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LETTER FROM THE DEAN

Dear Friends,

My first year as interim dean of Rutgers Robert Wood Johnson Medical School has been exciting and rewarding. I have been grateful to meet so many of you and share in your achievements; I hope that you have enjoyed getting to know me better, as well (*page 3*).

I have been continually impressed with the diverse ways in which this medical school is making the world a better place. This issue of *Robert Wood Johnson Medicine* presents four quite different areas in which we are changing lives for the better.

Our cover story, “New Jersey Designates January 23 as Annual Maternal Health Awareness Day” (*page 8*), describes one of our proudest successes. In partnership with a community coalition, the medical school inspired and ultimately compelled legislation for an annual day devoted to educating health care professionals, present and future, about ways to reduce maternal mortality and morbidity.

From our legislature to the NFL stadium, we are shaping change. In “Eagles Autism Challenge Raises Millions for Research” (*page 22*), we learn of a faculty member’s key role in advancing the Philadelphia Eagles’ mission in autism research. As external scientific adviser to the Eagles Autism Challenge, Emanuel DiCicco-Bloom, MD, developed and leads a rigorous, National Institutes of Health–modeled grant-making process.

At another intersection between distinct worlds, we meet four medical students who taught in low-income communities before beginning medical school. “From Classroom to Clinics” (*page 18*) describes how, in interactions from classroom groups to one-on-one help, they found overlapping factors that affect a student’s ability to learn and a patient’s ability to control their health status.

“Rutgers Lab Sheds Valuable Light on How TB Survives in the Body” (*page 34*) moves us inward, to the microscopic-level research of Nancy Woychik, PhD. Dr. Woychik and her team have broken major ground in studies targeting *M. tuberculosis* and the cellular events that determine the balance between the latent and active forms of TB.

The people who populate the articles in this issue of *Robert Wood Johnson Medicine* remind me once again of my gratitude to you—faculty, staff, students, alumni, and friends—for your loyalty to our mission and for your valued support.

Sincerely,



Robert L. Johnson, MD, FAAP
Interim Dean



Contents

WINTER 2019

FEATURES



3 Meet Interim Dean Robert L. Johnson, MD, FAAP

As interim dean of Rutgers Robert Wood Johnson Medical School and Dean of Rutgers New Jersey Medical School, Robert L. Johnson has set his

chief goal to build upon the strength of the two Rutgers-affiliated schools. Learn about his vision for the future of academic medicine.

By Jodi McCaffrey

8 New Jersey Designates January 23 as Annual Maternal Health Awareness Day: Breakthrough Advocacy by a Coalition of Champions



A Gold Award from the Association of American Medical Colleges recognized the significance of an educational campaign for improved mater-

nal health and safety, initiated by the medical school in collaboration with the Tara Hansen Foundation.

By Kate O'Neill

14 Successful Removal of Rare Skull Base Tumor Produces a Magical Moment in Medicine

Lia was 37 when she was diagnosed with a large, rare



bifrontal cerebral meningioma tumor. Luckily, she was referred to Anil

Nanda, MD, MPH, chair of the Department of Neurosurgery, who has performed more than 16,000 surgeries.

By Jodi McCaffrey



18 From Classroom to Clinics: Med Students Who Taught in Inner Cities before Pursuing Medicine

For four students, the winding road to medical school included stops as educators in underserved neighborhoods. These experiences not only have enriched their lives but have made them better students—and physicians.

By Jodi McCaffrey

22 Eagles Autism Challenge Raises Millions for Research—Emanuel DiCicco-Bloom, MD, Leads Scientific Review Team



Dr. DiCicco-Bloom serves as external scientific adviser to a panel of international specialists who review proposals to the Eagles Autism Challenge.

The panel awarded more than \$6 million in grants for innovative autism research.

By Kate O'Neill

26 Reading with Toddlers Reduces Harsh Parenting and Enhances Child Behavior



Manuel Jimenez, MD '06, finds that people who regularly read with their toddlers are less likely to engage in harsh parenting and the children are less likely to be hyperactive or disruptive.

By Neal Buccino

28 Wellness Services Support Medical Students Mentally, Physically, and Spiritually

Students enter medical school to help others, but at times, the rigors of that commitment can cause stress,



anxiety, and depression. The medical school offers services to empower students to take steps to protect their health.

By Jodi McCaffrey



34 Rutgers Lab Sheds Valuable Light on How TB Survives in the Body

As the number of deaths worldwide from tuberculosis surpasses those from AIDS, the work of Nancy Woychik, PhD, has become increasingly urgent.

By Randy Young

ALUMNI PROFILES

Orthopedic Surgeon Robert Palumbo, MD '86: Treating Professionals from Athletes to Acrobats 42

By Lynda Rudolph

Alison Noble Escalante, MD '04: Practicing Pediatrician, Mom, Writer, and TEDx Speaker 44

By Lynda Rudolph

Danielle Davies, MD '14: Bringing Medical Residents to an Underserved Area 46

By Sherrie Negrea

Sukumar Nagendran, MD '94: A Long Journey to Gene Therapy Pioneer 48

By Randy Young

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EXTRAS:

Letter from the Dean	1
Social Media Highlights	7
News	37
Research News	39
Letter from the Alumni Association President	41
Class Notes	51



Meet Interim Dean
Robert L. Johnson, MD,
FAAP

BY JODI MCCAFFREY
PHOTO BY STEVE HOCKSTEIN



ANDREW HANENBERG

For years, Robert L. Johnson, MD, FAAP, has been confused with Robert W. Johnson, the businessman and philanthropist for whom this medical school is named. As dean of Rutgers New Jersey Medical School in Newark, Dr. Johnson often received mail meant for the New Brunswick-based medical school. Patients would stop by his office, eager to meet that Robert Johnson. Now, in his additional role as interim dean of Rutgers Robert Wood Johnson Medical School, he's making a name for himself.

A Lifetime of Learning

At age 9, Dean Johnson, now 73, declared that he wanted to be a physician. While he's not sure what influenced that ambition, he hasn't wavered in his commitment to the profession. He received his bachelor of arts degree from Alfred University in Alfred, New York, in 1968 and his medical degree from New Jersey Medical School, in 1972. He also completed his residency there. Dr. Johnson is the first dean of the Newark

medical school to be an alumnus as well.

During medical school, he had planned to become an orthopedic surgeon specializing in sports medicine, but when he scrubbed in on an operation, he was "bored" by the experience. It was during his second year of medical school, when he was assigned to a pediatrics unit, that his path turned. He considered pediatric cardiology before choosing to specialize in adolescent health—a burgeoning medical niche that he helped to define.



STEVE HOCKSTEIN

Then and now, Dean Johnson’s practice delivers reproductive health care, behavioral health counseling, general medical care, and HIV treatment. He still works five clinical shifts each week. During the early years of his practice, he treated commercial sex workers for the sexually transmitted infections that often came with the profession. Then, in the 1980s, his practice shifted toward responding to the AIDS epidemic. Now, meeting the clinical and psychological needs of the LGBT community is key.

Dr. Johnson cautions physicians to keep learning, because the science of medicine is evolving: “The protocols we learned in school have changed. What we learn today will change. It’s important for physicians to continue to learn, and to embrace opportunities to acquire new skills.”

A New Role as Interim Dean

While his duties as dean of New Jersey Medical School and interim dean of Robert Wood Johnson Medical School

“The protocols we learned in school have changed. What we learn today will change. It’s important for physicians to continue to learn, and to embrace opportunities to acquire new skills,” says Robert L. Johnson, MD, FAAP, interim dean, Robert Wood Johnson Medical School (center), with medical students (front row, left to right) Mark Danila, Bethany Mancuso, Denisse Amarilla, and Nicole Altomare; and (back row, left to right) Nicole Fosko, Tina Gowda Sara, Michael Sunyak, and Christopher Samuel.

are quite similar, Dean Johnson has set his chief goal to build on the strength of the two Rutgers University–affiliated schools and align them when appropriate. He also is excited about expanding the schools’ clinical offerings and research opportunities through the partnership between RWJBarnabas Health and Rutgers.

“Now that the two schools are under one Rutgers umbrella,

we can truly collaborate to design the best way to educate our students,” says Dean Johnson, who also is a professor of pediatrics and director of the division of adolescent and young adult medicine at New Jersey Medical School. “The schools have largely aligned administrative structures, and now with the same dean, there are opportunities for greater synergy and the sharing of best practices in order to more efficiently serve our faculty and students.”

For physicians and medical students, the benefits of the partnership include expanding and enhancing opportunities for clinical research. For patients, the change will be more profound.

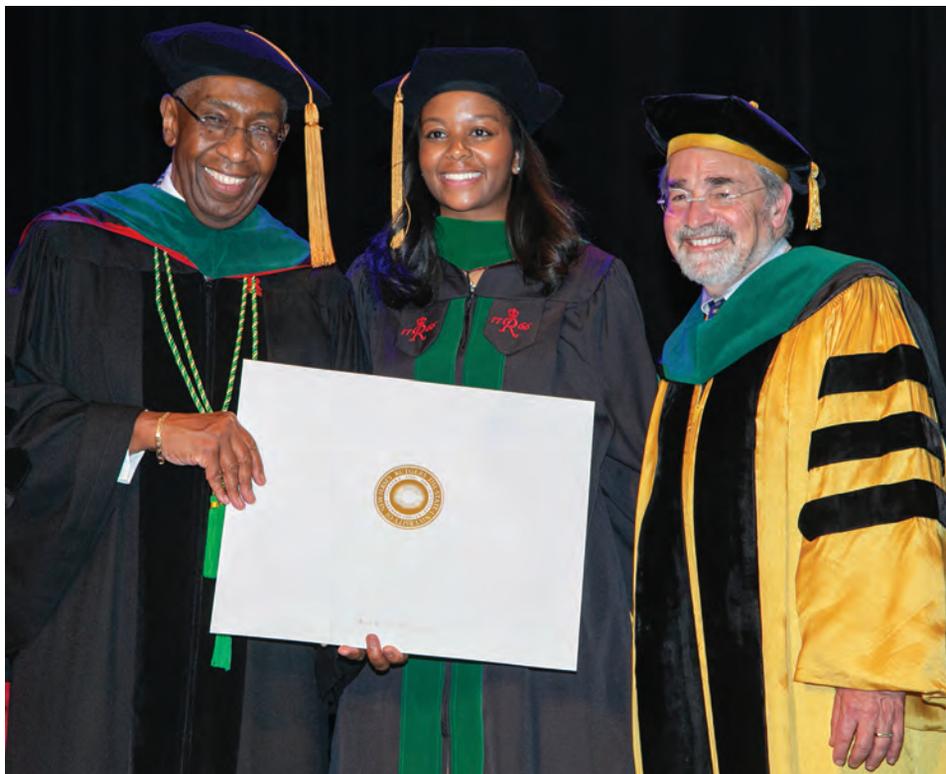
“Having all physicians, nurse practitioners, nurses, and other health care providers in the system working together under one management team will greatly benefit patients,” he says. “We’ll be able to deliver better, more efficient care and be more productive.”

Defining the Future of Academic Medicine

A committee chaired by Thomas Hecker, PhD, executive vice dean, Robert Wood Johnson Medical School, and Maria L. Soto-Greene, MD, MS-HPed, FACP, executive vice dean, New Jersey Medical School, was formed to define the future of academic medicine at Rutgers. The committee analyzed the current state of each school and reviewed best practices, and then made recommendations for how to move forward, including how to preserve each school’s unique qualities and culture. This report will be delivered to Chancellor Brian Strom, MD, MPH, Rutgers Biomedical and Health Sciences, shortly.

To shepherd the alliance between the two medical schools, Dean Johnson plans to split his time between the campuses, which are about 30 miles apart. A dual challenge plaguing many medical schools, including Robert Wood Johnson Medical School, is an imbalance between the increase in medical school students and decrease in places for these young physicians to perform their residencies after graduation, as a result of hospital closures nationwide.

The future of academic medicine will hinge on adequately training students and residents in a way that lessens the burden on practicing physicians. It also will require bolstering



KIM SOKOLOFF

By and large, the way we train medical students has been the same for about 100 years. While lectures have given way to problem-based learning, the thing that hasn’t changed is the importance of learning at the bedside,” says Interim Dean Robert L. Johnson, MD, FAAP (above, left), with Tori Gartmond, MD ’19, and Rutgers Biomedical and Health Sciences Chancellor Brian Strom, MD, MPH.

the number of students the schools can attract. Both schools have strong recruitment pipelines to court aspiring physicians, including underrepresented minority students.

“By and large, the way we train medical students has been the same for about 100 years. While lectures have given way to problem-based learning, the thing that hasn’t changed is the importance of learning at the bedside,” Dean Johnson explains.

Advice for Aspiring Physicians

One of only a small percentage of African-American deans in the country, Dean Johnson has simple advice for medical students: keep an open mind.

“My career path has definitely changed,” he says. “I never started this career to be a dean or clinical leader, but I always took on the challenge that was presented. My advice is not to feel bound by the decisions you make about what you want to do. If you see a detour, take it. That’s what keeps it fun. If you like your work, every day is enjoyable.” He adds with a laugh, “The downside is that you never want to retire.” **M**



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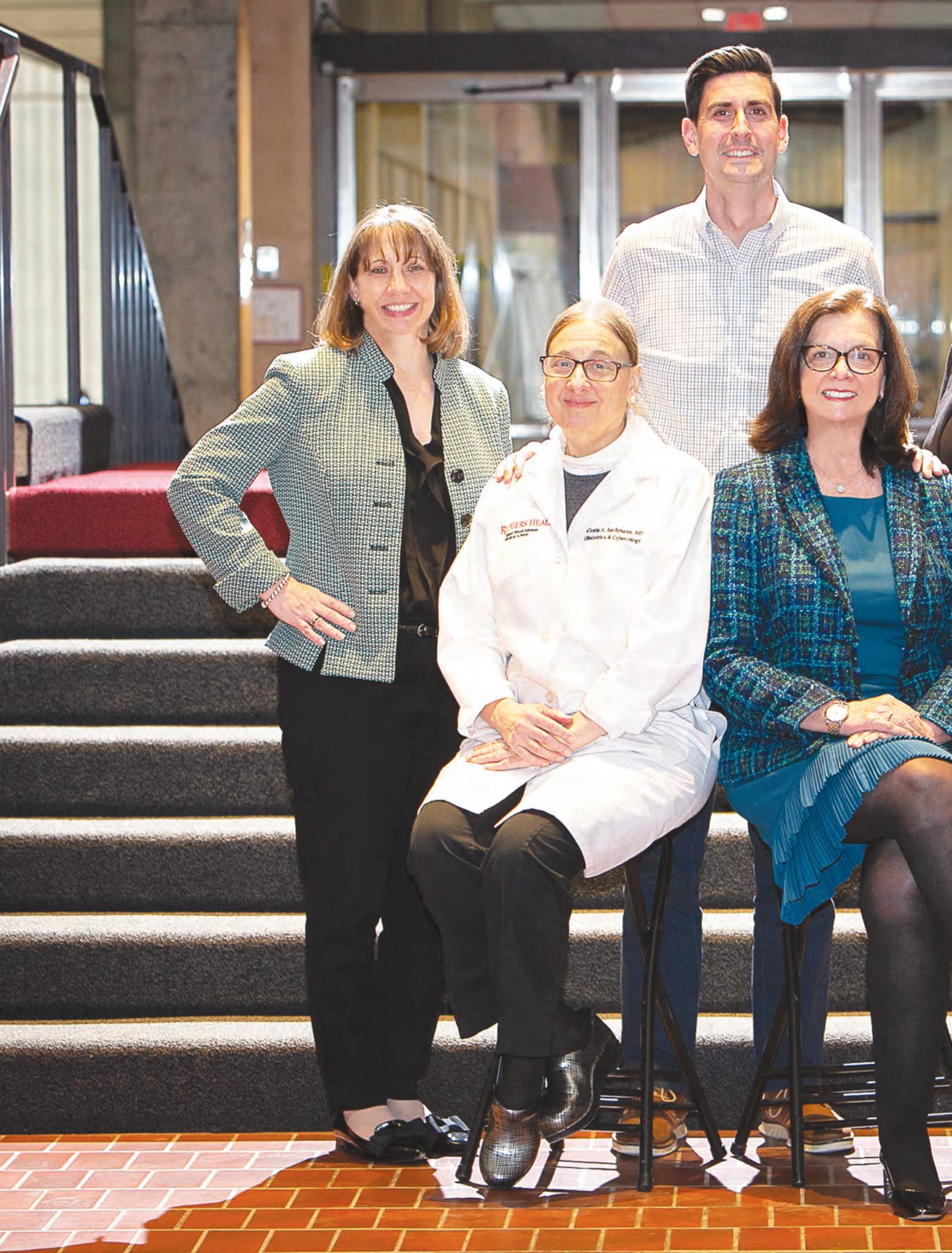


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PROGRESS HEALTH
Crista A. Sordani, MD
Obstetrics & Gynecology



#123forMoms

**New Jersey
Designates January 23 as
Annual Maternal Health:
Awareness Day**

*Breakthrough
Advocacy by a*
**Coalition of
Champions**

New Jersey Maternal Health Awareness Day was the nation's first of its kind. Established by the New Jersey Legislature in 2017, this special day owes its designation to a coalition of dedicated champions at Rutgers Robert Wood Johnson Medical School and throughout the state, united to reduce pregnancy-related morbidity and mortality and improve outcomes in maternal health.

