

# Rochester

## MEDICINE

**Neuroscience:**  
The *Beauty* of Team Research





### On the cover

The cover captures a portion of the painting *Paths of Least Resistance* (96" X 40") by internationally renowned neuroscience artist Greg Dunn, PhD. The entire work, on display in the new Del Monte Institute for Neuroscience offices overlooking the Flaum atrium, was inspired by satellite images of mountains and river systems that resemble the neural patterns formed by interacting dendrites and axons. The large white "neuron" on the left is drawn directly from a map of Rochester's highway system. Dunn, who holds a doctorate in neuroscience, combines his passion for the minimalist style of Japan's Edo period with his desire to express the beauty and elegance of the neurons in the brain. To learn more, visit [gregadunn.com](http://gregadunn.com).



### POINT OF VIEW

Grace's Garden, built in honor of "Amazing" Grace Esposito, is a healing space for patients and their families. Filled with colorful plants and warm fixtures, it provides a change of scenery from the hospital atmosphere.

Photo by Adam Fenster









Mark B. Taubman, MD

CEO, University of Rochester Medical Center  
Dean, School of Medicine and Dentistry  
Senior Vice President for Health Sciences

The Ernest J. Del Monte Institute for Neuroscience is a prime example of what can be accomplished when we are able to step outside our comfortable professional boundaries and engage the strengths of others around us.

Collaboration sounds easy enough on paper, but in reality it means significantly expanding our singular focus to embrace new ideas and divergent schools of thought, which can be a challenge in the competitive world of scientific discovery.

The effort now underway to combine the incredible resources, expertise and ambitions of investigators across the entire Medical Center and University is powered by an urgent need to ease the burden on millions of men, women and children suffering from complex and debilitating diseases of the mind.

Anyone with a loved one struggling with Alzheimer's or Parkinson's disease, autism, mental illness, or complications from a stroke or spinal cord injury, knows that cures cannot come soon enough in this realm. Only a team approach can reveal the answers, and The Del Monte Institute has the breadth and depth of integrative basic and translational research to lead this national movement.

In addition to the need for close partnerships among researchers, patients and families, success depends on the development of shared-resource space, a highly streamlined and experienced Neuroscience administrative office, the recruitment of key faculty to our centers of excellence, and the growth of our diverse student and post-doctoral talent pool.

I am convinced The Del Monte Institute will make Rochester a focal point for treatment and research for neuroscience-related

diseases and disorders. The center's work will also fortify the University's standing as a premier place to educate the next generation of neuroscientists. In addition to the medical school's two neuroscience-focused PhD programs, the UR is home to the nation's first undergraduate neuroscience major in its Department of Brain and Cognitive Sciences.

From undergrad through doctoral programs, our students work in a dynamic research environment with more than 140 principal investigators, and gain hands-on experience using the most advanced technologies to investigate brain function—at cellular and molecular, as well as clinical and translational levels.

A diverse and fully representative student body is the lifeblood of a vibrant research institute, and we aim to continually nurture our students' enthusiasm, creativity and thirst for knowledge. By providing clear pathways through which students can grasp the crucial interface between basic research findings and patient care delivery, we also look to create a new brand of research-oriented clinicians and clinically-oriented researchers.

I hope you will enjoy reading more about this exciting and critical endeavor, as well as others featured in this issue. Thank you for your continued support and your contribution to the medical school's broad portfolio of excellence in team-oriented patient care, education and research.

## What do you think?

Write to us! Rochester Medicine welcomes letters from readers. The editor reserves the right to select letters for publication and to edit for style and space. Brief letters are encouraged.

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# Rochester

## MEDICINE

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*A native of Rochester, Christine went to Indiana University in Bloomington, Ind., to become an opera singer and wound up earning a Journalism degree. After a brief adventure as a singer in France, she came back home in 1988, where she has worked as a newspaper reporter, an advertising executive, and a public relations specialist, primarily in the health care arena. At URM since 2010, she has worked for the School of Nursing and the SMD.*

## From the Editor:

In my career as a journalist and public relations writer, I've never received such a response to an article as I did to the last issue's cover story on diversity in medicine. I'm inspired about this because it means people took the time to read it, but more importantly, it stimulated a vital conversation that I hope will continue.

Some people felt the article helped to reveal the modern day complexities of identifying and combatting racism in medicine, and showcased the ample opportunities within our grasp to prepare and build a more diverse pool of clinicians, teachers and researchers. Some shared their ideas for the future, and some expressed their support and admiration to the school for bravely presenting the issue in an oftentimes less-than-flattering light.

Through my interviews with the story's exceptional young African American male doctors, I came to understand that a critical step toward improving diversity is taking ownership of historical racial injustices, and acknowledging their link to contemporary issues. I am very grateful to URM leadership for giving me the freedom to tell the story of the school's beginnings and its current progress in a forthright way.

However, as you will read in the Letters to the Editor, there is a group of alumni from the Class of 1956 (see p. 6) who strongly object to the story's introductory paragraphs which decried the school's founding dean, George Hoyt Whipple, MD (1878-1976), for openly racist behavior toward African Americans and Jews. In their experiences as his students in the 1950s, they attest there was no hint of these traits, and believe the article was unfair and gratuitously damaged his legacy as a gifted physician, scientist and teacher, a talented administrator, and gentleman.

I regret I did not present Dr. Whipple in a broader context. The article was not

an attempt to single-out Dr. Whipple, nor diminish the sum of his legacy.

Indeed, Dr. Whipple was a renowned pathologist who achieved international prominence as an investigator, teacher and academic executive, and upon his retirement was singlehandedly credited as being the "guiding genius who transformed the Medical Center from a bare piece of ground to one of the great forces in the nation."

In 1934, he was also one of three physicians who received the Nobel Prize for his discovery of liver as a treatment for pernicious anemia, an achievement that elevated his stature as a highly influential figure in Rochester.

In my research for this article, it also became clear that Dr. Whipple ran the school with a high degree of autonomy. Founding UR president Rush Rhees agreed to give him "unquestioned" executive authority over the school when he recruited him.

As dean of the medical school from 1921-1954, Dr. Whipple took great pride in hand-selecting its students. Blacks were not admitted and there was a strict quota on Jews—two per class. As documented in minutes from an SMD advisory board meeting led by Dr. Whipple, blacks were historically denied because they could not complete the obstetrics portion of their clinical training, because it would involve touching white women.

The facts remain that blacks were excluded until 1940, when, under pressure from the New York State Legislature, one black student was admitted per class. Restrictions on Jewish students loosened in the wake of World War II and the Holocaust, but it wasn't until the 1970s that the medical school began accepting U.S.-born blacks in greater numbers, and actively trying to improve its diversity.

As I stated in the article, when it opened in 1921, the SMD was not unlike many others



**I was thrilled to see young Dr. Clifford Pierre on the cover of your marvelous issue detailing the progress being made at the University of Rochester School of Medicine around issues of recruiting and educating African American physicians.**

When I arrived in Rochester in 1960 to begin my psychiatric residency, the city was known as Smug Town and there was little to remind one of its radical history in the 19th Century when Frederick Douglass, Lewis Henry Morgan, Susan B. Anthony and others made it a central area of intellectual ferment. When I left Seattle for Rochester a friend gave me a *New Yorker* article that said when traveling salesmen worked in Rochester they left for Buffalo in the evening.

When John Romano became the first chairman of the Department of Psychiatry in the 1940s, at his first meeting with other chairmen he recoiled at their usage of racial epithets, and said he would not be a part of any further meetings should that persist. He was a powerful force. George Engel, who arrived with him from Cincinnati, had spent his adolescence with his uncle, Emanuel Libman, famous for Libman Saks Endocarditis, who was one of the founders of Mt. Sinai Hospital in Manhattan, a place where Jewish physicians could practice because they were not welcome in most New York hospitals. Dr. Engel hoped that he would be able to have an academic career as an assistant professor and continue to do research.

I was in the military at the time of the 1964 race riots in Rochester. I returned in 1965 and was a member of Dr. Engel's Medical Psychiatric Liaison Group until I left in 1979. By 1968 students around the world were radicalizing and there were riots and takeovers in many schools. I have never reported this until now, but a colleague of mine and I realized that the leaders in the medical school would not be able to speak with our disaffected students, so we ran an "underground" elective, where it was our

hope to acknowledge their frustrations and aspirations and enable them to finish medical school honorably and become leaders for medical change. We succeeded and nobody ever knew what we had done.

In the 1970s, teaching the second year course with Dr. Engel, I was responsible for grading the students and representing the Department of Psychiatry at the second-year grading meetings. The school had made an effort to recruit African American students and many of them were having problems from the start. There was not the wonderful kind of support your article documents for today's students and the faculty was poorly informed about the kinds of issues a minority student would face in medical school.

Your article is the best I have ever read about the daily micro-crises that African American students must endure in a white hospital world. Some of us younger faculty chose to live in the city and work towards broader urban changes. (I was president of my neighborhood association.) Many of us advocated for a metropolitan government, the city of Monroe. Imagine where Rochester would be now if that had happened.

My colleagues, who mostly lived in Brighton and Pittsford, did not know that in the African American community Strong Memorial Hospital was known as the "Plantation," as the largest employer of African Americans in the city—those who did all the environmental work to keep it functioning. They were open to efforts to expand their awareness of the special struggles African American students might have that were different from their own experiences, and the students and the faculty discovered that repeating the first year often launched a student on a successful career in medicine. It just took that extra year for students and faculty to figure out how to do it.

My dream for the future would be that not only will diversity flourish, but the diversity will reach out to the community and help Rochester recapture some of that 19th Century magic.

—David C. Tinling, MD (Res '63)  
Rochester, Vt.

in its admissions practices. In his book *Ebony & Ivy*, author Craig Steven Wilder, a history professor at MIT, writes about many universities, including Harvard and Dartmouth, where slaves were owned by university presidents or served faculty and students.

"What is the institutions' responsibility to bear witness to these experiences and atrocities?" he queries.

Although Dr. Whipple presided over a racially exclusive system during SMD's formative years that would be considered inexcusable in the present day, it bears stating that he did not stand alone. His decisions were at the very least passively supported by his colleagues and the governing bodies of the school. The son and grandson of New England physicians, his views also reflected the prevailing prejudices of his day.

The truth is, all of our perceptions are shaped by a variety of factors outside our control—the environment we were raised in, the ideologies of our parents, teachers, neighbors and friends, and of course, the pervasive media.

Beverly Daniel Tatum, MD, a clinical psychologist, college administrator, and educator who has conducted research and written many books on the topic of race, likens the cycle of racism to a moving walkway at an airport. Active racist behavior is the equivalent of walking fast on the conveyor belt.

"Passive racist behavior is equivalent to standing still on the walkway," she writes. "No overt effort is being made, but the conveyor belt moves the bystanders along to the same destination as those who are actively walking. Unless they are walking actively in the *opposite* direction at a speed faster than the conveyor belt—unless they are actively anti-racist—they will find themselves carried along with the others."

—Christine Roth



**I**n the last issue of *Rochester Medicine*, Editor Christine Roth, in an otherwise timely and important article designed to promote diversity, singled out for condemnation only one person, our founding dean George Hoyt Whipple, with the words: **“Notorious for his anti-Semitism and unabashed bigotry toward African-Americans”**. Indeed a review of the history of the University admissions policy generally and Medical School specifically shows a pattern of exclusion of African-Americans from 1925 to 1940 and onward as well.

The undersigned graduates of the Class of 1956 declare themselves affronted by the assertion that exclusionary policies toward African-Americans and Jews in prior years rest so heavily on Dean Whipple’s shoulders alone. We intend to show that these now nefarious practices were then dreadfully commonplace. We will also show that at the University of Rochester this policy which was attributed to Dean Whipple was actually the result of a committee’s deliberations after several “careful” discussions with the University President. No one man has the blame.

We have been in correspondence with Editor Roth and with President Seligman. Editor Roth cited a 1939 New York State Commission Report that found severe and widespread discrimination against African-Americans in employment, housing, education, places of accommodation, etc.

This Commission found: “Admission of Negroes as students in medical schools...is practically non-existent in up-State New York”. The Commission sampled 58 hospitals outside New York City and found none accepted “Negros” as interns. In New York City, “Negro” interns were permitted at only three hospitals.

President Seligman’s letter to Dr. Marshall states: “Regrettably these discriminatory practices were not unusual for the time period...” as the Editor stated. We agree but would amend by saying these unjust practices were usual at this time period and it would have been very unusual for African-Americans

to be accepted in up-State New York.

President Seligman also wrote: “That Dean Whipple should bear the sole responsibility for these practices at the University of Rochester, however is arguable...” Our argument is as follows: The Commission quotes a letter of denial to African-American applicants from the Medical School Admission Committee. That quotation reads: “The Admission Committee on several occasions has discussed carefully with the President the question of Negro students in this school of medicine”. Editor Roth in an email to Dr. Marshall quotes this sentence but omits the words “with the President”. This error is significant.

It is now apparent that the Committee was sufficiently conflicted and concerned to have raised the issue up to the University President’s level several times for careful discussion. The Commission quotes Dean Whipple as follows: “that it was their belief that admission of Negroes to the medical school... would cause wholesale objection on the part of white patients in the hospital...” The resultant, but now abhorrent, letter was a joint product of the Committee, the Dean and the President. We see no reason to single out Dean Whipple.

The Undergraduate Admission Policy of the University of Rochester at this time is also suspect. The policy is probably reflected in the junior class pictures of the *Interpres* Annuals. Dr. Marshall has looked at 12 randomly selected years from in 1925 to 1954. Among the 3,224 professionally photographed faces, he found only three African-Americans. For the years 1955 to 1965 Dr. Marshall has viewed five random years with 1,851 faces and found only eight African-Americans. It is his conclusion that the evidence thus far shows that exclusive and unjust practices directed at African-Americans, whether or not articulated by the administration, resulted in de facto racial segregation of the undergraduates.

We believe it is unfair and mean spirited for subsequent administrations to attack Dean Whipple while the University itself was failing to achieve desired standards.

The problem was apparently not solved by Dean Whipple’s retirement. Based on numbers the Editor gives, a crude calculation suggests that subsequent Deans of the medical school for the next 50 years did little better than the one African-American male medical graduate per year achieved in Dean Whipple’s later tenure.

The author also accuses Dean Whipple of anti-Semitism. This charge rests almost exclusively on an incident in approximately 1938 where a Jewish medical student did not obtain a fellowship year which he coveted. His autobiography states that he was bored with two of his basic science courses and not interested in research. In a telephone conversation on January 31 the Editor and Ms. Teri D’Agostino agreed that they would not pursue this angle further.

President Seligman’s letter to Dr. Marshall states: “It will also be recognized in the ‘Letter from the Editor’ that you and members of your Class of 1956 never witnessed Dean Whipple displaying anti-Semitism or bigotry toward African-Americans”. We heartily agree.

Summary: It is our view that it is unfair, unjust and inaccurate to attach such an overwhelming burden of blame on Dean Whipple who retired 63 years ago and certainly had no influence on admission policy in succeeding decades. Dean Whipple was to us a giant of a man who made us into the doctors we ultimately became, and we revere him for that.

We hope the reader agrees that singling out Dean Whipple as **“Notorious for his anti-Semitism and unabashed bigotry toward African-Americans”** is unreasonably harsh and a significant disservice to Dean Whipple’s legacy and these words should now be retracted.

Although he created our modern medical school and won a Nobel Prize, Dean Whipple repeatedly stated that he would prefer being remembered as a teacher. We trust that this administration, as well as history will now grant him his wish.

– Joseph Amdur (MD ’56)  
 – John O. Burris (MD ’56)  
 – K. Leo Buxbaum (MD ’56)  
 – Robert H. Carman (MD ’56)  
 – Cynthia Baldwin Dutton (MD ’56)  
 – Richard C. Elton (MD ’56)

– Paul B. Jaques (MD ’56)  
 – William H. Marshall (MD ’56)  
 – David Maude (MD ’56)  
 – George Mizner (MD ’56)  
 – Richard Pollen (MD ’56)  
 – Sanford Spraragen (MD ’56)





It will take **metrics** and monitoring. Customs, practices and outcomes must be measured the same way we monitor the speed of our automobiles. Like radar guns, speeding tickets and traffic court, each micro-aggression must be counted, adjudicated and tracked. We must disaggregate all outcomes by population and include some painful stories. We must tweet how disappointing it is to be an institution with disparate

**W**hat will it take to change a culture? Like the innovator's dilemma, it will take more than we think, but without change we will not survive. It will take generations of mentoring. It will take clarity about our place in history; self-monitoring with discipline; and finally, the institutionalization of equity.

The inside and outside covers of the last issue of *Rochester Medicine* are stark and ironic contrasts. The two covers belie the cultural chasm that must be bridged. I vividly remember how I felt the chasm most walking in the great halls where our most venerated doctors were honored with portraits.

The two unintentional memes must come into an intentional dialogue. But what institutional structure can contain these two world views? Can the two visions be harnessed to pull us into a future characterized by equity?

#### What Will it Take?

It will take **time**. Generational and sustained efforts at retention of diverse students, residents, faculty and staff. It takes 'time in not timing.' How can the school maintain its focus on uncomfortable but self-evident truths? Can we endure the dissection of our own history?

It will take **truth**. We must understand our history of black and non-white patients and physicians in our racialized institutions. It is our history in a context that arcs through the peak of colonialism and colonizing. Our history rests on wars, race riots and anti-union violence.

It will take **mentoring**. Mentoring is the true affirmative action and mentoring takes sustained, interpersonal relationships over time. URM C must institutionalize the value of true assimilation in research, education and clinical caring. Demonstrate that black doctors' careers matter.

outcomes based on race.

It will take **institutional recovery** from the abuse of coercive power. Everyone must recover their humanity because just witnessing injustice is unhealthy. Listen as an institution with open channels of communication and shared workspaces that support curious dialogue, not debate.

When I was a resident, all of the black residents came together to decide should we just resign in mass? What will it take for us to just hang on, we wondered?

After hours of passionate discussion, we decided to continue our work here, but to also warn all black applicants that coming to URM C was to risk floundering on jagged rocks. We told them that from our personal experiences, coming to URM C could end your career. It is a very dangerous opportunity.

– W. Joseph Hicks, MD (Res '90), MPH  
Baton Rouge, La.

**Editor's Note:** Providing an affirming and supportive learning environment for all students, and investing in medical education pipeline programs for minority youth, are cornerstones of the school's efforts to nurture and attract qualified candidates among underrepresented groups. Since 1995, the SMD admissions committee has taken many steps to improve the diversity of the student body in terms of gender, race, disability, sexual identity, religion and socioeconomic status. Today, 55% of the Class of 2020 identify as non-Caucasian, and about 52% are women (a jump from 35% in 1995). In 2015-2016, the SMD had 22 U.S.-born black males enrolled across its classes, the most in its history, and the fourth-highest among all non-Historically Black Colleges and Universities. Read more about SMD's diversity and inclusion efforts in the profiles of John Hansen (p. 52), retiring associate dean for Admissions, and Adrienne Morgan (p. 58), who recently became assistant dean for Medical Education Diversity and Inclusion.

**J**ust a quick note to say kudos on the current issue. A tough topic and nicely done. I hope we get to meet at my class reunion during the Meliora weekend in October.

– David Nash (MD '81) MBA  
Founding Dean,  
Jefferson College of Population Health

continued on page 88





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Harvard Medical School professor of Psychiatry **Carol C. Nadelson (MD '61)**, delivered a powerful keynote speech at Commencement May 19, 2017, describing her journey as a woman in medicine. One of two women in her medical school class, Nadelson went on to become the first woman president of the American Psychiatric Association (APA), the first woman editor-in-chief of the APA Press, and founding director of the Office for Women's Careers at Partners' Brigham and

Women's Hospital. "I decided I wanted to be a physician when I was 12, after my grandfather died of cancer," she told the graduates and families in Eastman Theatre's Kodak Hall. "But it was the 1950s, and women just didn't become doctors. The threat of imminent failure was always on my mind, but I had to learn to believe in myself." Although she graduated magna cum laude from Brooklyn College, she endured demeaning interviews and was turned down by 23 medical schools before

acceptance at Rochester, where Drs. John Romano and George Engel guided her toward Psychiatry. Among her achievements, she founded Boston's first rape crisis center, helped to erase sexist attitudes and foster new approaches in women's mental health, and has encouraged hundreds of women toward careers in medicine. Nadelson was also presented with the University's Charles Force and Marjorie Smith Hutchison Medal.







## URMC NEWS

## \$19M Grant Supports 'Bench-to-Bedside' Research

A recent \$19 million grant from the National Institutes of Health (NIH) is helping continue URM programs that support the application of medical research to patient treatments and population health. This is the Medical Center's third consecutive translational science award, bringing total funding from these grants to almost \$86 million.

In 2006, the Clinical and Translational Science Institute (UR CTSI) was one of the first 12 institutions in the nation to receive a Clinical and Translational Science Award (CTSA), established by the NIH's Center for Advancing Translational Science to get new therapies to patients faster. In addition to the award funding, the UR CTSI has helped investigators across the University obtain nearly \$58 million of further NIH funding over the past decade.

"Ten years ago the University was catapulted to the forefront of the NIH initiative to reengineer our nation's

biomedical research enterprise," said **Joel Seligman**, UR president and CEO. "This is another milestone in our efforts to bring together the scientific talent, resources and expertise necessary to advance medicine and improve health."

The development of the UR CTSI was the catalyst for the Saunders Research Building, built in 2011 with \$50 million in state funding. The 200,000-square-foot space is a home for clinical and translational research. It is named in honor of E. Phillip Saunders, whose commitment to URM medical research and \$10 million gift to the CTSI was instrumental in fostering muscular dystrophy, cancer, and translational biomedical research.

"Translational medicine is the bridge between scientific discoveries and better health, and the UR CTSI will continue to drive research and improvements in patient care," said **Mark Taubman, MD**, CEO of URM and dean of the School of Medicine and Dentistry.



*Steve Dewhurst, PhD, vice dean for research*



## Strong Recognized for Excellence in Care

For the fourth consecutive year, *Becker's Hospital Review*, one of the nation's leading health care industry publications, named Strong Memorial Hospital to its 2017 list of 100 Great Hospitals in America. According to *Becker's*, the hospitals included on the top 100 list are renowned for excellence and leaders in innovation, quality patient care, and clinical research.

Strong Memorial is the only hospital in upstate New York with multiple programs that earn *U.S. News and World Report* Top 50 rankings and is ranked as the #1 hospital in the Rochester metro region by the publication.

*Becker's* selected hospitals based on analysis of ranking and award agencies, including *U.S. News and World Report's* 2016-17 Honor Roll and specialty rankings, CMS star ratings, Leapfrog grades, Truven Health Analytics top hospitals, Most Wired hospitals, and Magnet accreditation.

## Leading in Health Care Equality

Strong Memorial was recognized as a 2017 Leader in LGBTQ Healthcare Equality by the Human Rights Campaign (HRC) Foundation, the educational arm of the nation's largest lesbian, gay, bisexual, transgender and queer (LGBTQ) civil rights organization. Nationwide, only 302 health care organizations earned "leader" status out of 596 who voluntarily took part in the survey. The HRC Foundation also proactively researched the key policies of 900 other non-participating hospitals.

This is the 10th year the HRC has conducted the national survey, which uses a benchmarking tool called the Health Care Equality Index to evaluate inclusive policies and practices related to LGBTQ patients, visitors and employees.

Strong earned a perfect score of 100 on a survey that raised the bar on what it takes to be designated a "leader." In addition to core criteria, participants were rated on how



many policies and best practices they have in place within four areas. These included foundational elements of LGBTQ patient-centered care, LGBTQ patient services and support, employee benefits and policies, and LGBTQ patient and community engagement.

"This is a reflection of how far we've come as an organization since we first began taking part in the review in 2007, and how organic it is becoming for people across our hospital to think inclusively," said **Linda H. Chaudron** ('92 MD), MS, URM associate vice president and senior associate dean for Inclusion and Culture Development.



## URMC NEWS

## Golisano Children's Hospital Completes NICU Renovation

The Strong Memorial Hospital Nursery, which provides care for newborns across the Finger Lakes region, reopened in December 2016. The renovated space, part of the Golisano Children's Hospital (GCH) Gosnell NICU, houses 24 beds that are predominately single family spaces. The region's only Level IV NICU, the facility now has the capacity to care for 68 infants, including the 44 beds in the GCH tower that opened in July 2015.

The space has 16 private rooms, and a transitional care nursery with eight beds that provides intense observation and monitoring for babies whose mothers are inpatients. The private rooms have more space, support infection control, and allow parents to actively participate in their child's care. The third-floor bridge that connects Strong to the NICU in the GCH tower also lets mothers on the high-risk Obstetrics unit (3-1200) be close to their newborns.



## CANCER

## Exercise a Boon for Cancer Patients, Study Shows

Exercise and/or psychological therapy work better than medications to reduce cancer-related fatigue and should be recommended first to patients, says a Wilmot Cancer Institute-led study published in *JAMA Oncology*.

"If a cancer patient is having fatigue, rather than looking for extra cups of coffee, a nap, or a pharmaceutical solution, consider a 15-minute walk," said lead author **Karen Mustian, PhD** (MPH '09), associate professor in the Department of Surgery's Cancer Control Program. "It's a simple concept but one that's hard for patients and the medical community to wrap their heads around, because these interventions have not been front-and-center in the past."

Scientists reached their conclusions after analyzing the outcomes of 113 unique studies (involving more than 11,000 patients) that tested various treatments for cancer-related fatigue. All were randomized clinical trials. Nearly half were women with breast cancer; ten studies focused on other types of cancer and enrolled only men.

Data showed that exercise alone—whether aerobic or anaerobic—reduced cancer-related fatigue most significantly. Psychological interventions, such as therapy to provide education, change personal behavior, and adapt the way a person thinks about their circumstances, similarly improved fatigue. Studies combining exercise and psychological therapy had mixed results, however the study showed that drugs tested for treating cancer-related fatigue were not as effective. Those drugs include stimulants like modafinil and Ritalin.

The most common side effect during and after treatment, cancer-related fatigue is a crushing sensation not relieved by rest or sleep, and can persist for months or years. Researchers believe it may result from chronic inflammation induced by the disease or its treatment. Fatigue can lower a patient's chances of survival because it lessens the likelihood of completing treatment. The NCI has chosen it as a top research priority.

Mustian and Wilmot colleagues have studied exercise in the context of cancer for nearly 15 years, looking at many forms of therapeutic movement. The Wilmot team also explores the biological pathways impacted by exercise. To see the *NBC Nightly News* story, visit <http://bit.ly/wcicancerstudy>



**"If a cancer patient is having fatigue, rather than looking for extra cups of coffee, a nap, or a pharmaceutical solution, consider a 15-minute walk."**

—Karen Mustian, PhD





## First-of-a-kind Study Shows E-cigarettes Damage Gum Tissue

Electronic cigarettes are equally as damaging to gums and teeth as conventional cigarettes, a recent URM study suggests.

Published in *Oncotarget*, the study was led by professor of Environmental Medicine **Irfan Rahman, PhD**, and is the first to address the detrimental effect of e-cigarettes on oral health at cellular and molecular levels. E-cigarettes continue to grow in popularity among young adults and current and former smokers because they are often perceived as a healthier alternative to conventional cigarettes.

Previously scientists thought chemicals found in cigarette smoke were the culprits of adverse health effects, but a growing body of scientific data, including this study, suggests otherwise.

“When the vapors from an e-cigarette

are burned, it causes cells to release inflammatory proteins, which in turn aggravate stress within cells, resulting in damage that could lead to various oral diseases,” explained Rahman, who last year published a study about the damaging effects of e-cigarette vapors and flavorings on lung cells, as well as an earlier study on pollution effects. “How much and how often someone is smoking e-cigarettes will determine the extent of damage to the gums and oral cavity.”

The study, which exposed 3-D human, non-smoker gum tissue to e-cigarette vapors, also found that flavoring chemicals play a role in damaging cells in the mouth.

“Some flavorings more than others worsened the damage to the cells,” added **Fawad Javed**, a post-doctoral student at Eastman Institute for Oral Health, who contributed to the study. “It’s also important to remember that e-cigarettes contain nicotine, which is known to contribute to gum disease.”

## Lynne Maquat Earns Lifetime Achievement Award from International RNA Society

**Lynne E. Maquat, PhD**, has spent years unraveling what happens in cells during disease, making seminal contributions to the understanding of RNA’s role in sickness and health. She’s also committed countless hours to mentoring the next generation of researchers and advocating for young women in the sciences. For these outstanding efforts, she was honored with the 2017 Lifetime Achievement Award in Science from the international RNA Society.

The J. Lowell Orbison Endowed Chair and Professor in the Department of Biochemistry and Biophysics, Maquat began her career studying inherited anemias. She discovered a quality-control process that blocks the creation of toxic proteins that cause disease. Known as nonsense-mediated mRNA decay or NMD, this process plays a part in one-third of all inherited diseases, such as cystic fibrosis and muscular dystrophy, and one-third of all acquired diseases, including a number of cancers.

“This award recognizes Lynne’s pioneering contributions to understanding



the mechanisms of RNA, as well as her outstanding leadership, support and commitment to our field, including being a role model for new generations of scientists,” said Juan Valcarcel Juarez, current president of the RNA Society, who works at the Centre of Genomic Regulation in Barcelona, Spain.

Maquat, who is founding director of URM’s Center for RNA Biology: From Genome to Therapeutics, accepted the award at the society’s annual meeting in Prague.

The NIH has continuously funded Maquat’s research for the past 14 years. She has published more than 150 papers and reviews, with one of her projects recently receiving an NIH MERIT award, a coveted grant that provides long-term, stable support to investigators whose research skills and productivity are distinctly superior, as judged by their peers and NIH leaders.

“Lynne’s work has uncovered totally new avenues of cellular regulation that are relevant to the function of normal genes, as well as genes involved in numerous inherited and acquired diseases, and she is now leveraging these discoveries toward transformative therapies that firmly place RNA in the realm of personalized medicine,” said **Jeffrey J. Hayes, PhD**, the Shohei Koide Professor and Chair of the Department of Biochemistry and Biophysics.

In 2010, Maquat received the RNA Society’s Lifetime Achievement Award in Service. The following year she was elected to the National Academies of Sciences, one of the highest honors possible for a scientist. In 2015, she was the first individual from upstate New York to receive the prestigious Canada International Gairdner Award, the country’s top award for excellence in biomedical research.

Maquat joined URM in 2000 after 18 years at the Roswell Park Cancer Institute. A member of the RNA Society since its formation in 1993, she has played an active role, holding elected office from director, to secretary/treasurer, to president. With more than 1,000 members, the society encourages the sharing of experimental results and emerging concepts in RNA research.

## 'Chemo-brain' Pervasive Among Women with Breast Cancer, Study Shows

Scientists have long-known that cancer-related cognitive impairment—including problems with memory, attention, and processing information—is a big issue. Yet questions remained about when and why it occurs, and who is most likely to develop it.

Now, Wilmot Cancer Institute researchers have found that women with breast cancer report “chemo-brain” as a substantial problem for as long as six months after treatment.

In a study led by assistant professor of Surgery in Wilmot's Cancer Control and Survivorship program **Michelle C. Janelins-Benton** (MS '05, PhD '08, MPH '13), the cognitive difficulties among 581 breast cancer patients were compared with those of 364 healthy people, with a mean age of 53 years in both groups.



Researchers used a tool called FACT-Cog, a well-validated measurement that examines a person's perceived cognitive impairment and impairment perceived by others. They noted persistent symptoms and correlated them with factors such as age, education, race, and menopausal status.

Published in the *Journal of Clinical Oncology*, the study showed the FACT-Cog scores of women with breast cancer exhibiting 45 percent more impairment than healthy people. Over a period of nearly a year (from diagnosis and pre-chemotherapy to post-chemotherapy follow-up at six months), 36.5 percent of women reported a decline in scores compared to 13.6 percent of the healthy women.

Anxiety and depressive symptoms at the onset led to a greater impact on FACT-Cog scores. Other influencing factors were younger age and black race. Women who received hormone therapy and/or radiation treatment after chemotherapy had similar cognitive problems to women who received chemotherapy alone, the study noted.

## A New Tool For Predicting Prostate Cancer Course

Researchers from Wilmot Cancer Institute and Buffalo's Roswell Park Cancer Institute reported in the journal *Oncotarget* the discovery of a potential tool to predict whether prostate cancer will reoccur following surgery, based on the expression patterns of four genes.

