

Patients benefit when researchers and physicians collaborate, as is the case with Drs. Jeffery Elias (right) and Binit Shah.



PHOTOGRAPH © TOM COGILL

## NEW HOPE FOR PATIENTS WITH PARKINSON'S DISEASE

Collaboration Leads To Possible Targeted Treatments For Patients

**DIAGNOSED WITH PARKINSON'S DISEASE AT THE AGE** of 45, Dottie Mitchell lived with the condition for nearly four decades, dedicating herself to the cause of finding a cure until her death in June 2013. A longtime patient at the University of Virginia Medical Center, Dottie participated in multiple drug trials and other studies.

"Dottie didn't know the word 'can't,'" says her husband John Mitchell, to whom she was married for nearly 40 years. "She jumped at the chance to participate in clinical trials. She thought that even if they couldn't help her, maybe these trials could help someone else in the future."

As a way to honor Dottie's memory, Mitchell has designated \$1 million through his will to create a Parkinson's disease clinical research endowment in her

name. Additionally, he gave a \$250,000 contribution to support current research projects.

"Dottie's UVA doctors were supportive and kept us in the loop as far as possible about new developments and treatments for Parkinson's disease," says Mitchell, who lives in Berryville, Virginia. "Dottie and I were very close—we were like one person—and I know this is what she would want me to do."

Mitchell's outright contribution supports a research project led by neurosurgeon Jeffery Elias, MD, to develop highly selective drug therapies for Parkinson's disease. These therapeutic compounds, tailored to each patient's specific symptoms, would be injected directly into affected areas of the brain during deep brain stimulation (DBS)—a standard treatment for Parkinson's disease that Dottie Mitchell underwent in



*We have a lot of ideas about how we can improve our understanding and treatment of Parkinson's disease.*



*Continued on page 2*

### IN THIS ISSUE

# MAKING MEDICAL EDUCATION AFFORDABLE

**T**HE COST OF MEDICAL SCHOOL HAS GROWN exponentially since the era when Ed Lyons, MD (MED '62) paid just \$700 per year for out-of-state tuition to attend UVA School of Medicine. Now retired after almost four decades as a pediatrician, Lyons has given generously to support scholarships to make a medical education at UVA more affordable for deserving students.

Lyons has named UVA School of Medicine as a testamentary beneficiary of his IRA. Half of the gift will be used for scholarships, and the other portion will be unrestricted for the school to support strong academic and clinical programs for students. Lyons and his wife, Marlene, also have supported the University through annual contributions.

"I'm forever grateful for the opportunity I was given to go to medical school and become a physician," says Lyons, of Naples, Florida, who became a lifetime member of the UVA Alumni Association after graduation. "Becoming a doctor is really the only thing I wanted to do with my life, since I was a small child of about age six or seven. I'm glad to be able to help others in this way."

After graduating from UVA, Lyons completed his internship from 1962 to 1963 at Jackson Memorial Hospital—the teaching hospital for the University of Miami School of Medicine—and at Miami Children's Hospital. He served in the U.S. Army from 1963 to 1965 at Fort Monmouth's Patterson Army Hospital, and then completed his residency from 1965 to 1967 at the Children's Hospital of Philadelphia.

Lyons—known to his patients as "Dr. Ed"—practiced pediatrics in Kingston, Pennsylvania, from 1967 to retirement in 2000. His smallest patient, he recalls, was a preemie named Charlene, born weighing just one pound, 13 ounces. He enjoyed watching her and so many other children grow up into healthy, happy adults.



Dr. Ed Lyons and his wife, Marlene, are strong supporters of the UVA School of Medicine.

PHOTOGRAPH COURTESY OF DR. & MRS. LYONS

"I loved the kids, loved the parents," says Lyons, who still works with children as a Sunday school teacher. "There were a few for whom I cared for as they were growing up and later took care of their children. That was very rewarding."

Lyons believes it's important for alumni to give back to the University to strengthen educational opportunities for future leaders in the field of medicine.