"Maternity care is not an option. It is a basic necessity," says New Jersey Senator Joseph F. Vitale, long-time chair of the Health, Human Services and Senior Citizens Committee. "We have failed the mothers of New Jersey for a long time." Senator Vitale wrote the bill and shepherded it through the legislative process. "Our mortality rates and particularly the racial disparity within them are unacceptable," he says.

B Y K A T E O ' N E I L L

“We're asking physicians to support the goals of Stop! Look! Listen! and we're encouraging women to seek out doctors who have committed to the level of communication we're looking for between a mom and her team," says Patricia M. Hansen, MA, chief of staff and executive director of public affairs (seated, right), with (left to right) Jennifer Forbes, associate director of public relations; Gloria Bachmann, MMS '72, MD, professor of obstetrics, gynecology, and reproductive sciences and director, Women's Health Institute; Ryan Hansen, president of the Tara Hansen Foundation; and Beth-Ann Kerber, associate director of marketing.



Ryan Hansen established the Tara Hansen Foundation in honor of his late wife, Tara (above), and all mothers whose pregnancies ended in critical illness or death. ■
Below: Today, Ryan and Tara's son Brandon (below, middle) has two younger brothers, Dylan (left) and Liam.



Signed into law by then Governor Chris Christie, the annual Maternal Health Awareness Day was proclaimed again by Governor Phil Murphy on January 31, 2018, in conjunction with the first event. The governor commended state- and national-level initiatives showing promise of progress in slowing the upward spiral of pregnancy-related deaths. These included *Stop! Look! Listen!*, an educational campaign cosponsored by the Tara Hansen Foundation, Robert Wood Johnson Medical School, Rutgers New Jersey Medical School, and Robert Wood Johnson University Hospital (RWJ), an RWJBarnabas Health facility.

The Inspiration of Tara Hansen's Life and Character

Maternal Health Awareness Day evolved from the heartbreaking death of Tara Hansen. In early 2011, 29-year-old Tara and her husband, Ryan, were eagerly awaiting the birth of their first child. Tara had excellent prenatal care: she ate well, exercised, educated herself about labor and delivery, and had no health risks. But almost immediately after Brandon's birth, Tara didn't feel right, "like she was coming down with the flu," Ryan recalls. While she spoke up repeatedly, her health care team assured her that her pain was normal for a woman who had just delivered a baby. She stayed a second night, but, while the reassurances continued, no one examined her.

On the third day, the health care team discharged Tara even though she insisted, "Something is wrong." She felt faint, her joints ached, and her pain persisted. At home, her condition deteriorated, and 36 hours after she was discharged, Ryan took her back to the hospital, where, two days later, she died of septic shock. Brandon was only six days old.

"Ultimately, Tara's death was attributed to infection from a third-degree tear that had gone unnoticed and uncontrolled," says Ryan. "Neither was caught early enough or treated aggressively enough to make a difference in saving Tara's life. They never gave her a chance."

Grim Maternal Health Statistics

As Ryan sought to make sense of his family's loss, he discovered statistics on maternal morbidity and mortality in the United States: more than 700 American women a year die of childbirth-related complications—two families suddenly

left motherless every day.

The United States is the only developed country in which maternal mortality has increased. Pregnancy-related deaths more than doubled between 1987 and 2011, from 7.2 to 17.8 per 100,000 live births, according to the Centers for Disease Control and Prevention (CDC), exceeding the incidence of maternal mortality in some developing countries. The nation's highest rate occurs among African-American women; in 2012, they suffered an average of 42.8 deaths for every 100,000 live births. Moreover, a study by the *American Journal of Obstetrics and Gynecology* concluded that 40 to 50 percent of maternal deaths and 40 percent of severe "near-miss" complications are avoidable.



Partners who contributed to New Jersey's first Maternal Health Awareness Day included the Central Jersey Family Health Consortium, New Jersey Affiliate of the American College of Nurse-Midwives, New Jersey Hospital Association, New Jersey Obstetrical and Gynecological Society, American College of Obstetricians and Gynecologists, and New Jersey Section of the Association of Women's Health, Obstetric and Neonatal Nurses.

The Birth of a Foundation

One year after Tara's death, Ryan established the Tara Hansen Foundation. He knew this work would keep Tara close to her family's hearts while honoring her and all mothers whose pregnancies had ended in critical illness or death. Looking ahead, he also wanted to expand awareness of maternal health among health professionals and their patients.

A graduate of Rutgers, Ryan worked in partnership with Robert Wood Johnson Medical School to build the awareness that led to the establishment of New Jersey's Maternal Health Awareness Day. The foundation also endowed a scholarship fund at the medical school, now valued at \$85,000. Annually, a third- or fourth-year student who plans to specialize in OB/GYN is awarded a scholarship in memory of Tara. In addition, the medical school holds an annual maternal health and safety module so that every student recognizes

the importance of listening to women's voices during and after the birth process. During this module, Ryan shares Tara's story and emphasizes the importance of *Stop! Look! Listen!* "Tara was a special education teacher, who loved teaching," he says. "Her goal was to help people in need, and I think of our work as her final lesson plan."

Stop! Look! Listen!

The *Stop! Look! Listen!* slogan reminds obstetric teams to **stop** in order to respect every patient's concerns; **look** at any problem the patient describes, examining her for infection or other issues; and **listen** to specific complaints, never dismiss-



At the 2018 Maternal Health Awareness Day, New Jersey First Lady Tammy Snyder Murphy (above, center) shared her thoughts on the maternal health crisis in New Jersey, noting that the statistics are not just alarming but a “call to action,” with (left to right) Mary and Ryan Hansen; Patricia M. Hansen, MA; and Executive Vice Dean Thomas Hecker, PhD. ■ Below: Participants at the 2018 Maternal Health Awareness Day (left to right): Robyn D’Oria; Patricia M. Hansen, MA; Mary Hansen; Ryan Hansen; Thomas Hecker, PhD; Mark V. Sauer, MD; Christy Turlington Burns; Gloria A. Bachmann, MMS ’72, MD; State Senator Joseph F. Vitale; Stephen Hasley, MD; Assemblywoman Nancy J. Pinkin; NJ Department of Health Principal Deputy Commissioner Jackie Cornell, MPAP; and Patricia D. Suplee, PhD, RNC-OB.



ing them as “a normal part of having a baby.” Above all, the campaign seeks to improve maternal health and safety by empowering women to speak up when they have a question or concern.

In 2012, Gloria Bachmann, MMS '72, MD, professor of obstetrics, gynecology, and reproductive sciences and director, Women's Health Institute, was the first faculty member on board with the Tara Hansen Foundation. She is prized as the foundation's “physician champion” for her dedication to its success. “*Stop! Look! Listen!* doesn't use scare tactics,” says Dr. Bachmann. “It's designed as a positive force to empower women and their families to raise concerns with their health care team—no matter how minor their question may feel.”

Well in advance of “Every Woman. Every Hospital. Every Time,” the second annual Maternal Health Awareness Day, all 47 hospitals in New Jersey that offer obstetric services once again received a comprehensive online publicity kit, promoting the event and providing downloadable materials. The hashtag #123forMOMs (with 123 as shorthand for January 23) made event details easy to share, along with links to informative videos, articles, and maternal health statistics.

“We're asking physicians to support the goals of *Stop! Look! Listen!* and we're encouraging women to seek out doctors who have committed to the level of communication we're looking for between a mom and her team,” says Patricia M. Hansen, MA, chief of staff and executive director of public affairs, who was key, along with her son, Ryan, in developing the Tara Hansen Foundation.

Medical School and Tara Hansen Foundation Share AAMC Gold Award

In June, the Association of American Medical Colleges presented a Gold Award to the medical school and the Tara Hansen Foundation for the MHAD campaign. The association commended the medical school as a pioneer in maternal health awareness, praising its initiatives designed to reduce maternal mortality and morbidity.

“The CDC is considering adopting portions of the *Stop! Look! Listen!* campaign as a national effort,” says Robyn D'Oria, MA, RNC, APN, CEO, Central Jersey Family Health Consortium, who began her career in maternal health as a labor and delivery nurse. “It's a low-cost, high-value way to make women know that they will be heard and respected.”

Participants in the 2019 public event included providers of women's health care services, legislators, and insurance company executives. Among the speakers was Casey Cattell, a “two-time near-miss survivor.” When shortness of breath left her gasping for air in her 24th week, she was diagnosed with

bilateral pulmonary emboli, a leading cause of sudden death in pregnancy. Injectable blood thinners controlled the blood clots, but a week after her son's birth by cesarean section, Casey developed persistent, excruciating abdominal pain. In three phone calls with her OB practice, the on-call physician assured her that the pain was probably caused by normal uterine contractions—“or possibly constipation, as a result of your surgery.”

A day later, Casey's husband rushed her to RWJ in New Brunswick, where the trauma unit team diagnosed postpartum internal hemorrhaging. “Another hour,” she says, “and I probably wouldn't have made it.” Casey lost five liters of blood and required 22 units of blood products before she was stable enough for a lifesaving laparotomy to repair six hemorrhaging sites.

Like Tara Hansen's family, Casey wants her story to have a positive outcome. Her commitment includes raising public awareness of perinatal complications, primarily through her blog (www.theheartofhome.net) and her contribution to the 2018 book *Nobody Told Me about That: The First Six Weeks*. In addition, as an ambassador for Heroes for Moms, she promotes understanding that new mothers have an enormous need for blood donations.

A Coalition of Champions

Another champion advocating for meaningful change is Joseph Apuzzio, MD, professor and vice chair, Department of Obstetrics, Gynecology, and Women's Health, and director, division of maternal fetal medicine, at New Jersey Medical School. Dr. Apuzzio also chairs the New Jersey Maternal Mortality Review Committee. While his specialty focuses on high-risk pregnancies, he is working to see that all patients are aware of postpartum symptoms such as a headache that should trigger a call to their physician. Maternal health is a national concern that needs to be legitimized and acknowledged by the insurance industry and high-level legislators, he says. Meanwhile, he suggests, something as simple as a refrigerator magnet listing the leading postpartum warning signs could save many lives.

More important than the individual incentives behind New Jersey Maternal Health Awareness Day is that, together, its champions share miles of heart: Ryan and Patty Hansen's love for Tara; Casey Cattell's grit and gratitude to her medical professionals and blood donors; Robyn D'Oria's hands-on experience as a labor and delivery nurse; the devotion of Dr. Bachmann and Dr. Apuzzio to the well-being of every new mother; and Senator Vitale's contribution to the vision of a special day that would start in New Jersey and, ideally, become a national movement. **M**





Successful Removal of Rare Skull Base Tumor Produces a Magical Moment in Medicine

WHEN LIA REDONDO WAS DIAGNOSED WITH CEREBRAL MENINGIOMA IN NOVEMBER 2018, SHE KNEW THAT HER LIFE WAS GOING TO CHANGE DRASTICALLY. WHAT SHE DIDN'T REALIZE WAS THAT IT ALREADY HAD.

“I used to think that nothing good ever happened to me. I felt like I was mad at the world,” says Lia Redondo. “Now I feel lighter and happier. People say that I seem like a different person. I didn’t realize how the tumor had been affecting my outlook on life and my relationships.”

Redondo, who lives in Atlantic Highlands, was 37 years old when she began experiencing double vision in her right eye, numbness in her right hand, and headaches. As a fit woman who exercised frequently, she was concerned, so she made an appointment with an ophthalmologist instead of her regular eye doctor. The ophthalmologist noted that her optic nerves were swollen and that she had pressure behind her eye. He recommended that she get an MRI as a precaution.

“Getting the MRI was meant to be a preventive measure to rule out something extreme,” explains Redondo. “I was only in the machine for 10 minutes before the technologist pulled me out and sent me directly to the ER.”

The MRI had revealed a large bifrontal cerebral meningioma with internal swelling and displacement of the brain due to intracranial pressure. Nine centimeters in diameter, the benign skull base tumor was nearly the size of a grapefruit.

BY JODI McCAFFREY • PHOTOS BY JOHN EMERSON



*Anil Nanda, MD, MPH,
Peter W. Carmel MD Chair
of Neurological Surgery,
professor and chair,
Department of Neurosurgery,
at Robert Wood Johnson
Medical School and
New Jersey Medical School,
and senior vice president for
neurosurgical services at
RWJBarnabas Health,
describes Lia Redondo's post-
surgical changes as almost an
awakening. "As doctors we
can't always choreograph a
positive outcome,
but when it happens, it's a
magical moment in
medicine," he says.*

Redondo was transferred to Robert Wood Johnson University Hospital in New Brunswick from another facility and was seen by Anil Nanda, MD, MPH, Peter W. Carmel MD Chair of Neurological Surgery, professor and chair, Department of Neurosurgery, at Rutgers Robert Wood Johnson Medical School and Rutgers New Jersey Medical School, and senior vice president for neurosurgical services at RWJBarnabas Health. Dr. Nanda has written 500 academic papers in his field, with more than 200 focused on skull base meningiomas, and has performed more than 16,000 surgeries.