The Wilmot/Roswell Park tool was able to predict recurrence, based on human tissue samples and known patient outcomes, with 83 percent accuracy. The only other way to estimate tumor aggressiveness is with a Gleason score, a grading system that has limited power in most cases.

Prostate cancer is the most common cancer in men and is on the rise as the population ages. Some prostate cancers grow slowly, and when the disease is detected early the five-year survival rate is nearly 100 percent. However, in some men with more



aggressive localized disease, and in one-third of all patients, cancer will return even after a radical prostatectomy.

“Our study sought to improve the prediction tools so that oncologists would know with more certainty when to recommend additional treatment, such as radiotherapy, immediately after surgery,” said lead researcher **Hartmut “Hucky” Land, PhD**, Wilmot's director of Research and the Robert and Dorothy Markin Chair of the Department of Biomedical Genetics.

Earlier, Land's lab discovered a large group of non-mutated genes actively involved in cancer development. After analyzing expression of this ‘gene set’ in frozen prostate cancer tissue samples, researchers discovered the four-gene signature, which was expressed differently in prostate cancer that later returned. **Justin Komisarof**, an MD/PhD student (Grad 5) in the Land lab, developed the algorithms and methods to evaluate the gene signature. The research team concluded that their tool outperformed other scientific methods, and has applied for a U.S. patent.



## Working to Improve Radiotherapy as a Cancer Treatment

A URM study shows that when tumors are treated with radiotherapy the benefits can be hijacked by the treatment's counteraction to trigger inflammation and dampen the body's immune response.

Published in *Oncotarget*, the study suggests radiotherapy could be more effective when combined with a drug that would block a specific cell that dulls the immune system. In mice, the research team experimented by delivering an immunotherapy two days prior to radiotherapy and saw significant benefits for many types of cancer.

Led by **Scott Gerber, PhD** (MS '01), assistant professor in the Department of Surgery, and **Kelli A. Connolly**, a fourth-year PhD student, the research fills an important knowledge gap. Scientists know that radiotherapy stimulates anti-tumor cells and helps control cancer's growth, but what is less-understood is why radiotherapy cannot cure cancer.

The answer may lie in how the immune system responds to radiotherapy when a tumor is present. URM and Wilmot Cancer Institute scientists discovered that radiation increases the circulation of certain harmful inflammatory cells and changes the way the immune system rallies against cancer. In many patients, the circulating level of these cells (monocytes) is already high before treatment and sometimes indicates a poor prognosis.

Gerber believes an abundance of these cells—measured by a simple blood test—could identify patients who might benefit most from blocking them, allowing the immune system to fight the disease in combination with radiotherapy. Because these inflammatory cells express a unique protein on their surface, they are an easy target for medications, the study said.



## Eastman Institute Wins National Achievement Award



In March, Eastman Institute for Oral Health (EIOH) director **Eli Eliav, DMD, PhD**, and past EIOH directors accepted the William J. Gies Award for Achievement at the American Dental Education Association Conference in Long Beach, Calif.

The award is the profession's foremost recognition for individuals and organizations with the highest standards in oral health and dental education, research and leadership. The award is presented by the ADEAGies

Foundation and named after dental education pioneer William J. Gies, PhD, who published a landmark report establishing dentistry as an essential component of higher education in the health professions.

As URM's Eastman Institute marks its 100th year, the award recognizes its history of achievements, such as being the safety-net provider for the Greater Rochester area, providing world-class graduate education, and leading oral health research.

## Heart Transplant Team Celebrates 200 Hearts, 200 Second Chances

URMC Heart and Vascular celebrated 200 "second chances" in 2016 with a reunion of heart transplant recipients, families of organ donors, and staff from Strong Hospital and the Finger Lakes Donor Recovery Network. Cardiac surgeons and cardiologists with the Program in Heart Failure and Transplantation completed the 200th heart transplant Aug. 24, 2016.

URMC cardiologists completed their first heart transplant in 2001. In 2012, they introduced the total artificial heart, a bridge-to-transplant device for patients with end-stage biventricular heart failure. The Heart and Vascular program also offers a Cardiac Critical Care Transport Team composed of cardiac critical care nurses, respiratory therapists, perfusionists and physicians. Strong is the only comprehensive heart failure and transplant center in upstate New York, serving the vast majority of the state.



To see a video of the celebration, visit <https://www.urmc.rochester.edu/200/>

## The Heart-Brain Connection: LQTS and Seizures

URMC researchers discovered a genetic link between Long QT Syndrome (LQTS), a rare cardiac rhythm disease, and an increased risk for seizures. The study also found that people with LQTS who experience seizures are at greater risk of sudden cardiac death.

Published online in *Neurology*<sup>®</sup>, the study points to a clear association between the heart and brain of LQTS patients. Patients carrying LQTS genetic mutations were three times more likely to have had seizures in the past, compared to family members who did not carry those mutations. LQTS patients with a history of seizures also tended to have worse cardiac symptoms.



Lead author **David Auerbach, PhD**, senior instructor of Medicine in the Aab Cardiovascular Research Institute, found seizure status to be the strongest predictor of cardiac arrhythmias. About 20% of the LQTS patients with a history of seizures had survived at least one lethal cardiac arrhythmia.

The study sets a new clinical precedent for the link between seizures and LQTS and

provides a case for doctors to be attentive to what is happening in LQTS patients' brains. More broadly, it suggests doctors "look outside the classic organ of interest" in any disease.

Auerbach utilized the Rochester-based LQTS Patient Registry for his study, a unique resource developed 40 years ago by the study's senior author **Arthur Moss, MD** (Res '62, Flw '65), the Bradford C. Berk Distinguished Professor of Medicine. It holds information about more than 18,000 LQTS patients and their affected and unaffected family members, providing a nearly ideal control group.

More research is needed, but Auerbach said physicians treating LQTS patients today could begin applying the findings "by looking outside the heart."



## HEART

## Heart Team Offers New Smaller Pacemaker

URMC cardiologists have become the first in the region to offer the world's smallest pacemaker.

The Micra Transcatheter Pacing System is the most advanced technology for people with bradycardia. It is one-tenth the size of a traditional pacemaker, without any wires extending to the heart. In November 2016, electrophysiologists **David Huang, MD**, professor of Medicine (Cardiology), and **Mehmet Aktas, MD**, associate professor of Medicine (Cardiology), implanted the lightweight device into the heart of a 67-year-old Ontario County man.

"This is another tool in our arsenal for treating cardiovascular diseases," said Huang, director of Strong Hospital's Heart & Vascular Electrophysiology Lab. "In addition to its remarkably small size, it automatically adjusts pacing therapy based on a person's activity level."

Traditional pacemakers are about the size of a half-dollar coin and three times as thick. They are placed in a "pocket" under the skin in the chest, and their wires send electrical impulses to keep the heart rate from dropping too low. The FDA-approved Micra TPS—available at only 70 hospitals in the country—offers the same level of support, but is the size of a large vitamin pill and weighs 2 grams, the same as a penny.

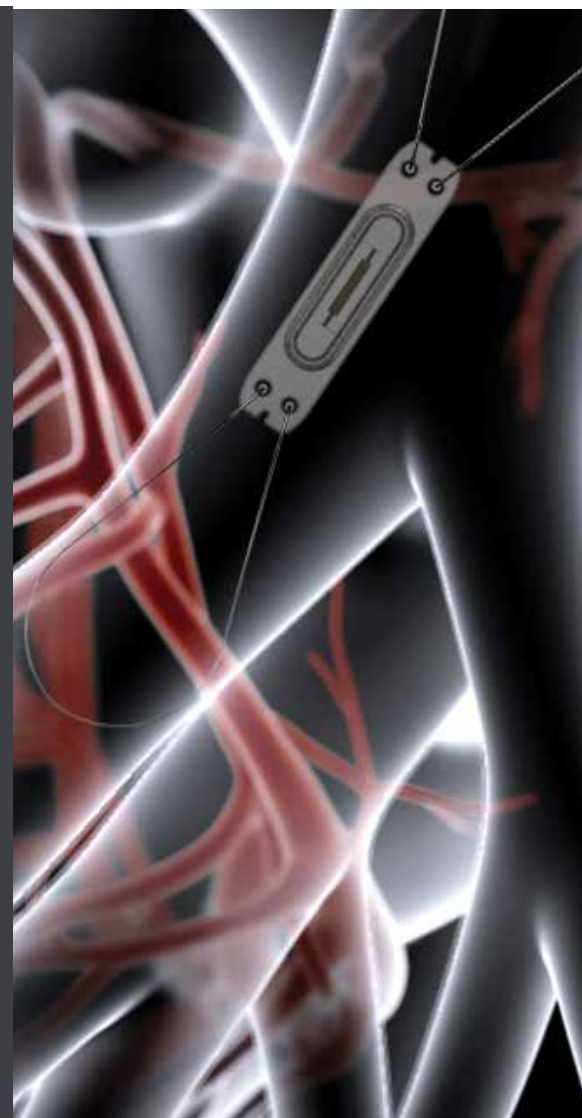
The pacemaker battery can last up to 12 years and the device is MRI-compatible.

## New Device to Monitor Heart Failure Symptoms, Reduce Hospitalizations

URMC cardiologists have introduced a new implantable miniaturized, wireless monitoring sensor to manage heart failure and reduce hospitalizations for those with the disease.

The CardioMEMS HF System measures pulmonary artery pressure, an indirect measure of worsening heart failure. A monitor built into a pillow enables transmission of daily information from patients' homes to the heart failure team at Strong Memorial, allowing for proactive care to reduce the likelihood of hospitalization.

"This technology benefits patients who may have worsening heart failure well before we are able to detect it," said **Leway Chen, MD, MPH**, director of the Heart and Vascular Program in Heart Failure and Transplantation.



## GENETICS

## Repurposed Drugs May Improve Treatment for Fatal Genetic Disorders

URMC researchers may have identified a new means of treating some of the most severe genetic diseases of childhood, according to a study in *PLOS Biology*.

The diseases, called lysosomal storage disorders (LSDs), are caused by disruptions in the functioning of the stomach of the cell, known as the lysosome. LSDs include Krabbe disease, Gaucher disease, metachromatic leukodystrophy and about 40 related conditions. In their most aggressive forms, they cause the death of children within a few years after birth.

Led by Martha M. Freeman, MD Professor in Biomedical Genetics **Mark Noble, PhD**,





## Aiding Diagnosis, Treatment of Traumatic Nerve Damage

URMC researchers may have identified a means of enhancing the body's ability to repair cells, which they hope will lead to better diagnosis and treatment of traumatic nerve injuries, like those sustained in car accidents, sports, or combat.

Published in *EMBO Molecular Medicine*, the study demonstrates for the first time that 4-aminopyridine (4AP), a drug currently used to treat patients with multiple sclerosis, has the unexpected property of promoting recovery from acute nerve damage. Although 4AP has been studied for more than 30 years for its ability to treat chronic diseases, this is the first evidence of its benefit in treating acute nerve injury, and the first time those benefits were shown to continue after treatment.

Study authors **John Elfar, MD** (Res '07), associate professor of Orthopaedics, and **Mark Noble, PhD**, the Martha M. Freeman MD Professor in Biomedical Genetics, and their team, found that daily treatment with 4AP promotes repair of myelin, the insulating material that surrounds nerve fibers, in mice. When this insulation is damaged, as occurs in traumatic peripheral nerve injury, nerve cell function is impaired. The team found that 4AP treatment accelerates repair of myelin damage and improvement in nerve function.



These findings advance research that has been stagnant for three decades. The current standard of care for traumatic peripheral nerve injury is “watchful waiting” to determine whether a nerve has the ability to spontaneously recover, or if it will require surgery. The problem, says Elfar, a sports medicine surgeon specializing in hand, wrist, elbow and shoulder repairs, is “the patient who may recover is recovering so slowly that nerve-dependent tissues are in jeopardy, and the patient who needs surgery has to wait for weeks for the diagnosis that surgery is appropriate. That delay means that surgery is less effective.”

The research team, which includes **Kuang-Ching Tseng** (PhD '15), former graduate student in the Center for

Musculoskeletal Research and first author of the study, also found that treating mice with a single dose of 4AP one day after nerve crush injury improved muscle function within an hour. In this model, nerves are damaged, but not completely severed. This finding suggests that 4AP could be used immediately after injury to diagnose whether a nerve is severed. More studies are needed to know if this will work in humans.

Recognizing the impact this could have for soldiers, the Department of Defense granted \$1 million to continue the research over the next three years. Researchers are also exploring the use of 4AP to repair nerve conduction after routine surgeries, such as prostate surgery.

the team discovered how specific toxic waste products that accumulate in LSDs cause multiple dysfunctions in affected cells. They also found that several drugs approved for other uses have the unexpected ability to overcome the cellular toxic build-up, providing new opportunities for treatment.

Two postdoctoral fellows in the Department of Biomedical Genetics, **Christopher Folts** (PhD '16), and **Nicole Scott-Hewett** (PhD '16), conducted the experiments. They demonstrated that like the stomach, lysosomes are usually more acidic than other parts of the cell, and that toxic substances accumulating in several LSDs disrupt maintenance of the acidic environment. They also showed that restoring the normal acidity of the lysosome with drug treatment was sufficient to prevent multiple disruptions of normal lysosome function and maintain critical cell functions.



In a mouse model of Krabbe disease (one of the most severe LSDs), Noble's team found that the lead study drug, colforsin, increased survival as effectively as seen in studies where disease-causing mutations were corrected by gene therapy. Colforsin is approved in Japan to treat cardiac disease.

Increased survival in mice occurred even though treatment was started later than necessary for gene therapy. The treatment also decreased damage to the brain and

improved quality of life in the diseased mice. These outcomes are critical in the treatment of children with Krabbe disease or related illnesses, said Noble.

“The challenges of these diseases are that they are rare and come in

many different varieties, and any advances have tended to focus on single diseases,” Noble said.

“In contrast, our findings suggest our treatments will be relevant to multiple disorders. We saw benefits even without needing to correct the underlying genetic defects. That gives us hope that we could combine our treatments with other approaches to gain additional benefits.”

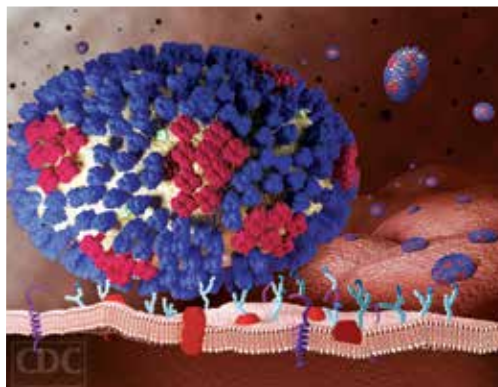
## IMMUNOLOGY

## 'Needle in a Haystack' Flu-Thwarting Mutation Found

A rare and improbable mutation in a protein encoded by an influenza virus renders the virus defenseless against the body's immune system. This URMIC discovery could provide a new strategy for live influenza vaccines in the future.

Identifying a new approach to the live flu vaccine would be timely because the Centers for Disease Control and Prevention stopped recommending the live attenuate flu vaccine, FluMist® in 2016. Several studies found that the pain-free nasal spray—used in about one-third of young children in the U.S.—offered no protection to this vulnerable population. The flu shot, on the other hand, performed well and the CDC recommends using this vaccine in place of FluMist®.

"There is a need to understand what's happening with the existing live vaccine and potentially develop a new one," said **David Topham, PhD**, Marie Curran Wilson and Joseph Chamberlain Wilson Professor of



Microbiology and Immunology and author of the study. "We proposed that the mutation we found could be used to create a live vaccine."

The mutation weakens the flu virus by making the flu-encoded protein, called Non-Structural 1 (NS1) defunct. Flu virus needs NS1 to prevent interferon—the immune system's front line against viruses—from alerting the host cell that it's been infected. Inhibiting interferon gives the virus time to multiply and spread before the immune system can mount an attack.

Most people have healthy interferon responses and would quickly and easily fend

off this weakened mutant strain of flu, but "this virus somehow managed to find the one person who had an interferon defect that allowed it to replicate," said Topham.

Topham and lead study author **Marta Lopez de Diego, PhD**, research assistant professor of Microbiology and Immunology, isolated the mutated virus from a nasal swab of a single flu sufferer among the tiny percentage of people (0.03 percent of all reported flu strains nationwide) with inadequate interferon responses. They likened it to finding a needle in a haystack.

This naturally-occurring "attenuating" flu mutation could provide a new way to make live flu vaccines, which contain viruses that are alive but weakened, so the vaccine itself does not cause illness. Topham and Lopez de Diego suspect their NS1 mutation could be a way to prevent viruses in the live vaccine from infecting anyone who has normal interferon responses, which is most people.

Published online in the *Journal of Virology*, the study underlines the importance of flu virus surveillance.

## CHILDREN

## Infant Nose, Lung Cells Have Similar RNA Patterns

Cells from an infant's nose are remarkably similar to those found in the lungs, a



discovery that could lead to more precise diagnosis of respiratory syncytial virus (RSV) and other infant lung

diseases, according to URMIC research.

The study, published in *Scientific Reports*, provides a potential avenue for diagnosis that has eluded physicians for years, as infants with respiratory disease are usually so fragile that attempting to obtain lung samples is unsafe. Nasal cells, however, can be captured through a simple swab of the nostril, and their similarity to lung cells on an RNA level would provide a non-invasive way for physicians to tell how the lung is responding during disease states.

"An infant with RSV could potentially have their nasal cells tested to determine if they are among the small group that will develop a severe response," said the study's lead author **Thomas Mariani, PhD**, professor of Pediatrics. "We might also use this method to examine other at-risk infants, such as those born prematurely, and identify those who should be treated more aggressively."

While scientists have made significant gains in understanding adult lung diseases (such as COPD and lung fibrosis) discovery has been hampered in infants by the risks in securing lung tissue. The relative ease of obtaining nasal cells could speed understanding of how infant lungs respond to RSV and other diseases. While this study examined 53 healthy infants to establish a benchmark for normal cell structure, URMIC researchers are now studying the nasal tissue of diseased infants, and "showing quite clearly that we can identify differences between those with mild disease and those with more severe outcomes," said Mariani.

## Researching New Vaccines

URMIC has been awarded a five-year, \$5 million grant to study new vaccines for children with respiratory and intestinal infections. The grant from the Centers for Disease Control and Prevention (CDC) allows the Division of Pediatric and Infectious Diseases to continue evaluating the impact of new vaccines and new vaccine policies, especially those affecting young children.

URMIC began research in this field in 2000, after receiving one of the first three grants as part of the CDC's New Vaccine Surveillance Network (NVSN).

"This will help continue the important study of children's respiratory and intestinal infections and how to best use new vaccines to prevent disease," said **Geoffrey A. Weinberg, MD**, professor of Pediatrics at Golisano Children's Hospital and the NVSN's primary investigator locally.

Since the NVSN's inception in 2000, Rochester has conducted population-based surveillance of hospitalizations associated with acute respiratory infection or gastroenteritis caused by influenza and other viruses, for which there are pediatric vaccines available, or in clinical development.



## Nuclear Protein Causes Neuroblastoma to Become More Aggressive

Aggressive forms of neuroblastoma contain a specific protein in their cells' nuclei not found in the nuclei of more benign forms of the cancer. The discovery, made by URM C researchers, could lead to new forms of targeted therapy.

EYA1, a protein that contributes to ear development, is present in the cytoplasm of many neuroblastoma tumors, but it migrates to the nucleus in the cells of more aggressive forms of the disease. As published in the

*Journal of Cancer Research & Therapy* and *Oncotarget*, the study supports the development of targeted drugs to prevent the neuroblastoma from reaching this more aggressive stage. Researchers here and elsewhere are already lab-testing potential treatments.

"Neuroblastoma is one of the most common and deadly forms of childhood cancer, and this helps identify drugs that prevent the change in EYA1 structure and potentially minimize the danger to children with the disease," said the study's co-lead author **Nina Schor, MD, PhD**, professor of Pediatrics and Neuroscience and the William H. Eilinger Chair of Pediatrics at URM C.

The EYA1 protein enters the cancer cell's nucleus due to the presence of an enzyme called PRMT1. The presence of PRMT1 also results in the increased hardness of a second protein, N-MYC, which has long been known to increase the aggressiveness of neuroblastoma when it is present in higher-than-normal amounts. By limiting PRMT1's effectiveness, researchers believe they can decrease the damage done by both proteins at once.

"Inhibitors of PRMT1 may deliver a 'one-two punch' to neuroblastomas before they become deadly," said Schor.

## Major Grant Supports Study of Prenatal Inflammation and Child Health

Over the past several decades, research has proven that an array of conditions in pregnant women, such as anxiety, stress, and obesity, are associated with a large and common cluster of behavioral and physical health conditions in children. URM C researchers are now embarking on a seven-year mission to study one factor that may explain the link: prenatal inflammation.

Supported by an NIH grant that could total more than \$18 million, the research is the first detailed longitudinal investigation of how inflammation during pregnancy can affect a child's neurodevelopment and metabolic systems. Should the study reach seven-year maturity, it will be one of the largest grants in URM C history.

"Obesity, stress, anxiety, and a history of trauma have all been linked to elevated levels of pro-inflammatory cytokines, part of the body's immune response. This seems to generally be the case in adults and, of particular concern to us, in pregnant women," said study director **Thomas O'Connor**, professor of Psychiatry and director of the Wynne Center for Family Research. "Inflammation underlies many conditions that may all be connected, so it is a compelling target for developmental health research starting in the prenatal period."

Past research exploring the connection between maternal psychological states and physiology on the long-term health of



children focused on stress physiology, and especially the stress hormone cortisol, as a likely explanation. But the implications for human health were only modest, underscoring the need for further research.

Clinical scientists have long-known that pro-inflammatory cytokines can be measured in the blood at varying levels. If URM C researchers find that prenatal immune activation alters child growth and development, it would open up new intervention targets.

The grant is part of \$157 million in funding from the NIH's Environmental influences on Child Health Outcomes (ECHO) program. The ECHO program will investigate how exposure to a range of environmental factors—from conception through early childhood—influences the health of children and adolescents.

In collaboration with the University of Pittsburgh Medical Center, URM C

researchers from a broad range of specialties will follow 500 families from the first trimester through the child's fourth birthday. They will assess maternal social and family factors, psychological symptoms such as depression and anxiety, and clinical measures such as diet and nutrition. Biological samples including blood, urine, and saliva will be collected from the mothers in each trimester, and from babies starting at birth.

At birth, cord blood and placenta samples will be collected through a process developed by co-investigator **Richard K. Miller, PhD**, professor of Obstetrics and Gynecology, and his URM C colleagues. Children will undergo behavioral and developmental assessments, brain imaging, and dual energy X-ray absorptiometry, a non-invasive scan that quantifies body composition. Immune, endocrine, and metabolic system development will also be tracked.

## Hearing Test May Identify Autism Risk

URMC researchers identified an inner ear deficiency in children with autism that may impact their ability to recognize speech. The findings, published in the journal *Autism Research*, could provide a way to identify children at risk for the disorder earlier.

“The study identifies a simple, safe, and non-invasive method to screen young children for hearing deficits associated with autism,” said **Anne Luebke, PhD**, associate professor in the Departments of Biomedical Engineering and Neuroscience and co-author of the study. “It may give clinicians a new window into the disorder and spur earlier intervention to achieve optimal outcomes.”

Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder characterized by impairments in social-communication skills and restricted and repetitive behaviors. While many signs of ASD are present before age two, most children aren’t diagnosed until after age four, which delays corrective therapies and their potential impact. Some of the earliest and consistent signs of ASD involve auditory communication and rely on speech, making them ineffective in

very young children or those with communication delays.

URMC researchers used a technique that measures otoacoustic emissions, similar to the screening many newborns undergo in the hospital. Using miniature speaker/microphone earplugs, researchers measured hearing deficiencies by listening for signs that the ear is having difficulty processing sounds. Minute sound emissions made by inner ear outer hair cells can be detected in response to certain tones or clicking sounds. If the cells are not functioning properly, the device fails to detect an emission, indicating that inner ear (cochlear) function is impaired.

When researchers tested the hearing of children between the ages of 6 and 17 (half diagnosed with ASD), they found that children with ASD had hearing difficulty

in a specific frequency (1-2 kHz) important for processing speech. They also found correlation between the degree of cochlear impairment and the severity of ASD symptoms.



“While there is no association between hearing problems and autism, difficulty in processing speech may contribute to some of the core symptoms of the disease,” said study co-author **Loisa Bennetto, PhD**, associate professor in the Department Of Clinical and Social Sciences in Psychology.

## Obesity Diagnosis Often Overlooked, Study Shows

Despite a growing epidemic, many medical providers fail to diagnose obesity in their patients and miss an opportunity to identify an important component of long-term health, according to a URMC study published in the *Journal of Community Health*.

Among patients whose body mass index (BMI) indicated obesity, providers diagnosed and documented obesity in less than a quarter of office visits with children, and less than half for adolescents and adults, researchers found. The study further found that patients living in less-educated communities were even less likely to receive an accurate diagnosis.

“As a medical community, we can’t effectively manage obesity until we are identifying it properly in our

patients,” said **Robert Fortuna, MD, MPH**, assistant professor of Medicine and Pediatrics in Primary Care and one of the study’s authors.

The study echoes previous research showing that up to 82 percent of children



and young adults are not being appropriately diagnosed as obese during office visits. Researchers speculated on potential explanations for this failure, including the possibility that the prevalence of obesity in lower socioeconomic areas may desensitize providers to normal body size. In addition, other medical problems and social issues may take priority over discussing obesity. Social stigma may also make providers hesitant to label patients, especially children, as obese.

“Discussing obesity must be done in a sensitive and delicate manner, and providers may avoid it because they don’t want to offend patients,” said study co-author **Bryan Stanistreet (MD ’13, Res ’16)**. “Providers may also avoid the discussion because communities lack resources to help support patients, educate them on diet, and encourage regular exercise.”





ALZHEIMER'S/ELDERLY

## Exploring 'Supernormal' Brains to Prevent Dementia

Researchers have historically viewed memory loss as an inevitable part of aging. However, a small group of older adults, called “supernormals,” maintain their memories much better than their peers and **Feng (Vankee) Lin, PhD**, an assistant professor in the UR School of Nursing, is exploring what can be learned from them.

The study found that these adults actually have more efficient connections between specific areas of the brain—findings that

hold promise for preventing dementia and cognitive decline.

As published in *Cortex*, Lin and her team explored differences in brain function among three groups of older adults: supernormals (with higher than average memory scores for their age), those diagnosed with amnesic mild cognitive impairment at high risk for developing Alzheimer's disease, and a healthy control group. The study is the first to compare the brain function of supernormals to those at risk for Alzheimer's.

She found that people with stronger or more efficient functional connectivity between the cingulate cortex and certain regions of the brain had better memories than those who had weaker or less efficient

relationships. Supernormals also had lower levels of amyloids, groups of proteins associated with Alzheimer's disease. But even when amyloids were present, the relationship between better functional connectivity and memory remained. These findings show that the cingulate cortex of supernormals may possess exceptional neural reserve—the ability of the mind to resist damage. This neural reserve could be what protects supernormals against the effects of amyloid plaques, and helps maintain memory.

“The cingulate cortex could be a viable target for interventions aimed at preventing memory decline or enhancing memory capacity,” said Lin.

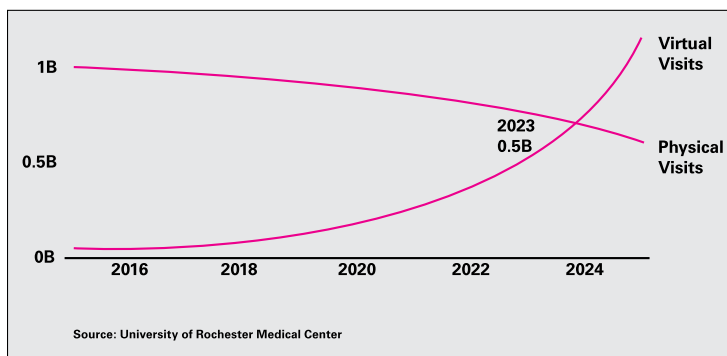
## Telehealth Poised to Revolutionize Health Care

An article published in the *New England Journal of Medicine*, co-authored by **Ray Dorsey, MD, MBA**, and **Eric Topol (MD '79)**, with the Scripps Research Institute, foretells the profound implications telehealth will have on health care delivery and medicine.

While there are challenges to overcome, the authors note, telehealth could help address concerns about the number and distribution of physicians, and offer more flexibility to patients and clinicians.

Telehealth holds potential to disrupt established patterns of care, the authors say, because it provides convenient access for patients at a potentially lower cost. From traditional medical providers to start-up companies, virtual visits are being offered around-the clock with physicians across the country, at an average cost of less than \$50 per visit. By contrast, it takes on average 20 days to secure a 20-minute appointment with a physician that, with travel and waiting, can consume two hours of an individual's time.

The authors identify three trends reshaping telehealth. The first is its potential to make care more accessible, convenient, and less costly. The second is the expanded application of telemedicine



from its traditional use for acute conditions (such as telestroke programs that connect neurologists with physicians in distant emergency departments), to episodic needs (such as a consultation between a pediatrician and a school nurse), to the ongoing management of chronic conditions.

The final trend is the migration of telehealth from hospitals and clinics to the home, and eventually, to mobile devices. For example, Dorsey and his URM colleagues have shown that telehealth enables individuals with Parkinson's disease to receive convenient care in their homes. Virtual visits from physicians, combined with remote wearable devices and mobile applications, supplemented with in-person visits from multi-discipline providers, could one day be the new way to treat conditions

such as congestive heart failure and diabetes.

The authors discuss some policy barriers—including a fragmented reimbursement system—but argue that the rise of bundled payments and accountable care organizations opens a

door to examine the benefits of telehealth for defined conditions and populations.


The biggest obstacle, according to the authors, is a “digital divide,” meaning that those who most need telehealth often have the least access to it. Older adults in rural areas with lower incomes, less education and more chronic conditions are less likely to have Internet access than their younger counterparts in urban areas.

While the authors state that great care must be taken to maintain patient-provider relationships in virtual encounters, technological advancements—if properly harnessed—hold great promise in managing chronic diseases, improving access, and returning health care to its patient-centered roots.



*John Foxe, PhD, fits a pediatric patient with an ANTneuro EEG (electroencephalogram) system, which non-invasively records and collects neurological and physiological data critical to the diagnosis and understanding of autism and other intellectual and developmental disorders. The mobile device records activity in real-life settings, instantly sending patient data to a wireless tablet for storage and analysis.*





## Del Monte Institute Tackles Neurological and Neuropsychiatric Diseases from All Fronts

*by Christine Roth*

After 30 years in the states, his Dublin brogue has softened to a barely-detectable lilt in the turn of certain words and phrases. But John Foxe, PhD, who came to America in 1986 to run Division I Track and Field for Iona College in New York City, hasn't lost a bit of the engaging, convivial spirit or "craic" so characteristic of his Ireland roots.



The *Beauty* of  
**Team**  
Research





Travel advisors note that if you stop and ask a Dubliner for directions, they'll most likely take you there themselves—and entice you to stop for a pint along the way. That genuine delight in conversation and innate ability to form connections with others are traits easy to see in Foxe, a 50-year-old father of three who still has the lanky physique of a miler and possesses a brimming energy and curiosity not unlike his pediatric patients. A neurobiologist, Foxe has devoted his career to finding ways to improve the lives of people—primarily children—suffering from intellectual and developmental disorders such as autism and schizophrenia.



With more than 25 years of clinical and scientific experience in the field, he came from New York City's Albert Einstein College of Medicine to Rochester in 2015 to take the helm of The Ernest J. Del Monte Institute for Neuroscience. For certain, his keenly present, vibrant personality helped make him an easy choice to lead a daunting charge. Since his arrival he has worked collaboratively to break down barriers between individual laboratories, centers and departments focused on the nervous system across the University, and sculpt multi-investigator teams to more competitively confront and solve the "wicked" problems slowing discovery. The aim is to significantly speed the translation of new discoveries, and more effectively treat and prevent humankind's most deadly and debilitating neurological and neuropsychiatric diseases.