"We had our chance, and now it's somebody else's turn," says Lyons, who was inspired and influenced by his own family physician as an adolescent. "To finish medical school and to have a debt burden of \$100,000 or more is awful and challenging. So wherever I can help, I'd like to do that." ●

*Parkinson's Disease—continued from page 1*



John Mitchell is continuing the work started by his wife Dottie Mitchell.

PHOTOGRAPH © COE SWEET

2001. Elias and his collaborator, neurologist Binit Shah, MD, are hopeful these drugs will optimize symptom relief while minimizing associated side effects. They expect to begin testing in patients this year.

"Mr. Mitchell's gift has completely advanced our research by years—it's really accelerated our ability to develop this concept," Elias says. "We have the ultimate admiration for the Mitchells, and they were a wonderful couple to work with. Their generous gift means a lot to us, and we will enjoy our continued interactions with Mr. Mitchell."

Patients benefit tremendously from the collaborative efforts between UVA medical researchers and physicians, Shah says. The experienced team brings together diverse perspectives and strives to care for patients

holistically to better understand how Parkinson's disease affects them and their families. This latest study will broaden the avenue of treatments available to Parkinson's disease patients in the future.

"We have a very dynamic group of specialists who treat Parkinson's disease at UVA," Shah says. "We have a lot of ideas about how we can improve our understanding and treatment of Parkinson's disease, and are hopeful that we can someday find ways to slow or stop disease progression. This pilot study has the potential to position UVA as a pioneer in these infusion therapies and help us to build our profile as a place that offers cutting-edge treatments for people with Parkinson's disease and other movement disorders." ●

## IN THE SPOTLIGHT

# MICHAEL McCONNELL, PHD



Michael McConnell, PhD, is a leader in UVA's efforts to implement personalized medicine, also known as precision medicine. He is using human stem cells to test new therapies—customized for each patient's needs—for atrial fibrillation (A-fib), epilepsy, and other neurological disorders.

These stem cells, called Human Induced Pluripotent Stem Cells (iPS cells, for short), are generated from a four-millimeter-sized sample of skin, taken via biopsy. Once reprogrammed into iPS cells, these skin cells can give rise to any type of cell in the body, including heart, blood, or brain cells. Importantly, these cells will now have each patient's unique genome, or genetic profile, in-a-dish so that scientists can determine which drugs would be most effective for treating that particular patient.

McConnell's work currently is focused on developing stem cell-based personalized medicine for A-fib and epilepsy, two disorders with complex genetic causes. UVA Medical Center offers strong clinical programs for these conditions, and McConnell is collaborating with doctors in hopes of offering personalized treatments before the end of this year.

"The genetic components of these diseases are hard to tease out," says McConnell, an assistant professor of biochemistry and molecular genetics. "But if we can take a person's whole genome and put it in a petri dish, we can team up with their doctors to find the right treatments. We can reduce the trial-and-error period of drug treatment often associated with epilepsy or A-fib."

McConnell was part of a team of researchers who found genetic variations within each person's brain cells. These cells have differences not just from other types of cells in the body, but also from one another. This "brain mosaic," which was named a top 10 scientific discovery of 2013 by the National Institute of Mental Health, is critical for understanding and treating diseases such as autism, schizophrenia, and depression.

"Researchers have had a hard time cracking these diseases because we always thought that a genome is a genome," McConnell says. "But the brain genome is actually different from other cells, and that's a significant finding that we need to consider in order to understand and treat these diseases."



PHOTOGRAPH © TOM COGILL

### CHALLENGE

*Unlock the potential of stem cell therapy to deliver personalized care for patients with genetic-based diseases.*

### IMPACT

*Offer more efficient and cost-effective care by eliminating the trial-and-error period typically spent finding the right drug for the right patient.*

### ACTION

*Collaborate with researchers and clinicians at UVA and other organizations to develop methods for using a patient's own cells to quickly identify their best treatment option.*

*"We can pick out the best drugs or combination of drugs for each patient based on a four-millimeter-sized piece of their skin. We take that skin sample into the lab, grow stem cells, and observe how their genetic makeup responds to different treatments. This stem-cell based personalized medicine can start to make a difference for patients pretty quickly."*

# A HERO FOR OUR SMALLEST PATIENTS

UVA's Heart Rate Monitoring System Saves Lives



Dr. Karen Fairchild's clinical research will help diagnose, treat, and reduce apnea in premature infants.