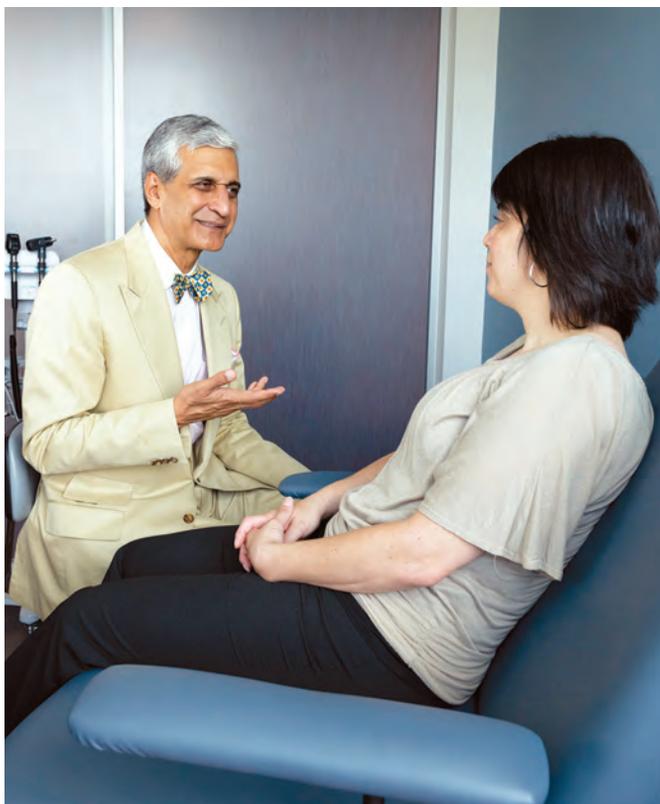
The “No-Man’s-Land” of Brain Tumors

THE BRAIN’S TWO HEMISPHERES ARE DIVIDED INTO FOUR LOBES: PARIETAL, OCCIPITAL, TEMPORAL, AND FRONTAL; THE LATTER IS WHERE

Redondo’s tumor was growing. The frontal lobes control thinking, planning, organizing, problem solving, short-term memory, and movement.

Benign skull base meningiomas are rare tumors that historically have been inoperable—a surgical “no-man’s-land.” It’s only in the last few decades that neurosurgeons have attempted to remove these complex tumors. Redondo’s case was additionally unusual due to her age; while meningiomas are more often found in women, due to a possible correlation to estrogen production, they are typically found in women in their 50s and 60s—and she was only 37.

During surgery, Dr. Nanda and his team—which included surgical resident David Slottje, MD; Alice Edwards, MSPA-C, assistant professor of neurosurgery and director of practice operations, Department of Neurosurgery; and anesthesia circulator nurses Maria Fernandez-Pazos, RN, and Alexandria Rodriguez, RN—removed the tumor by accessing only the right side of the skull. This approach protects the frontal lobe on the left side of the brain from damage. This challenging surgery usually can take as long as 18 hours to complete, but Dr. Nanda and his team were able to do it in three and a half hours, thanks to his extensive experience with this specific procedure.



A Positive Outlook

ALTHOUGH THE TUMOR DIAGNOSIS WAS NEW, ITS EFFECTS ON REDONDO’S PERSONALITY HAD BEEN EVIDENT FOR YEARS TO HER FRIENDS and family, including her daughter, now 15. Given its size, Dr. Nanda believes that the tumor may have been growing on Redondo’s frontal lobe for as long as 10 years. Redondo admits she had been short-tempered and prone to negative thinking before surgery. Now she’s back to her old self.

“I used to think that nothing good ever happened to me. I felt like I was mad at the world,” explains Redondo. “Now I feel lighter and happier. People say that I seem like a different person. I didn’t realize how the tumor had been affecting my outlook on life and my relationships.”

Dr. Nanda describes Redondo’s postsurgical changes as almost an awakening: “Her family says that they’ve seen a huge personality change in Lia. Her mother told me, ‘I’m so happy that my daughter loves me again.’”

Redondo’s physical recovery was equally as remarkable as her cognitive recovery. She didn’t have any verbal impairments after surgery and was able to get out of bed and walk a few days later. She was discharged to her home 12 days after surgery and didn’t require physical therapy after discharge. Although she initially suffered from short bouts of double vision and headaches, and struggled with insomnia and short-term memory lapses for a few

months after surgery, her symptoms have improved. She’s relearning how to help her body—and mind—wind down at the end of the day to rest. She’s looking forward to going back to work in human resources and retail management.

“Having brain surgery was a punch to the gut,” says Redondo, who enjoys working out, reading, watching sports, and spending time with her family. “This is the best worst thing that happened to me. I was on a negative path, but now I don’t want to take this second chance for granted.”

“As doctors we can’t always choreograph a positive outcome, but when it happens, it’s a magical moment in medicine,” Dr. Nanda says. **M**

A photograph of three Rutgers medical students standing in front of a stone wall. On the left is a woman with long dark hair, wearing a white lab coat over a blue dress and black and gold flats. In the center is a man with short dark hair, wearing a white lab coat over a blue and white checkered shirt, a dark tie, and dark trousers. On the right is a man with a beard and dark hair, wearing a white lab coat over a blue and white checkered shirt and khaki trousers. All three are smiling and looking towards the camera. The background is a large, textured stone wall with some light-colored architectural elements.

I was thinking about a career in medicine, and teaching was a great way to stay intellectually stimulated while I made a decision,” says Anoushka Dua ’20 (far left), with fellow Robert Wood Johnson Medical School students (left to right) Dan Reyes ’21, Laith Abushanab ’21, and Lauren Salgueiro ’22.



From Classroom to Clinics:

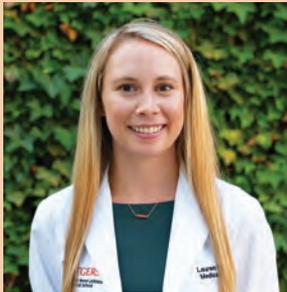
*Med Students Who
Taught in Inner Cities
before Pursuing
Medicine*

For some, the road to becoming a physician is a straight line. For others, the route is more circuitous, with stops along the way, sometimes in other fields. Often at the heart of these forays into other careers is the need to help others and to share knowledge—much like the role of the physician.

BY JODI MCCAFFREY

PHOTOS BY JOHN EMERSON

Sharing STEM Knowledge in Newark



Lauren Salgueiro '22 knew she wanted to be a doctor but delayed applying to medical school so she could try a different type of career before entering medicine. She chose to share her passion for STEM (science, technology, engineering, and mathe-

matics) with students in underserved communities.

“I knew that once I started medical school, I’d be in that tunnel for the rest of my life,” explains Salgueiro, who plans to specialize in cardiothoracic surgery. “My long-term career goal was med school, but I had an interest in activism and community outreach, so teaching made sense.”

After she earned her undergraduate degree from Dartmouth College, Salgueiro applied to Teach for America, an organization that works in partnership with urban and rural communities in more than 50 regions across the country. The program requires a two-year commitment. After training, she was placed at North Star Academy College Preparatory High School in Newark, where she taught biology, chemistry, and geometry to ninth-, 10th-, and 12th-grade special education students.

What she learned was the impact that socioeconomic inequities can have on students. Nearly 95 percent of the school’s students qualified for free or reduced lunch through the National School Lunch Program. Some students couldn’t concentrate because they were distracted by hunger. Others had medical issues that affected their ability to learn.

“I had taken my access to health care for granted, but here, the disparity in health care was very apparent,” she says. “Some students couldn’t see the whiteboard because their parents couldn’t afford glasses, and another student had a chronic health condition but wasn’t able to access care because the cost of routine visits was too high. This inequity is very clearly tied to the ability to succeed in school and in life.”

She’s now more mindful of the circumstances that patients face outside the hospital or clinic.

“It’s easy for physicians to blame patients for “not taking medications, attending appointments, or adhering to recommendations,” says Salgueiro, who earned a master’s degree in biomedical sciences from Tufts University School of Medicine. “But in many instances, if physicians take the time to understand why the patient is noncompliant—lack of prescription coverage, lack of transportation, work and family responsibilities—a solution can be found to get the patient back on their plan of care.” **M**

Overcoming Socioeconomic Disparities in Las Vegas



Future emergency medicine physician Laith Abushanab '21 has a strong interest in the macro-level socioeconomic issues that impact a community and its health. These issues—access to education, access to health care,

home life—were daily stressors that affected the students at Western High School in Las Vegas, where Abushanab taught high school chemistry for two years before entering medical school.

“I saw firsthand that the quality of your education often depends on the zip code where you’re living,” says Abushanab, who holds a bachelor’s degree in finance from Rutgers University.

In this underserved community, many students didn’t know fifth-grade math and had never taken a closed-book test, a disparity that shocked Abushanab. “I’ve been fortunate that my parents made sure I went to good schools,” he says. “I thought the level of education in the rest of the country wouldn’t be that much different from what I experienced, but clearly it is.”

Seeing the systemic issues affecting his students led Abushanab to pursue a career in strategy consulting, working with philanthropic and nonprofit organizations to bring change to these struggling communities. Although the position allowed him to work on projects that he found exciting, he missed directly seeing the impact of the projects he worked on. When he spoke with friends in the medical field, he learned that he could go back to working with patients while also having an impact on the broader issues that keep patients coming back to the hospital.

His experience teaching in an underserved community has made Abushanab more conscious of the socioeconomic disadvantages that his patients may face, and he plans to reflect this knowledge in his philosophy of care.

“Providing health care is like being in a classroom,” he explains. “Although health care is about improving someone’s health, there are so many other aspects—where they live, their level of education, factors in their communities—that can affect their health status. My patients are like my students; I need to learn where they have gaps in health education and address those gaps.” **M**

A Decade of Teaching in California's Underserved Communities



In 2007, Dan Reyes '21 was at a crossroads. He had just graduated from the University of California, Berkeley, with a bachelor's degree in molecular and cell biology. He wanted to pursue

medicine but felt his grades weren't strong enough. During his undergraduate experience, he took a medical ethics class and then was offered the opportunity to teach it. He enjoyed the experience and completed a six-week intensive workshop with the Oakland (California) Teaching Fellows. This led to a teaching position at Far West High School in Oakland, where he taught biology, physiology, and study skills and served as co-adviser of the 10th-grade class. About 90 percent of students qualified for free or reduced lunch.

He continued teaching for the next decade in high schools in Moraga, Lafayette, and Walnut Creek, California, adding teaching chemistry, coaching water polo, and serving as coordinator for the gifted and talented program to his résumé. In 2011, Reyes earned a master of arts degree in teaching leadership from Saint Mary's College of California, and four years later, he earned his administrative services credential, a prerequisite for a career as a school principal in that state. Still, a career in medicine continued to interest him.

"Medicine was always something I wanted to do, but I needed stronger grades," Reyes explains. "The next best thing for me was being in the classroom. My break wasn't supposed to last 10 years, but I really enjoyed the work."

Now, he's pursuing a career in emergency medicine, with a special interest in underserved communities. His time in the classroom has made him more empathetic—a key skill in becoming a patient-focused physician.

"Teaching is like medicine because you're in the service of someone else. You're walking through their journey with them and checking in periodically to see if they are meeting their goals," Reyes says. "In both disciplines, you work together to plan how to reach a goal. If they fail, they'll need encouragement. Teaching has given me a unique skill set to help people."

For the future, Reyes says he plans to look for opportunities to teach as a physician, whether it's teaching residents or providing patient education.

"The likelihood that I won't be in front of a classroom again is small," he says. "I love teaching, and I love medicine. I'm really lucky that I can do both." **M**

Building Biology Curriculum in Camden



For two years between college and medical school, Anoushka Dua '20 taught ninth-grade biology at Freedom Prep High School in Camden.

"Science was the only subject I ever really loved in school," says Dua, who earned her undergraduate degree from the University of California, Los Angeles. "I was thinking about a career in medicine, and teaching was a great way to stay intellectually stimulated while I made a decision."

Dua developed the school's biology curriculum, including original lesson plans that employed a variety of learning modalities to ensure student comprehension. She also held twice-weekly tutoring sessions to help those who were falling behind.

"I learned that particularly in lower-income communities, being able to interact with students and parents with different educational, cultural, and socioeconomic backgrounds is an important skill, one that will help me establish strong relationships with my patients," says Dua, who is pursuing a career in internal medicine.

During her internal medicine rotation, an attending physician asked her to teach a patient who was newly diagnosed with type 1 diabetes about the disease. Dua drew on the skills she gained as an inner-city teacher to break down the complex subject into easy-to-understand facts for a patient who wasn't familiar with the topic.

"Patients can't make changes to their health status if they don't understand their condition," she explains. "They feel more in control when they fully understand their diagnosis. It's important for future physicians to know how to properly educate their patients, and teaching has helped me develop that skill."

Dua is involved with Rutgers Robert Wood Johnson Medical School's Student Curriculum Committee and is participating in several medical education projects. She hopes to continue to be involved in education by teaching residents and medical students. **M**



Eagles Autism Raises Millions for Rese Leads Scientific Review

PHOTO COURTESY OF THE PHILADELPHIA EAGLES

The Eagles' 2018 autism fundraising event raised \$2.5 million. The 3,300-plus participants and Swoop (the team mascot), along with more than 40 players and team "legends" who



START

ADVANCING AUTISM RESEARCH TOGETHER



EAGLES
AUTISM
CHALLENGE

Lincoln
Financial Group

Challenge

arch; Emanuel DiCicco-Bloom, MD,
Team

BY KATE O'NEILL

included the full Eagles organization: coaches, owners, front office executives, cheerleaders, completed either the 5K or the biking challenge.

The Philadelphia Eagles care about autism.

In 2018, Jeffrey Lurie, chair and CEO of the National Football League team, led the organization in creating a new charitable foundation, the Eagles Autism Challenge (EAC). For Lurie, who has owned the Eagles for 25 years, the goals of the challenge are rooted in a personal connection that gives him a deep appreciation of the strengths and challenges of those affected by autism.

The Lurie family is far from alone: the Centers for Disease Control and Prevention report that autism is the fastest-growing developmental disorder, estimating that 1 in 59 Americans under the age of 21 are on the autism spectrum. Lurie is committed to funding breakthroughs in research and cutting-edge programs that will help unlock the mystery of autism and improve this statistic.

Dr. DiCicco-Bloom Named External Scientific Adviser

As Lurie envisioned the EAC, it would feature a series of community fundraising events. They would support a new form of philanthropy for the Eagles, modeled on the grant application and review process developed by the National Institutes of Health (NIH). The team's popularity and network of supporters, he believed, would heighten participation and public appreciation of the organization's serious, longtime support for autism-directed research.

He recruited Emanuel DiCicco-Bloom, MD, professor of neuroscience and cell biology and pediatrics, Rutgers Robert Wood Johnson Medical School, as the EAC's external scientific adviser. A highly accomplished physician-scientist—an expert on autism, with extensive grant-making experience—Dr. DiCicco-Bloom was the ideal choice to develop and guide a fair but rigorous grant-making process.

Dr. DiCicco-Bloom's basic and translational research on neurodevelopmental disorders focuses on gene and growth factor regulation of neurogenesis (the production of new neurons) during normal brain development. He studies the ways in which abnormalities in the process may lead to neurodevelopmental disorders, including autism and schizophrenia, and conditions resulting from environmental exposure. In addition to pursuing these research goals, Dr. DiCicco-Bloom serves on several autism- and brain-related scientific panels, chairs the NIH Developmental Brain Disorders Study Section, and is a member of the Department of Defense Autism Research Program.



JOHN EMERSON

Clockwise from above: Emanuel DiCicco-Bloom, MD, professor of neuroscience and cell biology and pediatrics, Rutgers Robert Wood Johnson Medical School, and the EAC's external scientific adviser. ■ Family-friendly 5K walk/run at the Eagles' Lincoln Financial Field. ■ Philadelphia Eagles Chair and CEO Jeffrey Lurie (fifth from left) hosted a welcome dinner for the newest scientific review panelists in January 2019. Dr. DiCicco-Bloom (second from left) also attended the dinner.