"It's a bit like putting together a great relay team, where each runner brings a specialized set of abilities to form a winning unit," says Foxe, who as former director of Research for Einstein's Children's Evaluation and Rehabilitation Center was responsible for uniting pediatric scientists in a similar way. "I love drawing together like-minded individuals and trying to help them reimagine a framework for accomplishing something. Right now in neuroscience, we can't move the needle without teams that tackle major problems from all fronts and multi-methodological,

## THE ERNEST J. DEL MONTE INSTITUTE FOR NEUROSCIENCE

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multi-scalar perspectives. There are fundamental neuroscientific questions that simply can't be broached at the level of an individual laboratory or investigator."

That a well-functioning nervous system depends upon precise communication and perfectly-timed signals across the wiring of the brain and spinal cord, is an irony not lost on Foxe.

"Everything depends on synchronicity, doesn't it?" says Foxe. "In very simple terms neuroscience is all about improving our understanding of the connectivity between our neurons and the molecular soup that's in our brains. That's what creates your sensations, your perceptions and your cognition, and if there's something wrong with your cognition, there's either something wrong with the soup, or something wrong with the connectivity of the networks."

Vice dean for Research **Steve Dewhurst, PhD**, says The Del Monte Institute is well-poised to become a national destination for people seeking advanced care for neurological disorders under Foxe's collaborative vision.

"We have been on the verge of novel therapeutics in this area for many years and this movement will make them a reality," he says. "As our knowledge of brain function explodes, Rochester is prepared to lead the next chapter of neuromedicine research that will translate these findings into meaningful interventions for afflicted patients, and effective disease prevention methods to advance the health of populations."

*Live imaging from the brain of a mouse with Purkinje cells (a specific type of neuron) fluorescently labelled in red, and microglia (the immune cells of the brain) fluorescently labelled in green. The imaging demonstrates how microglia interact with Purkinje cells in the cerebellum.*

## A Devastating Puzzle of Disorders

**T**ogether, neuroscience-related diseases are the leading cause of disability in the U.S.—affecting 18.7 million people—and represent the most unmet medical need in the industrialized world.

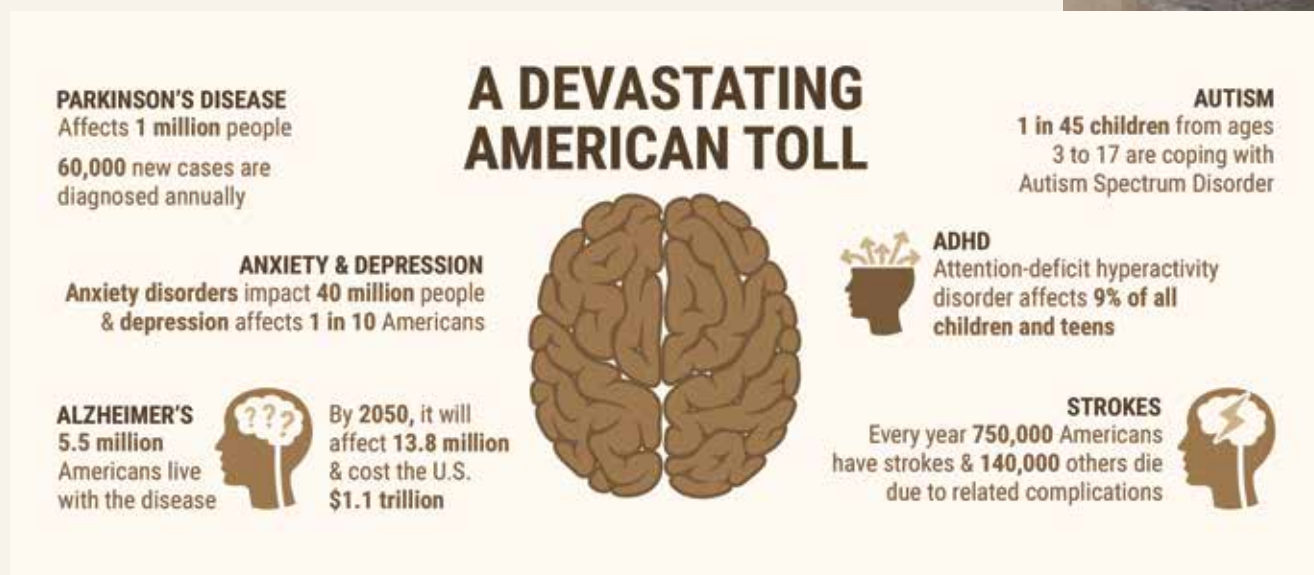
There are more than 600 different types of devastating neurological disorders—diseases of the brain, spine, connecting nerves and muscles—including brain tumors, epilepsy, Parkinson's disease, Huntington's disease, muscular dystrophy, cerebral palsy, ALS and stroke, as well as lysosomal storage diseases (Tay Sachs, Gaucher, Krabbe, Batten) and less-familiar conditions such as frontotemporal dementia.

Neuropsychiatric disorders—which involve the structure and function of the brain in relation to specific psychological processes and overt behaviors—include childhood intellectual and development disabilities (autism, ADHD, fetal alcohol syndrome, tic disorders), neurodegenerative diseases (Alzheimer's and dementia), psychosis (schizophrenia), mood disorders (depression, bipolar disorder, mania), neurotic disorders (anxiety, OCD, PTSD) addictions (chemical dependency, gambling), as well as eating and sleep disorders.

For the majority of these diseases, there is yet no definitive cure beyond ameliorative medications and therapies. Early and accurate diagnosis and intervention remain critical to improving quality and duration of life. The bulk of UPMC research continues to focus on this important target, with prevention being the ultimate goal.

"These are the fundamental problems of humankind and they can only be solved by unraveling the deep mysteries of the brain," says Foxe. "If you ask older people what their major health concern is, they won't say heart disease, cancer, falls or even incontinence. Almost 95% will say, 'I want my mind to stay sharp.' We all expect to get frail and for our bodies to give up on us, but we don't want our minds to give up on us. Our minds and memories are fundamental to who we are. We want to be present as long as we can with our kids and grandkids. Anyone who knows the horrors of advanced Alzheimer's disease doesn't want that for themselves or anyone around them. It's a torturous way to pass your final years."

*Foxe meets with doctoral students in The Del Monte Institute's new administrative office space.*





**“These are the fundamental problems of humankind and they can only be solved by unraveling the deep mysteries of the brain.”**



# Increasing the Bandwidth

Across the country, universities like Rochester are coming up against the limits of research as it has traditionally been done, Foxe says. The image in popular culture of the lone lab-coated researcher hitting upon a brilliant idea is fast becoming outdated.

“Pick up the daily paper or peruse the Internet and one is beset with story after story about tough medical and societal challenges that won’t be solved with facts alone,” he says. “They have innumerable causes, are interconnected with other problems and rarely have single acceptable solutions. Hundreds of studies can be carried out, and still the answer can be elusive.”

Some of the blame lies in an all-too-common “loading dock” approach to science, which has been likened to scientists following the model of a factory where widgets are produced and then trundled out to the loading

dock where someone eagerly waits to pick up the supposedly useful product. But the product may not, in fact, be at all useful to a patient if it doesn’t take into account the full set of complications in the real world.

“You can’t fault individual scientists for not thinking more broadly, because funding is so difficult, that their primary worry becomes just to keep their labs funded and open,” he says. “They develop their niche and what often happens is that when they’re asked to do something at the team level, they often just don’t have the bandwidth. In this way, the system has become inherently conservative—when the one discipline that can’t afford to be conservative is science.”

Solving today’s biggest health problems demands a more ambitious, complex approach, says Foxe. Researchers with different kinds of expertise need to put their

heads together. Scientists and decision-makers need to interact regularly and become more familiar with each other’s worlds. Patients and families need to be closely involved, and novel funding streams need to be explored, including partnerships with industries and organizations.


“We need stakeholder-engaged, solutions-focused, interdisciplinary work if our scarce science resources are to be mobilized,” he says. “We have to alleviate resource worries so researchers can devote time to projects at the team level. That’s where philanthropy and private donors become crucial. You can’t expect the government to come in and do that. The government is mostly going to fund stuff that’s absolutely destined to work. That’s great, that needs to happen, but that’s not how new discoveries are made.”

## The Del Monte Institute for Neuroscience **Centers of Excellence**

Representing the “best in class” integrative work being pursued across the University

Center Focus	Led by
Addiction and Habit Formation	Suzanne Haber, PhD
Alzheimer’s Disease	Kerry O’Banion, MD, PhD
Augmented and Virtual Reality	Edmund Lalor, PhD Duje Tadin, PhD
Environmental Influences on Child Health Outcomes	Tom O’Connor, PhD
Healthy Aging	Jan Moynihan, PhD Yeates Conwell, MD
Health and Technology	Ray Dorsey, MD, MBA Erika Augustine, MD, MS
Intellectual and Developmental Disabilities	John Foxe, PhD Tristram Smith, PhD
Invasive Brain Mapping and Deep-Brain Stimulation	Bradford Mahon, PhD
Large-Scale Recording of Neural Activity	Ania Majewska, PhD
Lysosomal Storage Diseases	Margot Meyer-Proschel, PhD
Neurorestoration	Bradford Berk, MD, PhD
Neurotherapeutics	Harris Gelbard, MD, PhD
Origins of Cognition	Jessica Cantlon, PhD Ben Hayden, PhD
Pain	Eli Eliav, DMD, PhD
Parkinson’s Disease	Ray Dorsey, MD, MBA
Translational Neuromedicine	Maiken Nedergaard, MD, DMSc Steven Goldman, MD, PhD
Visual Rehabilitation	Krystel Huxlin, PhD





*The laboratory team of associate professor of Neuroscience Ania Majewska, PhD, at right, uses advanced imaging techniques to understand the structural and functional changes that occur at synapses (junctions between neurons), which affect brain function. The lab also explores the critical importance of microglia (the brain's immune cells) to the development of normal neurophysiology.*

## A National Powerhouse

Rochester, says Foxe, has a tradition of being “top of the class” in neuroscience and has the key ingredients, not only in the Medical Center but across the University, to create a new paradigm.

Dozens of widely published, internationally-regarded neuroscientists have made their mark in Rochester, such as **Maiken Nedergaard, MD, DMSc** (the role of the glymphatic system in eliminating brain toxins), **Steve Goldman, MD, PhD** (glial cell transplantation in Huntington's disease and multiple sclerosis), **Ray Dorsey, PhD, MBA** (web- and mobile-based technologies and therapeutics for treatment of neurodegenerative diseases), **Bradford Berk (MD/PhD '81)** (cellular mechanisms in the vascular system), **Robert Griggs, MD** (pharmacologic treatments for Duchenne muscular dystrophy), **Marc Halterman (MS '99, MD/PhD '02, Res '03, Flw '06)** (pharmacologic agents to protect the brain after stroke and trauma), **Tristram Smith, PhD** (behavioral interventions for autism spectrum disorder), **Susan Hyman, MD** (diet and nutrition in autism spectrum disorder), and **Krystel Huxlin, PhD** (retraining the brain to see after stroke), to name just a few.

The SMD's Department of Neuroscience (formerly the Department of Neurobiology and Anatomy) now chaired by Foxe, has roots dating to 1929, as one of the five original basic science departments of the school. It was first in the medical school to offer formalized graduate training leading to advanced degrees (MS and PhD).

Collaboration has always been the department's hallmark. Former chair **Carl Mason, MD**, initiated ties with Orthopaedics and Neurosurgery, and former chair **Wilbur Smith, MD**, partnered with Pediatrics to provide fellowship training in Pediatric Neurology. It was former chair **Carl Knigge, MD**, who first steered the department's focus toward the neural sciences (leading a national trend), a shift that was fully realized under former chair **John Sladek, Jr., MD**, who changed the department's name to Neurobiology and Anatomy in 1985. Over the years, Neuroscience nurtured its close ties with clinical disciplines, reflected in the large number of students who complete the department's medical and graduate training.

The Department of Neurology, chaired by **Bob Holloway, MD** (Res '93, MPH '96), ranks 10th in NIH funding. Neurology,

Neurosurgery and Neuroscience are currently responsible for 25% of the Medical Center's research, making URM a hub for global research networks conducting multi-center clinical trials. And clinically, Neurology and the Department of Neurosurgery, chaired by **Webster Pilcher (MD/PhD '83, Res '89)**, are ranked among the best programs in the country by *U.S. News and World Report*, with Strong Hospital noted for the most advanced brain and spinal surgical program in the state.

The team research initiative Foxe is spearheading as director of The Del Monte Institute taps the scientific prowess of all of these departments, and extends to include researchers in the departments of Psychiatry, Pharmacology & Physiology, Otolaryngology and other specialties. But it also reaches further to draw upon the brainpower across the UR's River Campus, within the School of Nursing, the Eastman Institute for Oral Health and Warner School of Education.

“World class neuroscience is woven into the fabric of the University, with basic and translational investigators working across more than a dozen departments and centers,” says Foxe. In 2016 he led an exhaustive assessment of UR's current team-based

neuroscience programs, identifying 17 centers of excellence in the process (see list p. 28).

One of the first in the nation to offer an undergraduate program in neuroscience, the University is now among the top institutions in the world for studying multisensory integration (how sight, sound, touch, smell and taste are integrated in the brain), and is home to pioneers in optics technology development and applications.

“Additionally, we have exceptional computer science and data analytics experts, amazing technological abilities to monitor brain activity, and one of the best biomedical engineering departments in the country,” says Foxe. “Very few universities possess this span and depth of expertise. It opens the door to developing new devices, new sensors and new ways to monitor and interface with humans. Our Center for Health and Technology then gives us a vehicle to get these technologies out the door and test their benefits in real-life

situations. Pooling our abilities across the campus gives us a whole new vista to study multisensory integration.”

Basic science investigators also have the ability now to recapitulate a human disease in a mouse or rat model in a matter of weeks, rather than years, to test new antibodies and techniques. These genetic engineering capabilities have exploded in the last decade, “significantly advancing our ability to understand the underlying mechanisms of neurologic diseases,” he says.

A more subtle but equally important advantage is Rochester’s culture, says Foxe.

“Having worked in big-city institutions, Rochester is friendlier and people talk more readily. We also have geography on our side. The undergraduate campus is nested against the graduate campus and Medical Center, with the Rochester Center for Brain Imaging (RCBI) in the middle as a fulcrum. It’s very easy to go back and forth, which isn’t the case

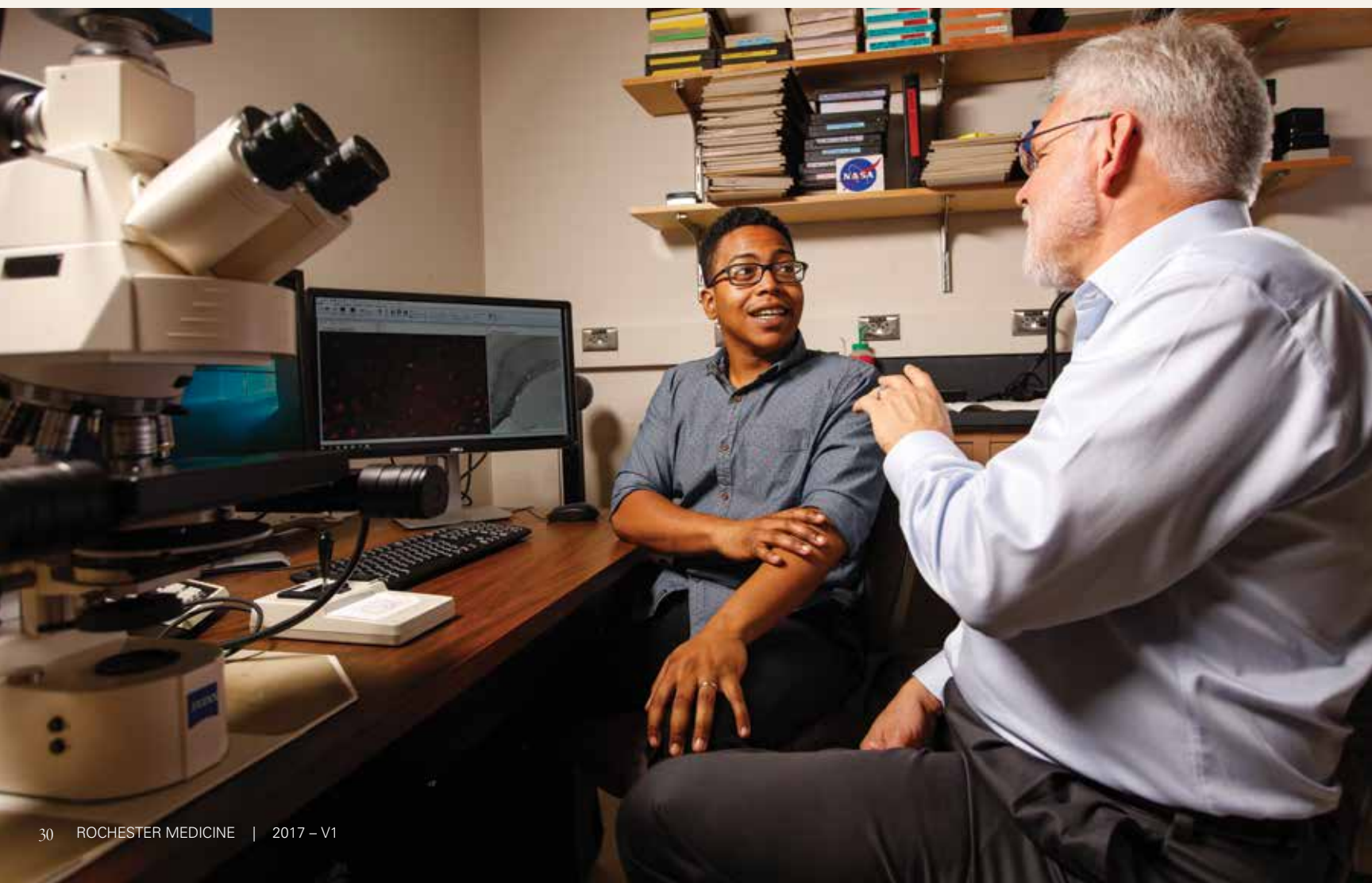
at most places.”

Of course, a crucial element is that University leaders believe in the effort’s value.

“The folks at the top of the chain here get it,” he says. “The philosophy of bigger team-led science is being supported in the president’s office, and in the dean’s office. That makes it easier for me to do my job. They’ve made a massive investment in renovation and creating new space for us, and to free up resources the labs need to work at the team level.”

Vice chair of Neuroscience **Kerry O’Banion, MD, PhD**, who was tapped by Foxe to lead the effort to synergize research on Alzheimer’s and dementia-related diseases, says it helped to have “someone from the outside to pull people out of their comfort zones and stir things up. John’s good at doing that, and at the same time advocating for what researchers need. He also realizes that what really matters to scientists is to be a part of building something super-cool.”

**“World class neuroscience is woven into the fabric of the University, with basic and translational investigators working across more than a dozen departments and centers.”**







*Left: Kerry O'Banion, MD, PhD, and MD/PhD student Dawling Dionisio-Santos work in O'Banion's lab. Their team explores the role of neuro-inflammation in Alzheimer's disease, and conducts related studies on radiation's effects on the brain. Above: Lab technician Nanette Alcock and associate professor of Neuroscience Julie Fudge, MD. Fudge's basic science laboratory seeks to better understand how dysfunction in the amygdala (the set of neurons in the brain's medial temporal lobe) contributes to psychiatric illness. Below: Assistant professor of Neuroscience Krishnan Padmanabhan, PhD, works with first-year neuroscience grad student Emily Warren. His lab explores, from a multisensory perspective, how memories shape our response to future experiences, and how this association is disrupted in neurological disorders.*





*Staff scientist Emily Kelly, PhD, works in the Fudge lab to study the anatomy and neurochemistry of brain regions associated with symptoms of psychiatric illness.*



# Setting the Pace

Transforming an entire research program might seem a huge feat for a self-described former “dumb jock” who didn’t take his first science course until his 20s. But Foxe—who grew up running the craggy coastal roads of Dublin and posted sub 1:50 minute half-mile times in college—has a habit of making marathons look like sprints.

His athletic talent earned him a scholarship to Iona College, where he took “bits and bobs” of courses to maintain NCAA eligibility, eventually earning a degree in Psychology. “Science wasn’t even on my radar,” he says. But in his senior year, one of his professors—a devoted track and field fan—persuaded Foxe to take a physiological psychology course, which “blew my mind” and sold him on pursuing a career in the field.

However, with no science training, he was advised to find a job as a lab technician. After knocking on dozens of doors, one professor took a chance on him—David Stapells, MD, at Einstein College, who was using electrophysiology to record brainstem responses in preemies.

“The first time I saw the recording of brain activity of a baby born as early as 15 weeks premature, I was completely hooked,” says Foxe, who published his first paper with Stapells. “I found it extraordinary that you could track how an auditory stimulus propagated through the brain of a tiny infant, and learn meaningful things about the health of their neural architecture. I was floored by it, and still am 25 years later. I find that same excitement in knowing we can literally watch the inter-workings of the human mind.”

When Foxe applied to Einstein for grad school, he was admitted provisionally, and had to scurry to complete a hefty slate of undergrad science courses in a 10-week summer session to start in the fall. There, he was inspired by, and collaborated with, neuroscience professor Steve Walkley, PhD, who later recruited Foxe to teach the medical school’s neuroscience course for 12 years. Meanwhile Foxe also worked seven years at CUNY, directing the PhD program in cognitive neuroscience and co-directing its children’s research unit. He also led the Cognitive Neurophysiology Laboratory at the Nathan S. Kline Institute for Psychiatric Research.

Then in 2010, he was recruited to create and direct a new clinical pediatric research initiative within Einstein’s Children’s



*Foxe meets with patients in the new Human Neurophysiology Laboratory. In the lab, patients—primarily children with autism spectrum disorder and more than 40 other related diseases—are evaluated, diagnosed, treated, and take part in research studies.*

Evaluation and Rehabilitation Center (CERC), one of the largest U.S. clinics that evaluates, diagnoses and treats children and adolescents with autism, ADHD, cerebral palsy and hearing impairments. Foxe engaged basic science researchers from across the institution to assist CERC clinical researchers in investigating the genetic, neurologic, physiologic and environmental causes of these conditions. What emerged was a high-tech, multi-methodological lab where basic science projects of healthy individuals are conducted in tandem with clinical studies of affected populations to develop novel assays.

Foxe—whose efforts paid off in restoring the CERC’s top-tier NIH funding it had lost a decade earlier—wants to replicate what he did at Einstein on a much grander scale in Rochester.

What drives him is the same enthusiasm he had when he watched those first brainstem recordings of neonates. But there is also a renewed sense of urgency.

“I get impatient when I think about how many people are suffering...waiting for cures. But I also have a relentlessly optimistic view of things. I know we can create something truly special here. I just try to move the goalposts a little bit every day, even if it’s an inch at a time.”

## Book Chronicles Life of Neurology “Superhero” Robert Joynt

**Robert J. Joynt, MD, PhD** (1925-2012), one of the most influential neurologists of the last half-century and founder of the Department of Neurology, enjoyed a career spanning more than 45 years. A newly published book, *A Man For All Seasons*, chronicles his life as a doctor, scientist, teacher, leader, friend and family man.



Written by Nancy Bolger, the book follows him from his Iowa childhood through his later years, where he remained a towering international figure and beloved mentor to UR medical students and

colleagues. He died on his way to Neurology grand rounds.

Created in 1966 with three full-time neurologists, Neurology is now home to more than 25 times that number and regarded as one of the top departments in the nation. Dr. Joynt’s teaching abilities also helped make it a top choice for residents, a trend that continues today.

“Bob’s life reinforces to all of us that the most important things we do in our lives, we do for others,” writes Professor and Chair of Neurology **Robert Holloway, MD** (Res ’93, MPH ’96) in the forward.

*The book is available on amazon.com.*

## The Flagship Programs

Of the 17 centers identified through 2016's assessment, The Del Monte Institute's Scientific Advisory Board identified four integrated "flagship" programs to be prioritized. "Some lend themselves to mechanisms that exist at the NIH," says Foxe. "So shaping them competitively for NIH designation is one way to do it. But every possibility will be explored, from foundation funding to corporate sponsorships."

### Intellectual and Developmental Disorders: Creating a Model System

Every Intellectual and Development Disorders Research Center (IDDRC) has two arms, explains Foxe.

"The human-based one and the cell-molecular, animal-based one," he says. "The idea is that you're working with patients, but you're also working on the model systems to develop new understanding and therapeutics, and move them as quickly as possible to patients."

Rochester's IDDRC, led administratively by Foxe and Haggerty-Friedman Professor of Developmental/Behavioral Pediatric Research **Tristram Smith, PhD**, builds on URM's longstanding place as a national hub for the development and application of behavioral interventions for autism spectrum disorder and other childhood neuropsychiatric disorders. Pooling the expertise and capabilities of many laboratories and dozens of investigators, the IDDRC catalyzes research on genomics, gene-environment interactions, neural systems, novel therapies for rare and neglected neurological diseases, and clinical trials of IDD treatments.

One of Foxe's first goals is to improve the systems for subject recruitment by creating a single point of entry for patients to take part in investigations. To this end, a Human Neurophysiology Lab was created in the Annex building (also home to the RCBI) where for the first time, patients (primarily children with autism spectrum disorder and



*Kerry O'Banion, MD, PhD, was one of the scientists who discovered the enzyme cyclooxygenase-2, and its role in inflammation. He was inspired to shift his focus to studying inflammation in Alzheimer's when his grandfather developed the disease.*

more than 40 other related diseases) can be evaluated, diagnosed, treated and take part in research at one location. It is outfitted with the most advanced equipment for structural and functional neuroimaging, ultra-high-density (UHD) electroencephalography (EEG), imaging genomics, eye-tracking, psychophysics and virtual reality techniques to carry out broad varieties of studies.

For example, Foxe is collaborating to create what he calls "the brain equivalent of a cardiac stress test" to study neural development in children and identify patterns of brain activity (in response to well-defined

stimuli) associated with illness. Using EEG technology, brain activity is measured in real-time during the course of a child's day, which could help identify kids with IDD at a much earlier age than currently the case. Foxe and his team are studying how the brain processes sounds that make up speech, and using EEG to determine where the breakdown is—which circuits are working, and which are not.

"A preverbal child may be able to understand language before she can produce it," says Foxe. "This ability to process and understand sound will show up as electrical activity, while another child who cannot process sound, or has a deficit, will fail to respond. This creates an opportunity to develop a universal way to screen infants at risk for IDD."

### Alzheimer's Disease: No Stone Unturned

In terms of clinical care and clinical research around Alzheimer's disease, URM has a robust history of serving nearly 100,000 affected individuals in the Finger Lakes region.

"We are a regional center for providing Alzheimer's diagnosis, care and support to patients and their loved ones, and that's something to be very proud of," says Neuroscience vice chair **Kerry O'Banion, MD, PhD**, who is working to bring together scientists across the University to elevate the understanding of the disease from a host of perspectives. "But the amount of

**Alzheimer's pathology begins 20 years before the first symptoms appear.**





*Julie Fudge, MD, and her lab team study, at the cellular level, the circuitry of the amygdala to better understand its complex role in processing emotions such as fear, stress, anger, and pleasure.*

clinical research we're doing far outweighs the amount of basic research we're doing to identify the underlying disease causes. That's what we're hoping to change."

O'Banion says the scientific community has slowly dispelled the long-held hypothesis that amyloids (plaques) in the brain are the sole culprits of the disease. Although amyloid accumulation is an indicator, scientists agree there are more complex causes at work.

"About 80% of research dollars have gone to studying whether preventing amyloid accumulation will prevent Alzheimer's, but the promise has not really unfolded," says O'Banion, who believes more focus is needed on resilience to aging and how memory ability changes with age.

"We need more work in model systems of the disease, in mice for example, that looks at how connections are lost, because it's a disease in which the brain is disconnecting within itself," says O'Banion, adding that Alzheimer's pathology begins 20 years before the first symptoms appear. "The neurons aren't firing as they should be. As different parts of the brain are affected, cognition disappears. Recovering what is lost is unlikely something we will be able to do in the near future, but preventing the loss has become a clear target, and is within our reach."

Accomplishing this means gaining more insight into disease progression, and the fundamental changes that happen early, so that people at risk can be identified earlier and potential targets for intervention—blood or spinal fluid for example—can be explored.

"We have a fairly good handle on patient populations and some really cool tools to start to look at this harder," he says. "But then, how do you use that information to shift the balance in a positive way? There may be a drug shown to slow the process in an animal model, but to find out why it works and whether it can be translated to humans, you need to look at it from a mechanistic standpoint. That's biochemistry, pharmacology, therapeutics. But you also have to consider behavioral therapy as just as important. For example, social engagement may be key to maintaining memory."

Alzheimer's has so many facets, he says, no scientific stone can be left unturned.

"What happens is that every researcher picks their favorite and concentrates on it," says O'Banion, who is meeting with every UR scientist involved in Alzheimer's and dementia-related work—including Psychiatry, Geriatrics, the School of Nursing and elsewhere—to collect ideas and reimagine a broad, collective research approach. "You can't ignore anything. People who may be



*Ania Majewska, PhD, and her team want to better understand how visual activity shapes the structure and function of connections between neurons in the visual cortex over time.*

working more in the weeds, so to speak, are just as vital as those in leadership."

A molecular neurobiologist, O'Banion was one of the first in the country to study the link between neuro-inflammation in the brain and the pathogenesis of Alzheimer's and other brain diseases. His laboratory with this focus has been externally-funded for more than 20 years.

"The longstanding dogma was that inflammation in the brain was bad, and that if you could slow the inflammation you slow the disease," he says. "But over the last 10 years, our research using mouse models shows inflammation might actually be very beneficial.



*The electrophysiology studies of Krishnan Padmanabhan, PhD, and his team may one day inform therapies for PTSD, Alzheimer's and other disorders by gaining a deeper understanding of how memories shape experience, and how they may be manipulated.*

So we're trying to hammer that out by looking at amyloid pathology and cognitive changes. There's a ton of potential here."

O'Banion says UR researchers are also gaining insight—through animal models and at the cellular level—into the mechanisms by which neurons talk with each other, and how synapses are formed and lost. These studies could potentially be meshed with Foxe's clinical research in EEG brain mapping, he believes.

Numerous experts in neurology are also studying the roles of energy balance and oxidative stress (the damage to mitochondria during energy creation) in neuromuscular diseases.

"Understanding how to be more efficient with energy or help mitochondria deal with stress is key," he says. "And what's really interesting is the connection between inflammation and oxidative stress, which together contribute to the aging process. There's something there, and people are working hard on it."



*In addition to seeing patients, Erika Augustine, MD, MS, works in the Center for Health and Technology developing clinical trials to address neurodevelopmental and rare pediatric disorders.*

## Health and Technology: Meeting People Where They Are

Currently, the likelihood of a promising new drug or therapy for a neuroscience-related disorder moving from a laboratory model, to a human trial, all the way to FDA approval is about 8%, strikingly low compared to other fields, such as cardiology, where rates are as high as 20%.

The reasons for this discrepancy are many, says pediatric neurologist **Erika Augustine** (MD '03), MS, who works closely with URM's Center for Health and Technology director **Ray Dorsey, MD, MBA**, to carry out the center's mission of supporting researchers in developing treatments more efficiently and safely, and in the most meaningful way for patients.

"Neurological diseases are chronic, disabling, cause multiple symptoms, and have a high impact on patients and families," says Augustine. "That makes it hard to measure disease and disease burden. How do you quantify all of that together with their movement and cognitive problems? It's not as objective as measuring blood pressure or glucose, and day-to-day fluctuations make it even more difficult."

Making sure neuroscientific clinical trials in the academic arena succeed has been the center's goal (formerly known as the Center for Human Experimental Therapeutics) since it was founded in the 1980s by neurologist **Ira Shoulson** (MD '71, Res '73, Flw '77). During his time at URM, he established two global academic networks to support

this effort—The Parkinson Study Group in 1985 and The Huntington Study Group in 1994—and created an infrastructure that supported collaboration with industry. This work expanded under the direction of neurologist **Karl Kieburtz** (MD '85, MPH '85), and is supported by current URM Clinical Translational Science Institute leadership.

"We were one of the first academic research centers that helped study groups develop scientific questions, and execute and operate multi-center trials," says Augustine. "The relationships are here, the expertise and experience are all here. Now we're looking at what's next...what can we do even better?"

Many trials still fail because they fail to recruit, she says.

"The parameters may be too narrow in scope in terms of geography or the type of patient who can qualify," she says. "For neuroscience, we have to cast a bigger net and reach more people, and make it equitable so that anyone who wants to participate can."