## DID YOU KNOW?

Did you know that childhood cancer survival rates have increased to more than 80%, thanks to research? UVA's Child Health Research Center will speed development of new treatments for countless childhood diseases, offering hope to our smallest patients and their families.

PHOTOGRAPH © COE SWEET

**I** N UVA CHILDREN'S HOSPITAL'S NEONATAL INTENSIVE CARE UNIT (NICU), heroes come in all shapes and sizes.

The Heart Rate Observation system—or HeRO monitor—was developed more than ten years ago by UVA researchers and Medical Predictive Science Corporation. It is now utilized in NICUs across the country and, most recently, in Europe. The system applies algorithms to data already collected by a patient's bedside monitor in order to determine a HeRO score.

The higher the HeRO score, the more likely an infant is to develop a potentially life-threatening disease, such as sepsis. Sepsis, which is contracted by about one in five babies, is a bacterial infection with very few distinguishing symptoms.

“Even if we walk by a bed 100 times a day, we can't detect subtle symptoms,” says UVA neonatologist Karen Fairchild, MD. “The HeRO monitor alerts us that a baby could be sick 24 hours before he or she starts acting sick, and gives us the opportunity to take early intervention measures.”

In 2011, a multicenter study of more than 3,000 very pre-term infants—led by cardiologist Randall Moorman, MD, who was instrumental in developing the monitor—showed that infants whose HeRO scores were displayed to clinicians had a 20 percent lower risk of dying. The HeRO monitor saved one life for every 48 monitored.

Fairchild is now building on that initial research with support from a three-year National Institutes of Health grant for collaborative research between UVA and Columbia University. In their combined NICU populations, the two teams are developing new algorithms incorporating not only heart rate patterns but also breathing and other vital signs for better early warning systems for sepsis and other life-threatening conditions.

A new area of research for Fairchild and the UVA NICU team is apnea of prematurity. All very pre-term infants have apnea which, despite treatments with caffeine and CPAP, can cause a drop in oxygen levels that may lead to permanent damage to organs including the brain. Moorman and neonatologist John Kattwinkel, MD, developed a new apnea detection system that has allowed them to study apnea in NICU babies in ways not possible anywhere else in the world. Fairchild's ongoing studies aim to determine the best ways to reduce apnea and optimize oxygen levels for pre-term infants. This initiative is part of the new “Neuro

NICU” program at UVA that joins multiple subspecialists to optimize neurologic outcomes for babies in the NICU.

“Key research takes place every day at our Child Health Research Center (CHRC), and Dr. Fairchild's investigations and collaborations are very representative of that,” says UVA pediatrics chair James Nataro, MD, PhD, MBA. “The CHRC takes it a step farther by translating that research into innovative and personalized treatment options for patients.”

UVA Health System benefactors Stuart and Betsy Houston of Chevy Chase, Maryland, two of the earliest supporters of the CHRC, make research such as Fairchild's possible. They believe that the center not only develops new therapies and tools for children and their families, but also educates and mentors new graduate and medical students, as well as physician-scientists.

“The center's unique emphasis on scientific research opens doors that help infants in utero, in the neonatal intensive care unit, and later in pediatrics,” say the Houstons. “Through the CHRC, promising discoveries can move quickly from the research lab to children in need. This is one of the many reasons we are proud supporters of UVA Children's Hospital.” ●

# A PROMISE 20 YEARS IN THE MAKING

Immunotherapy Takes Center Stage in Cancer Fight

## PERSISTENCE PAYS OFF.

For decades, the idea that the immune system could be successfully harnessed to fight cancer had been doubted by many in the medical community. Now researchers around the world are racing to take advantage of new findings that the immune system can be redirected in cancer patients to provide better results than any other cancer treatments. In this exciting new era of cancer immunotherapy, the Human Immune Therapy Center (HITC) at UVA Cancer Center finds itself at the forefront of this race.