Autism Research Is EAC's Big Winner

The first two years of EAC fundraising were extraordinarily successful. Inaugurated in 2018 and repeated in 2019, the most visible of these efforts is a family-friendly 5K walk/run at the Eagles' Lincoln Financial Field.

The 2018 event raised \$2.5 million. The 3,300-plus participants included the full Eagles organization: coaches, owners, front office executives, cheerleaders, and Swoop (the team mascot), along with more than 40 players and team "legends" who completed either the 5K or the biking challenge. Participants can also choose a shorter "sensory walk" around the stadium's perimeter, with reduced noise levels and frequent stops.

The Eagles organization turned out again this past spring, joined by even more enthusiasts, and raised \$3.6 million. Every dollar of the two-year total, exceeding \$6 million, was directed to individual support and scientific research that will benefit people and families living with autism.

Given the initial success of the EAC, Lurie can easily imagine



PHOTOS COURTESY OF THE PHILADELPHIA EAGLES

opportunities.

“Manny’s outstanding reputation in the field was critical to this step, and all of our invited panelists accepted because of their admiration for him and his work,” says Ryan Hammond, executive director, Eagles Autism Challenge.

In the first year, the nine-member panel received applications from the three beneficiary institutions and awarded grants to eight research projects. This year, the challenge was even more successful, and, following review of proposals submitted by 51 Philadelphia researchers, the panel will provide \$3.6 million in research grants. By design, Round Two EAC grant recipients reflect the panel’s decision to give priority to novel, exploratory, and/or innovative topics and approaches. Seeing an opportunity to apply innovative approaches and concepts to systems and studies relevant to autism spectrum disorder (ASD), the panel encouraged applications from researchers who have worked outside the autism field.

The Gamut: Proposals from Bench Research to Community Engagement

“We received great proposals,” says Dr. DiCicco-Bloom. “There were programs that will move into the community to help those affected integrate better and receive a better education. There are programs that are looking for biomarkers—an objective, biological measure that we can use to help us understand what might be different about the brain in a person with autism.

“Biomarkers might not only be a tool to diagnose different subtypes of autism,” he adds. “They could also provide an understanding that individuals with different subtypes may need different types of therapies.”

Among the 2018 grant recipients was William C. Gaetz, PhD, research associate professor of radiology, Perelman School of Medicine, University of Pennsylvania. Dr. Gaetz and his team propose to use advanced scanning technology to assess electrical activity of the brain and determine important biomarkers. They will study some of the specific neurological pathways that could be implicated in the connection between ASD and epilepsy. Focusing on the issue of diminished brain circuit inhibition, which can be shared by people with ASD and epilepsy, Dr. Gaetz’s study aims to allow researchers to identify epilepsy treatments that could potentially be repurposed as treatments for children with ASD.

The Eagles Autism Challenge promises to provide much-needed dollars to support the best autism research in Philadelphia, and perhaps beyond. “With the collaboration of an outstanding community of peer reviewers, we are confident that EAC will make a significant impact on the lives of those affected by autism, now and into the future,” says Dr. DiCicco-Bloom. **M**

surpassing \$10 million in the first three years. This would be a significant step toward realizing his vision of making Philadelphia a worldwide destination for autism research and care.

Focusing on that objective, the 2018 applications for research funding were limited to three Philadelphia institutions that are the Eagles’ founding beneficiaries: Children’s Hospital of Philadelphia (CHOP), Drexel University, and Thomas Jefferson University and Jefferson Health. In 2019, the invitation went to all Philadelphia researchers.

Distinguished Peer Review Panel Names EAC Award Recipients

With the inauguration of the EAC, Dr. DiCicco-Bloom constructed the more rigorous grants-based approach to philanthropy that Lurie conceived. Not only would the peer review panel members be experts at the top of their field, but, with proposed projects running the gamut from understanding the basic causes of autism to developing new treatments, only a broad-based team could ensure an expansive view of research

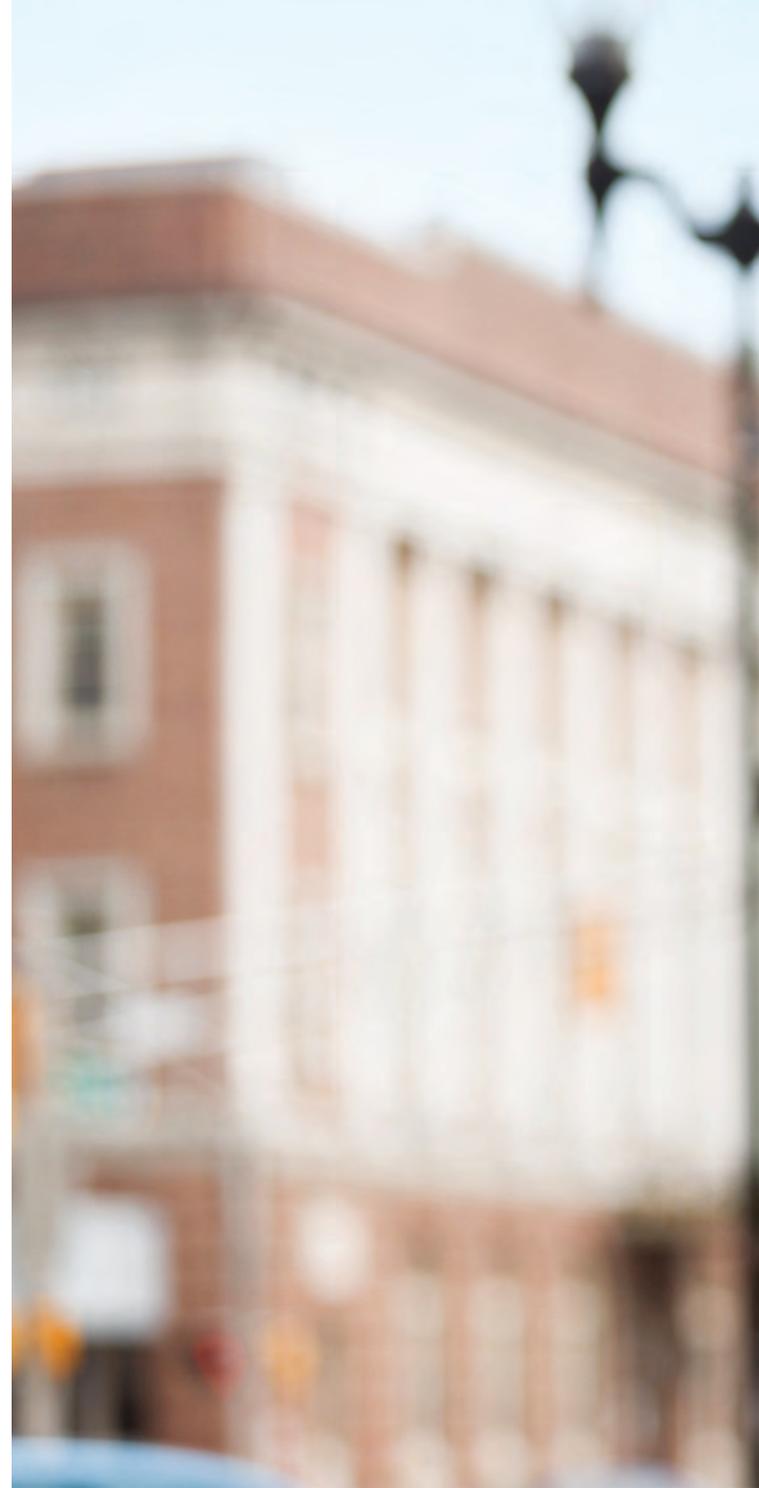
Reading *With* Toddlers

Reduces Harsh Parenting
and Enhances
Child Behavior

People who regularly read with their toddlers are less likely to engage in harsh parenting and the children are less likely to be hyperactive or disruptive, a Rutgers study led by Manuel Jimenez, MD '06, assistant professor of pediatrics at Rutgers Robert Wood Johnson Medical School, finds.

Previous studies have shown that frequent shared reading prepares children for school by building language, literacy, and emotional skills, but the study by researchers at the medical school may be the first to focus on how shared reading also affects parenting.

The study, published along with a video abstract in the *Journal of Developmental & Behavioral Pediatrics*, suggests additional benefits from shared reading—a stronger parent-child bond, less hyperactivity, and fewer attention problems in children.



“For parents, the simple routine of reading with your child on a daily basis provides not just academic but emotional benefits that can help bolster the child’s success in school and beyond,” said Dr. Jimenez. “Our findings can be applied to programs that help parents and caregivers in underserved areas to develop positive parenting skills.”

The study reviewed data on 2,165 mother-child pairs from 20 large U.S. cities in which the women were asked how often they read to their children at ages 1 and 3. The mothers were reinterviewed two years later regarding how

BY NEAL BUCCINO ■ PHOTO BY STEVE HOCKSTEIN



For parents, the simple routine of reading with your child on a daily basis provides not just academic but emotional benefits that can help bolster the child's success in school and beyond," says Manuel Jimenez, MD '06, assistant professor of pediatrics.

often they engaged in physically and/or psychologically aggressive discipline and about their children's behavior. The study controlled for factors such as parental depression and financial hardship that can contribute to harsh parenting and children's disruptive behavior.

The results showed that frequent shared reading at age 1 was associated with less harsh parenting at age 3, and frequent shared reading at age 3 was associated with less harsh parenting at age 5. Mothers who read frequently with their children also reported fewer disruptive behaviors from their children, which may partially explain the reduction in harsh parenting behaviors.

The findings can strengthen programs that promote the

academic, emotional, and socioeconomic well-being of children, the authors said.

Coauthors included Yong Lin, PhD, professor of biostatistics at Rutgers' School of Public Health; Patricia Shelton, a clinical research assistant at the Boggs Center on Developmental Disabilities at Robert Wood Johnson Medical School; and researchers at New York University School of Medicine/Bellevue Hospital Center, the University of Toronto's Institute of Health Policy, Management and Evaluation, and Princeton University. **M**

—Originally published by *Rutgers Today* on May 22, 2019



Wellness Services Support Medical Students Mentally, Physically, and Spiritually

Students enter medical school to begin a journey to help others, but at times, the rigors of that commitment can cause stress, anxiety, and depression.

Assistant deans for student affairs Sonia Garcia Laumbach, MD '99 (left), and Daniel J. Mehan Jr., PhD, develop wellness programs and services to provide support to students. "We believe healthy physicians provide the best care for their patients," says Dr. Mehan.

"Ironically, pursuing a career in the medical field often pushes students to sacrifice their own health, well-being, and personal relationships to succeed," explains fourth-year student Amita Risbud.

As assistant deans for student affairs for Rutgers Robert Wood Johnson Medical School, Sonia Garcia Laumbach, MD '99, and Daniel J. Mehan Jr., PhD, develop wellness programs and services to provide support to students like Risbud. The program employs a multi-pronged approach to promote why wellness is important and empowers students

to take steps to protect their mental, physical, and spiritual health.

"We believe healthy physicians provide the best care for their patients," says Dr. Mehan.

The goal for most medical students is to excel academically so they can move on to residency. The competitive nature of that process is stressful, exacerbating anxiety. Add romantic relationships, family commitments, and extracurricular activities into the mix, and wellness activities often fall to the bottom of the priorities ladder.

BY JODI McCAFFREY ■ PHOTOS BY JOHN EMERSON



By offering a full scope of wellness services and programs, the medical school aims to proactively support student well-being and mental health before issues snowball into crisis. From mental health counseling to physical activities to even financial aid counseling to address students' economic stressors, wellness is consistently integrated into the student experience.

CAP Provides Peer Support, Mentoring—and Fun

The College Advising Program (CAP) provides ongoing support throughout a student's experience. The program pairs first-year students with second-year mentors, introduces new students to faculty and alumni mentors, and helps create a sense of community through competition and camaraderie.

CAP was developed in 2011 to provide incoming medical students with learning communities that served academic, social, and professional purposes. In 2015, the program's focus on wellness was formalized by creating CAP representatives within the student government association who assist in planning and carrying out wellness events that best meet the students' needs. The focus on wellness at the medical school since CAP's creation has grown exponentially. Now students can join interest groups that explore topics such as mindfulness in medicine and healthy living. Mixer nights with faculty and alumni provide forums for networking and expose students to different fields in medicine.

As a student, Gianna Seeland, MD '19, was tapped to help plan wellness events through her role as vice president of her class. Her first goal was to spread the word about the free counseling services at University Behavioral Health Care (UBHC), which also are available to medical residents. To highlight the connection between creativity and wellness, Dr. Seeland, then a student, helped orchestrate an art gala that featured student and faculty artwork, as well as wine-and-paint nights led by Rob Zachow, PhD, professor of biochemistry and molecular biology, who also holds

an undergraduate degree in commercial art. Other events included puppy play dates and movie nights.

Risbud developed wellness programming during her nonclinical years as well, including dance activities, hiking outings, and community outreach.

"We want to reinforce a sense of community—and have some fun," says Dr. Seeland, who started her residency in obstetrics/gynecology at Baylor College of Medicine. "Every medical student has to balance

As a student, Gianna Seeland, MD '19 (left), was tapped to help plan wellness events through her role as vice president of her class. Her first goal was to spread the word about the free counseling services at University Behavioral Health Care (UBHC), which also are available to medical residents.

studying and performing well with researching, networking, socializing, spending time with family, relationships, and more. I've seen classmates and friends get to the point of despair trying to juggle it all, and I've felt that way myself."

A two-part "Patient-Centered Medicine" course for first- and second-year students further espouses personal and professional balance. In small groups, students explore issues of humanism, professionalism, cultural and ethical sensitivity, and the influence of one's personal beliefs on the practice of medicine. Participants enhance their communication skills for establishing trust and rapport with patients through teaching scenarios, which they can apply in their personal lives.

Understanding and Overcoming "Impostor Syndrome"

In addition to stress, some medical students grapple with impostor syndrome, says Dr. Laumbach. Occurring among high achievers who are unable to internalize and accept their success, impostor syndrome can lead students to chalk up their accomplishments to luck rather than ability, according to the American Psychological Association. While you won't find the condition listed in the *Diagnostic and Statistical Manual of Mental Disorders*, psychologists acknowledge that it's a very real, silent, and specific form of self-doubt.

"I've had students say they feel like they don't belong here," explains Dr. Laumbach. "They doubt themselves and think they fooled us to get into medical school."

For students feeling self-doubt, the antidote is to build their self-confidence and help them recognize that what they are feeling is normal, she says. The medical school's Student Wellness Program provides free and confidential mental health services for students on the Piscataway and New Brunswick campuses through

“Ironically, pursuing a career in the medical field often pushes students to sacrifice their own health, well-being, and personal relationships to succeed,” explains fourth-year student Amita Risbud (right).

UBHC. Services include individual, couple, and family counseling; medication management; crisis intervention; and prevention-oriented groups and workshops.

The medical school also offers a Cognitive Skills Program, a robust academic support initiative that aids those experiencing academic challenges. Services are tailored to each student’s specific needs and are integrated with course curricula. The program provides tips and guidance on effective study strategies, test taking, time management, and learning productivity, along with preparation programs for course, board, and licensure examinations.

Timely Intervention for Each Class

Student support services are tailored to each milestone in a student’s medical school journey.

First-year students are required to meet with a dean to talk about their goals, interests, and concerns. Orientation and CAP’s peer mentoring initiative begins a foundation of encouragement and trust, which continues throughout their tenure. For second-year students, preparing for the United States Medical Licensing Examination Step 1 can cause heightened anxiety, so faculty, mentors, and counselors are empathetic to this rite of passage.