The other aspect is improving how neuroscience diseases are measured.

"We still don't do it very well," she says. "For example, in a two-year study we may be getting data from a patient once every three months in an office after they've traveled, parked, and they're tired, stressed. Measuring that one day is not going to give you a full picture of the burden of their disease. So we are trying to do a better job of meeting people where they are."

Today the work pioneered by center director, David M. Levy Professor of Neurology **Ray Dorsey, MD, MBA**, is doing that and more. It uses web-based, mobile technologies to monitor patient symptoms in their homes, at work, and even while they're sleeping. For example, the Parkinson's iPhone App, mPower, co-developed by Dorsey, provides data on patient dexterity, balance, gait, and memory multiple times a day, that would otherwise be impossible to harness. In just its first year, the app was downloaded more than 60,000 times by participants in all 50 states, and represents the largest-ever study of the disease.

"With mPower, the patient is at the center of the study, representing a disruptive model for conducting research that has applications well beyond Parkinson's disease," says Dorsey.

Augustine points out the technology heralds a huge leap forward in patient care, too.

"Across the country, there's a shortage of neurologists and millions of people who



*David Williams, PhD, says "the sky is the limit" in the number of ways augmented and virtual reality technologies can improve diagnosis and treatment of neurological disorders.*

can't access the care they need," she says.

"Technology like this makes it possible for doctors to not only monitor symptoms but intervene when necessary. Our larger vision today, which is reflected in our new name, is to enable anyone, anywhere to receive care, take part in research and benefit from its advances. That's what we're working toward."

## Augmented and Virtual Reality: The Next Frontier

**David Williams, PhD**, dean for Research for the UR's College of Arts, Sciences and Engineering, says it won't be long before smartphones go to our heads—literally.

The director of UR's Center for Visual Sciences, who has pioneered technologies to improve the eyesight of people around the globe, says worldwide there are about 1,000 companies investing millions of dollars to develop a pair of glasses that will provide hands-free, visual and auditory response to voice commands, connect with others instantly, and fully engage the internet, including social media, without getting in the way of everyday functioning.

"Everything you can see and hear on your smartphone you'll be able to do in a much more enriched and interactive way, to navigate the world," he says.

Williams uses this as an example because the pursuit of these commercial technologies has now opened the floodgates for academic institutions like the UR to develop



multi-sensory technologies to diagnose and treat people with neurological diseases.

“The challenges of providing seamless access to online information, without disrupting the perceptual experience of the world, have birthed a renaissance in basic research on multi-sensory processing,” he says. “And our international expertise in neuroscience, especially multi-sensory processing, and the powerful clinical applications we are discovering for these patients, make The Del Monte Institute a natural home for this initiative.”

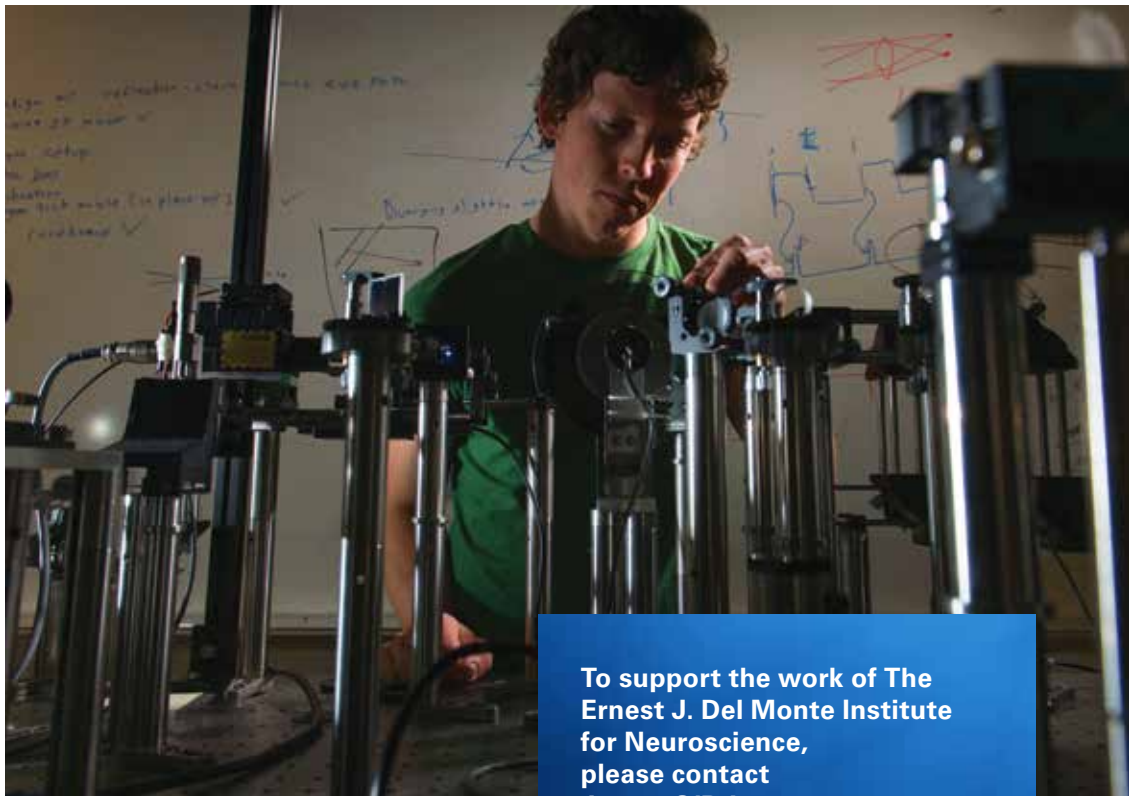
The Center for Augmented and Virtual Reality is the brainchild of Williams and **Mark Bocko, PhD**, chair of Electrical and Computer Engineering. It brings together more than 50 optical and electrical engineers, computer scientists, neuroscientists and augmented-virtual reality (AVR) users from across the UR—including professors of music, the humanities and medicine. With the support of federal, corporate and private funding, the goal is to develop a new wave of AVR technologies that will allow scientists to study, at an unprecedented level, how patients integrate sensory information with balance, motor and muscular activity.

“In patients where those abilities are compromised, what better way to study them than to have complete control of a sensory environment through virtual reality?” says Williams. “We can look at how patients respond in different settings and what their deficits are in integrating varied senses. Maybe there’s a mismatch between what their hearing is telling them and what their vision is telling them...this is a way to isolate that.”

The work of professor of Neuroscience and Visual Science **Krystel Huxlin, PhD**, provides another example of how AVR technology might be applied. Huxlin currently uses a one-of-a-kind visual training regimen, using a personalized software system, to restore sight in patients who have lost it following a stroke. To maximize the regimen’s potential, she is now working to develop a virtual reality device that would allow patients to do the training at home.

“We want to develop technologies that feed our scientists’ visions, while also being a resource for industries that can benefit from our research,” says Williams. “There are very few universities capable of doing this kind of work, and there are no limits to how it can be applied in neuroscience and beyond...only our imaginations.”

“The relationships are here, the expertise and experience are all here. Now we’re looking at *what’s next*...what can we do even better?”



To support the work of The Ernest J. Del Monte Institute for Neuroscience, please contact James O’Brien, senior director of Advancement, Neuroscience, at (585) 276-6877 or [james.obrien@rochester.edu](mailto:james.obrien@rochester.edu)

*James Feeks, a PhD candidate in the UR’s Institute of Optics, conducts fluorescence imaging of cells in the Advanced Retinal Imaging Alliance, a research group founded by David Williams, PhD, director of the Center for Visual Science.*





**WATCH**  
TO SEE A VIDEO  
ABOUT THE  
PROGRAM visit:  
<https://youtu.be/Ah7gJ4Vgr-w>

# Surgery Made SIMPLE:

Surgeons and Trainees Perfect Their Craft Using Lifelike Anatomy

A URMC program using scientifically-fabricated artificial human organs and anatomy is now being used to create highly realistic simulations for surgical training, and may soon be widely used to rehearse complex cases prior to surgery.

Called SIMPLE (Simulated Inanimate Model for a Physical Learning Experience), the program uses organs so lifelike that they even bleed when cut.

The program is the brainchild of **Ahmed Ghazi, MD, MSc**, an assistant professor in the Department of Urology, and **Jonathan Stone, MD**, a Neurosurgery resident (PGY-7) who also holds a degree in biomedical engineering. Designing the organs involves converting images obtained from medical scans into computer generated designs and—with the assistance of 3D printing—constructing them with materials that can be poked, prodded, and dissected.

“Very few surgical simulations are successful at recreating the live event from the beginning to the end,” says Ghazi. “What we have created is a model that looks, feels, and reacts like a live organ and allows trainees and surgeons to replicate the same experience they would face in the operating room with a real patient.”







*Stone and Ghazi perform a simulated partial nephrectomy in the robotic OR*

## Science Meets “Arts and Crafts”

Developing the method of fabricating lifelike artificial organs was a process of trial and error and began more than two years ago when Ghazi, a urological surgeon and educator, was introduced to Stone, who has a passion for engineering new medical devices, and, most importantly, had access to a 3D printer.

Images obtained from MRI, CT, or ultrasound scans are converted into computer-assisted designs (CAD). But instead of using these designs to create rigid plastic replicas of human anatomy—as is done in many places—the pair instead converted the CADs of organs into molds, or negatives, which were built using a 3D printer. In a process akin to casting a bronze statue, the molds are injected with a hydrogel which, after freezing, assumes a solid state.

The water consistency of the hydrogel is identical to that found in the human body, giving the artificial organs the same feel as the real thing. Formulating the hydrogel so it had the right consistency and correct color took extensive research and experimentation.

“We think of it as science and engineering, although at its heart it is really ‘arts and crafts’ because at the end of the day we are creating sculptures that just happen to be anatomical,” says Stone.

In collaboration with the UR Department of Biomedical Engineering, the team subjected the models to a battery of scientific tests to ensure that the final product had the same mechanical properties as real tissue. They also compared the performance of surgeons on the models and in real patients and found a close correlation between the two. The simulations have also been recognized during annual meetings of the American Urological Association, the nation’s largest organization of urologists. Video presentations of the SIMPLE program earned top honors in 2015 and 2016.

## Full Environment Simulation

Once the basic models of human anatomy were created, the pair began to tweak the designs in order to change the pathology. For example, they would alter the concentration of the hydrogel to add a denser tumor mass to a liver, or a blockage in a kidney, or plaque in an artery. Using the 3D printer to create more rigid structures, the team can also create bone to simulate procedures involving the spine and skull. The potential medical scenarios that the technology could replicate are virtually endless.

Just being able to handle and examine a replica of a real organ can give surgeons vast insights and information. They can observe where the blood vessels enter and leave the organ and, in a cancer model for example, assess the size and location of the tumor. They can even cut away at the organ to take a look at the interior.

Not satisfied with just creating models of anatomy, Ghazi and Stone wanted to take this process further. They wanted students, trainees, and surgeons to experience replications of a complete surgery, which meant not only building the organs of interest, but the rest of the surrounding human anatomy. In this way, surgeons could experience the entire surgical process of guiding instruments to the right location, moving other organs out of the way, clamping blood vessels, and resecting and removing tumors.

To accomplish this feat, the team assembles entire segments of the body, complete with artificial muscle tissue, skin and fat, and, depending upon the area of interest, the liver, intestines, spleen, kidney, and other adjacent organs and structures. Artificial blood vessels are connected to bags of red dye that will “bleed” if cut. This was also done with other bodily fluids such as urine or bile.

The assembled unit can then be brought into the operating room where it is hooked up to a robotic surgical system, and the entire procedure simulated from the first insertion of instruments to completion. The lifelike nature of the simulation has occasionally caused even trained professionals to do a double-take.

“We have had times when we are doing these simulations in the OR when nurses or other physicians have looked in the window and thought we were doing the real thing, and have even gone so far as to scrub and put their masks on before coming in, thinking there was a patient on the table,” says Ghazi.

“As an experienced surgeon, when I am working with these simulations it is often hard to tell that it is not a real patient,” says **Jean Joseph** (MD ’92, Res ’98), MBA, head of urologic laparoscopic and robotic surgery in the Department of Urology who has worked closely with the pair to develop the simulations.

## A Flight Simulator for Surgery

“Surgeons are just like pilots,” says Ghazi. “There will always be the first time a pilot takes a 747 up into the air and there will always be a first time a surgeon does a procedure from beginning to end on their own. While pilots have simulators that allow them to spend hours of training in a realistic environment, there really is no lifelike equivalent for surgeons.”

While the SIMPLE program is an opportunity for surgical residents to practice full procedures and trained surgeons to keep their skills sharp and learn new surgical technologies, the models are also being used with medical students. The surgical procedure that third-year UR medical students are required to learn during their surgical clerkship is a cholecystectomy. In the past,

**“We have had times when we are doing these simulations in the OR when nurses or other physicians have looked in the window and thought we were doing the real thing, and have even gone so far as to scrub and put their masks on before coming in.”**





*Injected hydrogel into a 3D printed mold produced this artificial kidney*

medical students have been limited to observing real gall bladder surgeries or practicing certain surgical techniques on cadavers.

Ghazi and Stone have built a simulation of a cholecystectomy which allows students to perform the surgery in teams from beginning to end—making the initial incision, inserting and guiding instruments, and separating, clamping, and removing the gallbladder via minimally invasive surgery.

“There really isn’t another effective alternative for students,” says Stone. “Virtual reality hasn’t gotten far enough to feel like they are operating and, as a result, medical surgical education is lacking. This gives them a whole task-training model that not only benefits the students who want to go into surgery, but also those who aren’t interested in it as well, because they are able to gain a perspective and appreciation of surgical methods and technologies they may not otherwise be exposed to.”

### **Helping Surgeons Tackle Complex Cases**

While the simulations can be used to train on a generic model of anatomy, the ultimate vision is to harness this technology so that it can enable surgeons to rehearse complex cases before the patient is brought into the operating room. In these instances, the team can build organs using the actual patient scans, accurately replicating the unique conditions that will be found during the live operation. An example of how this model could improve patient care and

outcomes is in a partial nephrectomy, during which surgeons remove a tumor while attempting to preserve as much of the healthy kidney as possible. This procedure necessitates not only that the surgeon successfully remove the tumor and a very small “margin” of adjacent healthy tissue, but that they complete the operation as quickly as possible. Surgeons are essentially racing the clock in the procedure because if blood flow is interrupted for more than 20 minutes, kidney function will be lost.

For this reason it’s critical to anticipate potential complications that could slow the procedure down. While unexpected events are rare in the vast majority of instances, surgeons will sometimes confront more complex cases due to the size and position of the tumor. In these instances, conducting a “dry run” of the surgery in advance can help guide the surgeons when the operation is conducted on the real patient. While widespread use of these patient-specific simulations is the long term vision, Ghazi has already used these models to practice real partial nephrectomies in several instances.

“Surgery is often like a Pandora’s Box,” says Ghazi. “You don’t know what is inside until you open the person up. The fact that we could someday have surgeons practice procedures on these models before going to the operating room helps eliminate the unknown, increases safety, and improves the quality of care. Patients can, in turn, reassure themselves by asking their surgeons, ‘How did the rehearsal go yesterday?’ That is going to be the future of surgery.”

*by Mark Michaud*

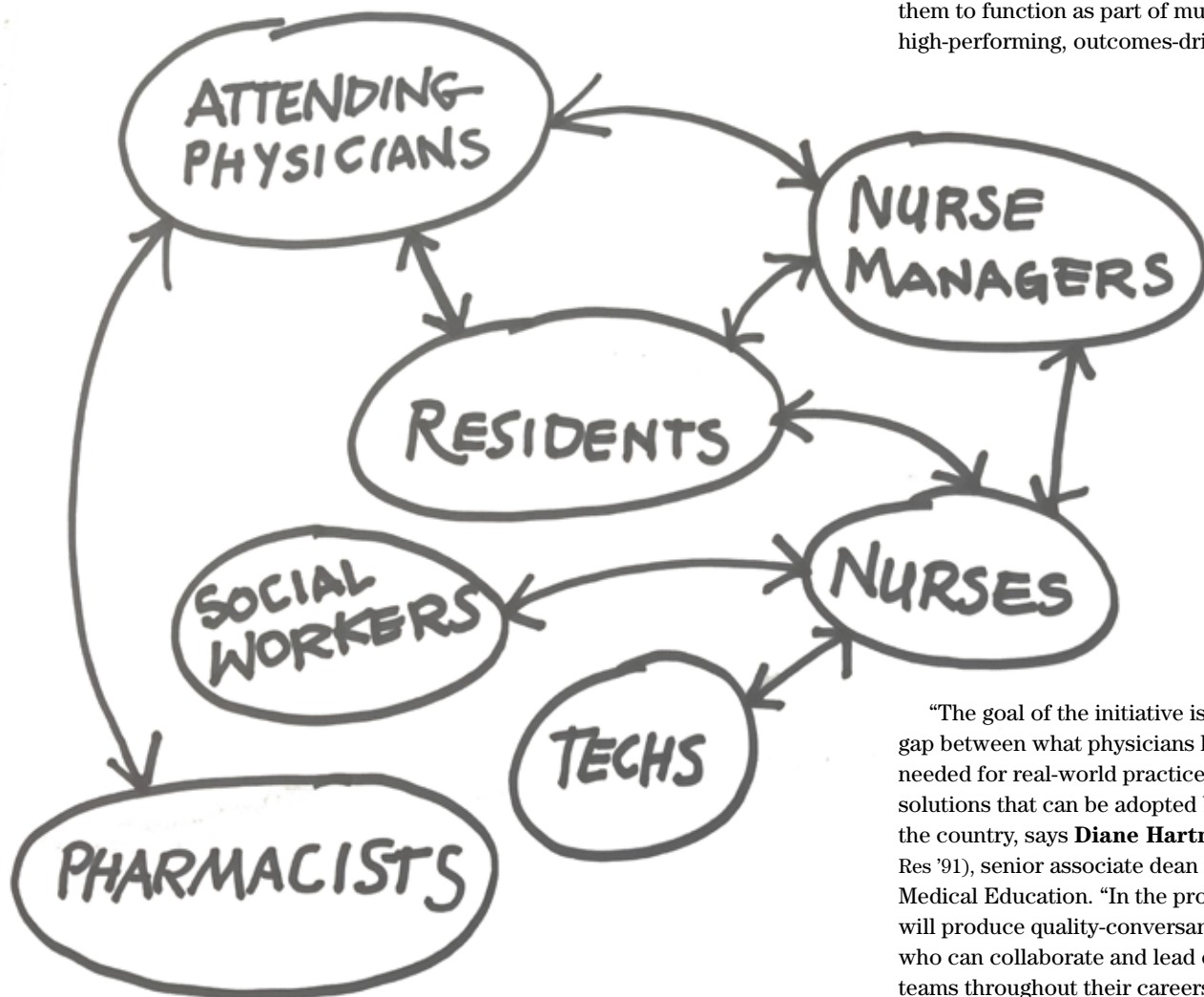
# URMC Leads National Effort to Transform

## Selected as One of Eight ACGME Pursuing Excellence "Pathway Innovators"

In the summer of 2016 the Medical Center learned that it was chosen by the Accreditation Council on Graduate Medical Education (ACGME) to help create a new model for how physicians, residents and other care providers work together to improve quality and safety outcomes.

As one of eight ACGME Pursuing Excellence Pathway Innovators, the Medical Center is leading a four-year, nationwide effort to instill the principles of safe, high-quality, efficient, and patient-centered practice in the nation's residents and fellows, and prepare them to function as part of multidisciplinary high-performing, outcomes-driven teams.

## How New Doctors Learn Quality and Safety



"The goal of the initiative is to close the gap between what physicians learn and what's needed for real-world practice by developing solutions that can be adopted by sites across the country, says **Diane Hartmann** (MD '87, Res '91), senior associate dean for Graduate Medical Education. "In the process, the effort will produce quality-conversant physicians who can collaborate and lead exemplary care teams throughout their careers, no matter where they practice."

The other Pathway Innovator sites include Children's National Medical Center, the Cleveland Clinic Foundation, Maine Medical Center, Our Lady of the Lake Regional Medical



Center, the University of Texas at Austin Dell Medical School, University of California-San Francisco (UCSF) School of Medicine, and the University of Chicago Medical Center.

Creating an environment in which all health care providers can use data to drive measurable improvement in outcomes is, without question, the single most transformative step we can take toward safer, higher-quality, patient-centered, and cost-effective care, says Hartmann.

“Over the next four years, the Medical Center will gradually unroll a number of initiatives that will more closely integrate learners and teachers into quality processes,” she says. “The outcomes data from these evolving initiatives will help inform the ACGME’s national agenda to improve clinical learning environments across the country. Being a Pathway Innovator also gives URM C faculty, staff, and trainees a unique opportunity for professional growth while playing an active role in transforming the health care learning environment.”

### The STEP Project Gets Underway

URMC’s four-year project is called STEP (Systems Transformation through Experiential Partnerships) and includes several evolving components, including:

- Immersing residents in Unit-based Performance Program (UPP) teams on hospital units across the Medical Center, where they are collaborating with multidisciplinary providers on projects to measurably improve quality and safety outcomes and patient satisfaction;
- Creating and implementing a competency-based, experiential curriculum for patient safety and quality improvement (PSQI);
- Supporting and delivering robust faculty development initiatives; and
- Sponsoring an institution-wide annual Team-Based Care Summit to showcase the process-improvement activities taking place across URM C.

During the last few months, eight hospital units at Strong Memorial have assembled pilot teams of attending physicians, residents, nurses and nurse leaders, working in collaboration with technicians, social workers, pharmacists and other personnel across the hospital. Together, these new teams are already identifying issues and launching innovative projects to improve quality and safety outcomes.





**“The outcomes data from this evolving initiative will help inform the ACGME’s national agenda to improve clinical learning environments across the country.”**

*– Diane Hartmann, MD*



Teams are in place on 3-1400, 6-3400, 1-9200, 8-1200, AC5, AC6, 7-1200 and 5-3400, and each is working with the guidance of experienced quality improvement coaches to identify important quality and safety issues, and make process improvements that have a sustainable, multidisciplinary impact.

This dramatically different approach—integrating residents for the first time on existing unit-based teams previously composed primarily of nurses—was expected to take a little time to find its footing.

“However, we are finding that the opposite is true,” says Hartmann. “This culture change is being more quickly and enthusiastically embraced on these units than we ever anticipated, because they realize how much

more they are capable of accomplishing with every discipline at the table.”

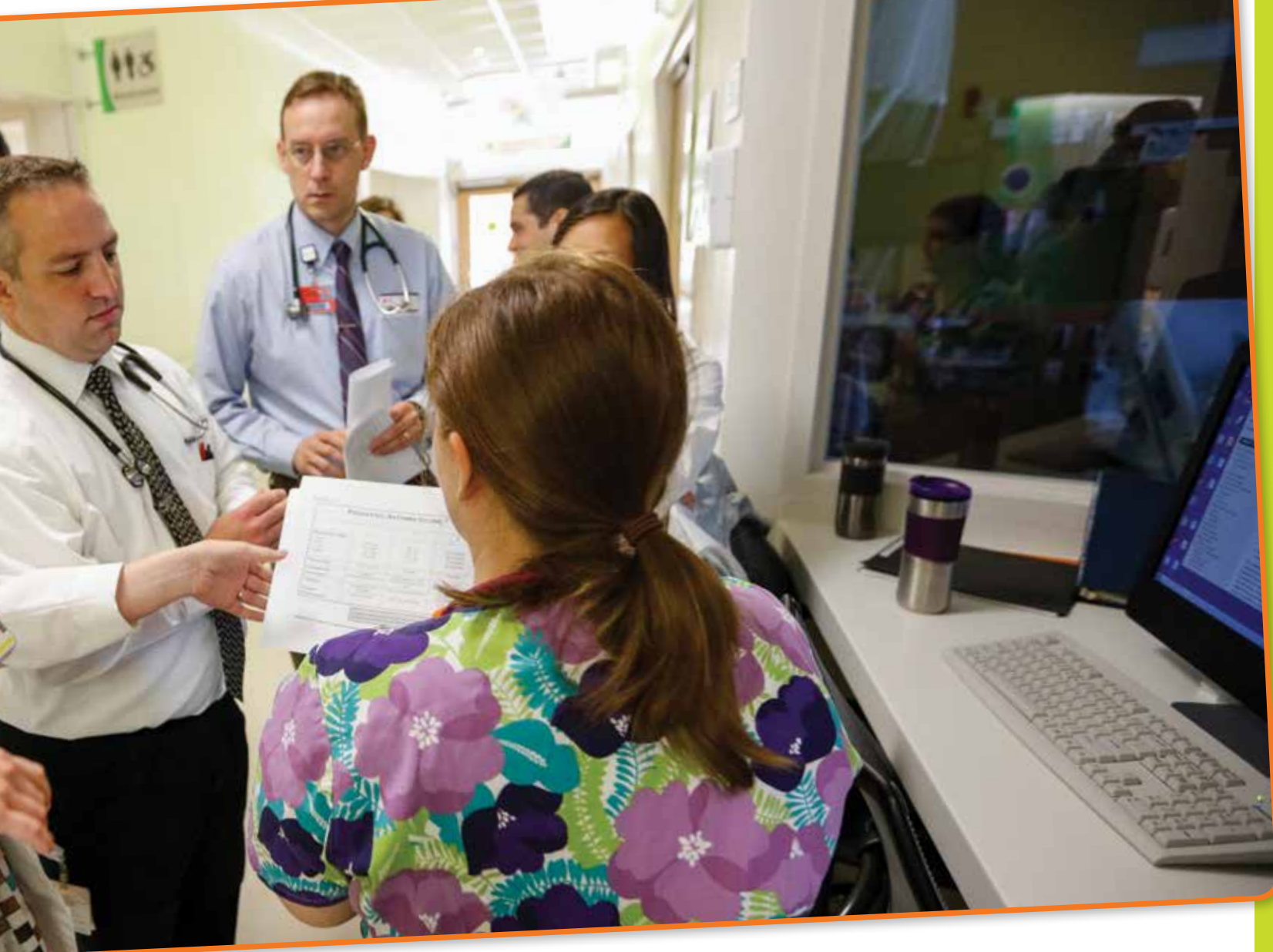
For the 8-1200 (NeuroMedicine ICU) pilot team, it was a green light they were waiting for.

“We all know what the issues are, but until now there was no effective way we could approach them without everyone’s involvement and ideas,” says 8-1200 team member **Debra Roberts, MD**, assistant professor of Neurology, Neurosurgery and Medicine. “Since our first brainstorming meeting, we’ve been amazed at what we’ve been able to do. The residents are actually saying, ‘this is one meeting we don’t mind going to because we’re actually getting something accomplished.’”

For example, the 8-1200 team devised what’s known internally as an external ventricular drain (EVD) “to go” bag, that’s now always at the ready on the unit for Neurosurgery physicians whose patients need an EVD placed to relieve pressure from brain bleeds due to aneurysm, high blood pressure or traumatic injury. Previously, residents traveled to the unit from the Emergency Department to gather and transport the varied pieces of equipment each time, a time-consuming process. The new method gives residents more time to devote to obtaining patient/family consents and preparation for the EVD procedure, while the NMICU team brings the bag to the bedside.

“I was not sure what to expect when we





added the residents to the quality and safety improvement teams, but it has been great,” said Neuromedicine ICU nurse manager **Jamie Fodness, MSN, RN, CCRN, NEA-BC.**

“We meet every other week, and it is the best start to my day, because it is so productive. Everyone seems to feed off each other’s ideas and enthusiasm. The residents add a new and fresh perspective to the areas we wish to see improved and they bring other ideas that, from a nursing perspective, I would not have thought of.”

Fodness adds that the initiative has also provided an ideal way for the nursing staff and residents to get to know one another.

“Since the team changed, I have seen an improvement in interdisciplinary

communication when the residents are on the unit seeing their patients,” she said. “The residents are more comfortable asking the nursing staff questions and vice versa. Indirectly we have improved care, just based on the improvement in communication from the relationships that have developed.”

The team wisely decided to create a list of both short-term and long-term projects so that they could enjoy some encouraging early successes while working toward more challenging goals.

Their other projects include working with Pharmacy to build an automatic laboratory order set for patients who are prescribed mannitol and/or hypertonic saline (osmotic medications for cerebral edema),

and developing a more efficient way, using eRecord, to keep residents informed of a patient’s electroencephalogram (EEG) results without numerous phone calls. The team is also looking to develop bedside informational sheets, based on a patient’s diagnosis, to assist unit nurses in identifying key symptomatic concerns. Other plans include developing orientation packets for medical students on their Neurology rotations as well as more comprehensive packets for residents and fellows rotating in the NMICU.

*by Christine Roth*

# Student David Bernstein Brings 'Rochester Voice' to AAMC



**A**s the newly elected chair of the Association of American Medical Colleges' (AAMC) Organization of Student Representatives (OSR), **David Bernstein** (MBA '16, MD '19) is tackling the biggest concerns of medical students here and across the country.

These include reducing loan debt, improving diversity in medicine, addressing health care disparities, and understanding the impact of ever-evolving health care policies and cost reimbursement models on their patients and careers.

But it's all in a day's work for this ambitious and articulate doctor-in-the-making.

For Bernstein, the national leadership role is a chance to do what he does best: be a voice for his colleagues, sharpen his diplomacy skills, and deepen his knowledge of the business and politics of health care.

"My friends tease me about how I'm always 'ambassador-izing,'" says the MD/MBA candidate who earned his MBA at the Simon School of Business in December and is finishing his second year at the School of Medicine and Dentistry. "I take that as a huge compliment because I love meeting people

and learning something from every person. Every relationship is a pathway to a new experience or idea."

The AAMC/OSR position is a three-year term. During this time, he will lead the OSR administrative board, and sit on the AAMC group on student affairs (GSA) steering committee (chaired by Johns Hopkins School of Medicine associate dean of Student Affairs Thomas Koenig, MD), where he'll help guide national efforts to improve academic medicine. In addition, he will be a sounding board for the concerns of medical students across the country.

"The medical school is thrilled to have one of our students in this major national leadership position," said **David R. Lambert, MD**, senior associate dean for Medical Student Education. "It will allow the 'Rochester voice' to be heard on a national platform. The school works to promote student involvement in national organizations and prominent research programs, and David will represent us well."

Bernstein says he is most intrigued by how the science, art and business of medicine interconnect and how the goals and objectives of each area can be aligned more closely.

"The solutions lie in being able to see the issues from all perspectives, the financial side, the patient side, the provider side, and the researcher side," says the tech-savvy and personable 26-year-old who prides himself on returning emails within an hour, if not a few minutes. "That's something I hope to bring to all my student endeavors and my future career."

A Boston native, Bernstein had an early role model in his father, pediatrician Henry (Hank) Bernstein, DO, now chief of Pediatrics at North Shore University Hospital and professor at Hofstra Northwell School of Medicine in Long Island, N.Y. His mom Sophie was a nurse.

"My parents are my heroes," says Bernstein. "I was always around health care, but I never felt any pressure to pursue it," he says. "I chose it because it's a field where you can have a direct impact on a person's life during their biggest time of need. I saw my father's impact on children and families on a daily basis. No other field is quite like that."

When it came time for college, Bernstein chose Bowdoin, a tiny (about 1,800 students) private liberal arts college in Brunswick, Maine. There he studied economics and anthropology—and played college baseball too—but always kept his eye on a career in medicine.

"The push at Bowdoin is to become a problem-solver and critical thinker, and it gave me a perfect foundation for medical school," he says. "One of the things we would have to do there is put forth what we think is a good idea, and then look at it completely from the other side, and write about why it's *not* a good idea. Bowdoin also teaches that you should try to make a positive impact for the common good, rather than just personal gain."

At UR, Bernstein found an environment to nurture his pay-it-forward attitude.

"Bowdoin teaches it, and Rochester loves it...it fuels the engine here," he says, "When my father connected me with (clinical professor of Pediatrics) Dr. (Lawrence) Nazarian, I knew right away this was where I wanted to go. It just had a different, more intimate feel. You're in a small community, but you get to do the highest level of research. There are world leaders in major areas, but without major egos. People recognize and engage with each other in a patient-focused way. That's a difference-maker."



He was so confident in his Rochester choice that he took advantage of the early assurance program between his sophomore and junior year to lock in attendance. Since arriving on campus, he's found a way to serve the local community by volunteering for the student-run, free clinic UR Well, where he is junior coordinator for the musculoskeletal care specialty.