HITC co-directors Craig Slingluff, MD (A&S '80, Med '84), and Vic Engelhard, PhD, have been working for more than 20 years to understand the immune system's response to cancer. Their efforts have led to a number of innovative approaches for melanoma and other cancers—cancer vaccines that have been administered to hundreds of patients with exciting results.

Building on their comprehensive work, Slingluff and Engelhard are now exploring how antigens (the substances on cancer cells that trigger the immune system) can be more effectively used to increase the number of specialized white blood cells (T cells) that can kill cancer cells and shrink cancers.

"We're trying to intervene within cancer patients to change the operation of their immune systems," Engelhard says. "That involves trying to improve the functioning of the immune system to control the cancer better by targeting it more toward the antigens we have identified."

The HITC is also expanding its work through several combination therapy efforts including: a trial of an immune therapy plus radiation therapy for prostate cancer, an immune therapy with chemotherapy for pancreatic cancer, and novel vaccine trials and combinations in melanoma and breast cancer.

"Our goal is to create new knowledge about how to direct the immune system to target cancer more effectively," explains Slingluff. "Melanoma has been the most responsive to these therapies, but we're interested in better understanding the biology and technology behind cancer vaccines so that we can improve them. This is part of our effort to build a much



more comprehensive immunotherapy program."

## The Future of Cancer Immunotherapy

Investigators know that cancers normally can shut off the immune response before the tumor is eradicated. The FDA has recently approved three drugs that block this inhibition in a significant fraction of patients with melanoma, lung cancer, and other cancers. Engelhard and Slingluff want to figure out how the tumor blocks the immune response, and why new immunotherapy drugs work very well for some cancers but not for others. Their goal—to take the brakes off the immune response to help a greater number of patients.

But it's not enough to take the brakes off, you need to be able to steer. This year, Engelhard and Slingluff plan to combine their cancer vaccines with novel immunotherapies to foster an appropriate immune response to cancer, and expand their use in other cancers.

The UVA team will also begin research into T cell therapy. The team will take T cells from a patient and genetically engineer the cells to better recognize cancer antigens—antigens the HITC team has successfully identified in its labs. Once infused back into the body, these

engineered cells will multiply and, with help from their new receptors, recognize and kill cancer cells.

"The Human Immune Therapy Center at UVA is already recognized nationally for its pioneering work," says Tom Loughran Jr., MD, director of UVA Cancer Center. "We can dramatically expand this program. We want to bring new faculty to UVA who will help us understand how cancer tumors subvert the immune system—and to develop new, personalized therapies that reverse that process."

By expanding UVA's capabilities in immunotherapy and immunology, patients will have access to more clinical trials—not only at UVA but at other leading institutions we will collaborate with. This is one reason why UVA has made immunotherapy a priority of the Health System.

"Immunotherapy is still in its early stages, but it has the potential to transform cancer care," says Executive Vice President for Health Affairs Richard Shannon, MD. "That's why we want to build on our existing strengths and expertise. Such an investment could be game-changing." ●



Scholarships help the next generation of nursing students pursue their dreams.

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## A NURSING LEGACY

Alumna's Generous Gift To Provide Vital Scholarships

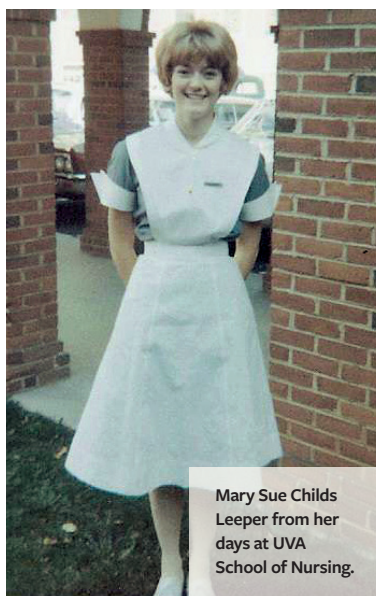
**FOR MARY SUE CHILDS LEEPER (BSN '68),** the field of nursing opened up a world of opportunity. Her career took a diverse and exciting path that included working as a school nurse in England; teaching nursing courses at the University of Nevada, Las Vegas; and community nursing in Idaho. She found it rewarding to work with people and educate them about healthy living.