Year three is when students typically feel the most pressure, says Dr. Laumbach. “This is a year of major decisions and many demands. This is the time when students start answering questions about their career.”

This, she says, also is when the school sponsors an annual wellness talk to encourage students to share their thoughts with others. Any feedback about their wellness needs is used to adjust and recalibrate the program.

When It’s More Than Just Stress

During orientation, first-year students learn tips for avoiding burnout that they can use as students and later as practicing physicians, says Dr.

Mehan. Substance abuse also is addressed during orientation, and the school promotes the Student Wellness Program as an avenue for referrals to professional assistance. Ways to deal with a patient’s death is integrated into the curricula, and the school recently hosted a national expert on physician suicide, who also offered tips for resiliency.

Utilization and Trends

“We emphasize to struggling students that they aren’t the only ones who are having difficulties,” says Dr. Mehan. “We make ourselves available whenever a student needs to talk. We share our cell phone numbers so they can call us at any time.”

The good news is that it appears that those who need help are seeking it. During the academic year September 1, 2017, through September 30, 2018, 17.4 percent of the school’s students used the services of the Student Wellness Program. Perhaps not surprising, of those who used the program, more were third-year students (37 percent), followed by second-year students (31 percent), first-year students (26 percent), and, last, fourth-year students (6 percent).

Regarding why students sought services, 62 percent of students reported that they sought counseling for reasons other than academic issues, with 34 percent reporting job stress.

Dr. Laumbach and Dr. Mehan note that there are marked trends for when students seek counseling services, with spikes in use coinciding with pivotal activities in a student’s life. High utilization months include August, September, and October, when students are starting a new academic year, and February, January, and March, when students are weighing important career decisions and scheduling choices.

However, the deans are consistently adjusting services in response to student feedback. “We work to identify specific programs and services that speak to students’ needs,” explains Dr. Laumbach. “If new issues or triggers arise, we develop ways to help students cope with those issues.”

“Physician wellness is a hot topic in the medical community,” says Dr. Seeland. “The suicide rate among physicians is high, but the culture is changing. I’m proud that our school has made student wellness a priority.” **M**



Amita Risbud
Medical Student



Rutgers Lab
Sheds Valuable
Light on

How TB Survives in the BODY

Few more dreaded diseases reside in the global health repertory than tuberculosis. TB, which is spread person-to-person through the air, is responsible for an estimated 10 million infections and 1.6 million deaths annually. Equally sobering is the fact that 25 percent of the world's population—nearly two billion people—is infected with the causative germ *Mycobacterium tuberculosis*. Fortunately, most people who are infected develop the latent form of the infection: they have no symptoms, don't feel sick, and cannot spread TB infection to others. Most will hold the infection in check for the rest of their lives, but between 5 and 10 percent will progress to active TB disease at some point, according to the Centers for Disease Control and Prevention (CDC). People with TB disease battle chronic cough, fever, fatigue, weight loss, and, ultimately, the risk of death if the infection is not treated effectively.

“We study the switches that determine how the bacterium that causes tuberculosis has the unique ability to evade being killed by our immune system and is able to persist for long periods of time in its host as a latent infection,” says Nancy Woychik, PhD, professor of biochemistry and molecular biology.

This delicate intersection of latent and active TB is where Nancy Woychik, PhD, professor of biochemistry and molecular biology at Rutgers Robert Wood Johnson Medical School, has targeted much of her research. As a recent study published in *Nature Communications* makes clear, her laboratory is breaking important new ground in understanding the complex series of

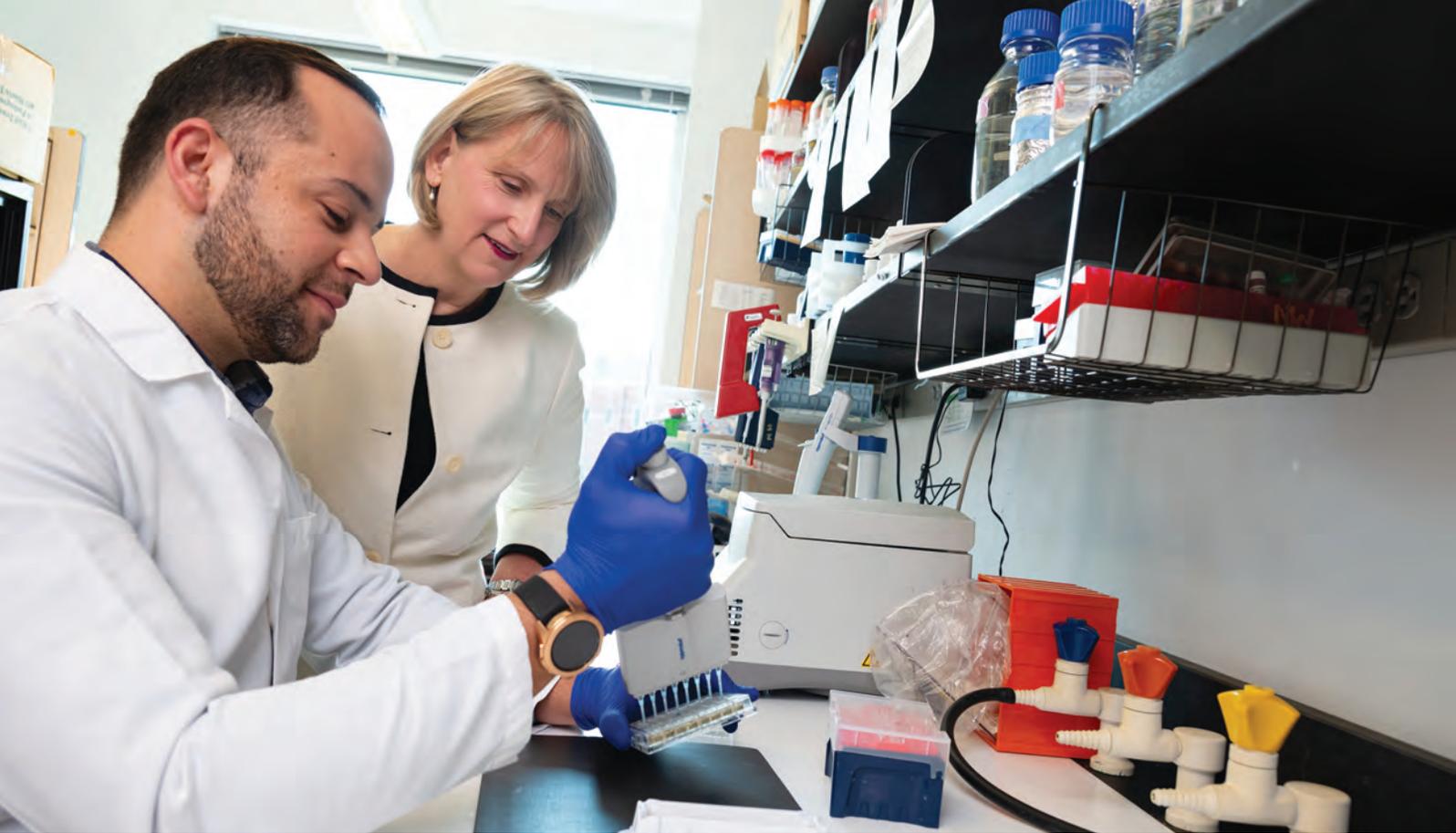
cellular events that determine how *M. tuberculosis* responds to stresses produced by the human immune system that can tip the balance between latent and active TB.

“We study the switches that determine how the bacterium that causes tuberculosis has the unique ability to evade being killed by our immune system and is able to persist for long periods of time in its host as a latent infection,” Dr. Woychik explains. “And latent infections can be reactivated, especially in immune-compromised individuals, to the highly contagious, active form of TB that accelerates spread of the disease.” Underscoring the urgency of her research is the fact the number of deaths each year from *M. tuberculosis* has surpassed those from AIDS, making it the world's leading infectious cause of death.

Most susceptible to active TB are individuals whose immune systems have been weakened through viruses such as HIV, which causes AIDS, leaving them unable to fight the TB bacteria. Indeed, an individual with HIV is 25 times more likely to acquire TB than someone with a normal immune system, according to the World Health Organization (WHO). And about half of those who develop TB will do so within the first two years of infection.

In their study, Dr. Woychik and lead author

BY RANDY YOUNG ■ PHOTOS BY JOHN EMERSON



Valdir Barth, a PhD candidate in her lab, drilled down to the molecular and signaling levels to understand how cells react when faced with formidable stresses like immune system attacks. Working closely with Robert Husson, MD, senior physician in pediatrics, Boston Children's Hospital, and professor of pediatrics at Harvard Medical School, they learned that a single gene that may be activated during latent TB infection—known as *mazF-mt9*—is implicated in driving the pathogen into a dormancy-like state.

Through their research, they further discovered that this gene mediates the shift of *M. tuberculosis* to a nonreplicating state in a rather unexpected way: by controlling the levels of a very important molecule known as tRNA, which signals the bacteria to synthesize only specific proteins that may be beneficial to their survival during latent TB infection. Put another way, through its ability to lower the level of a specific tRNA, *mazF-mt9* regulates protein production by a form of reprogramming that is thought to enable cells to exist in a dormant state. This finding in turn led the Rutgers researchers to a “new bacterial strategy” designed to remodel the physiology of the pathogen.

“By learning what this gene actually does, we uncovered a novel approach that *M. tuberculosis* cells may use to establish a latent state and enable this pathogen to hide from normal

“We believe that molecular approaches like ours, aimed at understanding latent tuberculosis, hold great promise,” says Nancy Woychik, PhD, professor of biochemistry and molecular biology (above), with PhD candidate Valdir Barth. “They could help health authorities respond more effectively on a global scale to a disease that continues to devastate developing countries.”

immune-clearing pathways,” explains Barth, who will graduate in 2020 from Robert Wood Johnson Medical School's Graduate Program in Microbiology and Molecular Genetics. “This also has the effect of slowing its growth so that antibiotics are not able to easily kill it.”

But why focus on understanding the inactive, latent form of infection? The answer largely lies in the prolonged treatment required for inactive TB: six to nine months of an antibiotic drug. As Barth points out, “In many cases, the treatment may not be necessary because the vast majority of people with latent TB will keep the disease under control during their lifetimes.”

Focused on how the *M. tuberculosis* stays alive rather than on how to eradicate it, Dr. Woychik and her lab are edging closer to two critical outcomes. One is discovering latency-inducing or -disrupting signals that could serve as predictive biomarkers for reactivation risk. The other is unearthing pathways that could lead to a new class of therapeutic targets for more effectively treating latent TB. “We believe that molecular approaches like ours, aimed at understanding latent tuberculosis, hold great promise,” emphasizes Dr. Woychik. “They could help health authorities respond more effectively on a global scale to a disease that continues to devastate developing countries.” **M**

R W J M S NEWS



Graduation for the Class of 2019

Congratulations to the newest group of alumni, the **Class of 2019**, who graduated on May 20, 2019, at the State Theatre in New Brunswick. The Class of 2019 is the largest class in the medical school's history, comprising 188 students. ■



PHOTOS BY KIM SONKHOFF

Welcome, Class of 2023

Donning their new white coats and reciting the Hippocratic Oath, the 165 members of Rutgers Robert Wood Johnson Medical School's **Class of 2023** marked their entrance into the medical profession as part of the school's annual White Coat Ceremony on August 2, 2019. The Class of 2023 is diverse in background as well as experience, with nearly half the class having pursued another career or advanced education between earning their undergraduate degree and becoming a medical student. ■



STEVE HOCKSTEIN

Doctors Are Increasingly Likely to Recommend Antihistamines Rather Than Cough and Cold Medicine for Children

Mindfulness May Reduce Opioid Cravings

People suffering from opioid addiction and chronic pain may have fewer cravings and less pain if they use both mindfulness techniques and medication for opioid dependence, according to a study co-authored by **Nina Cooperman, PhD**, associate professor of psychiatry (right), and **Anna Kline, PhD**, adjunct associate professor of psychiatry.

The study examined the effects of mindfulness and methadone therapy on 30 patients with opioid addiction and chronic pain. Mindfulness is the meditative practice of focusing on the present moment and accepting one's thoughts, feelings, and bodily sensations, with-

out judgment.

The findings showed that those who received methadone and a mindfulness training-based intervention were 1.3 times better at controlling their cravings and had significantly greater improvements in pain, stress, and positive emotions, even though they were aware of more cravings than those who only received standard methadone treatment and counseling.

Dr. Cooperman said many of those with opioid addictions experience chronic pain, anxiety and depression while on methadone maintenance, which is why mindfulness-based, non-drug interventions are promising treatments. ■



Nina Cooperman, PhD

STEVE HOCKSTEIN

A study by **Daniel Horton, MD**, assistant professor of pediatrics, found that for respiratory infections in children under 12, physicians are increasingly likely to recommend antihistamines and less likely to recommend cough and cold medicines.

Antihistamines have little known benefit for children with colds, and some older antihistamines (for example, diphenhydramine, in brand names such as Benadryl) cause sedation and occasionally agitation in children. The study, published in *JAMA Pediatrics*, found a sharp decline in cough and cold medicine recommendations for children under 2 after 2008, when the U.S. Food and Drug Administration



Daniel Horton, MD

STEVE HOCKSTEIN

(FDA) recommended against the medicines for that age group.

The researchers looked at national surveys representing 3.1 billion pediatric ambulatory clinic and emergency department visits in the United States from 2002 to 2015. After the FDA's 2008 public health advisory, physician recommendations declined by 56 percent for non-opioid cough and cold medicines in children under 2 and by 68 percent for opioid-containing medicines in children under 6. At the same time, researchers saw a 25 percent increase in doctor recommendations for antihistamines to treat respiratory infections in children under 12.

"There is little evidence that antihistamines actually help children with colds feel better or recover faster. We do know that these medicines can make kids sleepy and some kids quite hyper," says Dr. Horton.