He has also channeled his energies into summer internships—one in Rochester and one at Dell Medical School in Texas. Both were focused on orthopaedics, an area rife with opportunities to learn about the integration of evidence- and value-based care.

At Dell, Bernstein had the unique opportunity to learn from chair of Surgery and Perioperative Care Kevin Bozic, MD, MBA, a hip and knee surgeon at the forefront of research in health care technology assessment, cost-effectiveness analysis, shared medical decision making, and the implementation and evaluation of value-based (i.e., bundled) payments and delivery models. He was also mentored by associate dean for Comprehensive Care David Ring MD, PhD, (with whom he co-authored several papers), and Karl Koenig, MD, MS, medical director of Dell's Integrated Practice Unit for Musculoskeletal Care, an innovative endeavor to improve patient-centered, value-based care.

In his Rochester internship, Bernstein expanded his knowledge and conducted research under URM orthopaedic surgeon **Addisu Mesfin, MD**, whom he met in a Simon School class. Mesfin focuses on spine surgery trends, risk factor analyses and clinical outcomes of patients following spine tumor removal and surgical treatment of scoliosis.

Under Mesfin's mentorship, Bernstein had a first-author abstract selected for a podium presentation at the International Meeting on Advanced Spine Techniques (IMAST) in Cape Town, South Africa, and presented there in July. He has also been mentored by **Judith Baumhauer, MD, MPH**, professor of Orthopaedics and director of URM's Orthopaedics Foot and Ankle Institute, and other URM orthopaedic surgeons including **Benedict DiGiovanni, MD**, and **Warren Hammert, DDS, MD**.

"I couldn't have asked for better guidance and support than I've received from the Orthopaedics faculty here," he says.

The Rochester internship convinced him he had made the right choice for medical school. But while preparing to don his white coat in the fall of 2013, he learned at the last minute he was the recipient of a Fulbright scholarship to attend the University of Luxembourg.

So, he postponed medical school a year to gain insight into the European health system, and earned a master's degree in entrepreneurship and innovation. He

credits his teachers and mentors—at Bowdoin, Dell, in Rochester, and Luxembourg—with solidifying his interest in finding ways to forge a better relationship between health care and business policy.

"There are many people who understand the science, art or business of medicine but very few understand them all," he says. "That's what I aspire to."

With health care having the largest consumer base of any business in the world, the stakes are high, he says.

"Everyone needs health care that is affordable, but it also needs to be profitable," he says. "Traditionally, finance and medicine have been at opposite sides of the table. So often one side gets mad at the other and they walk away without solving the problem."

For example, says Bernstein, hospital finance personnel might ask a surgeon why they need a certain instrument for a procedure, and if there might be a less expensive way to do it.

"The surgeon wants to do what he thinks is best for the patient regardless of cost, and the tendency is for emotions to get in the way of exploring new possibilities and resolving issues," he says.

Bernstein was chosen by his first-year SMD classmates to be an AAMC representative, where he attended national meetings, weighed-in on policy and business issues, and was tapped as a delegate to the AAMC's Northeast Group on Educational Affairs.

"The next thing I knew my colleagues said 'Why don't you run for chair of the student representatives group?'" he recalls.

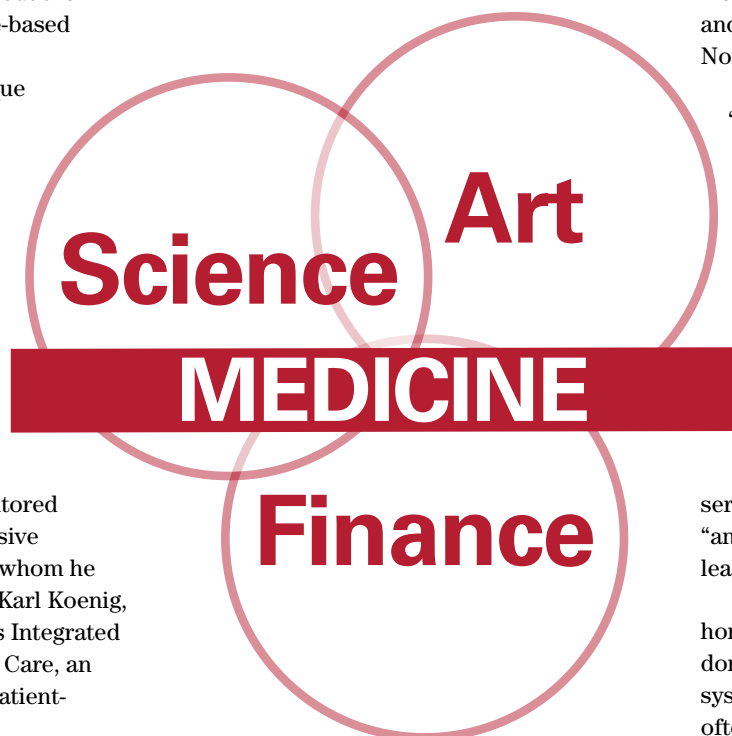
In the late fall, he gave a five-minute speech, and answered questions from an AAMC panel of student representatives. After votes from over 100 participating U.S. medical schools were tabulated, he learned he won the post and began his duties in January. These include attending AAMC/OSR administrative board meetings in Washington, D.C., as well as regional and national meetings, serving on numerous committees, and "ambassador-izing" with faculty and hospital leaders from across the country.

"To represent my peers like this is a real honor," he says. "As medical students, we don't have much leverage in the health care system and can feel very powerless. But we often demand a lot of things without offering solutions. With this opportunity, I realize I need to bring good ideas to the table. I think that's critical."

Bernstein—who was also selected to be a 2017 Fulbright Alumni Ambassador—hopes to use his platform to advocate for more education about health systems in med school.

"How will health care regulations and insurance reimbursement policies guide the way we practice in the future?" he says. "That's something we don't learn enough about as medical students. For example, you may know a certain drug is the greatest, but if it's not covered by insurance, your patient can't afford it. Understanding medicine is at the core of every physician, but understanding all of the influential outside factors, too, is what helps drive genuine change."

*by Christine Roth*



# What Qualities Make a ‘Good’ Doctor ‘Great’?

## Mindfulness Book Offers Some Answers

**Ronald Epstein, MD** (Res '87, Flw '90), who's had a legendary impact on the hearts and minds of thousands of School of Medicine and Dentistry students and alumni, has written a book for clinicians and the lay public about the “mindful” practice of medicine.

The book is called *Attending: Medicine, Mindfulness, and Humanity* (Scribner, January 2017), and the title was chosen deliberately, to reflect the ideals of a senior attending physician.

“Attending means showing up, being present, listening, and accompanying patients when it matters most,” Epstein writes. “Attending is also a moral imperative: by being attentive, doctors not only provide the best care, they also honor each patient’s humanity.”

Epstein’s interest in this topic dates back to his days as a medical student. He tells a story of watching an experienced surgeon fail to notice that a patient’s kidney was turning blue during a routine procedure. In the same rotation, Epstein says, a different surgeon was adept at slowing down when necessary and weaving between speed and precision during a very complex operation.

What separates the merely good doctors from the truly masterful? Self-awareness and mindfulness are the essential qualities, Epstein concludes after years of research, observations, and practice. Being mindful extends far beyond knowledge, skills, and technique, he adds. It means setting aside judgments and assumptions during encounters with patients, seeing speed bumps sooner, and becoming curious rather than rigid or defensive if something unexpected arises.

The book offers an inside look at medicine and how doctors think, illustrated with true stories.

“I’m hoping readers will see medicine through new eyes,” Epstein says. “I also hope that people realize that mindfulness is not just for doctors, it’s valuable for everyone. Many of us work under tremendous pressure—whether it’s due to workload, parenting, or other demands on our lives. Mindfulness is the ability to focus and shift out of autopilot.”



Epstein has distilled mindfulness in medicine into four key skills:

- Paying attention both outside and inside; being able to observe one’s own tendencies in difficult circumstances
- Critical curiosity and being open to novelty
- Maintaining a “beginner’s mind,” or the ability to see a familiar situation from another angle, as if it were new
- Being present. Most doctors and patients know when they’re being completely attentive and present with one another—and when they’re not. Presence is the key to making a connection.

As a professor of Family Medicine, Psychiatry, Oncology, and Medicine at the School of Medicine and Dentistry, Epstein has built a worldwide reputation for physician training. He was the medical school’s first George Engel and John Romano Dean’s

Teaching Scholar, and in 2001 developed the Comprehensive Assessment (which is actually a series of assessments) for second-year medical students, one of Rochester’s hallmarks. Given much more frequently than most, if not all, medical schools, the assessments emphasize the connection between basic science and the clinical world, and give faculty and students an opportunity to see how they communicate with patients early in their education. The Comprehensive Assessment created a sea change in the way students were educated by providing real-life clinical encounters that were then evaluated by peers, standardized patients, and faculty, rather than through written exams.

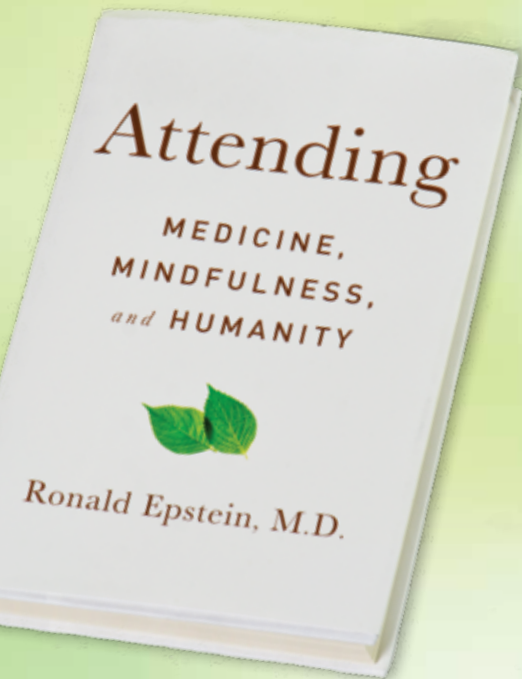
The following year, in 2002, Epstein wrote a medical education article that is among the top-five most widely cited articles in the last century. It called for revamping the definition of “professional competence” beyond knowledge of medicine and basic skills and to include reasoning, time-management, communication skills, and the way doctors cope with ambiguity. He has also written extensively about physician burnout and doctor-patient communication when the stakes are particularly high, as in cases of advanced cancer or end-of-life care.

by Leslie Orr



# Containing Multitudes

An Op-Ed by **Ronald Epstein, MD** (Res '87, Flw '90)



**R**ecently I had an encounter with a patient who was not like me in several ways. He had chronic pain for years and lately had been misusing and lying about narcotic medications that I had prescribed. He nearly killed himself and was now demanding more medication. I was enraged. I thought, “That one, not like me, not my tribe, kick him out of the practice.” But my short-sighted view of him would take a toll on both of us. He would feel betrayed and so would I. We were at a stalemate – he, a human being in pain deprived of caring attention and me, not able to fulfill my role as a healer.

In a mindful moment I remembered a line from “Song of Myself” by Walt Whitman, the great American poet. Looking straight into the eyes of those whom he might consider “not like me,” Whitman could see a spark of humanness that merits deep regard, respect, and humility. He described how he could see himself in the criminal and the victim, the robust and the dying, a realization that his vision of openness and inclusion was at the core of the American spirit. “I am large,” he wrote. “I contain multitudes.”

Recalling Whitman’s “multitudes,” I considered my patient in a new light. I saw that it was possible to set aside my anger and disappointment. I could become curious and try to know and understand him better. I learned that he had an unspeakably abusive childhood, chronic pain from a fractured jaw and brain damage from repeated concussions. He was in a cycle of despair, having made bad decisions that cost him his job and his family. As we talked I realized he was no longer an “other.” We were doctor and patient, but our candid conversation made him more connected to me and I to him. Eventually he went into drug treatment.

There is an alternative, and I’m not just suggesting tolerance or reconciliation. I’m talking about awareness—learning to be aware of your own thoughts and feelings, and to listen deeply. Awareness means unflinching acceptance of our own tendencies to avoid knowing those whom we see as different.

I teach medical students and doctors that it takes effort, resolve, and practice to be a healer in the face of our natural tendencies to avoid knowing those whom we see as different. Learning to be aware of your own thoughts and feelings, and to listen to them, is key. I suggest that before they see each patient, they pause for a moment, hand on the door handle, and mentally set aside everything that happened in the previous encounter so they can be fully attentive to whatever the next patient might bring—beautiful or horrible, expected or surprising. Ask: “What am I assuming about this patient that might not be true?” Smile, as if to say: “Welcome, this is your time; here I am, listening.” Recognize that we all contain multitudes.

Recognize that we all contain multitudes.

## Flavia Nobay Selected to Lead Admissions Office

**A**ssociate professor of Emergency Medicine **Flavia Nobay, MD**, who has directed the Emergency Medicine residency program since 2008, and mentored dozens of up-and-coming doctors along the way, will now become a familiar face to many more students as the SMD's new associate dean for Admissions. She succeeds professor of Neuroscience **John Hansen, PhD**, who is retiring from his administrative post after more than 20 years in the role.

Nobay has gradually transitioned to the position as an assistant to Hansen over the last several months.

"Flavia is very passionate about the medical school, has a strong familiarity with the curriculum, and is focused on strengthening our Rochester connections, while building our national presence and outstanding alumni base," says senior associate dean for Medical Student Education **David Lambert, MD**, who led the selection process. "She's deeply committed to furthering the school's holistic approach to student selection that John has so skillfully championed here."

This philosophy, says Lambert, looks beyond test scores to explore all the varied dimensions a student can bring to the profession. As a residency program director, Flavia has a keen sense of the traits and abilities today's physicians need to possess, and will bring valuable insight to our admissions process," he says.

The SMD has risen to become one of the most selective medical schools in the country, typically accepting 104 students from a nationwide pool of over 6,000 applicants each year. Roughly 20 percent are underrepresented in medicine and more than half are female.

Nobay says she hopes to build on this success and shape a student body that





# “The medical school is highly regarded across the country because it’s not focused on churning out doctors, but about creating leaders who represent holistic values.”

personifies the school’s humanistic approach, but is also in lockstep with the evolving health care system and its need for diverse, outcomes-driven, data-savvy, team-oriented physicians.

Although she has cherished her role as an Emergency Medicine physician and teacher since joining URM in 2006, the move to the medical school feels like a natural progression, she says.

“Working in Emergency Medicine gives you an ability to connect with people in a way that is not reproducible in any other field,” she says. “Teaching and mentoring emergency residents has been a deeply rewarding way to have an impact on the future of health care. But this move was an easy choice for me because I’m representing a fantastic product. The medical school is highly regarded across the country because it’s not focused on churning out doctors, but about creating leaders who represent holistic values.”

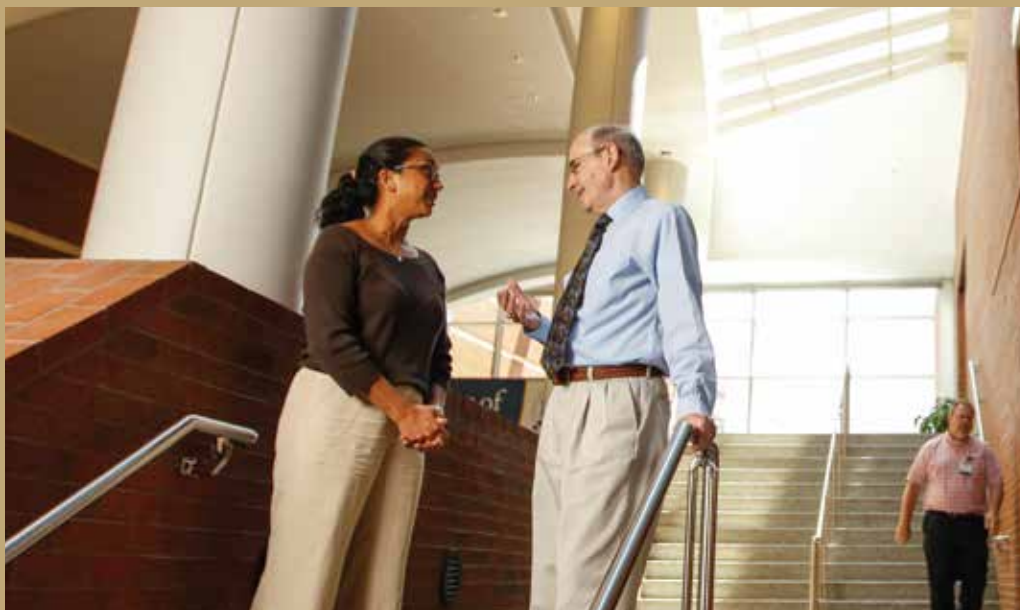
Nobay says SMD students are taught not to just listen to a stethoscope but to listen to the patient, and interpret findings in the context of a patient’s illness, environment and family.

They are taught not to just treat a patient in the moment, but to find ways to make the quality of a patient’s life better and safer. Being a part of this revolutionary educational dynamic now is a privilege.”

What are the best traits a future physician can have? Curiosity for learning, she says.

“They can’t be afraid to ask the hard questions,” she says, adding that roughly 40 percent of all SMD graduates elect to build their careers in the Western New York area.

“They must be unbiased, independent thought-leaders who realize they are ambassadors of the community and have a responsibility to enrich it in any way they can. They must always be aware they are part of a mechanism larger than themselves and be adaptable to working on health care teams.”



A native of Los Angeles, Nobay completed her undergraduate work at the University of California at Berkeley and earned her medical degree from the University of California at San Diego. She completed her residency and post-doctoral training at UCSF’s Alameda County Medical Center, where she served as a clinical instructor, and later as assistant professor of Emergency Medicine, from 1991-2006, after which she joined URM.

After arriving in Rochester, she was also selected to lead the Rochester Early Medical Scholars (REMS) program, an eight-year BA/BS plus MD program for outstanding undergraduates committed to pursuing a medical career. It is the University’s most competitive combined admissions program. Her work with REMS and with residents has given her an opportunity “to oversee experiences on both ends of the academic spectrum” with the medical school being the only remaining piece.

Nobay says she hopes to help bring more women into medicine who aim to ascend to

academic and leadership roles, and develop strategies to support their progression. She recently co-authored a journal article on the best practices for recruitment and advancement of women in emergency medicine.

Before beginning her new role, Nobay took a month-long trip to Borneo, in Southeast Asia, with her husband, **David Adler, MD, MPH**, associate professor of Emergency Medicine and of Community and Preventive Medicine, and their children. Adler works with a project that provides health care to Borneo residents in order to keep them from cutting down the rainforest to pay for it—a project that also typifies Nobay’s goals and vision.

“What is most important to me now is educating future physicians about the importance of creating health systems that advance entire populations of people, to teach them the highest standards of care, and give them the tools to make a difference,” she said.

*by Christine Roth*

# Transitions

## John Hansen: A Career That Launched 3,000 Ships

To think, if he had lived a little closer to the west coast, **John Hansen, PhD**, might have become a marine biologist.

But thanks in part to the cold temperatures of the Great Lakes, the Wisconsin-native—a budding ‘Jacques Cousteau’ and certified scuba diver while coming-of-age in the 1960s—dove head-first in a completely different career direction.

More than 3,000 School of Medicine and Dentistry alumni can count their lucky “starfish” for that decision. That’s the number of first-year students the professor of Neuroscience and “guru of anatomy” has taught since he was recruited in 1985 to direct the medical school’s anatomy program.

In addition to teaching one of the SMD’s top-rated courses for three decades, Hansen deftly navigated two major curriculum changes, ascended to become chair of Neurobiology and Anatomy, and stepped up to become associate dean for Admissions, where for 21 years he has helped shape the student body of one of the most selective schools in the country. He also built and maintained a collaborative, externally funded research program, and became lead consulting editor for the most widely-used human anatomy atlas in the world.

“I’ve been very blessed,” is how he sums it up, in his modest, get-up-and-go-to-work fashion. Indeed Hansen, who steps down from his admissions role this summer, has been a strong, quiet force at the medical school, confidently and matter-of-factly maneuvering it through swift currents of change in philosophy, curriculum, technology and leadership as America’s health care system has morphed and shifted under intense political and economic pressures.

“I’ve gotten to do everything I set out to do, and more,” he says. “I love students, and I had the luxury of being able to play a role in selecting some outstanding young people, and the added joy of teaching anatomy to first-year students every day for 14 weeks in the fall. I’ve also been lucky to keep a research lab going with some incredible collaborators...so it has been a good ride.”

Hansen says one of the best things he did

was listen to his master’s thesis advisor and pursue a PhD in anatomy, rather than biology, so that he could teach first-year medical students and have more time for research.

He attended Tulane—which at the time had a large NIH-funded anatomy graduate training grant—to study under internationally-known developmental biologist S. Meryl Rose, PhD. Rose did serve as one of his mentors, but Hansen’s scientific focus soon shifted after “falling in love with cellular neurobiology and electron microscopy,” a rapidly growing field in the early 1970s.

“I was interested in photography so it was a good fit,” he recalls. “I ended up working in the nervous system, innervation of the heart and peripheral dopaminergic systems, which were very interesting to me.”

### Rolling Up His (Plaid) Sleeves

After earning his PhD, he joined the University of Texas and stayed 10 years, first teaching dental students and later medical students. He earned an NIH Research Career Development Award and rose quickly to become an associate professor. But as his two children grew, Hansen and his wife felt the need to relocate to a better school system. After doing some homework, Rochester (and the Brighton Central School District) caught their eye.

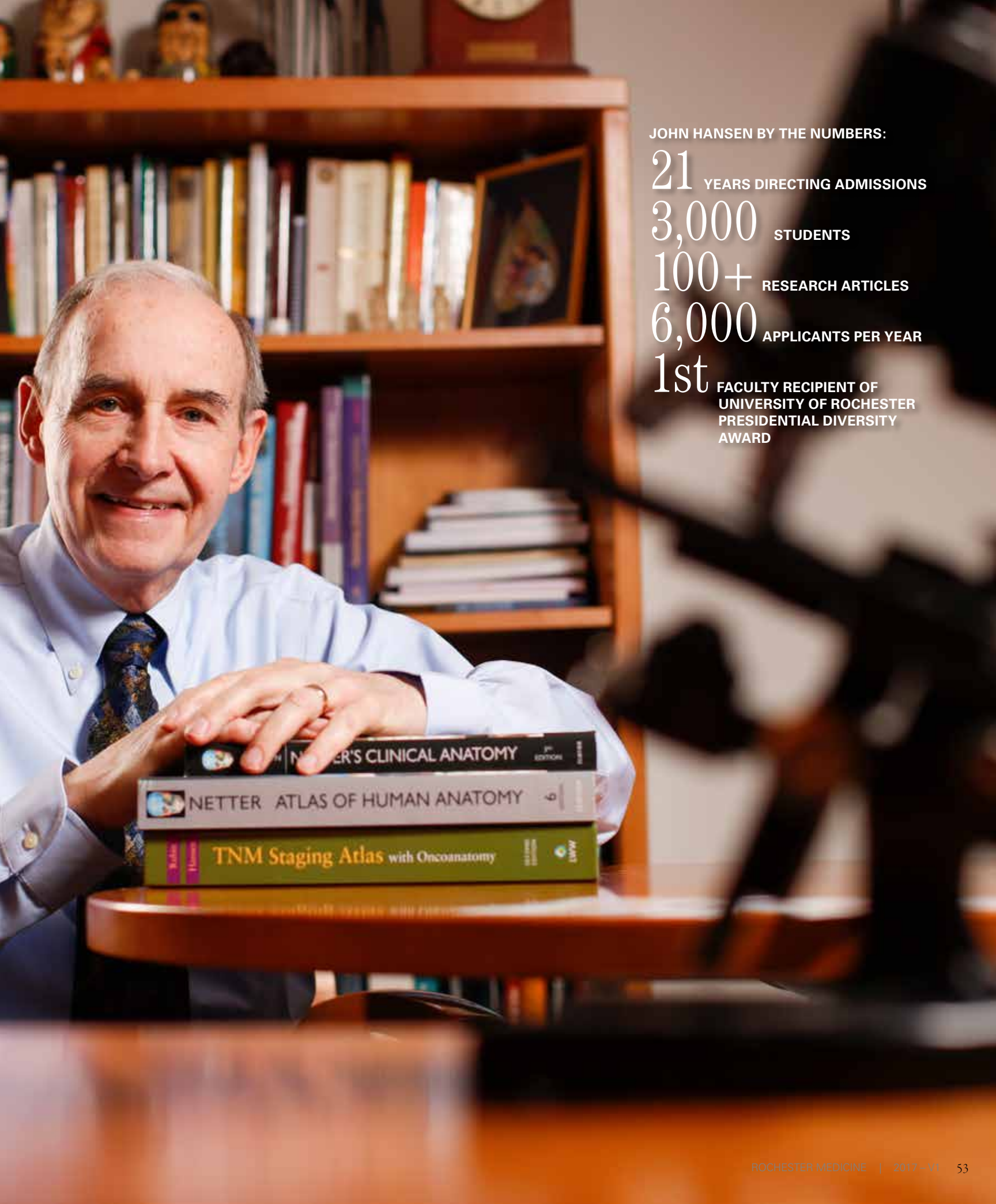
“I visited Rochester on April Fools’ Day, and of course, it snowed,” he recalls.

Here he met the very persuasive **Jules Cohen, MD** (then senior associate dean for Medical Education), who was leading a major curriculum revision in 1985 and needed someone to direct the anatomy program and teach the Human Structure and Function course, which at the time integrated anatomy and embryology.

“I was concerned about not being able to do research because anatomy is an intensive teaching commitment with many hours of lecture and lab time,” says Hansen. “I knew I would need good collaborators to stay funded. Luckily there were active studies going on here in neurodegenerative diseases like Parkinson’s, and they were interested in having someone like me on the team with cell biology and microscopy experience. This great







JOHN HANSEN BY THE NUMBERS:

21 YEARS DIRECTING ADMISSIONS

3,000 STUDENTS

100+ RESEARCH ARTICLES

6,000 APPLICANTS PER YEAR

1st FACULTY RECIPIENT OF  
UNIVERSITY OF ROCHESTER  
PRESIDENTIAL DIVERSITY  
AWARD

# Transitions

collaboration let me teach and maintain an active externally-funded research program.”

Colleagues say Hansen brought a new energy for teaching to the school.

“John ignited something here,” says professor of Neuroscience **John Olschowka, PhD**, who has taught and conducted research with Hansen for 32 years. “He doesn’t settle for less than doing the very best job of teaching students. He nurtured that enthusiastic feeling, that tradition, among our faculty, and we all easily joined in. Now we’re all involved in passing that legacy on to younger faculty. We’re in a transition period as many of us near retirement age, so it’s very important to prepare the next wave.”

Early in his career Hansen also started another tradition—wearing a plaid shirt and khakis to work every day. His wardrobe became such a popular subject of conversation that near the end of one semester, every student came into his class dressed in plaid. “John got a real kick out of that,” recalls Olschowka. “The first-year students adored him and John would win the teaching award year after year. Finally it got kind of embarrassing, and he told whomever was in charge at the time to take him off the list.”

## A Role He Couldn’t Refuse

In 1995, Jules Cohen came to Hansen with another request. He needed a new associate dean for Admissions.

“I had just stepped down as chair of Neurobiology and Anatomy, and Jules asked if I might direct Admissions for three-to-five years,” recalls Hansen, who had interviewed student applicants at the University of Texas and served on the URSMD admissions committee since 1987. “I said, ‘Sure, it couldn’t be worse than being chair of a department.’ That was 21 years ago. The truth was, I loved meeting young people and having a role in selecting the classes. I wasn’t planning on doing it this long, but it kind of grew on me.”

Later that same year, Cohen came knocking on Hansen’s door again. He needed someone to pull together a committee to draft a White Paper that would provide a roadmap for how medical education should evolve to keep pace with changing health care needs.

“Jules was getting ready to step down and wanted to have something to hand to his successor,” says Hansen.

That legendary paper—which took 18 months to create and harnessed the ideas of SMD faculty across multiple disciplines and research areas—became the blueprint for the Double Helix Curriculum rolled out under dean emeritus **Ed Hundert, MD**.

“The moniker ‘Double Helix’ was suggested by the chair of Pharmacology and Physiology at one of our early committee meetings,” says Hansen. “Dr. Hundert took that paper and re-designed the curriculum, created space for Student Services, and gave us *carte blanche* to



do all kinds of innovative things. He was very charismatic, which helped.”

The new curriculum was a major departure from lecture-based education, offering a hybrid of lecture and (earlier) clinical experiences, small group and problem-based-learning, and expanding the Primary Care Clerkship.

Hansen recalls using some salesmanship to recruit the first class of students to test the curriculum in 1999.

“They were asked to take a leap of faith,” he says. “They thought of themselves as guinea pigs, and I said, ‘Oh no, you’re pioneers.’ It turned out that was very true.”

## A Changing Student Body

In his two decades directing Admissions, Hansen saw paper applications change to an electronic format, and the number of applicants rise from 2,000 to more than 6,000. Every application folder gets reviewed, he says, but only about 650 (roughly one-tenth) are invited for interviews.

Those that make the cut have strong academic portfolios, but also “a good work ethic, demonstrated empathy, and altruism,” he says. “Many students gain clinical experience as undergraduates by volunteering, shadowing, and working as medical scribes.

Increasingly, we’re seeing more students take a gap year, or more, after college to join the Peace Corps, AmeriCorps, Teach for America, or address health disparities in urban or rural areas, and really test whether they want to work in health care. As a result, our incoming students are a little older (average age is 24), although they all still look young to me.”

By far, Hansen’s greatest achievement is improving the diversity of the student body in terms of gender, race, disability, sexual identity, religion and socioeconomic status.



Women, for example, now comprise 52% of the incoming class (up from 35% in 1995) and in 2015-16, there were 22 enrolled black male students in the school, the fourth highest in the country among non-Historically Black Colleges and Universities.

“Increasing the number of underrepresented students in medicine is what I’m most proud of,” says Hansen, who was the first faculty recipient of the University’s Presidential Diversity Award in 2010.

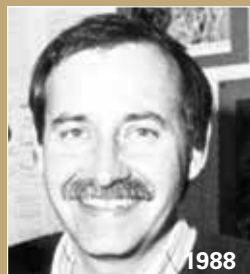
All of the deans of Medical Education during his tenure were supportive of the effort to diversify the school, recognizing the distinct challenge of recruiting from a finite pool of qualified candidates, particularly among Native Americans, and U.S.-born African Americans, Hispanic and Latino-Americans.

“Many are first in their family to go to college and cost is a major issue,” says. “We have made it a priority to invest in the broader community infrastructures that strengthen the pipeline of culturally diverse medical students. At the same time, we’ve built a support system and welcoming atmosphere for faculty and students that makes them want to come here.”

## He Wrote The Book

In 2002, Hansen, who has authored more than 100 research articles, was selected by Netter’s





**“Dr. Hansen used this special white chalk that didn’t ever squeak..and with it he drew the most beautiful illustrations of anatomy I’ve ever seen...”**

– Erika Augustine (MD ‘03), MS

to become the new editor of the publishing company’s *Atlas of Human Anatomy*, the most widely used human anatomy atlas in the world, published in 18 languages. For the last five editions, including one coming out in March 2018, he has been the lone editor or lead editor. *A Netter’s Clinical Anatomy* textbook (four editions), anatomy Flash Cards (five editions) and anatomy Coloring Book (three editions) followed suit, an achievement giving him iconic status with anatomy students around the globe.

Research-wise Hansen was forced to evolve as neuroscience shifted its focus from cellular to molecular biology to solve disease puzzles, which “wasn’t as gratifying for me as taking beautiful pictures of cells and tissues at 500,000 magnification,” he admits.

Nonetheless, he earned several years of continual NCI funding to support his studies of radiation’s effects on the brain, before turning the grant over to Olschowka and vice chair of Neuroscience **Kerry O’Banion, MD, PhD**, whose lab now has NCI and NASA support.

In retirement, Hansen and his wife hope to eventually relocate to the California Bay Area to be closer to their daughter, a physician, their son, an engineer, and their grandchildren. But until then, as he concludes his last year of teaching, he’ll continue to review applications and interview students one day-a-week.