"I've done a lot of different jobs in lot of different places, but it was nursing that allowed me to do that so fluidly and so easily," says Leeper, of Littleton, Colorado. "Some nurses choose to stay and grow in the same community throughout their careers. It doesn't matter if you love to travel, or if you want to stay in the same place—you still have the ability to grow in this profession."

Leeper hopes to help make nursing education more affordable for deserving students in the future. She has documented a bequest of more than \$1 million to establish nursing scholarships for undergraduate and graduate nursing students.

"I wanted to be able to give many people the same kind of opportunities I had," says Leeper, whose husband, Mert, died in January 2011 after battling esophageal cancer. "Education is something a person will have forever."

"Through her gift of scholarships, Mrs. Leeper will help the UVA School of Nursing attract the best students, regardless of their ability to pay," says School of Nursing Dean Dorrie Fontaine, RN, PhD, FAAN. "This is critical as the profession demands that more nurses pursue advanced degrees in order to provide the



Mary Sue Childs Leeper from her days at UVA School of Nursing.

most compassionate and competent care in a variety of settings.

"Ultimately, our patients at UVA—as well as those anywhere our graduates work throughout the world—will be the ones to benefit tremendously from this generous gift."

A sense of adventure was cultivated early in Leeper's life. With her father serving in the U.S. Army, Leeper grew up all over the world, living most of her teen years in Northern Virginia. She studied for two years at what was then called Mary Washington College of the University of Virginia before transferring to the School of Nursing.

"I always thought UVA was prestigious and had the best nursing school," she says. "Believing in your school makes you more sure of yourself, and I was always proud to say that I went to UVA."

Though Leeper retired 10 years ago, she enjoys keeping up with the changes in nursing. She encourages those interested in a nursing career to spend time talking to nurses, shadowing them on the job, and learning about the challenges and rewards of the profession.

Leeper recently enjoyed attending her 45th reunion at UVA—her first time back on Grounds in many years. Though the University has undergone many physical changes, she sensed the same spirit of community and excellence that was prevalent during her time as a student.

"It was fun to be back and see many of the same traditions alive today," Leeper says. "It felt like being home." ●

# FUELING SCIENTIFIC CAREERS

Larner Lectureship in Pharmacology Honors Legendary Educator and Scientist



**PIONEER IN THE FIELD OF PHARMACOLOGY** and chair of UVA School of Medicine's Department of Pharmacology from 1969 until 1990, Joseph Larner, MD, devoted his life to scientific discovery. Focused on the study of insulin activity with the goal of improving diabetes treatments, Larner was conducting research full time in his laboratory until a month before his death at age 93 in January 2014.

"My husband had incredible persistence," says Frances Larner. "He spent more than 50 very enjoyable years trying to figure out how insulin worked to help reduce the awful complications of diabetes."

The Larner family—wife Frances and sons Andrew, James, and Paul—endowed the Joseph Larner Annual Memorial Lecture in Pharmacology to highlight exciting scientific advances in the field. The funds, raised through gifts from the family as well as Joseph Larner's UVA colleagues and other scientists who respected his work, will allow the Department of Pharmacology to support the annual lecture, continuing Larner's influence and legacy at the School of Medicine. The inaugural lecture is expected to take place this fall.

"We hope these lectures will attract truly cutting-edge scientists to share their discoveries at UVA," says Joseph Larner's son, Jim Larner, MD, chair of UVA's Department of Radiation Oncology. "Ultimately, we hope the lectures will help fuel scientific careers and promote collaborations that will raise the level of science at UVA to even higher levels."