To treat children with a cold or flu, the American Academy of Pediatrics recommends over-the-counter medicines for pain or fever, honey to relieve cough in children over 1 year old, and plenty of rest and hydration. ■

Student Receives Fulbright for Research in Switzerland

Anna Giarratana, an MD/PhD candidate who in May 2018 received her PhD in neuroscience, was awarded a Fulbright Fellowship, which she plans to use for a year of post-doctoral research in Switzerland. Dr. Giarratana will work at the Zurich Center for Neuroeconomics with Philippe Tobler, PhD, associate professor of neuroeconomics and social neuroscience at the University of Zurich, using state-of-the-art brain-imaging techniques and neuroeconomic methods to



PHOTO COURTESY OF ANNA GIARRATANA, PhD

Anna Giarratana, PhD

investigate human decision making in disease states. She plans to investigate brain function in healthy individuals who have schizotypal personality traits, using functional magnetic resonance imaging (fMRI) in conjunction with sensorimotor and reward-adaptation tasks. The research is designed to help advance understanding of the spectrum of mental illness and help pinpoint the regions of the brain responsible for deficits, as well as identify novel therapeutic targets. ■

Research News

By Kate O'Neill

Research Grants

The National Institutes of Health awarded grants of \$1 million or more to the following members of the Rutgers Robert Wood Johnson Medical School faculty:

- **Daniel Herranz Benito, PhD**, assistant professor of pharmacology, a new five-year, \$1,791,572 R01 grant for “The Role of Glutaminolysis as a Therapeutic Target in T-ALL.”
- **Detlev Boison, PhD**, professor of neurosurgery, transferred to Robert Wood Johnson Medical School four years of a five-year, R01 grant for “Adenosine Receptor Mediated Therapies for SUDEP” (Sudden Unexpected Death in Epilepsy). The total amount transferred was \$1,369,376.
- **Paul Copeland, PhD**, professor of biochemistry and molecular biology, a four-year, \$1,509,648 total competitive renewal R01 award for “Functional Analysis of SBP2 and Selenocysteine Incorporation.”
- **Subhajyoti De, PhD**, assistant professor of pathology and laboratory medicine and member, Rutgers Cancer Institute of New Jersey, a five-year, \$1,733,777 R01 grant to investigate “Computational Approaches for Identifying Epigenomic Contexts of Somatic Mutations.”
- **Marc Gartenberg, PhD**, professor of biochemistry and molecular biology, a four-year, \$1,549,202 competitive renewal of his R01 grant for “Binding, Sliding and Function of Cohesin Sister Chromatids.”
- **Hossein Khiabani, PhD**, assistant professor of pathology and laboratory medicine and member, Cancer Institute of New Jersey, a five-year, \$3,214,554 R01 grant for “Evolution and Clinical Impact of Clonal Hematopoiesis of Indeterminate Potential in Breast Tumor Microenvironment.”
- **Steven K. Libutti, MD, FACS**, professor of surgery and director, Cancer Institute of New Jersey, received a five-year, \$15,141,091 competitive renewal for the P30 Cancer Center Support Grant from the National Cancer Institute.
- **Chiara Manzini, PhD**, associate professor of neuroscience and cell biology, a new five-year, \$1,654,339 R01 grant to study “Identification of Genetic and Molecular Pathways in Congenital Rare Disorders Affecting the Brain and Muscle.” In addition, Dr. Manzini transferred to Robert Wood Johnson Medical School four years of her five-year, R01 grant for “Defining the Molecular Mechanisms of Sex Differences in Cognitive Function.” The total amount transferred was \$1,653,313.
- **Zhiping Pang, PhD**, associate professor of neuroscience and cell biology, a three-year, \$2,187,116 RF1 grant for “Developing Genetically-Encoded Detectors for Neuropeptide Release Based on Class B G-Protein Coupled Peptide Receptors.”
- **Loren Runnels, PhD**, associate professor of pharmacology, a four-year, \$2,204,077, multi-PI R01 grant for “Regulation of TRPM7 Channels.”
- **Soko Setoguchi-Iwata, MD, MPH, DrPH**, associate professor of medicine, a five-year, \$2,963,590 R01 grant for “Disease Outcomes in Older Adults under Extreme Heat, Air Pollution and Medication Use (DO-NO-HARM).”
- **Ann Stock, PhD**, professor of biochemistry and molecular biology, member, Cancer Institute of New Jersey, and resident member, Center for Advanced Biotechnology and Medicine, a five-year, \$2,623,512 R35 grant for “Two-Component System Design Principles.”

(Compiled with the assistance of the Research Support Team at Robert Wood Johnson Medical School.)

Published Research

The following is a representative sample of articles by Rutgers Robert Wood Johnson Medical School researchers, recently published in leading biomedical journals:

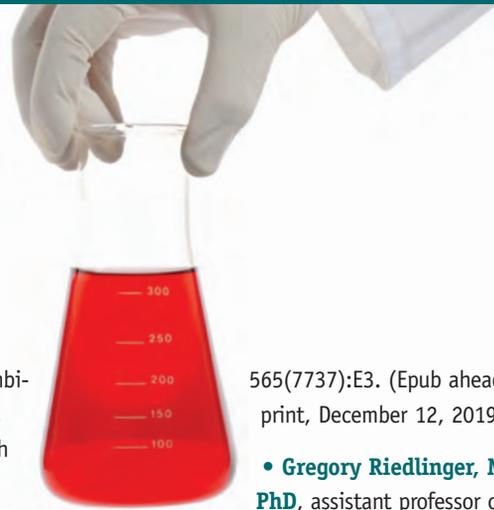
- **Theresa C. Barrett, MD '19, PhD**, was first author of “Enhanced Antibiotic Resistance Development from Fluoroquinolone Persists after a Single Exposure to Antibiotic,” published in *Nature Communications* 2019:10(1):1177. (Epub ahead of print, March 14, 2019.)
- **Valdir Barth**, a doctoral candidate in the laboratory of **Nancy A. Woychik, PhD**, professor of biochemistry and molecular biology, was first author of “Toxin-Mediated Ribosome Stalling Reprograms the *Mycobacterium Tuberculosis* Proteome,” published in *Nature Communications* 2019: 10(1):3035. (Epub ahead of print, July 12, 2019.) Dr. Woychik was senior author. Read more about the study on page 34.
- **Jeffrey Carson, MD**, Richard C. Reynolds Professor of Medicine, chief, and provost, New Brunswick, at Rutgers Biomedical and Health Sciences, was senior author of “Annals On Call—Outcomes of Patients Discharged with Anemia,” published in *Annals of Internal Medicine* 2019:170(6): Oc1. (Epub ahead of print, March 10, 2019.)
- **Ben Deverett, '21 PhD**, was first author of “Cerebellar Disruption Impairs Working Memory during Evidence Accumulation,” published in *Nature Communications* 2019:10(1):3128. (Epub ahead of print, July 18, 2019.)
- **Shridar Ganesan, MD, PhD**, professor of medicine and pharmacology and member, Rutgers Cancer Institute of New Jersey, and **Sharon Pine, PhD**, associate professor of

— Continued on Page 40



Research News

By Kate O'Neill



Published Research — Continued from Page 39

pharmacology and member, Cancer Institute of New Jersey, were senior authors of “A Novel Acquired Exon 20 EGFR M766Q Mutation in Lung Adenocarcinoma Mediates Osimertinib Resistance but Is Sensitive to Neratinib and Poziotinib,” published in the *Journal of Thoracic Oncology*. (Epub ahead of print, June 26, 2019.) First author was **Gina Castellano, PhD**, a PhD candidate in the Rutgers Graduate Program in Cellular and Molecular Pharmacology, who conducted her research in Dr. Pine’s laboratory at the Cancer Institute of New Jersey.

- **Rong Gao, PhD, and Sophie Bouillet, PhD**, were coauthors of “Structural Basis of Response Regulator Function,” published in *Annual Review of Microbiology*. (Epub ahead of print, May 19, 2019.) They are postdoctoral researchers in the laboratory of the article’s senior author, **Ann Stock, PhD**, professor of biochemistry and molecular biology, member, Cancer Institute of New Jersey, and resident member, Center for Advanced Biochemistry and Molecular Biology.
- **Roman Groisberg, MD**, assistant professor of medicine and member, Cancer Institute of New Jersey, was first author of “Of Mice and Men: Lost in Translation,” an editorial published in *Annals of Oncology*, the official journal of the European Society for Medical Oncology, 2019;30(4):497–498.
- **Abdul Hakeem, MD**, associate professor of medicine, was first author of “Role of Postintervention Fractional Flow Reserve to Improve Procedural and Clinical Outcomes,” published in *Circulation* 2019;139(5):694–706. (Epub ahead of print, January 29, 2019.)
- **Howard S. Hochster, MD**, distinguished professor of medicine and member, Cancer Institute of New Jersey, was senior author of “Phase IB/II Randomized Study of

FOLFIRINOX Plus Pegylated Recombinant Human Hyaluronidase Versus FOLFIRINOX Alone in Patients with Metastatic Pancreatic Adenocarcinoma: SWOG S1313,” published in the *Journal of Clinical Oncology* 2019; 37(13):1062–1069. (Epub ahead of print, March 1, 2019.)

- **Daniel Horton, MD**, assistant professor of pediatrics at the Child Health Institute of New Jersey, was first author of “Documented Pain Diagnoses in Adults Prescribed Opioids,” published in *Annals of Internal Medicine*. 2019;171(4):306–307. (Epub ahead of print, August 20, 2019.) Dr. Horton was also first author of “Cough and Cold Medicine Recommendations for Children in the United States, 2002–2015,” published in the *Journal of the American Medical Association Pediatrics*. (Epub ahead of print, July 30, 2019.)
- **Niel F. Miele, MD**, associate professor of pediatrics, was the author of “Reducing the Burden of Fellowship Interviews,” a comment to the editor published in the *Journal of the American Medical Association* 2019;321(11):1106. (Epub ahead of print, March 16, 2019.)
- **Rahul Parikh, MD**, associate professor of radiation oncology and member, Cancer Institute of New Jersey, and **Biren Saraiya, MD**, assistant professor of medicine and member, Cancer Institute of New Jersey, were coauthors of “Multidisciplinary Care in High-Risk Prostate Cancer Is the New Standard of Care,” published in the *Journal of Clinical Oncology* 2019;37(14):1143–1147. (Epub ahead of print, March 23, 2019.)
- **Laura Poillet-Perez, PhD**, a postdoctoral researcher at the Cancer Institute of New Jersey, was first author of “Autophagy Maintains Tumour Growth through Circulating Arginine,” published in *Nature* 2019;

565(7737):E3. (Epub ahead of print, December 12, 2019.)

- **Gregory Riedlinger, MD, PhD**, assistant professor of pathology and laboratory medicine and member, Cancer Institute of New Jersey, was first author of “Association of JAK2-V617F Mutations Detected by Solid Tumor Sequencing with Coexistent Myeloproliferative Neoplasms,” published in *JAMA Oncology* 2019;5(2):265–267. (Epub January 4, 2019.) **Shridar Ganesan, MD, PhD**, professor of medicine and pharmacology and member, Cancer Institute of New Jersey, and **Hossein Khiabani, PhD**, assistant professor of pathology and laboratory medicine and member, Cancer Institute of New Jersey, were senior authors of the paper.
- **Marlena Sabatino ’22** was first author of “Financial Investment in Global Surgery: Codevelopment as an Accretive Evolution of the Field,” published in *JAMA Surgery* 2019;154(6):475–476. (Epub ahead of print, March 21, 2019.)
- **Naomi Schlesinger, MD**, professor of medicine and chief, division of rheumatology, was the author of “Relationship of Interleukin-1beta Blockade with Incident Gout and Serum Uric Acid Levels,” published in *Annals of Internal Medicine* 2019;170(10):737–738. (Epub ahead of print, May 21, 2019.)
- **Lanjing Zhang, MD**, clinical assistant professor of pathology and laboratory medicine, was corresponding author of “Trend Analysis of Diabetic Mortality,” a letter published in *Lancet* 2019;393(10184):1931–1932. (Epub ahead of print, May 16, 2019.)

(Compiled with the assistance of the Robert Wood Johnson Library of the Health Sciences.)

LETTER FROM THE ALUMNI ASSOCIATION PRESIDENT

Dear Alumni and Friends:

ATEDTalks speaker and parenting expert, an orthopedic surgeon who treats professional athletes, a family medicine doc combating physician shortages, and an innovator who helped develop gene therapy that will transform the lives of hundreds of children—the four alumni profiled in the Fall issue of the magazine are truly spectacular. As president of the Alumni Association, I am proud to represent such a diverse and accomplished group, and I look forward to helping you connect to one another, and to our medical school.

I am excited to share that the alumni board is in the midst of planning a new social event for Spring 2020 in New Jersey. Make sure we have your email address (update at rwjms.rutgers.edu/alumni) for more details to come. One of our biggest alumni social gatherings is the **Annual Scholarship Gala**, which serves as a reunion for alumni. On April 4, 2020, we will celebrate the classes of 1970, 1975, 1980, 1985, 1990, 1995, 2000, 2005, 2010, and 2015, at The Heldrich in New Brunswick. Congratulations to our alumni celebrating this important milestone.

The Alumni Association will also host the **Annual Career Night** on March 10, 2020, connecting both alumni and students. In the meantime, alumni near and far can develop relationships with current students by signing up for the **alumni-student mentorship program**. Alumni can identify the ways in which they would like to be involved online at rwjms.rutgers.edu/alumni/alumni-mentorship.

Another way to support students is by donating to scholarships. Your contribution helps reduce our students' average debt of \$180,000, and new scholarships will help attract the best and brightest future physicians. You can mail in a donation using the enclosed envelope, or contribute online at support.rutgers.edu/rwjmsalumni.

In addition to updating your contact information, be sure to follow us on Facebook ([@RWJmedicalschoo](https://www.facebook.com/RWJmedicalschoo)) and Instagram ([@RWJMS](https://www.instagram.com/RWJMS)) for the most up-to-date medical school news, showcasing each day in the life of students so that you know about everything happening here at Rutgers Robert Wood Johnson Medical School.

Looking forward to another great year for alumni programs and events. To contribute news or ideas for our alumni program, email Jillian Prior, MPA, jillian.prior@rutgers.edu.

Sincerely,



Elena Frid, MD '06
President, Robert Wood Johnson Medical School Alumni Association



PHOTO COURTESY OF ELENA FRID, MD '06

Orthopedic Surgeon Robert Palumbo, MD '86: Treating Professionals from Athletes to Acrobats

The CV of Robert Palumbo, MD '86, reads like a Who's Who of sports and entertainment illuminati:

- The Women's World Cup soccer team
- The Philadelphia Phillies
- The National Football League (NFL)
- Disney
- The Orlando Ballet
- Cirque du Soleil

Dr. Palumbo's orthopedic expertise has been valuable to some of the nation's top athletes and performers. After graduating from Rutgers Robert Wood Johnson Medical School in 1986, he embarked on a sports medicine career that was anything but conventional. As a result, he has an enhanced insight into how to evaluate, treat, and rehabilitate athletes from all walks of life.

Early Experiences

Dr. Palumbo, who grew up in Hagerstown, Maryland, and later moved to Edison, New Jersey, knew he wanted to become an orthopedic surgeon when he was just 13 years old.

BY LYND A RUDOLPH

He was diagnosed with a congenital hip problem when he was 10 that became a struggle to resolve. "Sports kept me grounded," he says. "The thought of having a limp and not being able to do sports was horrifying." After some false starts at treatment, he met with a doctor who got him back to playing. It was that exposure to orthopedics that cemented Dr. Palumbo's ambition. "I knew I wanted to become an orthopedic surgeon right then and there," he says.

Dr. Palumbo wrestled, ran track, and played football in high school and was good enough to be recruited to play football for Cornell University. His own experience as an athlete gave him an understanding of both the psychology and the physiology of individuals who strive relentlessly to reach certain goals, pushing their bodies to the limit.

Residency and Fellowship

After Dr. Palumbo graduated from Robert Wood Johnson Medical School and did his residency at Robert

Wood Johnson University Hospital, he completed two fellowships—one in sports medicine at Union Memorial Hospital in Baltimore and a second in foot and ankle surgery at the Baylor College of Medicine Medical Center in Houston. "At the time, only a handful of people specialized in this combination," says Dr. Palumbo. Because of that niche of both foot and ankle surgery and sports medicine in general, the Orlando Ballet, Disney, and Cirque du Soleil turned to him for care.

During the same time period, he also treated some of the top golfers and tennis players in the world through a relationship with the LGE Sports Institute—one of the most elite organizations of its kind, founded by sports psychologist Jim Loehr, nutrition expert Jack Groppel, and fitness czar Pat Etcheberry.

"That combination of clinical expertise and my experience with many types of athletes gave me an ability to see things clearly through a different lens than others in my profession," he says.