He starts every interview, as he’s always done, with the same three questions. “How did you pick your undergraduate school, how did you pick your major, and why does that bring you to medicine? I figure if they can’t talk about that, they’re in big trouble. From there, I sit back and let the conversation unfold, and usually I don’t have to say anything for 10 or 12 minutes. I look for excellent communication skills, good eye contact, but mostly I want to hear that they’ve had the courage to extend themselves outside their comfort zone.”

Like scuba diving?

“Yes...and if they love what they do, that always shines through.”

by Christine Roth



SCHOOL OF  
**MEDICINE &  
DENTISTRY**  
UNIVERSITY of ROCHESTER

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Award

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Alumni Service Award

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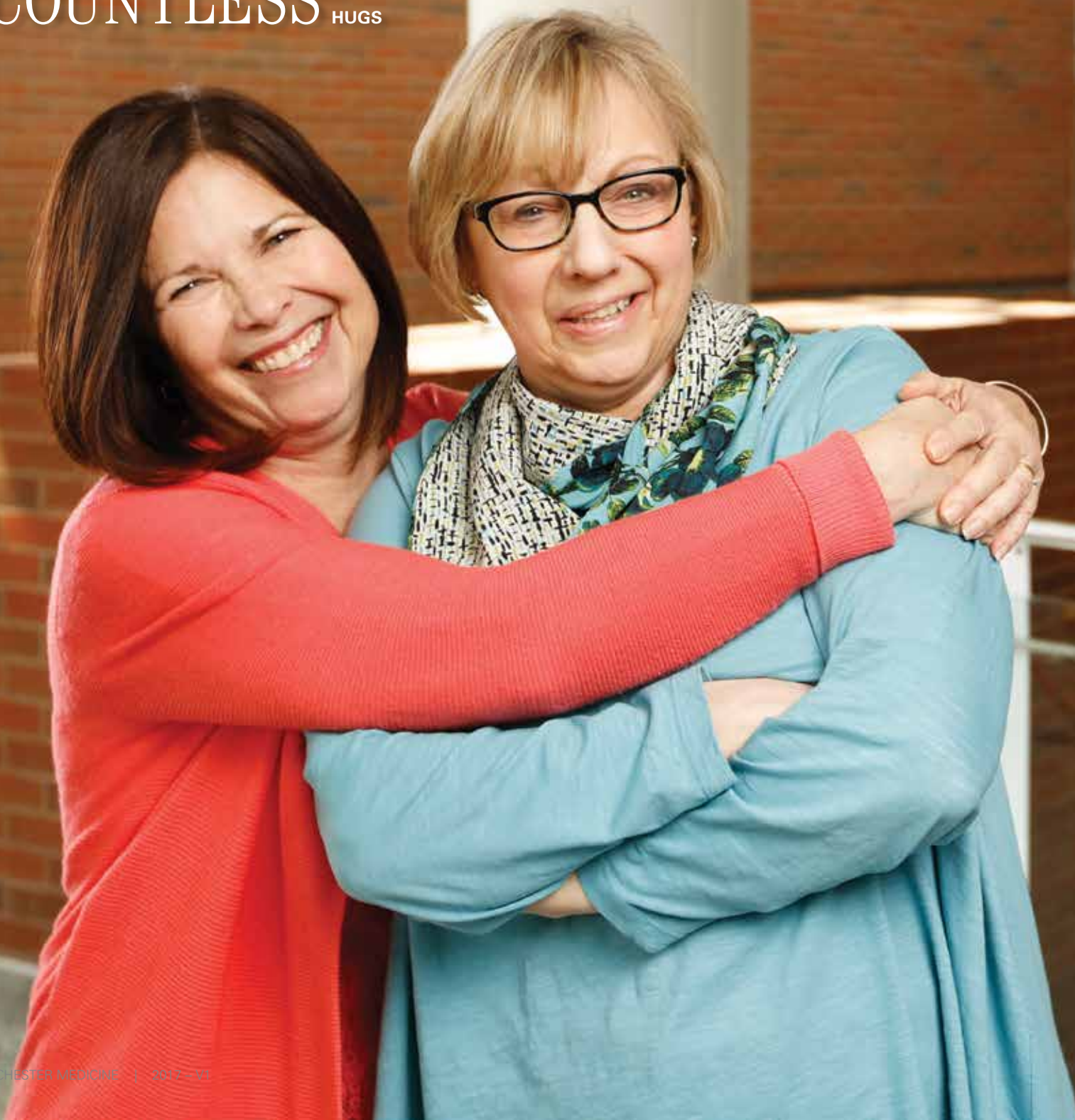
# Transitions

PAULA SMITH AND CAROL VELTRE BY THE NUMBERS:

40 YEARS OF FRIENDSHIP AND MEMORIES

25+ MATCH DAYS AND COMMENCEMENTS

COUNTLESS HUGS





**W**hen Student Services director **Paula Smith** and registrar **Carol Veltre** retire this summer, they take with them four decades of SMD history. Together they have worked for seven different deans and supported thousands of students through the highs and lows of medical school and beyond. Under their capable backstage direction, dozens of white coat ceremonies, convocations, Match Days, commencements, student events and conferences took place as flawlessly as Tony award-winning Broadway shows. Within their hearts, they hold the memories of the smiles and tears, triumphs and challenges, and the joy of knowing they made medical school feel less like an obstacle course, and more like home for SMD alumni now practicing around the world.

### About Paula

A native of the local town of Greece, Paula earned her associates' degree from MCC and quickly landed a secretarial position in the Clinical Laboratories where she worked for seven years. She then moved on to the Department of Pediatrics where she worked as a secretary, program manager, and coordinator of major fundraising efforts to support the evolution of what is today Golisano Children's Hospital.

After leaving Rochester for five years, she returned to URMCC Pediatrics briefly before transitioning to the SMD alumni office in 1991. There, Paula found her niche forging connections with medical students, and in 1999 was named administrator of SMD's consolidated Student Services. In this role, she united all student-related areas (admissions, registrar's office, financial aid, and what is now the Center for Advocacy Community Health Education and Diversity) and fostered a team approach to nurture student development. Since then, Student Services has flourished as a friendly, accessible hub where doctors-in-training receive guidance and support from orientation through graduation and residency placement.

Known as the "mama" of the SMD and the "go to" person for questions and concerns, she's never too busy to stop and chat with students and alumni. She loves "hearing from

alums about their new jobs and weddings and babies" through her personal Facebook page, and hopes to keep doing so in retirement.

"The students here became my kids," says Paula, who is planning an Alaskan cruise and a trip to the Canadian Rockies with her husband this summer. "I've had parents call to thank me for taking care of their sons or daughters. All I can say is that it's been an honor for me. I've felt wondrously lucky to have all of these young people in my life. I learned something from each one of them."

### About Carol

Carol has lived her whole life in the village of Hilton, where a handful of farms and country roads bear the last names of her immediate and extended family. Her father, a fruit farmer and navy pilot, died in a plane accident when she was eight, leaving her mother to care for four children and igniting in Carol an early appreciation for education and self-sufficiency.

In the 1970s, she earned her associates' degree from the prestigious Katharine Gibbs secretarial school in Boston (where dresses and ¼-inch heels were required). In 1975, landed a position as a secretary in the SMD Financial Aid office and worked for registrar Marie Barnes. In 1988, Carol was married and pregnant with twins when the registrar retired and she was promoted to her spot. As the demands on the office grew with the growth of technology, increased regulations, the complexity of the residency application process, and mobility of SMD graduates, she endured the loss of her husband to cancer, and lengthy battles with a genetic condition that left her deaf in one ear.

"I fell in love with working here right away, and that never, ever changed for me," says Carol, who remarried and looks forward to "less multi-tasking," family time, and gardening in retirement. "I cherish the interactions I've had with students, faculty and staff and the support I've received from them through personal trials along the way. I just try to make the lives of medical students less stressful, and reassure them that, even though it might seem far away at times, they're going to make it to the mountaintop."

### What was your most important goal in working with students?

**Paula:** To take a very candid approach to them and make them feel comfortable. I want them to feel like a valued part of this place, to make good memories and friendships, so that wherever they go they think of Rochester with fondness and will want to stay connected with the school and their colleagues.

**Carol:** Obviously I wanted to try to make scheduling as easy as possible, and make sure they're on the right track with their clinical requirements. Many of them change directions along the way so it's important to really listen to what they're asking, and be responsive. You don't want students to feel like they're coming in to see the Wizard of Oz, or like there's some secret code they have to crack to get what they need.

### What made you stay here?

**Paula:** Working with (senior associate dean for Medical Education) David Lambert for the last 15 years has been such a positive experience for me. In my role as director, I work closely with Dr. Lambert on all student and staff issues. He's smart, accessible, values your judgment. I'm not sure if I would have remained as long as I have without his continued support. There are definitely times when he questions me taking on additional projects, but he understands me. It's important to me to feel that we've made a positive impact in our students, and if it means saying "yes" to a student's request, that's exactly what we're going to do.

**Carol:** A memory that stays with me is getting to know (founding chair and professor of Psychiatry) John Romano when I was pregnant with my twins. He was very tall and stern, and could seem intimidating, but was actually just the opposite. His son had twins too so he would stop by my desk to ask how I was feeling. When my twins were born, he sent me a beautiful hand-written letter. I'll never forget that and still keep the letter in a box of baby things. To me, that gesture typifies the heart of so many people here, which is why I stayed all these years.

*by Christine Roth*

*Carol Veltre and Paula Smith*

## Morgan Named Assistant Dean for Medical Education Diversity and Inclusion

**“I look forward to working with residents and fellows and strengthening the Medical Center as a place medical students of all cultures and backgrounds choose to stay and establish their careers.”**



**A**drienne Morgan, (PhDW '12), has been tapped to fill a newly-created role that will support the Medical Center's strategic goal to build a more inclusive and welcoming culture across the organization, and develop an increasingly diverse cadre of clinicians, scientists and educators.

As assistant dean for Medical Education Diversity and Inclusion, Morgan is now a resource to URM residents, fellows, and faculty, and helps identify and address challenges to recruiting and retaining under-represented groups to URM's 84 residency programs and fellowship programs.

Morgan reports to URM senior associate dean for Inclusion and Cultural Development **Linda Chaudron** (MD '92), MS, and works closely with **David Lambert MD**, senior associate dean for Medical Student Education, and **Diane Hartmann**, (MD '87, Res '91), senior associate dean for Graduate Medical Education.

“Historically, like many other academic medical centers across the country, our individual residency and fellowship programs have often functioned in isolation, without sharing a cohesion and symmetry in their approaches to diversity and inclusivity,” said Chaudron. “The addition of this role represents a pivotal step toward developing an infrastructure that will better respond to needs in this area across the Medical Center with continuity and consistency.”

Hartmann noted that Morgan is “the perfect ambassador for the position because of her wealth of experience working with medical

students from all backgrounds, and her exceptional ability to forge connections across the medical education continuum.”

For more than 16 years, Morgan has been a familiar face to a succession of future physicians while serving as senior director of the SMD's Center for Advocacy, Community Health, Education and Diversity (CACHED), and assistant professor in the division of Medical Humanities and Bioethics. In addition to working on the school's admissions committee, she oversees affinity groups and coordinates international internships, community outreach opportunities, research experiences, and the fourth-year visiting clerkships for potential matching residents.

She also leads community-based “pipeline” programs that spark local minority elementary and high school students toward science careers while giving SMD students a chance to mentor younger students.

A member of the medical school's diversity theme committee, Morgan will continue her work with the CACHED office—which won a UR Presidential Diversity Award in 2012 under her direction—in tandem with her new position.

“Dr. Morgan has demonstrated a longstanding commitment to fostering diversity and inclusion within our medical degree program,” said Lambert. “I share in the sentiment of our students and faculty, who are proud and thrilled that she will now be bringing her talents and ideas to benefit our residency and fellowship programs.”

Morgan said she sees her new position as a

natural extension of her diversity work at the medical school.

“This is an exciting time to be part of diversity initiatives at URM because there is tremendous leadership support to making positive changes,” she said. “I look forward to working with residents and fellows and building connections to strengthen the Medical Center as a place of choice for medical students of all cultures and backgrounds, a place where they will want to grow as faculty and establish their careers.”

A native of Madison, Wisconsin, Morgan earned a bachelor's degree in political science from the University of Wisconsin-Madison and completed a graduate certificate at Cornell University in Industrial and Labor Relations. She earned a master's degree in Cross-Disciplinary Professional Studies from Rochester Institute of Technology and a Ph.D. in Higher Education from the Warner Graduate School of Education and Human Development. Her dissertation examined the lived experiences of U.S. born black males attending predominantly white medical schools. She teaches a popular medical humanities seminar focusing on anti-racism, and also co-teaches a public health community engagement course.

In addition to the 2012 UR Presidential Diversity Award, she received the Urban League of Rochester's Outstanding Educator of the Year Award in 2014 and the Susan B. Anthony Institute's Dissertation Award in 2013, among others.

*by Christine Roth*





**“Preparing medical students who will be responsive to society’s needs and the changes in our health system takes faculty who really want to focus on their skills as educators.”**

## Nofziger To Co-Direct Dean’s Teaching Fellowship

**A**ssociate professor of Family Medicine **Anne Nofziger, MD** (Flw ’07), has been selected to co-direct the Dean’s Teaching Fellowship (DTF), a competitive two-year program for SMD faculty who are dedicated to academic careers and want to become master educators.

Nofziger succeeds **Annette Medina-Walpole, MD**, who was recently named chief of the Division of Geriatrics and Aging. She will work closely with professor of Family Medicine, Psychiatry, Oncology and Medicine **Ronald Epstein, MD** (Res ’87, Flw ’90), who has directed the fellowship program for 17 years.

“Anne is an incredible teacher with a very long list of achievements to her credit, and she is a fierce advocate for improving the way we prepare our students and residents,” says Epstein. “She is a true role model for leadership in medical education.”

Among her most notable accomplishments, Nofziger completed the DTF program (under Epstein’s mentorship) in 2007, with a project that evaluated the impact of peer assessments for second-year medical students. She was instrumental in developing the Comprehensive Assessment with Epstein in 2001 and later directed that program for seven years. Whereas assessments of second-year students previously relied on written exams, the Comprehensive Assessment requires students to take part in standardized clinical encounters and be assessed by patients,

peers, and faculty. The goal is to help students contextualize the basic science knowledge they learn in the classroom, and to cultivate their communication and critical-thinking skills early in their education.

“Rochester is one of a very small number of medical schools that conducts such a rigorous clinical assessment of second-year students that is entirely formative,” says Nofziger. “These experiences are so valuable in helping students shift their self-identities from students of medicine to practitioners of medicine. In clinical courses, preceptorships and assessments, they learn how to interview and listen to patients, and how to apply their specialized knowledge and judgment to the treatment of patients.”

Nofziger, who has directed the Primary Care Clerkship for first- and second-year students since 2011, and also precepts students through her practice at Highland Family Medicine, says that mentoring students toward their professional formation has always been her greatest passion. Now as DTF co-director, she will guide other faculty toward becoming the best teachers and mentors they can be, whether in clinical and research settings, lecture halls or simulation laboratories.

The DTF program typically accepts four fellows a year—most tend to be assistant or associate professors—who attend a three-hour bi-weekly seminar series focused on different areas of educational theory, research and

teaching methods, educational technology, assessment, curriculum design, faculty development, leadership and career planning. Fellows also complete an educational project that is directly translatable to their teaching role, and will culminate in a publication or presentation at a national meeting.

“Preparing medical students who will be responsive to society’s needs and the changes in our health system takes faculty who really want to focus on their skills as educators,” she says. “This program allows faculty to go back and get a much deeper background in educational theory, practice, literature and methods, and gain a greater understanding of how we can help shape students as professionals.”

Born in Indianapolis, Nofziger attended the University of Notre Dame and earned her medical degree from Indiana University School of Medicine. She came to Rochester to complete her Family Medicine residency at Highland Hospital and was chief resident from 1998-2000. She is the recipient of numerous teaching awards including the SMD Family Medicine Faculty Appreciation Award in 2011, 2012, 2015 and 2016, and is a member of the steering committee and a lecturer for the Medical Education Pathway, a certificate program for students who hope to become medical educators.

*by Christine Roth*

# ‘Teacher’s Teacher’

Don Bordley Nationally Honored



**Don Bordley, MD**, (Res '81), professor of Medicine and vice chair of Medicine for Education, recently received the 2017 Dema C. Daley Founders Award from the Association of Program Directors in Internal Medicine (APDIM), an organization dedicated to improving and supporting the graduate education of doctors in internal medicine.

Named for Dema C. Daley, an APDIM leader for 15 years until her death in 2002, the award is the organization's highest distinction, recognizing excellence in education, innovation and leadership.

Bordley, who has shaped the careers of hundreds of physicians over the last 40 years, is known for revolutionizing the Internal Medicine residency program director role at UPMC and for upholding bedside teaching as

a critically important way to create the very best physicians. Bordley received the award at the annual APDIM conference in Baltimore March 22, accompanied by his wife and three children.

"I went into medicine to become a teacher," says the Yale graduate who taught English for two years before deciding to follow his father and brother into the medical field.

"Of everything I have done in my life, I have found the greatest reward in helping medical students and residents develop their bedside diagnostic skills and become experts at communicating, interviewing and listening to patients. Rochester has been a uniquely wonderful and supportive place for me to pursue my passion, and for education in internal medicine to flourish."

UPMC CEO and School of Medicine and Dentistry dean **Mark B. Taubman, MD**, says Bordley is one of a small group of individuals who helped transform residency education around the country.

"Common to these physicians was a deep love of teaching and a desire to focus one's career on elevating the residency experience," says Taubman. "This replaced the more typical revolving door in which the residency director was a relatively junior faculty member who was assigned the position for a few years as a career stepping stone. The number of innovations that Don championed over the years in his role as residency director is staggering, and many of these have been emulated throughout the country."

Bordley came to Rochester in 1976, after





**“Bordley is one of a small group of individuals who helped transform residency education around the country.”** – Mark B. Taubman, MD

earning his MD from Johns Hopkins, and went on to complete his residency and fellowship under the tutelage of professor emeritus **William L. Morgan, MD**, co-author of *The Clinical Approach to the Patient* with George Engel, MD.

Morgan’s “clinical excellence, integrity, and advocacy for residents” would serve as a beacon for Bordley throughout his own career.

“I wanted to be like him,” he told *Rochester Medicine* in 2012. “The best way to be like him was to wait for an opportunity to have the job he did with such distinction.”

In 1981 Bordley became a residency program director at Rochester General Hospital and held a variety of educational leadership positions at RGH before returning to Strong in 1994 to direct the Internal Medicine Clerkship. When the internal medicine residency program director position opened up in 1997, Bordley accepted the position he had always aspired to.

He proceeded to lead the program through countless challenges, including exploding patient volumes and proliferating regulatory requirements. For more than 15 years, he

navigated the program through a period of sharp decline in applications, changes to resident duty hours, and the transition to eRecord, while spearheading continual improvements, such as the recent block model transition and the creation of the Medical Educator Pathway for residents in Internal Medicine and Medicine-Pediatrics.

“Don’s leadership has been characterized by two guiding priorities,” says current internal residency program director **Alec O’Connor, MD, MPH**, who rose from intern to senior faculty to his current position under Bordley’s mentorship. “The first principle is ‘What’s best for patients?’ and the second is, ‘What’s best for residents?’ He doesn’t make decisions based on ego, but is actively interested in others’ perspectives...aiming to make the right decision rather than always being seen as right.”

O’Connor, who introduced Bordley at the recent award presentation in front of 800 of his APDIM peers in Baltimore, says “it was a stroke of good fortune for me and countless future physicians that Don picked Rochester for his residency” all those years ago.

“Don is an amazing teacher who loves teaching at the bedside and maintains a strong focus on resident autonomy and bedside team presentations,” he says. “He is also a wise and thoughtful mentor who selflessly puts others’ interests ahead of his own, advising people on what he truly thinks is best for them, not him.”

A devoted family man who cycles, hikes, dances and skis at the age of 69, Bordley continues to teach and support the program as vice chair, while being an influential voice in national organizations of physician educators. He first became a member of APDIM in 1981, and served as its president-elect, president and past-president from 2007 to 2010. He also consistently encourages other program personnel and teaching faculty in the Department of Medicine to become involved at the national level.

“My goal has not been to emulate him but to *be* him, and continually follow his example,” says O’Connor. “When I’m faced with tough decisions, I often ask myself, ‘What would Don do?’ I see him as someone leading a perpetual quest to be, and create, better doctors.”

*by Christine Roth*



*Internal Medicine-Pediatrics residency program director Brett Robbins, MD, and third-year resident Francis Coyne, MD, care for three-day-old twin boys Kyri and Tyri Reeves within the Culver Medical Group offices.*

## Robbins to Lead Medicine-Pediatrics Program Directors Association

**Brett Robbins, MD** (Res '97), professor in the Departments of Medicine and Pediatrics and director of URM's Internal Medicine-Pediatrics Residency Program, is the new president-elect of the Medicine-Pediatrics Program Directors Association (MPPDA), which is part of the Alliance for Academic Internal Medicine (AAIM).

The MPPDA is entrusted with advancing medical education in combined medicine-pediatrics programs across the country, promoting the growth of new combined programs, and educating medical students about opportunities in the field.

"We are thrilled to have Brett take on this important national

leadership role," said Department of Medicine chair and Charles Ayrault Dewey Professor **Paul Levy, MD**. "He is the perfect choice and I am certain in this role will shape and enhance resident educational programs across the country."

Robbins, who is also chief of Adolescent Medicine, said he sees the role as being an ambassador for the importance of having physicians in the health system who can provide high quality care for patients across the lifespan.

"This level of continuity has become especially important to improving the care and management of adolescent and young adults as they transition from pediatric to adult health care systems," he said.

The young adult population (age 18-25) is particularly vulnerable to "becoming lost to follow up" and seeking treatment in emergency rooms and urgent care facilities, said Robbins, and utilizes the emergency room more than any age group in the nation other than those over age 75.

"It's a particularly challenging time for those with developmental disabilities, and childhood-onset conditions such as sickle cell anemia, diabetes, and cystic fibrosis."

Robbins completed the residency program in 1997 after earning his MD from Indiana University School of Medicine.

"Having the opportunity to be a voice at the national table is a very humbling and reaffirming

recognition of how successful our pioneering model as a whole has been, and the incredible level of University support and departmental collaboration that has sustained that success."



*Brett Robbins, MD, center, with the provider team at Culver Medical Group.*



# Internal Medicine–Pediatrics Residency Program Ranked Best in Nation

When more than 35,000 board-certified physicians across the country were asked which Medicine-Pediatrics residency program provides the best clinical training, their leading choice was URM's combined Internal Medicine-Pediatrics program.

In 2016 rankings released by Doximity—the nation's largest online professional network for U.S. physicians, and a partner of *U.S. News & World Report*—URMC's Internal Medicine-Pediatrics program was ranked number one in reputation among similar programs. The achievement is especially meaningful given that the program was one of the first of its kind to be developed more than 50 years ago.

The four-year program provides integrated, rigorous training in both Medicine and Pediatrics, while remaining flexible enough to help residents pursue individual career paths. It offers a balance of clinical experiences in acute and outpatient settings, primary and specialty care.

"We are honored to be selected first among the nation's top Internal Medicine-Pediatrics residency programs," said program director **Brett Robbins, MD** (Res '97), associate professor in the Departments of Medicine and Pediatrics. "Over the years, we've gratefully had fertile ground on which to grow, including a large and engaged graduate education community and strong support from the medical school and Medical Center. We've also had an exceptional learning environment provided by the Internal Medicine and Pediatrics residency programs, and URM's Primary Care which houses the Culver Medical Group. This is truly the result of a sustained team effort of faculty and residents."

While *U.S. News* has annually evaluated and ranked hospitals and medical schools for decades, Doximity began its annual survey of residency programs in 2014 as the first major effort to gauge practicing



*Fourth-year resident Charity Oyedepi, MD*

doctors' views about this critical, formative component of medical training. The results are incorporated in Doximity's Residency Navigator, an online tool to help medical students make informed decisions about where to pursue their residencies. The tool also aims to improve the transparency of

**"This impressive recognition really speaks to the tangible impact of a high quality residency program"**

the National Residency Matching Program.

In addition to the reputation rankings, the Residency Navigator gives prospective residents valuable information on resident satisfaction, top subspecialties, research output, board pass rates, feeder medical schools, and alumni.

Director of UR Medicine Primary Care **Wallace E. Johnson, MD**, says a large number of Internal Medicine-Pediatrics residents choose to stay in Rochester after completing the program—which over the years has created a strong pipeline of local primary care physicians, and built a vast local and regional

alumni base for career education, advice and counseling. For example, of the program's 38 graduates between 2012 and 2016—twenty now practice in the Rochester area.

"This impressive recognition really speaks to the tangible impact a high quality residency program has on our community," said Johnson, who also serves as the associate chair for Primary Care within URM's Department of Medicine.

Fourth-year Internal Medicine-Pediatrics resident **Charity Oyedepi, MD**, said that when she was interviewing for residencies, she and other students were well aware that the program was a pioneer in its integrated model, and that it had a reputation for providing both flexibility and a supportive environment.

"On my interview day, I met with Dr. Robbins, and told him about my many interests involving community advocacy,

global health and sickle cell disease, and he told me all of those endeavors could be accommodated through the available tracks," said Oyedepi, a native of Houston, Texas. "Happily, that turned out to be true. Not only me, but other residents I know have had the opportunity to do amazing things here in our community and abroad. I feel well-prepared now to pursue a career as a specialist caring for patients with sickle cell disease—from pediatrics through adulthood."



*Calling all School of Medicine and Dentistry alumni  
whose class year ends in 2 or 7...*

# IT'S TIME TO CELEBRATE **YOUR** REUNION!

## SAVE THE DATE!

Reunion at Meliora Weekend  
October 12-15, 2017

Whether you are a recent graduate or have not been back to Rochester in decades, we encourage you to return and take part in Reunion at Meliora Weekend.

Reunion weekend will be a wonderful time for you and your classmates to renew those bonds forged so many years ago.

Visit your class reunion web page:

[www.rochester.edu/alumni/reunion-2017#smd](http://www.rochester.edu/alumni/reunion-2017#smd)

to add your name to the attendee list and to see who else is coming back!

Register today by visiting the Meliora Weekend website at: [www.rochester.edu/melioraweekend](http://www.rochester.edu/melioraweekend)

For more details, or to update your contact information, please call or email the Office of Alumni Relations at (800) 333-4428 or [alumni@admin.rochester.edu](mailto:alumni@admin.rochester.edu).

We look forward to seeing you there!

**Reunion Classes: 1947, 1952, 1957,  
1962, 1967, 1972, 1977, 1982, 1987,  
1992, 1997, 2002, 2007, 2012**





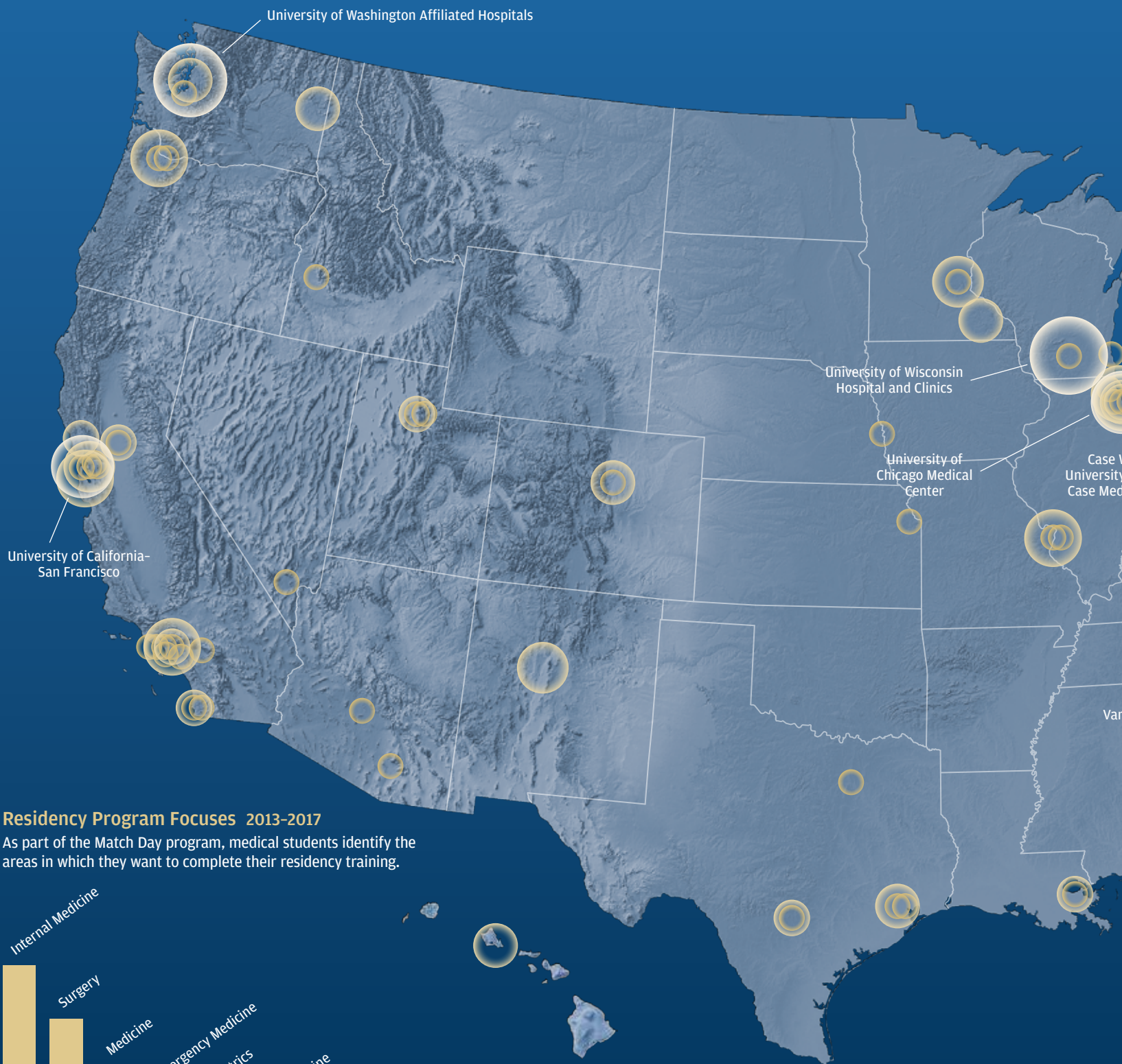


**WATCH**  
TO SEE MORE I  
MAGES visit:  
[bit.ly/urmcmatchday2017](http://bit.ly/urmcmatchday2017)

# Match Day 2017

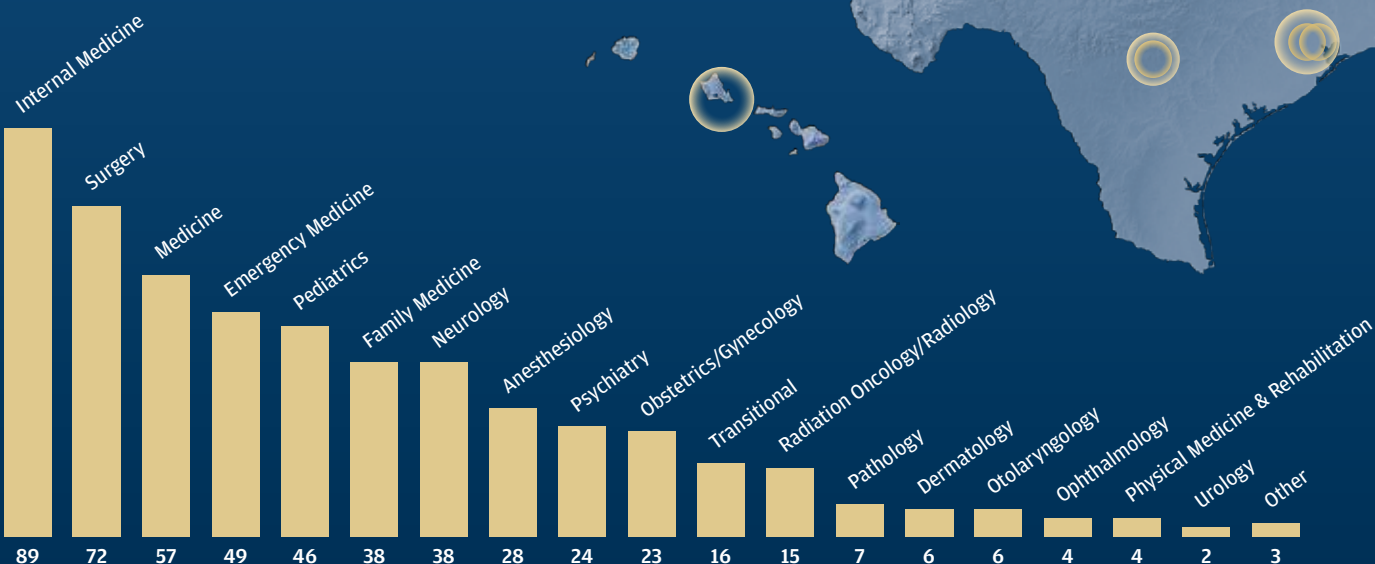
*Chante Calais-Morgan (MD '17) with her son Jeremiah*



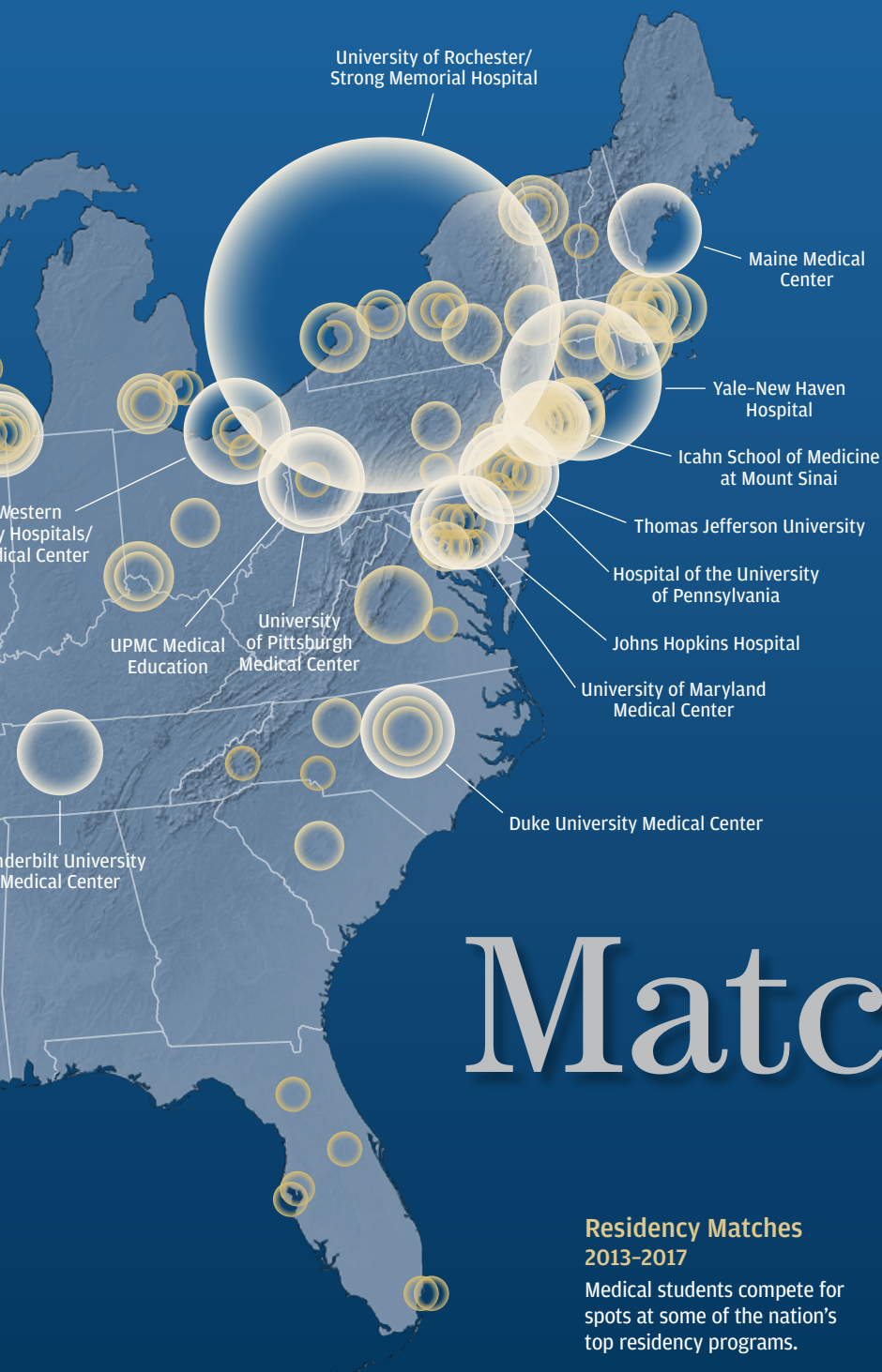


**Residency Program Focuses 2013-2017**

As part of the Match Day program, medical students identify the areas in which they want to complete their residency training.