## Celebrating a Legacy

The founder of the UVA Diabetes Center for Research in 1974, Joseph Larner was a mentor to some of the world's brightest scientific minds, including recruiting and mentoring Nobel Prize laureates Alfred Gilman, MD, PhD, and Ferid Murad, MD, PhD, who began their award-winning research at UVA. Larner's own research led to the development of some of the most promising drugs to treat type 2 diabetes. In 1987, he received the Banting Medal, the highest research honor given by the American Diabetes Association, and was elected to the Institute of Medicine of the National Academy of Sciences in 1988.

He and his wife established the Joseph and Frances Larner Professorship and



Joseph Larner's family is honoring his memory and legacy by creating a named lectureship at UVA.

the Joseph and Frances Larner Graduate Fellowship in Pharmacology at UVA.

"Joseph Larner had a big impact, with a lasting legacy in the field of pharmacology," says Doug Bayliss, PhD, the Joseph and Frances Larner Professor and Chair of Pharmacology. "He was engaged, energetic, and enthusiastic. It was really an inspiration for all of us to see him still so excited about his research past the age of 90. He believed in what he was doing, and that kind of lasting passion is inspirational. The lecture will be a chance every year to remember him and to catch up with the leaders of the field who are doing the kind of work he was passionate about." ●



Lectureships give students the chance to learn about exciting scientific advances.

PHOTOGRAPH © JACOBSON SMITH

## HONORING SCIENTIFIC ACHIEVEMENT

Endowed lectureships provide the opportunity to engage students and faculty on the latest scientific advances in medicine. A gift of \$100,000 can establish an endowment, which provides honoraria for visiting distinguished scholars, who consider it a high honor to be invited to deliver a named lecture. For more information on creating an endowed lectureship, please visit [UVAHealthFoundation.org](http://UVAHealthFoundation.org) or call 1.800.297.0102.

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# PULSE

PHILANTHROPY IN ACTION AT UNIVERSITY OF VIRGINIA HEALTH SYSTEM

## IN PURSUIT OF HEALTHCARE EXCELLENCE

UVA Medical Center's New Initiative Will Drive Progress

**IN JULY 2014, UVA MEDICAL CENTER** welcomed new Chief Executive Officer Pamela Sutton-Wallace. Sutton-Wallace oversees the strategic direction and operations of all inpatient and ambulatory services at the Medical Center. Sutton-Wallace's diverse background in healthcare includes 17 years as an executive with Duke University Health System, serving most recently as senior vice president for hospital operations.

As Sutton-Wallace helps guide UVA Medical Center through the many challenges and opportunities facing healthcare today, she is focused on carrying out the Be Safe initiative—a framework to boost UVA's national reputation as the safest place to work and receive care. The program engages employees at all levels to identify and solve problems related to patient or employee safety, as well as quality of care to increase patient satisfaction.

Sutton-Wallace emphasizes the importance of attracting and retaining the best and brightest practitioners, supporting groundbreaking medical research, and training the next generation of healthcare leaders in team environments that benefit our patients and address the demands of the changing healthcare environment.

"Our charge is clear, and our goals are ambitious: We want to be known as the safest place anywhere in the country to receive care," says Sutton-Wallace. "Our patients entrust us with their lives. They expect nothing less than the best from us, and it is our responsibility to pursue excellence in everything that we do, from the billing department to the lab to the bedside."



PHOTOGRAPH © COURTESY OF UVA HEALTH SYSTEM MARKETING

Sutton-Wallace will partner her efforts with Executive Vice President for Health Affairs Richard Shannon, MD, who spearheaded the Be Safe initiative.

"Pamela will be a critical adviser to me as we chart UVA's course to expand the Health System's range and scope," Shannon says. "Academic medical centers are the economic engines of the modern-day healthcare enterprise. Pamela's experience and success at Duke—coupled with her commitment to our academic mission—gives me exceptional confidence that she is the leader for the future of UVA Medical Center." ●

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