The NFL and the USWNST

In his 25-year career, his experiences have run the gamut from consulting



Above: Robert Palumbo, MD '86. ■ Right, Top: Dr. Palumbo (far left) with the 2002 U.S. Women's Soccer Team in Charleston. ■ Right, middle: Dr. Palumbo (far right) with the 2004 Gold Cup Training Staff. ■ Right, bottom: Dr. Palumbo (far right) at the Home Depot Training Center during practice. ■ Left: Dr. Palumbo (left) with Brianna Scurry during the 2004 Gold Cup.

PHOTOS COURTESY OF ROBERT PALUMBO, MD '86

on second opinions for the NFL Players Association (NFLPA) to treating acrobats who perform hundreds of feet in the air. For 10 years—from 1997 to 2007—Dr. Palumbo served as a team physician for the U.S. Women's National Soccer Team (USWNST). As an NFLPA second-opinion physician, he responds to requests from athletes when there are gray areas in evaluations performed by team physicians.

Dr. Palumbo is one of the founding members of the medical advisory board for the Gridiron Greats Assistance Fund, which provides nonprofit financial assistance to retired NFL players in dire need. "Coach [Mike]

Ditka started this idea, but it wasn't completely organized at first," he says. "I heard him talk about it on ESPN, got connected with him, and we put together a plan on how medical advisory should work." A network of physicians agrees to review medical records and provide medical services for free. "I got to be on the ground floor of that," says Dr. Palumbo. "It has been satisfying to help those players who just have no place else to turn."

The Philadelphia Phillies

Dr. Palumbo serves as the head physician for the minor league Lehigh Valley IronPigs and assistant

team physician for the Philadelphia Phillies. "In Triple-A, with a 40-man roster moving up and down into and out of the major league team, I end up taking care of a lot of major leaguers," he says. In spring training, he's usually present for one or two weeks over a six-week period. During the season, Dr. Palumbo covers 10 to 12 games in the majors. He also works with the Phillies' Dominican Republic Baseball Academy, recently adding about 25 players from Venezuela to get them into a safer environment. "We now have almost 100 kids at the baseball academy," Dr. Palumbo says. "It's a lot

—Continued on page 50

Alison Noble Escalante, MD '04: Practicing Pediatrician, Mom, Writer, and TEDx Speaker

As a pediatrician, Alison Noble Escalante, MD '04, hears all the time about the pressure parents feel:

“I know I should be breastfeeding more times a day.”

“Everyone tells me I really should get him into a play group early to start socialization.”

“I know there’s something I should be doing to make sure she gets a head start in kindergarten.”

Dr. Escalante calls this pressure the “ShouldStorm.” Her new three-step approach to overcoming it gives parents an effective, easy-to-grasp work-around that is gaining in popularity. It’s interesting when you consider that history was her original career path.

Dr. Escalante’s undergraduate studies at Princeton University were in medieval and Renaissance history. Exploring how people attempted to solve problems in the past appealed to her. Then she took some premed courses that changed her mind. Rather than learning how people dealt with struggles ages ago, she wanted to have an

BY LYND A RUDOLPH

impact here and now.

Pediatric medicine became her focus. Fast-forward two decades later. Dr. Escalante has developed a revolutionary parenting approach, writes a regular column for *Psychology Today*, manages and maintains a website, speaks at conferences, is writing a book, and still has time to practice medicine full-time and raise her children in Naperville, Illinois. To say she is fulfilling her goal of making an impact is a bit of an understatement.

Taking on the Daily Grind

There is a culture of criticism today that drives parental anxiety, which Dr. Escalante recognizes as a legitimate problem. “Parents are on a constant treadmill we can’t get off of,” she says. “Childhood shouldn’t be such a grind.”

It was during a visit with a friend that the ShouldStorm idea was born. As a



new mom, the friend was in crisis mode over breastfeeding and was asking Dr. Escalante for advice. An idea emerged on the spot: Dr. Escalante advised her friend to stop, take a deep breath, look at her baby, and try something to change the situation. Later, her friend told Dr. Escalante that those recommendations had changed everything. Dr. Escalante believes this was her “aha!” moment, the culmination of all those years she spent thinking and researching.

The Three ShouldStorm Principles

In simple terms, the ShouldStorm concept is to Sigh, See, and Start. In other words, take a deep breath to calm your mind and engage a sense of relaxation in your body, listen to and observe what is happening in front of



PHOTOS COURTESY OF ALISON NOBLE ESCALANTE, MD '04

The ShouldStorm website by Alison Noble Escalante, MD '04, gives parents a place to learn how they can raise kids skillfully and enjoy doing it.

you, and then try something that can impact what you see. She feels that the anxiety our lifestyle produces is a big-picture issue. “This is really all about culture. It’s bigger than looking at it on the parent level,” she says.

The aptly named ShouldStorm refers to the judgmental aspect of life—people telling you things, advising you, making you feel guilty if you don’t do as they think you should. All of this leads to worry and apprehension. As a pediatrician, Dr. Escalante recognizes how anxiety affects kids. “One in three children has an anxiety

disorder before age 18,” she says. It’s a behavioral health problem that can stick with children into adulthood.

Naperville and TEDx

Dr. Escalante landed in Chicago after graduating from Rutgers Robert Wood Johnson Medical School in 2004. She did her residency training at Duke University and the University of Chicago. She stayed in the Chicago area and currently lives in Naperville, home to local TEDx events. Some of her patients’ parents encouraged her to do one of the talks. After attending

a few, she met with the program’s curator. He was hooked when he heard about the ShouldStorm concept, and she presented in December 2018.

Her website, ShouldStorm.com, gives parents a place to learn how they can raise kids skillfully and enjoy doing it. It features blogs, videos, and much more. She also writes a regular column for *Psychology Today*. There are central themes that run through everything: Parents are continually told not to be so hard on themselves. Love really does conquer all. What your child needs is you.

Realizing that she was using her ideas in stressful medical situations, she’s taken the message to her own profession. She’s been a frequent guest on podcasts to talk about the Doctoring ShouldStorm, and in September, she discussed the three-step method when she spoke to physicians at the Women in Medicine Summit in Chicago. She is currently hard at work writing her book on the ShouldStorm concept. “Writing a solid book is time consuming,” she admits. “But it will be fun. We’re going to do a deeper dive into how we can raise our kids to thrive without burning ourselves out in the process.” **M**

Danielle Davies, MD '14: Bringing Medical Residents to an Underserved Area

After a full day seeing patients, Danielle Davies, MD '14, was back at St. Luke's Nampa Medical Center at 11 p.m. to deliver a baby. The next day, she began her rounds at the hospital at 8 a.m., and that afternoon, she was flying to a conference in Kansas City, Missouri, to recruit medical school graduates for a residency program.

Despite the hectic schedule, Dr. Davies was working on what attracted her to become a family medicine physician in Idaho in the first place—treating a diverse range of patients and training residents at a new teaching health center in Nampa, a growing city 20 miles west of Boise.

“I like the variety—I don't like doing the same thing every day,” she says. “And I also really like medical education and working with the residents. It's that moment where you get to see how far you've come by helping someone else learn something.”

This summer, Dr. Davies helped open the Family Medicine Residency of Idaho–Nampa, where she is assistant program director, to relieve a severe shortage of medical residents

and doctors in the area. Canyon County, where Nampa is located, has one primary care physician for every 3,300 residents. The national average is one for every 960 residents.

The physician shortage stems primarily from the lack of medical residents in the region. And until the Idaho College of Osteopathic Medicine opened last year, the only medical school training was offered through a program at the University of Washington School of Medicine; the program allows Idaho students to train at the University of Idaho and at various clinical rotation sites within the state.

The problem also extends statewide: Idaho ranks 49th out of 50 states in both the number of doctors per capita and the number of medical residents per capita. “The population is booming, and the need for residents

is not necessarily catching up with that,” says Dr. Davies. “There just haven't been enough resident training programs to bring doctors here.”

While Boise has had a medical residency program for 43 years, Nampa—the state's third-largest city, with a population of about 100,000—just accepted its first class of six residents this summer. Dr. Davies says two more cohorts will be added by 2021, bringing the total to 18 residents.

One way Dr. Davies has found recruits for the program is by attending the American Academy of Family Physicians Conference in Kansas City, Missouri, which attracts medical students who want to explore residency programs in family medicine. Ironically, it was at the same conference that she learned about the Family Medicine Residency of Idaho–Boise six years ago.

“Danielle has contributed so much as far as her energy and her willingness to really embrace this community,” says Kim Stutzman, MD, program director of the Family Medicine Residency of Idaho–Nampa. “We certainly would not have been able to start this program without her.”

Dr. Davies decided to become a

BY SHERRIE NEGREA



PHOTOS COURTESY OF DANIELLE DAVIES, MD '14



Left, top: Danielle Davies, MD '14. ■ Right, top: Dr. Davies at a family medicine conference. ■ Left, bottom: Dr. Davies with family medicine residents at Idaho-Nampa.

doctor after she spent two weeks serving Nicaraguan refugees in a small medical clinic in Costa Rica while attending Villanova University for her undergraduate degree. After her first year at Rutgers Robert Wood Johnson Medical School, she also volunteered in several pop-up tent clinics on the northern border of India.

“A lot of these experiences made me understand that health care happens

on a continuum,” she says. “It doesn’t just happen when you visit a person once a year in a remote village.”

To have an impact, Dr. Davies realized that doctors need to live in a community and treat patients in a more sustainable way. She also recognized that the developing world was not the only place that didn’t have adequate health care.

“There is as large a need for health

care in the U.S.,” she says. “There are large contingents of people without health care here.”

At the clinic in Nampa, which opened in 2018, she has treated scores of patients who are either uninsured or underinsured. As a federally qualified health center, she says, the clinic can offer medical visits for as low as \$10.

In the five years she’s lived in Idaho, Dr. Davies says she has grown to love the state and has even convinced her parents to leave their New Jersey home in Howell and retire to a mountain town near Boise.

“Don’t let the secret out—it’s really great to live here,” she says. “We have just amazing mountains and hiking, and I can take my bike from my front door, and within a mile, there are hundreds of miles of mountain biking trails that I can access. I really love that part of it.” 

Sukumar Nagendran, MD '94: A Long Journey to Gene Therapy Pioneer

Thirty-two years after leaving civil war-torn Sri Lanka to pick up his studies at Rutgers University, followed by Rutgers Robert Wood Johnson Medical School, Sukumar Nagendran, MD '94, still marvels at where that journey has led him. He has worn the hats of private physician, drug developer, biotech executive, and globally recognized expert and pioneer in the burgeoning field of gene therapy. In the latter role, his multifaceted career reached new heights in May 2018 when the U.S. Food and Drug Administration approved a gene transfer treatment he helped develop, which is transforming the lives of hundreds of children stricken with spinal muscular atrophy (SMA).

Serving as his lodestar throughout this voyage was a thirst to use his acquired knowledge and training—including a three-year residency in internal medicine at the Mayo Clinic School of Graduate Medical Education—to touch as many lives as possi-

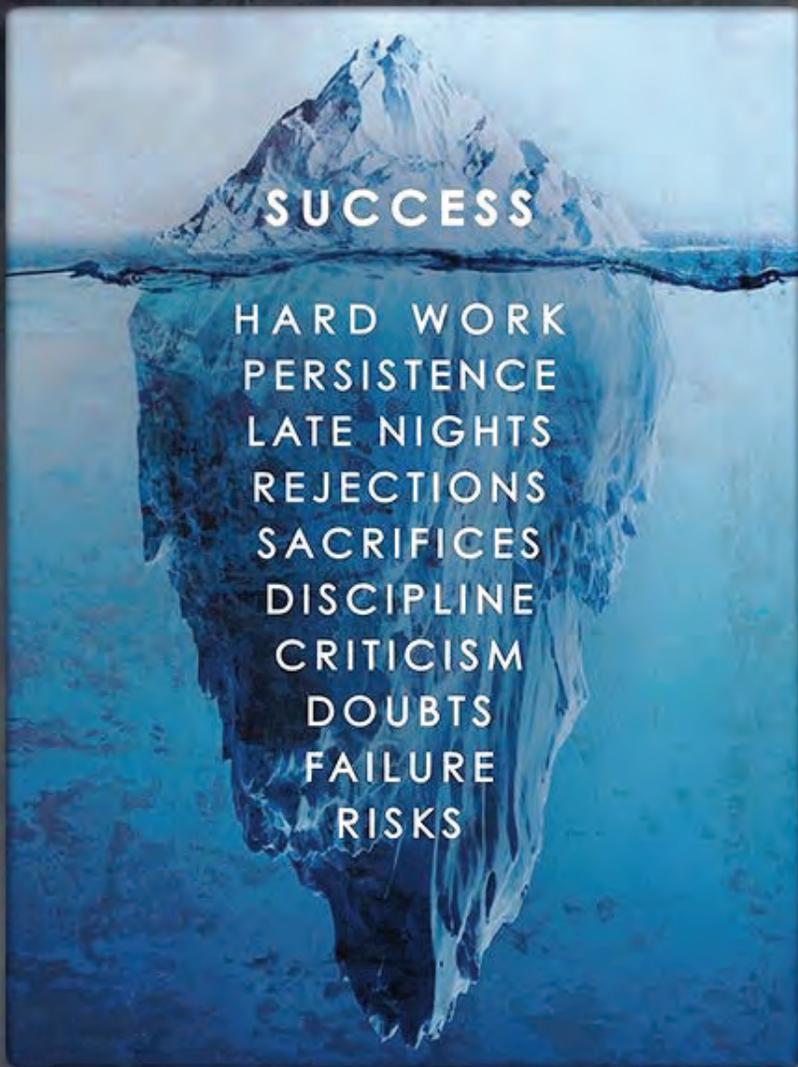
BY RANDY YOUNG

ble. “One of the reasons I left practice and went into the field of pharmaceuticals was the realization I wanted to have an impact on broad patient populations,” says Dr. Nagendran, who graduated first in the Class of 1994 at Robert Wood Johnson Medical School in Camden. “And the way to do that was through the pharma-biotech-



diagnostics sector.”

Blessed with a disciplined mind that adapted readily to the rigorous pace and pressures of medical school, he also had the savvy to build on each opportunity his medical training and experience afforded. His third and fourth years at medical school, for example, brought him to Cooper University Hospital in Camden, where he came face-to-face with the kind of trauma and diseases often seen in developing countries. That paved the way for the Mayo Clinic, where he was drawn to treating patients with rare diseases and got the chance to interact with public health experts around the world.



PHOTOS COURTESY OF SIKUMAR NAGENDRAN, MD '94

That chapter folded into his first job, in Phoenix, at a high-volume private practice in diabetes and cardiovascular diseases, which set the stage eight years later for his jump to pharmaceuticals when Pfizer offered him a position as director of its U.S. diabetes and metabolism team. From that leadership post flowed other pivotal roles with Novartis, Daiichi Sankyo, Reata Pharmaceuticals, and Quest Diagnostics, where he was instrumental in building the medical affairs department of one of the world's largest diagnostic labs.

In hindsight, those jobs might be seen as dress rehearsals for what happened in the late summer of 2015. Dr.

Nagendran met in Ohio with the founders of a start-up company, AveXis, who were looking for a chief medical officer. They showed him laboratory data for a gene therapy they had developed for spinal muscular atrophy (SMA), a hereditary genetic disorder afflicting one of every 10,000 children born in the United States each year. SMA is caused by a mutation in the survival motor neuron gene 1 (SMN1), which encodes for a protein that motor neurons—the nerve cells that control muscle contraction—need to survive. Symptoms can appear within the first six months of life with SMA1, the most common and severe form of the disease. These include

increasing difficulty in breathing, swallowing, speaking, and moving as the brain stops sending messages that control muscle movement. Left untreated, the muscles progressively deteriorate, leading to paralysis and death, which can occur within two years.