Of the 98 graduating SMD students who sought residency placements on Match Day, 34 will stay in New York State and 20 of those will complete their training at URM. The remainder are going to 24 states and the District of Columbia. Some of the esteemed residency programs they'll be heading to include those at Harvard, Yale, Johns Hopkins, NYU, Northwestern, Duke, Brown and Boston University.

# Match Day 2017

**Residency Matches 2013-2017**  
 Medical students compete for spots at some of the nation's top residency programs.

- 1 resident
- 2-5 residents
- 6 or more residents

Steve Boerner for the University of Rochester



The most popular specialty choice again this year was Internal Medicine (19 students), followed by Family Medicine (10 students), Emergency Medicine (9 students) and Pediatrics (9 students). Of note, a total of 44 students are entering primary

care through Internal Medicine, Family Medicine, Pediatrics or Internal Medicine-Pediatrics tracks. "The strong tradition of our educational programs continues to produce the highest caliber students, who are highly sought-after not only for

their academic achievements, but because of their unique leadership qualities, and their diverse interests and accomplishments in research, education and global health," said **David Lambert, MD**, senior associate dean for Medical Student Education.

"The broad spectrum of innovative, early clinical experiences our students receive here makes them especially attractive candidates to competitive programs." Within URM's 26 residency programs, 166 students from

here and across the country were matched to open slots, with Internal Medicine, Anesthesiology, Emergency Medicine, Pediatrics, and Family Medicine accepting the highest numbers. This year, a record-high 35,969

U.S. and international medical school students and graduates vied for 31,757 residency slots across the country, the most ever offered in the Match.







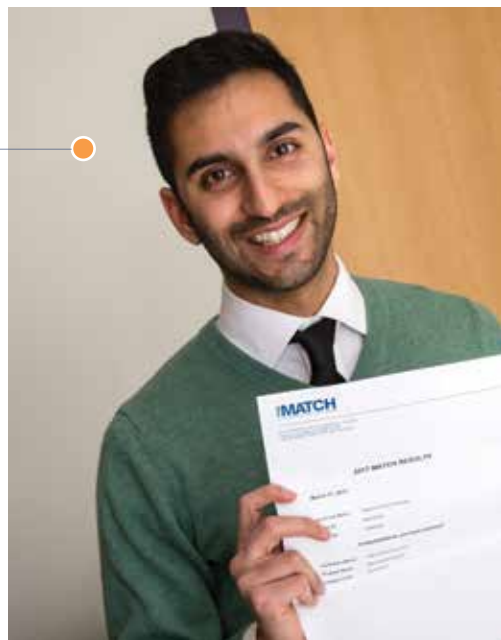
Student	Place	Program
Joanne Alcin	Johns Hopkins All Childrens Hosp-FL	Pediatrics
Katherine Allen	U Minnesota Med School-MN	Pediatrics
Leslie Anderson	Univ of Chicago Med Ctr-IL	Emergency Medicine
Jayson Baman	Northwestern McGaw/NMH/VA-IL	Internal Medicine
Graham Bevan	Case Western/U Hosps Cleveland-OH	Internal Medicine
Brittany Black	San Antonio Military MC Army-TX	Emergency Medicine
Andrew Bragg	U Rochester/Strong Memorial-NY	Emergency Medicine
Chante Calais-Morgan	Case Western/Metro Hlth-OH	Family Medicine
Eric Chang	Yale-New Haven Hosp-CT	Internal Medicine
Adrienne Chesser	Allina Fam Res Prog-MN	Family Medicine
Gyujae Choi	Lehigh Valley Hosp-PA Baylor Coll Med-Houston-TX	Transitional Radiation Oncology
Jeff Clegg	U Minnesota Med School-MN	Radiology-Diagnostic
Leah Conant	Barnes-Jewish Hosp-MO	General Surgery
Julia Cooper	Grtr Lawrence Fam Hlth Ctr-MA	Family Medicine
Elizabeth Cozart	Univ of Vermont Medical Center-VT	Neurology
Ayala Danzig	NYU School of Medicine-NY	Psychiatry
Karishma Dara	Providence Hospital-DC	Family Medicine
Nicholas David	U Wisconsin Hospital & Clinics-WI	Medicine-Primary
Sthuthi David	University of Virginia-VA	Internal Medicine
Erik De Angelis	George Washington Univ-DC	General Surgery
Rebecca DeHority	Case Western/U Hosps Cleveland-OH	Obstetrics-Gynecology
Judy Diep	Thomas Jefferson Univ-PA	Neurology
Christopher Doucette	U Rochester/Strong Memorial-NY	Med-Prelim/Radiation Oncology
Sara Doyle	Northwestern McGaw/NMH/VA-IL	Med-Prelim/Neurology
Mica Esquenazi	Baylor Coll Med-Houston-TX	Otolaryngology
Youssef Farhat	Med Coll Wisconsin Affil Hosps-WI	Pathology
Yaneve Fonge	Christiana Care-DE	Obstetrics-Gynecology
Andrew Forrestel	U Arizona COM at Tucson-AZ	Internal Medicine
Yidi Ge	Alameda Health Sys-Highland Hosp-CA	Medicine-Primary
Tiffany Gee	Case Western/U Hosps Cleveland-OH	Psychiatry
Zoe Gravit	U Rochester/Strong Memorial-NY	Family Medicine
Jillian Gruber	Massachusetts Gen Hosp-MA	Orthopaedic Surgery/Harvard
John Hale	Childrens Hospital-Boston-MA	Pediatrics
Cara Hall	Duke Univ Med Ctr-NC	Family Medicine
Claire Hartung	Contra Costa Reg Med Ctr-CA	Family Medicine
Joshua Haswell	UPMC Medical Education-PA	Internal Medicine
Lauryn Hemminger	U Rochester/Strong Memorial-NY	Neurology
Nicholas Hogan	UC San Diego Med Ctr-CA	Internal Medicine
Timothy Hong	UC San Francisco-CA	Emergency Medicine
Benjamin Hyers	Icahn SOM at Mount Sinai-NY	Anesthesiology
Oluchi Iheagwara	NYU School of Medicine-NY	Emergency Medicine
Megan Johnson	University of Buffalo SOM-NY	Internal Medicine/Sisters
Agata Kantorowska	Winthrop-University Hospital-NY	Obstetrics-Gynecology
Jean Kim	Icahn SOM at Mount Sinai-NY	Internal Medicine
Rachel Knight	NYP Hosp-Weill Cornell Med Ctr-NY	Psych/Payne Whitney
Bradley Kushner	Barnes-Jewish Hosp-MO	General Surgery
Stephan Kwak	Bassett Medical Center-NY U Rochester/Strong Memorial-NY	Transitional Radiology-Diagnostic
Jonathan Langdon	Hofstra Northwell SOM-NY Yale-New Haven Hosp-CT	Medicine-Preliminary Radiology-Diagnostic
Erica Lash	Rhode Island Hosp/Brown Univ-RI	Emergency Medicine
Rialnat Lawal	U Rochester/Strong Memorial-NY	Internal Medicine
Shamelia Loiseau	NYP Hosp-Weill Cornell Med Ctr-NY	Neurology
Benjamin Maddock	Cincinnati Childrens Hosp MC-OH	Pediatrics
Shwetha Manjunath	Hosp of the Univ of Pennsylvania-PA	Radiation Oncology
John Mariano	U Rochester/Strong Memorial-NY	Medicine-Pediatrics
Thomas Marini	St Josephs-Syracuse-NY U Rochester/Strong Memorial-NY	Transitional Radiology-Diagnostic
Ellen McCormack	U Wisconsin Hospital and Clinics-WI	Pediatrics
Anna McGuire	U Rochester/Strong Memorial-NY	General Surgery
Yifan Meng	Washington U.-St. Louis, MO	Surg-Prelim/Urology
Stephen Miranda	Hosp of the Univ of Pennsylvania-PA	Neurological Surgery

**Stephen Miranda (MD '17)**, a native of Long Island, is going to the Hospital of the University of Pennsylvania, where he'll be studying Neurological Surgery. Miranda wants to practice neurosurgery but remain in academic medicine to focus on improving end-of-life care for patients with serious neurological illnesses. "At the heart of providing the best end-of-life care possible is education that cultivates critical end-of-life communication skills in physicians," he says. Miranda completed the SMD's Medical Education Pathway and wrote an essay published in the New England Journal of Medicine describing his experience as a medical student conducting home visits with a terminally ill patient. "Not only are we one of the only schools offering clinical home visits to medical students in their first two years of school, but we offer very unique opportunities for students to get involved in academic medicine."



**John Mariano (MD '17)** learned he got his top choice to stay in Rochester and complete his physician training in URM's Internal Medicine-Pediatrics residency program. He hopes to become an oncologist treating children and adults across the lifespan. "I couldn't speak more highly of Rochester and this medical school for the opportunity it's given me," he says. "It's a special place. Just look around at everyone here today and you get a sense of the kind of support we've had."





**Chante Calais-Morgan (MD '17)** said she is thrilled to be joining her husband Steve Morgan (MD '16) at Case Western Reserve Hospital/Metro Health, in Cleveland, where she'll be studying Family Medicine. The two have a five-year-old son, Jeremiah, and have been logging hundreds of miles on their car commuting to see each other since Steve's graduation last May.



Student	Place	Program
Shannon Mitchell	U Southern California	Pediatrics
Brittany Moore	U South Florida Morsani COM-Tampa	Family Medicine
Lalita Movva	U Rochester/Strong Memorial-NY	Medicine-Pediatrics
Adrian Jun Yen Ng	U Southern California	Anesthesiology
Andrew Orenberg	SUNY Upstate MC-Syracuse, NY	Med-Prelim/Ophthalmology
Jacob Parzen	Beaumont Health System-MI	Radiation Oncology
Megan Pencek	U Rochester/Strong Memorial-NY	Plastic Surgery (Integrated)
Nina Piazza	U Wisconsin SOM and Public Hlth-WI	Family Medicine/Madison
Andrew Portuguese	U Rochester/Strong Memorial-NY	Internal Medicine
Pooja Prasad	UC Davis Med Ctr-CA	Internal Medicine
David Pudalov	U Maryland Med Ctr	Internal Medicine
Meghan Rochester	U Washington Affil Hosps-WA	Medicine-Primary
Nicola Ross	U Rochester/Strong Memorial-NY	Child Neurology
Eric Rudofker	U Colorado SOM-Denver-CO	Internal Medicine
Aaron Ryoo	Maimonides Med Ctr-NY	Emergency Medicine
Stacy Salerno	Univ of Vermont Medical Center-VT	General Surgery
Michaela Salvo	George Washington Univ-DC	Emergency Medicine
Sandeep Sandhu	Childrens National Med Ctr-DC	Pediatrics-Primary
Shalom Schlagman	U Rochester/Strong Memorial-NY	Medicine-Pediatrics
Matthew Seaman	U Rochester/Strong Memorial-NY	Surgery-Preliminary
Theresa Sepulveda	Baystate Med Ctr-MA	Medicine-Pediatrics
Talia Singer-Clark	Boston Univ Med Ctr-MA	Family Medicine
Zachary Skabelund	Bassett Medical Center-NY	Transitional
William Small	U Rochester/Strong Memorial-NY	Psychiatry
Andrew Smith	Hofstra Northwell SOM-Lenox Hill-NY	Medicine-Preliminary Radiation Oncology
Erika Snow	U Minnesota Med School-MN	Pediatrics
Andrew Soroka	Rochester Reg Hlth/Unity Hosp-NY	Medicine-Preliminary Radiology-Diagnostic
Matthew St. John	U Rochester/Strong Memorial-NY	Orthopaedic Surgery
Leigh Sundem	Rutgers-New Jersey Med Sch-NJ	Surgery-Preliminary
Seth Tobolsky	Massachusetts Gen Hosp-MA	Medicine-Pediatrics/Harvard
Sandra Toth	U Rochester/Strong Memorial-NY	Surgery-Preliminary
Katherine Vermilye	U Rochester/Strong Memorial-NY	Pediatrics
Lindsay Wahl	Brigham & Womens Hosp-MA	Anesthesiology
Ritika Walia	Baystate Med Ctr-MA	Medicine-Pediatrics
Emily Walters	UCLA Medical Center-CA	Anesthesiology
Harry Wang	Thomas Jefferson Univ-PA	Internal Medicine
Jozal Waroich	Rhode Island Hosp/Brown Univ-RI	Internal Medicine
Jeffrey Zimering	Icahn SOM at Mount Sinai-NY	Neurological Surgery
Marisa Zuluaga	Alameda Hlth Sys-Highland Hosp-CA	Emergency Medicine

## Residents Matching Here:

Anesthesiology – 14	Obstetrics and Gynecology – 8	Interventional Radiology
Dermatology – 4	Orthopedic Surgery – 7	Integrated – 2
Emergency Medicine – 14	Otolaryngology – 2	Radiation Oncology – 1
Family Medicine – 12	Pathology – 6	General Surgery – 6
Internal Medicine – 26	Pediatrics – 14	Preliminary Surgery – Urology - 2
Internal Medicine – Preliminary – 4	Physical Medicine and Rehabilitation – 3	Preliminary Surgery Non-Designated – 3
Medicine-Pediatrics – 8	Plastic Surgery Integrated – 2	Thoracic Surgery – 1
Neurological Surgery – 2	Preliminary Surgery - Urology - 2	Vascular Surgery – 2
Neurology – 6	Psychiatry – 8	
Child Neurology – 2	Diagnostic Radiology – 7	

## Schor Steps Down as Children's Hospital Pediatrician-in-Chief

William H. Eilinger Chair of Pediatrics **Nina Schor, MD, PhD**, who has led Golisano Children's Hospital for 11 years, stepped down as chair in June 2017. Schor steered the Department of Pediatrics toward fulfilling a decades-long dream of building the standalone children's hospital that opened in July 2015 and serves 85,000 children annually from the 14-county Finger Lakes region and beyond.

"I don't want to downplay the significance of the new hospital, but it's really what we do inside of it, and because of it, that's so important," said Schor, the seventh chair in the department's history. "I look at the academic physicians and physician scientists who came to Rochester with just a dream and a fire in their belly, and how they've brought those dreams to fruition. That's what I'm most proud of."

The Department of Pediatrics grew from 110 faculty members to more than 170 during Schor's tenure and created new divisions in palliative care, sleep medicine, allergy, and hospitalist medicine. She also nurtured the growth of research centers focused on premature infants, translational molecular programs, and red blood cell development.

"Not only was the hospital built under Nina's leadership, but she truly championed the project, ensuring that every detail was designed with patients and families in mind," said **Mark B. Taubman, MD**, URM CEO and dean of the School of Medicine and Dentistry. "She has been the face of the children's hospital and inspired trust in our families, physicians, and donors at a time when we very much needed the community's support."

Schor came to Rochester after spending 20 years at the University of Pittsburgh Medical Center, where she served

as chief of the Division of Child Neurology and the School of Medicine's associate dean for Medical Student Research. She was among a small group of faculty who transformed Pittsburgh's

fledgling pediatric research program into a nationally recognized powerhouse.

In Rochester she has maintained a lab conducting groundbreaking research into neuroblastoma, one of the most common childhood cancers. She is particularly known for identifying new molecular targets that are helping to design innovative therapies for tumors of the developing nervous system. Her discoveries earned her recent induction as a Fellow of the American Association for the Advancement of Science (FAAAS), the world's largest general scientific society.

"Nina has helped advance the understanding of the biology of these tumors, opening the door to precision-medicine approaches to treat this common and often fatal childhood cancer," said **Jonathan Friedberg,**

**MD, MMSc**, director of Wilmot Cancer Institute.

Schor's leadership was also crucial in securing an institutional training grant that fostered research among URM clinical fellows and junior faculty physician-scientists.

"One of her most striking accomplishments is the sustained increase of extramural research funding to the department, including the funding of physician scientists, during a time when research and training funding has diminished," said **Elizabeth (Lissa) R. McAnarney, MD**, chair emerita of Pediatrics. "She's also been highly successful in recruiting excellent young pediatric scientists at a time when this group has become increasingly rare."



## Halterman Leads Clinical Research

**Jill Halterman** ('90, MD '94, MPH '94, Res '98), an accomplished physician and scientist whose research has helped guide asthma care in Rochester and elsewhere, has been appointed senior associate dean for Clinical Research. A professor of Pediatrics, Halterman also serves as chief of the Division of General Pediatrics.

She succeeds Robert J. Joynt Professor in Neurology **Karl Kiebertz** (MD '85, MPH '85, Res '89), who stepped down from the position in 2016.

Halterman, aims to enhance community-based research on

a broad, population level," and looks forward to working with research colleagues across the University to help them achieve their goals. She also aims to "create an environment where trainees and junior investigators can thrive as the next generation of scientists in population health research."

**Mark B. Taubman, MD**, dean of the SMD and CEO of URM, said Halterman's work with asthma care delivery—centered on developing sustainable and scalable delivery models—makes her the "perfect choice to help our researchers translate their



work to affect health across a population."

Vice dean for URM Research **Stephen Dewhurst, PhD**, said Halterman's ability to collaborate and "build bridges with disparate groups of stakeholders" is another reason she's an ideal fit for the post.

Reporting to Dewhurst, Halterman works alongside senior associate dean of Graduate Studies **Edith Lord, PhD**, and incoming senior associate dean for Basic Research **Dirk Bohmann, PhD**.



## Medina-Walpole Leads Division of Geriatrics and Aging

Geriatrics clinician, mentor and educator **Annette (Annie) Medina-Walpole, MD**, has been named chief of the Division of Geriatrics and Aging. A professor in the Department of Medicine, her influence has shaped geriatric care and training since she came to Rochester in 1998.

"Dr. Medina-Walpole is a rising star on the national geriatrics stage," said **Paul C. Levy, MD** (Res '86), Charles Ayrault Dewey Professor and chair of the Department of Medicine. "She has incredible talent that spans many of



our missions, and will be an outstanding clinician and leader as URM expands as a regional and national leader in aging and population health management."

Medina-Walpole is medical director of Monroe Community Hospital, one of the premier teaching nursing homes in

the country, and was medical director at The Living Center at the Highlands at Pittsford, a URM-affiliated skilled nursing facility, from 2008 to 2014. She is certified as a medical director for long-term care by the American Medical Directors Association/American Board of Post-Acute and Long-Term Care Medicine.

She spearheaded an ambitious program to integrate geriatrics into the SMD's undergraduate curriculum, and also served as Geriatric Medicine Fellowship director and co-director of the Dean's Teaching Fellowship. Garnering national attention for her work to improve geriatrics education and address workforce shortages, she earned the American Geriatrics Society's (AGS) Dennis W. Jahnigen Memorial Public Service Award

in 2016. A reviewer for the *Journal of the American Geriatrics Society* and former chair of the AGS Annual Scientific Meeting Program Committee, she is also co-editing the ninth edition of the *Geriatric Review Syllabus*, a premier reference guide for clinicians.

After earning her MD at the University of Chicago Pritzker School of Medicine, she completed an Internal Medicine residency and served as chief resident at the University of North Carolina, Chapel Hill. She completed a fellowship in Geriatric Medicine at the University of Washington School of Medicine and a teaching appointment at the University of Washington Medical Center.

## Prasad Joins URM as Chief of Cardiac Surgery

**Sunil M. Prasad, MD**, has been appointed chief of the Division of Cardiac Surgery, where he will lead Strong Memorial's cardiac surgery program and serve as associate professor of Surgery.

While Prasad performs a range of complex surgical procedures including heart transplants, his special expertise is in the use of mechanical devices for patients in heart or respiratory failure.

After training in cardiothoracic surgery at Washington University School of Medicine and Barnes-Jewish Hospital in St. Louis, Mo., Prasad led Barnes-Jewish Hospital's program in ECMO (extra corporeal membrane oxygenation), a technique using a mechanical device to oxygenate the blood when the heart or lungs are failing. Prasad helped pioneer the next generation of ECMO, known as "walking ECMO," which allows patients

to walk using portable devices, often reducing complications and improving outcomes. He recently was senior-author of a review on walking ECMO in *JAMA Surgery*.

Prasad also has expertise in left ventricular assist devices (LVADs), which help circulate blood through the body when the heart is unable to pump properly, and are typically used to support patients awaiting heart transplants.

He joins URM after directing ECMO/LVAD at Mercy Springfield Hospital, in Springfield, Mo., for two years, and previously serving as an attending heart surgeon and medical school faculty member at Barnes-Jewish Hospital, whose adult cardiology and heart surgery program is ranked 14th by *U.S. News and World Report*. Prasad completed medical school at the University of Illinois.

"Dr. Prasad is an outstanding



addition to our team, bringing a wealth of experience in surgical treatment for people with life-threatening heart disease," said **David C. Linehan, MD**, chair of the Department of Surgery and Seymour I. Schwartz Professor in Surgery.

Attracted to heart surgery during his medical training because it combined his love of mechanics and auto repair with his professional skills, Prasad

often uses automotive analogies to explain advanced disease or heart trauma to patients and families. He has published more than 40 papers on topics including the prevention of LVAD complications, the use of radiofrequency ablation to treat atrial fibrillation, and ways to improve preservation of donor hearts.

He succeeds **George L. Hicks** (MD '71, Res '77, Res '78, Flw '79), chief of Cardiac Surgery since 1991. Instrumental to bringing new technologies to advance cardiac surgery and improve patient outcomes, Hicks will focus on providing education and training in the Cardiothoracic Surgery residency program. To see an introductory video of Prasad and his work, visit: <http://bit.ly/urmcprasad>

## Hernandez-Alejandro Named Chief of Solid Organ Transplantation Division

**Roberto Hernandez-Alejandro, MD**, has joined URM as chief of the Division of Solid Organ Transplantation in the Department of Surgery.

An expert in transplantation, Hernandez-Alejandro has special interest in caring for patients diagnosed with advanced liver cancer. He is one of the world's foremost authorities on a procedure called ALPPS, a two-step surgical technique that separates cancerous liver tissue from healthy tissue and promotes the rapid growth of the latter. The surgery is extending both the length and quality of patients' lives and expanding the number of patients undergoing major liver resections. The first to perform the procedure in North America, he is one of a few surgeons in the world who possess the expertise.

"Dr. Hernandez-Alejandro's unique expertise in transplantation and hepatobiliary surgery will bring added value to an already strong program," said Department of Surgery



chair **David C. Linehan, MD**, the Seymour I. Schwartz Professor in Surgery. "He is a gifted surgeon known worldwide for excellent results, academic productivity and leadership."

Hernandez-Alejandro was most recently an associate professor at Western University in Ontario, Canada, and directed Liver Transplantation and Hepatobiliary Surgery at London Health Sciences Centre-University Hospital.

"I was drawn to Rochester because of the culture and

passion for excellent patient care, research and education," Hernandez-Alejandro said. "The team here is laser-focused on providing the very best medical options and care for patients across Western New York."

A native of Mexico City, he graduated with honors from Universidad La Salle in Mexico City, followed by general surgery training at the Instituto Mexicano del Seguro Social, Centro Medico Siglo XXI. He completed a fellowship in transplantation for kidney and pancreas at the University of Calgary, with a second fellowship in liver transplantation and hepatopancreato-biliary (HPB) surgery at Western University in London, Ontario. He trained in living-donor liver transplantation and HPB at the University of Toronto and Kyoto University in Japan.

Hernandez-Alejandro's clinical interests include liver regeneration, colorectal liver metastases, donation after cardiac death, and living-donor

liver transplantation. His research is primarily focused on liver regeneration and ischemia reperfusion injury.

In the last five years he has published more than 30 peer-reviewed articles in international journals, as well as book chapters on liver transplant techniques and liver resections. He has also served as an associate and section editor for *TransplantNow*, and a reviewer for the *Annals of Surgery*, *Surgery*, *British Journal of Surgery*, and *HPB*.

He succeeds transplant surgeon and professor of Surgery **Mark S. Orloff, MD**, who is the newly-appointed vice chair for Clinical Operations and Regional Development, focused on URM's Western New York partners and surgical programs. Orloff remains a member of the Solid Organ Transplant surgical team. To see a video of Hernandez-Alejandro and his work, visit: <http://bit.ly/urmchernandez>

## Papa Named to NYS Board of Medicine

The New York State Education Department's Board of Regents has appointed URM Primary Care internist **Louis J. Papa, MD**, to a five-year term on the Board of Medicine.

He will advise and assist the Board of Regents and the State Education Department on professional regulations and licensing requirements, licensing examinations and practice issues.

Papa joins current Board of Medicine member pediatric radiologist **Margaret H. Ormanoski, DO** (MBA '15),

who also sits on the group's medical physics sub-board. His appointment follows that of professor of Clinical Medicine in the Department of Medicine **Roger M. Oskvig, MD** (Res '77), who completed 10 years on the Board and continues to serve as an extended non-voting member.

"Having Dr. Papa follow in the footsteps of Dr. Oskvig in providing oversight and guidance of licensing, will be a huge benefit to New York State and URM," said **Paul C. Levy, MD** (Res '86), Charles A.



Dewey Professor and chair of the Department of Medicine.

"The licensing process can be exceedingly complex when internationally trained providers or those moving across state lines wish to practice in our region."

A board-certified internist with UR Medicine Primary Care, Papa is professor of Clinical Medicine in the Department of Medicine and a Fellow of the American College of Physicians. He is past-president of the Monroe County Medical Society and on the boards of Excellus Rochester and the Greater Rochester Health Foundation.



## Rotondo to Lead National Trauma Society

**Michael F. Rotondo, MD, FACS**, professor of Surgery and CEO of the Medical Faculty Group, was voted president-elect of the American Association for the Surgery of Trauma (AAST), the world's leading scientific trauma society. His one-year term begins in September 2017.

Founded in 1993, the AAST is the premier scholarly organization for surgeons dedicated to trauma and caring for critically ill patients. It promotes the discovery, dissemination, implementation and evaluation of knowledge related to acute-care surgery. Rotondo has previously chaired the AAST publications and communications committee.

A trauma surgeon, Rotondo has pioneered research and education around "damage control surgery," a revolutionary

approach to treating penetrating abdominal injuries that is now a worldwide standard of care, applied to a wide array of severe bleeding injuries with remarkable outcomes. Today nearly 90

percent of patients recover from the most serious bleeding wounds.

Since the U.S. Department of Defense adopted it as a core treatment, "damage

control" practices have helped the Army achieve all-time high battlefield survival rates in

Iraq and Afghanistan. In 2011, Rotondo was commissioned by the military to analyze the joint theater trauma system by visiting facilities and operating on wounded soldiers in Afghanistan.

His report was referenced in a paper published by the National Academies of Sciences, Engineering and Medicine.

A graduate of Georgetown University School of Medicine, he completed general surgical

training at Thomas Jefferson University Hospital before becoming the first Fellow in

Traumatology and Surgical Critical Care at the University of Pennsylvania. He held his first academic post at Penn, later directing its Level I Trauma Center and serving as vice chief of Traumatology and Surgical Critical Care. In 1999, he was recruited by The Brody School of Medicine at East Carolina University, where he advanced to professor of Surgery, built a Level I Trauma Center for eastern North Carolina, and chaired the Department of Surgery while maintaining a surgical practice.

In 2013, he was recruited to his hometown, Rochester, N.Y., where he is leading a restructuring of the URMCC medical faculty group to make it more integrated, efficient and patient-centric.



## Sulkes Receives First-Ever Golisano Global Health Leadership Award

**Stephen B. Sulkes, MD**, a professor of Developmental and Behavioral Pediatrics in the Department of Pediatrics, and co-director of the Strong Center for Developmental Disabilities, was one of seven recipients of the first-ever Golisano Global Health Leadership Award.



Presented by the Golisano Foundation and Special Olympics, Sulkes received the award at the 2017 Special Olympics Winter World Games in Schladming, Austria, in March.

