richard Russell Jr., MD'56, BA'53, died Jan. 22. He was 85. Dr. Russell is survived by his wife Phyllis; children Scott, Katherine, Meredith and Stephen; and 16 grandchildren.

Robert Schaefer, MD, HS'65, died Feb. 12. He was 78. Dr. Schaefer is survived by his wife, Mary; children Robert and Esperance; and two grandchildren.

Harold Snyder, MD'60, HS'66, died March 5. He was 85. Dr. Snyder is survived by his wife, Deborah; children Shirley and Brett; and nine grandchildren.

Robert Strecker, MD, PhD'74, died April 15. He was 71. Dr. Strecker is survived by Terri Minion Sim; daughter Caroline; and one grandson.

Arthur Waltzer, MD'61, HS'62, BA'58, died Feb. 17. He was 81. Dr. Waltzer is survived by his wife, Rose; children Garrett, Adam, Joel and Megan; and seven grandchildren.

Walter (Walt) Wheelhouse Jr., MD'74, HS'79, FAC'80, BA'70, died March 8. He was 68. Dr. Wheelhouse is survived by his wife, Kimberly; children Jenna, Lara, Katie and Anastasia; step-children Jeremy, Stephanie and Barry; and 13 grandchildren.

Andrew (Andy) Williams, MD, HS'66, died Feb. 20. He was 80. Dr. Williams is survived by his wife, Marjorie; children C. Clegg, Shannon and Elizabeth; and nine grandchildren.

VUSM
THROUGH TIME

Lillian B. Nanney, PhD, shown here in 1989, helped develop the first synthetic drug to promote wound healing. After 38 years at Vanderbilt, she was named professor of Plastic Surgery, emerita, in May.

1989

SCIENCE AND TECHNOLOGY

The first synthetic blood, Fluosol-DA, was approved for human use. It was withdrawn from the market in 1994. The cystic fibrosis trans-membrane conductance regulator gene was identified.

ENTERTAINMENT

Nintendo released the Game Boy handheld gaming system in North America on July 31. "The Simpsons" debuted as an independent series with the Christmas special on Dec. 17.

BREAKING NEWS

The Exxon Valdez spilled 11 million gallons of oil after running aground in Alaska's Prince William Sound. On Nov. 9, throngs of Germans brought down the Berlin Wall, the physical representation of the Iron Curtain.

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