Dr. Nagendran remembers his reaction to the animal and early clinical data AveXis showed him: “It was incredible. I told them, ‘I’m in,’ because I think you have a cure.” So began his new role with the tiny biotech, where Dr. Nagendran was instrumental in clinical development of a one-time, intravenous therapy that delivered through a vector a fully functioning copy of the SMN1 gene to replace the mutated version. In a clinical trial, reported in the *New England Journal of Medicine* in November 2017, all 15 children who received a single dose of the treatment were alive and event-free at 20 months of age, compared to a survival rate of 8 percent in a historical cohort. “This was truly a miracle for the patients and their families,” acknowledges Dr. Nagendran, who co-authored the report. He sees the novel gene therapy, marketed by Novartis

—Continued on page 50

Orthopedic Surgeon**Robert Palumbo, MD '86:****Treating Professionals from Athletes to Acrobats***—Continued from page 43*

of work for trainers and medical staff down there, and we are communicating and collaborating often.”

Disney and Cirque du Soleil

Dr. Palumbo also has taken care of performance artists. “I’m very fortunate,” he says. “Some doctors get stuck in one sport, but I have gotten a chance to work with athletes from around the world who perform.” He has learned a lot taking care of them. “To an athlete on the field, movement is a means to an end—you have to move well to perform your sport,” Dr. Palumbo observes. “But to performance artists, movement is the end.”

Many of the artists at the Orlando theme parks and those who perform at Cirque du Soleil are former X Games athletes, Olympic gymnasts, or competitive acrobats in Europe or Asia. “They are incredibly tough because of the things they have gone through,” he says. “In Russia, for example, an injury can change your status from superstar to paper mill worker.” They are on the brink of injury just about all the time because of what they do. Dr. Palumbo has learned how to get these athlete-artists back to the last 5 to 10 percent of movement or balance that is so critical to their ability to perform. That experience also has helped him treat field athletes, particularly in the critical rehabilitation phase.

The Future

Dr. Palumbo enthusiastically puts two trends at the top of his list. The first is a new effort he is spearheading called U25, to raise awareness to keep body fat at less than 25 percent of body mass. “We know obesity affects

everything, including musculoskeletal,” he says. The second trend he has great interest in is the use of biologics and stem cells. “It’s still in its infancy,” Dr. Palumbo says, “but in the next five to 10 years, you’re going to see medicine change because of biologic enhancements.” He believes it’s going to be as big as the introduction of antibiotics.

“I’m very fortunate. Some doctors get stuck in one sport, but I have gotten a chance to work with athletes from around the world who perform,” says Robert Palumbo, MD '86.

He is also founder and president of the OAA Sports Medicine Foundation, dedicated to educating sports medicine professionals and part of OAA Orthopaedic Specialists. The health campus occupies 300,000 square feet of clinical space in Allentown and Bethlehem, Pennsylvania, and is staffed with more than 30 physicians.

As he continues to teach and share his knowledge with others, Dr. Palumbo is helping to educate the next generation of surgeons. Although a cervical spinal cord problem has limited his ability to perform surgery, he eagerly passes along his knowledge and acumen. His legacy is even more impactful when you consider his dedication to nonprofits and big-picture health projects. They are testament to his passion for making a difference. **M**

Sukumar Nagendran, MD '94:**A Long Journey to Gene Therapy Pioneer***—Continued from page 49*

under the name Zolgensma, as a cure for SMA if the disease can be detected through effective clinical screening in its presymptomatic stage—more common now that most states have newborn screening.

Following the acquisition of AveXis by Novartis in mid-2018, Dr. Nagendran left the company and stepped into an expansive new role: a much-in-demand international expert in gene transfer therapy with impressive bona fides not just in clinical development but on the business side of taking a company public and telling its remarkable story to a global audience of investors and the public. “It’s an interesting time to be using my experience in pharma and biotech to guide other companies as they look to develop therapies for difficult diseases like Duchenne muscular dystrophy and other rare disorders,” he says.

That’s not the only way Dr. Nagendran is applying his resources. He and his wife, Christine Ann, continue to give back through the Nagendran Scholarship for International Studies at Robert Wood Johnson Medical School, which allows about five students a year to experience medicine in developing countries. “I remember as a medical student in Sri Lanka, we had one needle for bone marrow aspiration in an entire 500-bed hospital,” he recounts. “The goal of our scholarship is to give medical students a better appreciation for the many resources we have here compared to other countries, and to use them to deliver the best care possible to patients.” **M**

C L A S S NOTES

What's New? Your fellow alumni want to know!

Please send your professional and personal news and photos to: **Jillian Prior, MPA**, manager of alumni affairs, at jillian.prior@rwjms.rutgers.edu. In addition to updates we receive from alumni, we use public news information and stories to share in our Class Notes section.

1976

Robert W. Amler is vice president for government affairs at New York Medical College, dean of the School of Health Sciences and Practice, and professor of public health, pediatrics, and environmental health science. He received the Edwin Crawford Award for Innovation in Government Relations from the Council for Advancement and Support of Education and the American Association of State Colleges and Universities for novel approaches that secured millions of dollars in grants and also built bridges with elected officials and agency heads.

Cadrin Gill is a family medicine physician in Los Angeles and is affiliated with multiple hospitals in the area, including California Hospital Medical Center and St. Mary Medical Center—Long Beach. He is also the founder of the VERNBRO Medical Center and created the "Project New Life" program in efforts to connect the homeless housing and health care.

1984

Peter Gerard Wernicki is an orthopedic surgeon and sports medicine specialist serving patients at the Cleveland Clinic Indian River Hospital in Vero Beach, Fla. He is also affiliated with Pro Sports and Elite Rehab. Dr. Wernicki has served as the medical adviser and an executive board member of the United States Lifesaving Association (USLA) for the past 25 years. The USLA is the association of professional open-water lifeguards in the United States. He helped write the USLA textbook and develop the national lifeguard certification program. He has also been the on-site physician for the USLA's National Championships.

1986

Kenneth J. Zemanek is multiple board certified in psychiatry, geriatric psychiatry, addiction psychiatry, forensic psychiatry, and psychosomatic

medicine. He provides outpatient adult psychiatry and consultation liaison psychiatry services at Lehigh Valley Physician Group's three Allentown, Pa., locations.

1990

Carlos W. Benito was appointed chair of the Department of Obstetrics/Gynecology at Saint Peter's University Hospital in New Brunswick. He previously served as director of maternal fetal medicine for Atlantic Health System's Morristown Medical Center and Overlook Medical Center in Summit. While at Atlantic Health System, Dr. Benito served as director of Pregnancy Loss Service, director of residency in the OB/GYN Research Program, and assistant director of residency in OB/GYN. In his new position, he will oversee the evolution of the department's services and provide clinical and administrative leadership in maternal fetal medicine.

Eric W. Emig joined Littleton Regional Healthcare as a radiologist at its Diagnostic Imaging Center in Littleton, N.H. With more than 22 years of experience in diagnostic imaging and radiology, he most recently served as president/radiologist at Premier Radiology at North Mississippi Medical Center, in Tupelo, Miss.

Saleem Husain is a cardiologist with the Plainfield office of JFK Medical Associates, part of Hackensack Meridian Health. He is currently the director of the Cardiac Catheterization Lab and the Chest Pain Unit at JFK Medical Center, Edison, and specializes in the diagnosis, medical management, prevention, and treatment of cardiovascular disease, as well as treatment and interventions for patients with peripheral arterial disease and peripheral venous diseases.

1994

Glenn L. Osias is a member of Princeton Gastroenterology Associates, an attending gastroenterologist at Penn Medicine Princeton Medical

Center, Plainsboro, and a clinical assistant professor of medicine at Rutgers Robert Wood Johnson Medical School. Board certified in gastroenterology and internal medicine, he is a Fellow of both the American College of Physicians and the American College of Gastroenterology. He previously served as a board-certified internist in the U.S. Air Force at Dover Air Force Base, attaining the rank of major, and was awarded the Meritorious Service Medal.

1995

Adam C. Weiser is a pediatric urologist with Central Ohio Urology Group, an affiliate of U.S. Urology Partners. He provides services at the group's Gahanna, Canal Winchester, and Grove City offices.

1996

R. J. Meagher is a neurosurgeon with an emphasis on minimally invasive spinal surgery who practices at Princeton Brain and Spine in Woodbury. He is a world expert in minimally invasive surgical spine techniques and is a Fellow of the American College of Surgeons and a Fellow of the American Association of Neurological Surgeons.

1997

Sang E. Sim is a board-certified radiation oncologist with East Coast Oncology Associates at Monmouth Medical Center, an RWJBarnabas Health facility in Long Branch. His clinical interests include high- and low-rate brachytherapy for prostate cancer, intensity-modulated radiation therapy for lung cancer treatment, and stereotactic radiosurgery. He serves as an adviser for *Oncology Net* journal.

1999

Jonathan Z. Rosenbluth is a hematologist-oncologist at the Central Jersey Division of Regional Cancer Care Associates, Somerville. He is actively involved in clinical trials and has particular interest in geriatric oncology, as well as colorectal and prostate cancer.

2000

Nagib Chalfoun, a board-certified cardiologist and electrophysiologist, is an assistant professor at Michigan State University's College of Human

—Continued on page 52

C L A S S NOTES

—Continued from page 51

Medicine and practitioner with Spectrum Health's SHMG Cardiovascular Medicine, in Grand Rapids. Fellowship trained in clinical cardiac electrophysiology, he specializes in catheter ablation of atrial fibrillation, ventricular tachycardia, and other complex arrhythmias, as well as implantation of pacemakers, cardiac defibrillators, and resynchronization devices.

Scott G. Chudnoff is an obstetrician/gynecologist affiliated with Stamford Health. He provides services to individuals in Stamford, Conn., and the surrounding communities. He specializes in infertility, fibroids, vaginitis, and pain.

2 0 0 1

Nicholas Avallone is an orthopedic surgeon with St. Luke's Orthopedic Care, which has offices in Clinton and Phillipsburg, as well as at St. Luke's Warren Campus, where he serves as medical director of sports medicine. He is also a clinical assistant professor of orthopedic surgery at the Lewis Katz School of Medicine at Temple University. Board certified in orthopedic surgery and orthopedic sports medicine, and fellowship trained in orthopedic sports medicine, he specializes in arthroscopy of the shoulder and knee, rotator cuff repair/ACL reconstruction, reverse

total shoulder replacement, and hand, wrist, elbow, and ankle ligament repairs.

2 0 0 2

James Lin is chief of the division of gastroenterology at the City of Hope Comprehensive Cancer Center in Duarte, Calif. He also is an assistant clinical professor in City of Hope's Department of Medicine and serves as the hospital's director of endoscopy.

Anthony J. Mazzealli is the co-president of Cooper University Health Care and dean of clinical affairs for Cooper Medical School of Rowan University.

2 0 0 3

Ruchi Gupta is a board-certified pediatric cardiologist with Lehigh Valley Reilly Children's Hospital, providing services at its Children's Heart Center of Northeastern PA, Allentown.

2 0 0 6

Arvind J. Trindade is a gastroenterologist with Northwell Health, currently serving patients on Long Island and in the surrounding areas. He is affiliated with North Shore University Hospital and Long Island Jewish Medical Center, where he

serves as director of endoscopy of medicine–gastroenterology. He also is an associate professor at the Donald and Barbara Zucker School of Medicine at Hofstra/Northwell.

2 0 0 7

Kristoffer A. De Lara has been a pain specialist at National Spine and Pain Centers in Germantown, Md., since 2012. In addition to residency training in anesthesiology at Robert Wood Johnson Medical School, including serving as chief resident, he completed fellowship training in interventional pain medicine at the medical school's New Jersey Pain Institute. He specializes in a variety of treatments, including epidural nerve blocks, facet joint injections, discography, radio-frequency neurotomy, and spinal cord stimulation.

Maame Yaa ("Maya") Yiadom was inducted into Glassboro High School's Distinguished Hall of Fame. She is an assistant professor of emergency medicine at Vanderbilt University School of Medicine, Nashville, Tenn., and works in the Vanderbilt and Nashville Veterans Administration hospitals. A published researcher who studies ways to improve emergency clinical care and cardiac outcomes for patients, she is the founding director of the Emergency Department Opera-



RUTGERS

Robert Wood Johnson
Medical School

Honoring the Classes:

50th: 1970 ■ 45th: 1975

40th: 1980 ■ 35th: 1985

25th: 1990 ■ 20th: 2000

15th: 2005 ■ 10th: 2010

5th: 2015 ■

tions Study Group and principal investigator for the Emergency Care Health Services Research Data Coordinating Center.

2008

Daniel G. Finch was named vice president of population health strategies and director of psychiatric urgent care services at CarePlus NJ, Paramus. In this new role, he will lead the team that offers clinical urgent care psychiatric services, as well as lead the development of business relationships and processes. Before joining CarePlus, he served as the director of emergency psychiatric services at Hackensack University Medical Center, where he was a Rutgers New Jersey Medical School residency site coordinator. He has served as an associate clinical professor at that medical school since 2013 and currently serves as an assistant professor in the Department of Psychiatry and Behavioral Health at the Hackensack Meridian School of Medicine at Seton Hall University.

Ndeye-Aicha Gueye is a specialist in reproductive endocrinology and infertility at Reproductive Medicine Associates of Pennsylvania, Allentown. She specializes in fertility diagnosis and treatment and minimally invasive robotic surgery. She completed

residency training in obstetrics and gynecology at Robert Wood Johnson Medical School and fellowship training in reproductive endocrinology and infertility at the Cleveland Clinic in Ohio.

Patrick M. Kane is leading the Philadelphia Hand to Shoulder Center's new state-of-the-art office in Cape May Court House. Dual fellowship trained, he specializes in conditions including osteo- and rheumatoid arthritis, upper-extremity trauma, soft-tissue reconstruction and compressive neuropathies, such as carpal tunnel syndrome. The recipient of various awards for his research, he helps oversee and lead the research team at the Philadelphia Hand to Shoulder Center and was recently appointed director of clinical research at the Hand Rehabilitation Foundation, where he serves as a member of the board of directors. He also serves on the Public Education Committee for the American Society of Surgery of the Hand.

James R. Penn joined Gastroenterology Consultants PA of Edison and Old Bridge.

2011

Laura L. Giusto specializes in the diagnosis and treatment of various urogenital conditions in men and women, and she practices female pelvic

medicine, genitourinary reconstructive surgery, and voiding dysfunction at Chesapeake Urology's Continence Center in Owings Mills, Md.

Kathryn Hoes is an assistant professor of neurological surgery at the University of Texas Southwestern Medical Center.

Adam Nabatian is a dermatologic surgeon specializing in general dermatology, Mohs micrographic surgery for skin cancer and facial reconstruction, and cosmetic dermatology. Practicing at Sutton Place Dermatology in New York, he is a clinical instructor at the Icahn School of Medicine at Mount Sinai and at Montefiore Medical Center in New York.

2012

Kevin F. Anton is an assistant professor of radiology, specializing in vascular and interventional radiology, at the University of North Carolina School of Medicine, Chapel Hill.

Peter Murr joined the Princeton Eye Group.

2015

Laura De Simone practices at Phoebe Putney Memorial Hospital in Albany, Ga.



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