Sulkes founded the Rochester student chapter of the American Academy of Developmental Medicine and Dentistry (AADMD) and encouraged students to get involved with Special Olympics both through Healthy Athletes and as event volunteers and

coaches. His work reflects the URMCC's unique commitment to make inclusive health a part of its strategic plan. This includes improving access to care across multiple arenas, and training the next generation of clinicians to care for people with intellectual and developmental disabilities.

## Davidson Elected President of IASSIDD

**Philip W. Davidson, PhD**, professor emeritus of Pediatrics, is the newest elected president of the International Association for the Scientific Study of Intellectual and Developmental Disabilities (IASSIDD), the largest and oldest scientific organization of its kind. Composed of members from more than 50 countries, it

promotes worldwide research and information exchange on intellectual and developmental disabilities.

Davidson aims to nurture the organization's tradition of promoting new knowledge, research, and other scholarly activities to improve the lives of people with intellectual and developmental disabilities.

Davidson joined URMCC in 1975 and is both former chief of the Division of Developmental

and Behavioral Pediatrics and former director of the Strong Center for Developmental Disabilities (SCDD). Today he continues his breakthrough research exploring the effects of methylmercury on child development and how maternal ingestion of fish during pregnancy affects children's developmental outcomes—research that helped position the SCDD on the national stage. He is an expert on aging as it relates to intellectual and developmental disabilities, behavior disorders, and neurotoxins and development.



# Making Pathology Cool: An Educational Challenge



When it's time for medical students to choose a specialty, pathology tends to be one of the last ones picked for the prom.

Modestly trailing in popularity behind high-stature fields like surgery and neurology as well as other less-visible pursuits such as anesthesiology, ophthalmology and radiology, the low-key specialty is simply not on the radar of most medical students. It's a factor contributing to a looming shortage of forensic pathologists across the country. Only about 40 forensic pathologists graduate from fellowship programs each year, and the number of practicing pathologists is projected to drop to 3.7 for every 100,000 people by 2030.

What could help turn pathology's wallflower status around?

Exposure to the field, however, remains a challenge in the early stages of medical education here and elsewhere.

"We need to incorporate pathology into the big picture," says PLM chief resident **Shana Straub, MD**. "I think people just don't appreciate the role it plays, because we're so far behind-the-scenes. Most of the general public doesn't know what we do. I honestly didn't know what pathology was until I got to medical school, so I don't blame them for not knowing. But the fact is, we are the ones who make everything else in health care possible."

Straub is part of a minority of students opting to venture into the lesser-known field, which has often carried the unfair stigma of attracting more "bookish" students less-in-

Due to curricula restructuring at many medical schools, many of today's medical students have little idea that PLM is one of the most scholastic areas of medical practice, representing the prototypical bridge between the basic sciences and the clinical disciplines.

Among other roles, PLM physicians are responsible for the ongoing translation of developmental technology in the hospital laboratory to improve diagnosis and patient care. They also serve as highly-valued consultants for other doctors, quality assurance officers, and resource scientists for other specialists. The median annual salary for pathologists across the U.S. is \$258,000.

Many in the field agree that earlier exposure in medical school would help



Faculty and residents in URM's Department of Pathology and Laboratory Medicine (PLM) believe that engaging medical students earlier in hands-on learning experiences would open their eyes to the intrigue of this quietly-industrious field, and help them realize its monumental impact on patient care.

clined toward the social aspect of medicine. Only 1.3 percent of first-year residents and fellows in the U.S. chose to specialize in anatomic/clinical pathology in 2015, according to the Association of American Medical Colleges. That's a total of 587 trainees out of a pool of more than 42,000.

capture the curiosity of more students like Straub and acquaint them with pathology's varied and attractive aspects, which include a balanced work schedule and no worries about non-compliant patients.

Straub was always fascinated by autopsy, and when she attended a lecture on forensic pathology—that explained the direct link



between autopsy and pathology—she was instantly hooked. And, the more she learned about the modern-day challenges of being a doctor, the less interested she became in the social aspects of medicine. Pathology offered an alternative.

“I liked working with patients, but I was more interested in the disease process and understanding how a disease affects the body from an academic standpoint,” she says.

## Looking Inward

Some theorize that the biopsychosocial model of medical education—which encourages a broad, humanistic exploration of patients and the way many different factors interact to influence health—may inadvertently steer students away from fields that explore

like Alzheimer’s which leave detectable plaques (amyloids) in the brain, to lupus, which leaves specific markers in the kidneys and blood vessels while spreading throughout the body. Pathologists are trained to detect patterns and expressions of certain diseases. As a result, they uncover many of the answers that oncologists and other physicians may scratch their heads trying to find.

Those in the field will say there’s nothing cooler than that “Ah-ha” moment in the lab when you confirm a tricky diagnosis.

“That’s what I like about coming to work every day,” says Evans. “That’s what we sit around and do. We come up with the answers for patients in the hospital. It’s never boring because there’s a continual sense of discovery.”

choose just one thing about medicine to pursue. I can learn a bit of everything.”

All first-year UR medical students take Histology, a difficult course that often tends to scare some students away from pursuing it further. It isn’t until their second year that the majority of pathology exposure happens, under the wings of Pathology and Laboratory Medicine faculty including assistant professor **Jennifer Findeis-Hosey, MD** (Res ’08), and professor **Mahlon Johnson, MD, PhD**, who is also a professor of Neurosurgery and directs Neuropathology.

The curriculum includes pathology electives in Anatomic and Clinical Pathology, as well as a year-out student fellowship that interested students typically take between their second and third year. Outside of these



## “What other profession allows you to touch gross specimens and hold two hearts in your hands?”

diseases at the cellular and molecular level.

“The biopsychosocial view, while very important, sort of downplays the significance and appeal of the microscopic, focused aspect of medicine which breaks the patient down into different smaller and smaller parts at the biological level, and examines their tissues and cells,” says PLM assistant professor **Andrew Evans, MD, PhD**, a hematopathologist and director of the Hematopathology Fellowship at URM. “That’s what we pathologists do every day. We think about patients, of course, but we think about them in terms of individual units and cells and molecules.”

Mastering pathology means learning how western medicine categorizes almost all diseases. This ranges from diseases that can be seen under the microscope to disorders

## A Bit of Everything

These days there is a pathology interest group within the medical school that meets monthly for a lunchtime lecture. Given by a PLM Department faculty member or resident, the lectures often include a short presentation followed by a tour or hands-on activity. The group is led by third-year SMD student **Heather Maioli** who majored in Forensic Anthropology at SUNY Buffalo and completed a summer internship at the Monroe County Office of the Medical Examiner.

“Pathology keeps you on your toes because you need to be well-versed in every area of medicine,” Maioli says. “That’s very unique and appealing to me. I really like not having to

offerings, however, it is still a challenge to attract the average medical student’s attention.

Findeis-Hosey says creating more interest in the field means building on the core classroom teaching with increased opportunities for students to get their hands dirty, often literally.

“I’m never concerned about students being interested in pathology if they have the same sort of cool experiences that I had when I was a student and resident here,” she says. “That’s always what I’m trying to recreate for them. What other profession allows you to touch gross specimens and hold two hearts in your hands?”

*by Bethany Bushen & Christine Roth*

With the support of Sen. Chuck Schumer (D-NY), URM is developing a new, one-year forensic pathology fellowship to train and educate medical examiners and boost their numbers here and nationwide, particularly in light of growing caseloads due to the opioid crisis. Pathology and Laboratory Medicine chair **Bruce Smoller, MD**, is spearheading the effort to submit an ACGME application, working in concert with Monroe County Executive Cheryl Dinolfo and Monroe County Medical Examiner, **Nadia Granger, MD** (Res’10).

# Endowed Professors

Endowed professorships are among the highest honors given to our distinguished faculty. They enable SMD to grow its faculty in many of the most highly regarded areas of research, clinical medicine, and education.

## John and Ethel Heselden Professor



**Aram F. Hezel, MD**, is chief of Hematology/Oncology at the Medical Center and associate professor of Medicine, Biomedical Genetics and Oncology. He is also director of the gastrointestinal cancers service line at the Wilmot Cancer Institute, and medical director of the infusion unit at Strong Memorial and Highland Hospitals. His clinical research focuses on testing new therapies in gastrointestinal malignancies and on the genetics and biology of primary pancreatic and biliary tract tumors. Established from a gift in honor of their late daughter, Carol, the John and Ethel Heselden Professorship was created in accordance with the late couple's desire to fund research, clinical program development, and education within the Medical Center, specifically, the Department of Hematology.

*Pictured with Hezel are Medical Center CEO and SMD Dean Mark B. Taubman, MD, and University President, CEO and G. Robert Witmer, Jr. University Professor Joel Seligman.*

## Dr. C. McCollister Evarts Professorship in Orthopaedics



**John T. Gorczyca, MD**, is professor of Orthopaedics, chief of the division of Orthopaedic Trauma, director of the Orthopaedic residency training program, and an attending orthopaedic surgeon at Strong Memorial Hospital. As a traumatologist, Gorczyca specializes in treating complex fractures, and performing reconstructive surgery to repair bone loss using bone transplants, artificial implants, and growing new bone in trauma patients. He also uses limb shortening and lengthening to correct skeletal deformities. C. McCollister ("Mac") Evarts (MD '57, Res '64) is the former CEO of the Medical Center and former chairman of the Department of Orthopaedics, who also established the Orthopaedics Research Lab. Evarts is internationally recognized for his role in the development of total joint reconstructive surgery for the hip and knee, completely transforming the field of orthopaedics and improving the lives of countless patients. A longstanding advocate for the Medical Center, Evarts has left a lasting impact on

Orthopaedics at the University. He made the lead gift to establish the Professorship to ensure the Medical Center continues to lead the nation in orthopaedic education, research, and care. *Pictured are Evarts and Gorczyca.*

## William and Sheila Konar Family Professor in Geriatrics, Palliative Medicine, and Person-Centered Care



**Daniel Ari Mendelson, MD** (MS '93, MD '95, Res '98, Flw '00) is professor of Medicine in the division of Geriatrics. At Highland Hospital he is associate chief of Medicine and co-director and co-founder of the Geriatric Fracture Center, the first facility of its kind dedicated exclusively to the care of elderly patients who suffer fractures. He also directs the Palliative Care Consultation Service and established the Geriatric Palliative Care Clinic. Mendelson's specialized work in geriatric fracture care has earned him international acclaim. He helped establish the Strong Health Geriatrics Group and the Palliative Care Program at Strong Memorial Hospital with Timothy Quill, MD. The Konar family established the professorship to enhance patient-centered care, especially for the elderly and complex patients. The Konars have been generous supporters of the University for decades, including the establishment of another endowed professorship, the William and Sheila Konar Endowed Professor, supporting clinical research into Alzheimer's

disease. They also gave a generous gift to the Medical Center's Gastroenterology and Hepatology Division, which led to the creation of the Konar Center for Digestive and Liver Diseases. *Pictured are Mendelson, Sheila Konar, and son, Howard.*



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## Haggerty-Friedman Professor in Developmental/Behavioral Pediatric Research



**Tristram H. Smith, PhD**, is professor of Pediatrics and director for Research at the Strong Center for Developmental Disabilities. Smith leads federally funded studies comparing the efficacy of different interventions for children with autism spectrum disorder (ASD), and serves as an investigator on studies of environmental risk factors for developmental disabilities. He has authored or coauthored several of the most widely-cited studies on treatment outcomes for children with ASD. The Professorship was established by gifts from Robert J. Haggerty, MD (Res '51), and the late Stanford B. Friedman (MD '57), with additional support from their colleagues, families, and friends. Haggerty is professor of Pediatrics and chair emeritus of the Department of Pediatrics. In addition to his clinical practice, he became internationally known for his effort to promote the health of children and adolescents by establishing integrated services and policies. Friedman was an SMD professor of Pediatrics and Psychiatry and a

pioneer in adolescent medicine and behavioral pediatrics. He focused his research efforts on these fields and was dedicated to the behavioral pediatric community. *Pictured with Smith, center, is Jeffrey Friedman, son of Stanford Friedman, and Janet Gibbons Morris, daughter of Robert J. Haggerty.*

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## Tansukh, Sarla and Rajesh Ganatra Distinguished Professor in Pediatric Cardiac Surgery



**George M. Alfieris, MD** (Res '92, Flw '94), is director of Pediatric Cardiac Surgery at Golisano Children's Hospital and SMD professor of Surgery. Alfieris holds a rare subspecialty certification in congenital cardiac surgery and is one of only two pediatric cardiac surgeons in the region, commuting by plane to treat patients between Rochester, Buffalo and Syracuse hospitals. More than half of Alfieris' patients are less than a year old, and at least one-quarter are babies in their first 28 days of life. The Ganatra family created the Professorship out of gratitude to the Medical Center pediatric doctors who helped their family and loved ones. The commitment is part of the family's long-time support of pediatric cardiology at the Medical Center. Tansukh, Sarla and Rajesh are dedicated to improving the lives and happiness of future generations through cardiology research at Golisano Children's Hospital and the Medical Center's Aab Cardiovascular Research Institute. Through their steadfast support, the Ganatra

family is enabling breakthrough treatments and bringing lasting hope to pediatric cardiac patients in the greater Rochester community and around the world. *Pictured are Sarla Ganatra, Richard T. Aab, University Trustee and close friend of the Ganatra family, Tansukh Ganatra, Alfieris and Rajesh Ganatra.*

Endowed  
Professors

# The Parkes Family Legacy: Improving the Lives of Asthma Patients

In 1995, Walter and Carmina Parkes, along with other family members, created the region's first asthma center—the Mary M. Parkes Center for Asthma, Allergy, and Pulmonary Care—in honor of their daughter, Mary M. Parkes, RN.

Mary was diagnosed with severe asthma when she was nine years old. Her illness was acute, requiring her to be hospitalized more than 50 times in 10 years. Despite her battle with asthma, Mary led a full and active life, eventually becoming an intensive care nurse. After a long struggle with the disease, Mary died in 1991 at the age of 32. Soon after Mary's passing, Walter and Carmina, sisters Susan and Linda, brother Tom, families, friends, and the physicians who cared for Mary, started a support group for individuals and their families dealing with asthma.

The center, which grew from this family-run support group, allowed huge steps to be taken toward eliminating the isolation many asthma patients felt, as well as providing a Center of Excellence to those who need specialized asthma care.

Today, the Mary M. Parkes Center remains one of the region's leading comprehensive centers dedicated to the diagnosis, treatment, and research of acute asthma, allergies, and other pulmonary diseases. In addition to asthma, the center focuses on general pulmonary medicine, obstructive lung disease, and houses the only program in upstate New York devoted to pulmonary hypertension, a serious illness in which high blood pressure affects the arteries in the lungs and the right side of the heart. The center is also involved in numerous clinical trials focusing on new therapies to help lessen symptoms and improve quality of life for patients in the region, across the country, and around the world.

Walter Parkes, owner of O'Connell Electric, serves on the Wilmot Cancer Institute Advisory Board, and continues to provide philanthropic support to the Mary M. Parkes Center. Susan Parkes-

McNally is a member of the Medical Center Board of Directors, and is a board member of The Mary M. Parkes Center as well as the Parkes Family Foundation. She is also co-chair of the Junior Builders Exchange Annual Golf Tournament, which has raised nearly \$2 million in support of the Mary Parkes Center.

The family's most recent act of generosity was to establish the Walter and Carmina Mary Parkes Family Professorship, with **Steve N. Georas, MD**, professor of Medicine, Environmental Medicine, Microbiology and Immunology, named the first Parkes Family Professor.

Georas, who has been caring for patients with acute and chronic lung diseases for more than 20 years, currently oversees URM's Pulmonary Function Labs. He has extensive experience managing patients with acute respiratory failure, pneumonia, sepsis, and multi-organ failure.

His research is focused on improving the understanding of how the lung functions as an immune organ, with the goal of alleviating the burden of immune-mediated lung diseases like asthma. He directs a research group that investigates mechanisms of immune cell

activation in the lung, and his current studies are aimed at defining molecular pathways by which allergens and particulate matter activate epithelial cells and dendritic cells, leading to generation of maladaptive allergen-specific immune responses in asthma. A separate line of research is investigating how lysophosphatidic acid is generated in the lung, exploring the role of different LPA receptors in lung inflammation and immune responses.



*Steve N. Georas, MD*



*Thomas and Brenda Parkes, Linda (Parkes) and Joseph Clement, Walter and Barbara Parkes, Susan (Parkes) and Jon McNally*



# Home Visit Program Offers Clinical Experiences for Medical, Nursing Students

Older adults in Rochester and the Finger Lakes region report more “poor mental health” days than their peers across the state, a fact compounded by a shortage of behavioral health providers. But a new interprofessional program has the potential to better address seniors’ complex health needs.

Funding from the National Center for Interprofessional Practice and Education has kick-started a geriatric home visit (GHV) program that pairs local nurse practitioner and medical students with social workers to provide in-home behavioral health screenings to older adults. The project improves access to behavioral health assessments for vulnerable older adults, while building a workforce of health professionals who can collaboratively identify and manage their health needs using new care delivery models.

“Interprofessional teams are the key to safe, high-quality, patient-centered care,” said **Tobie Olsan, PhD, RN, CNL, FNAP**, professor of Clinical Nursing at the School of Nursing and the grant’s principal investigator. “Our focus has traditionally been in the hospital, but this is about nurturing best team practices in the home, which is where we are increasingly caring for older adults.”

URMC CEO and School of Medicine and Dentistry dean **Mark B. Taubman, MD**, said the program powerfully extends what is already happening in Rochester to meet the behavioral health needs of vulnerable elders.

“It reinforces efforts to reframe our academic community and culture to critically apply an integrated, holistic, patient- and



family-centered lens to professional education and practice,” he said.

The initiative brings together third-year medical students, nurse practitioner students, and community-based professional social workers from Lifespan, a local aging services agency. The four-week experience has five components: preliminary online training modules, in-home visiting, collaborative assessment and development of integrated care recommendations, follow-up contact, and a debriefing with supervising UR medical and nursing faculty, and social work faculty from SUNY Brockport.

As many as 40 teams will take part in the two-year project, made possible by a \$50,000 grant from the National Center and \$200,000 in total funding, including matching resources from the partner organizations.

“This extends our previous work in interprofessional education—largely anchored in Strong Hospital and within the schools of medicine and nursing—to the community,” said **Sarah Peyre, EdD**, assistant dean for Interprofessional Education.

The Rochester team was one of 16 chosen to receive national funding; each led by a graduate nursing program and including one or more professional schools and a community partner.

UR School of Nursing dean and URM vice president **Kathy H. Rideout, EdD**,

**PPCNP-BC, FNAP**, said the program will “craft a new model for the co-education of nursing and medical students, and social work professionals, toward improved patient and family care and outcomes.”

“Too often we wait for people to come to our hospital or clinic door,” adds former Department of Psychiatry chair **Eric Caine, MD**. “Now students will learn the skills of going to the doors of older people who face multiple health challenges—those who often lack the ability or support to readily seek care. For persons with mental health concerns, this is especially important.”

The GHV program, which establishes URM and the School of Nursing as a Nexus Innovations Network and part of a virtual national learning community with other funded programs, dovetails with URM’s vision of advancing interprofessionalism through education, research, and practice. The Institute for Innovative Education, formed in 2012, fosters educational improvement through interdisciplinary collaboration, the integration of emerging clinical and curricular innovations and technologies, and team-based preparation of health care providers across the learning continuum. The ultimate goal is to improve the availability, quality and experience of medical care, particularly to vulnerable populations.

If you see any alumni whom you would like to contact, use the Online Directory at [www.alumniconnections.com/URMC](http://www.alumniconnections.com/URMC) to find address information.

Submit class notes to your class agent or to [RochesterMedicineMagazine@urmc.rochester.edu](mailto:RochesterMedicineMagazine@urmc.rochester.edu).

Note: MD alumni are listed alphabetically by class, resident and fellow alumni follow in alphabetical order, and graduate alumni are listed separately in alphabetical order.

## MD Alumni

### 1959

**Bruce Baker**, a medical consultant for the Genesee/Orleans Council on Alcoholism and Substance Abuse, recently received a lifetime achievement award from the Western New York Chemical Dependency Consortium. Baker began his work in the area of substance



abuse while working as a physician in the Genesee County Jail for 25 years, addressing substance abuse issues. From 1963-2015, he was also medical director of Hope Haven Alcohol and Chemical Dependency inpatient service at United Memorial Medical Center. He has worked in the addiction field for over half of his 60-year career as a physician.

### 1969

**Richard J. O'Reilly '68M (MD)**, director of the Pediatric Bone Marrow Transplant Service at Memorial Sloan Kettering Cancer Center (MSKCC) in New York City, was recently featured on the Humans of New York Facebook page. With more than 20 million followers worldwide on social media, the photo-blog offers a daily glimpse at the lives of New Yorkers through portraits and stories.



"All doctors have those patients who sit on our shoulder. Their image is always with you," said O'Reilly, who stepped down from his 30-year post as chair of Pediatrics at MSKCC last July. "One kid will pop into your head every time you hit a wall – when you encounter a disease that is so unrelenting, you've exhausted all therapies and you're still not even close," he said. "One memory will keep you going."

O'Reilly will always remember the five-year-old girl who made him laugh. When he asked how she was doing, she said: "I don't know. You're the doctor!"

And then there was the boy who was born without an immune system. He lived the first two years of his life in an isolation room with no windows. His entire exposure to the world was through a black-and-white TV. He received a bone marrow transplant, and suddenly his immune system came online.

"We took him for a walk in the garden," O'Reilly recalled. "This boy had spent his entire life in a windowless room. A sparrow landed on a bush, and he pointed at it and said: 'Bird.'"

That moment will always be with me." O'Reilly marvels at the buoyancy of his patients, who range in age from hours-old newborns and teens to adults in their 70s. He sees firsthand the incredible support their families provide.

"The kids have such devoted parents. The level of humanity I see in these parent-child relationships is just extraordinary. It's such a gift," he said. "It's also that kick-in-the-butt that makes me want to keep doing more."

O'Reilly's current work focuses on the development of immune cell therapies to treat post-transplant viral complications. He hopes to extend those treatments to other diseases like virus-associated cancers and to ultimately build banks of immune cell therapies that can be available for off-the-shelf treatment.

### 1974

**Phil Greenland (PhD '78)**, the Harry W. Dingman Professor of Cardiology and professor of Preventive Medicine at Northwestern University Feinberg School of Medicine, has received the David E. Rogers Award from the Association of American Medical Colleges (AAMC). He was among nine professionals honored for outstanding contributions to

academic medicine at the AAMC's 2016 annual meeting. Known as "the voice of preventive cardiology," he is a prolific scholar whose research has shaped cardiovascular care guidelines around the globe. His work was among the first to reveal that women are more likely to die from heart attacks than men, and to illustrate that major risk factors almost always precede heart attacks. He has also contributed to enhanced diagnostic and preventive care, showing the importance of coronary calcium scanning for prediction of cardiovascular disease risk. Greenland has been recognized as a Thomson Reuters Highly Cited Researcher, placing him among the 400 most highly cited scholars worldwide, and is a senior editor for the *Journal of the American Medical Association (JAMA)*.

**Paul D. Mintz ('70)** has been appointed to the board of directors at Nuo Therapeutics, Inc., a Gaithersburg, Maryland-based biomedical company offering biodynamic therapies for wound care. The company's Aurix System is a biodynamic hematology that harnesses a patient's innate regenerative abilities for the management of wounds. Mintz is senior vice president and chief medical officer of Verax Biomedical. Prior to joining Verax in early 2016, he directed the Division of Hematology Clinical Review for the FDA's Office of Blood Research and Review within the Center for Biologics Evaluation and Research. For 30 years previously he was a member of the faculty of the University of Virginia School of Medicine, where he was a tenured professor of Pathology and Internal Medicine.

### 1975

**Dean Parmalee**, associate dean for Medical Education at Wright State University Boonshoft School of Medicine, received the *Alpha Omega Alpha Robert J. Glaser Distinguished Teacher Award* from the Association of American Medical Colleges (AAMC). He was one of nine professionals recognized for their outstanding contributions to academic medicine at the AAMC's 2016 annual meeting. An early pioneer of team-based learning (TBL), he has been instrumental in designing and implementing many TBL modules into Boonshoft's curriculum. Parmalee also helped advance active-learning techniques nationally and globally in his role as



inaugural president of the national TBL Collaborative. He has edited four textbooks on TBL, including *Team-Based Learning in Health Professions Education*, which has been translated into other languages. He also helped establish a medical school in Saudi Arabia and has served as a consultant faculty developer to institutions in the Middle East, Southeast Asia, Africa and the US. "Dr. Parmelee has created a community of medical educators, which will be his ultimate legacy," says Margaret M. Dunn, dean of Boonshoft School of Medicine.

1977



**James R. Higgins** crossed yet another item off of his ambitious bucket list when he climbed Mt. Kilimanjaro last October and proudly hoisted a University of Rochester flag at its 19,341-foot high summit. Higgins trained intensively for over a year for the climb by hiking mountains of increasing altitudes.

In addition to mountain climbing and meeting hundreds of celebrities and politicians, the cardiologist of Tulsa, Okla., has accomplished nearly 2,000 goals on an always-growing bucket list he created while he was a Rochester medical student. The dizzying inventory of experiences includes acting in a 2014 big-screen political thriller, *Persecuted*, where he played president of the United States (delivering 38 lines alongside well-known actors), dining at Windsor Castle with Princes Charles, Edward and Philip, climbing Mt. McKinley, hiking the Appalachian Trail, parachuting with Navy SEALs, hunting rattlesnakes, piloting an acrobatic airplane and posing for photographs with every president since John F. Kennedy. He is hoping to find his way aboard Air Force One, and he'd really like to be inside a fighter jet as it's catapulted off an aircraft carrier.

Growing up in rural Wessington Springs, S. Dakota, Higgins always had a penchant for living life courageously. He was the first in his family to go to college. An electrical engineering major and star athlete, he hitchhiked to all of his medical school admission interviews, surprising bowtie-clad professors at numerous Ivy League schools.

"They would ask how my flight had been. When I told them I'd hitchhiked, they just about fell off their chairs," he laughs. Higgins remembers arriving in Rochester on a Friday night and sleeping in Helen Wood Hall before his morning appointments.

"They didn't ask about my grades or MCAT scores, which were very good. They wanted to know if I was the kind of person who should be a doctor. That's why I went to Rochester," he says.

A third-year rotation with **Arthur J. Moss, MD**, led him to become a cardiologist.

"We would go over to Dr. Moss's house for dinner every Wednesday and he would quiz us on a CPC from the New England Journal of Medicine. He changed my life."

Higgins is married to his high school sweetheart, Julie, and together they've raised three sons. The eldest, Christopher J. Higgins, MD, joined his father's practice and has taken over most of the invasive procedures, giving Higgins more time to whittle away at his list.

1982

**Harold L. Paz ('77)** was recently appointed to the board of directors at Select Medical Holdings Corporation, where he will also serve on the Quality of Care and Patient Safety Committee. Paz joins the board with nearly 25 years of experience in the healthcare and insurance industries. He is currently executive vice president and chief medical officer of Aetna Inc. Previously, he held posts at Penn State, serving as dean of the College of Medicine and senior vice president for Health Affairs, as well as chief executive officer of Penn State Health Milton S. Hershey Medical Center. Prior to his appointment at Penn State, Paz spent 11 years as dean of Robert Wood Johnson Medical School and as chief executive officer of Robert Wood Johnson University Medical Group.

**Luciano V. Del Priore** has joined the Department of Surgery, Ophthalmology section at Greenwich Hospital, part of



Yale New Haven Health System. He will treat patients at Yale Eye Center. Del Priore, who also holds a PhD, specializes in the surgical and medical treatment

of retinal disease, including age-related macular degeneration, retinal detachment, diabetic retinopathy, macular holes, epiretinal membranes and ocular trauma.

1986

**Tracey Weigel** was recently named chief of thoracic surgery for Westchester Medical Center Health (WMCHHealth) Network's Valhalla, Poughkeepsie and Kingston campuses. She will oversee all thoracic surgery functions at WMCHHealth's flagship Westchester Medical Center, as well as Maria Fareri Children's Hospital, MidHudson Regional Hospital, and at HealthAlliance Hospital's Broadway and Mary's Avenue campuses.

1989

Robert Smith has recently joined Health Quest Medical Practice Division of Radiation Oncology in the Poughkeepsie, N.Y. region. Smith previously served as chief of the Division of Radiation Oncology at Schenectady Radiation Oncology.

1991

**Glenn Egelman** has been named associate dean of the Colonial Health Center at



George Washington University, where he will oversee the center's medical, mental health, and

health promotion and prevention services. Egelman is a health care consultant who has delivered and overseen health services at five other higher education institutions.

## 1995

**Daniel Mendelson (MS '93, Res '98, Flw '00)**, associate chief of Medicine and director of Palliative Care for URM's Highland Hospital, will serve as 2017 council chair of the American Hospital Association's (AHA) section for long-term care and rehabilitation. Composed of CEOs and senior executives from the nation's leading hospitals, the council works with the AHA on public policy and member service strategies for post-acute and continuing care providers.

## 2000

**Kevin B. Martin**, a pulmonologist, is a newly appointed member of the Reliant Medical Group board of trustees. Martin currently practices at Reliant's Division of Pulmonology and Critical Care Medicine at Worcester Medical Center in Worcester, Mass.

## 2003

**Youngrin Kim (MD '03, Res '06)** received URM's Highland Hospital's Distinguished Physician Award. An instructor of clinical medicine at the University of Rochester School of Medicine, Kim serves as nocturnist, which is the physician leader at Highland during the night. Robert McCann, MD, chief of medicine at Highland, says: "Dr. Kim is one of the most highly regarded clinicians on our staff. He is known for his compassion, integrity and work ethic."

## 2005

**Camelia A. Lawrence**, a breast surgeon at St. Vincent's Medical Center in Bridgeport, Ct., was recently named a Doctor of Distinction by the Fairfield County Business Journal. She also received the Female Trailblazer award from her local chapter of the American Cancer Society, where she actively volunteers for programs like Relay for Life and Making Strides Against Breast Cancer. Lawrence also speaks at community forums to educate women on the importance of advocating for their health. She can often be found working in her hospital's mobile mammography coach, which provides mammograms to women in underserved communities. A board-certified surgeon

specializing in benign and malignant breast disease, Lawrence is fellowship-trained in advanced breast cancer surgery, including skin and nipple-sparing mastectomy, sentinel node biopsy and oncoplastic techniques.

**Mai H. Le** was recently appointed to the newly formed clinical advisory board at Batu Biologics, a San Diego-based immuno-oncology company focused on the development of its tumor angiogenesis targeting immune therapy, ValloVax™. A strategic advisor for biotechnology companies with a focus in oncology and immunotherapy, Le has more than 8 years of oncology drug development experience including small molecules, biologics, medical devices, and companion diagnostics strategy. She previously held posts as medical director at Calithera Biosciences, Plexxikon Inc., Onyx Pharmaceuticals and Proteolix, Inc. (acquired by Onyx). Most recently she served as chief medical officer at OncoSec Medical, Inc.

CT, conventional angiography and X-ray images collected over the course of his career. Published by Thieme, an award-winning international medical and science publisher, the books feature a distinctive three-column, table-plus-images format that sets them apart from the typically longer, disease-oriented radiologic tomes. Deemed "an unprecedented trifecta" in an *American Journal of Neuroradiology (AJNR)* review, the trio of books is praised for their unconventional format that allows a substantial amount of material to be presented in a compact space. On the AJNR blog, the reviewer writes: "Every reasonable pathology is covered in detail with excellent imaging. This, along with many other tables in other sections and chapters, is an outstanding way to learn imaging anatomy and corresponding diseases. This is a highly desirable set of books and would be a valuable addition to any neuroradiologist's personal collection and certainly, to any departmental or sectional library."

**Youngrin Kim (MD '03, Res '06)** – See MD Class of 2003

## Resident & Fellow Alumni

**Elaine Huber (Res '87)** has joined the



medical staff at Hunterdon Medical Center, in Flemington, NJ. Huber, who earned her medical degree at SUNY Buffalo, has been a gynecologist in private practice in Somerset County

for more than 22 years. She has worked at hospitals in New York, Pennsylvania and New Jersey.

**Daniel Mendelson (MS '93, MD '95, Res '98, Flw '00)** – See MD Class of 1995

**Steven P. Meyers (Flw '94)**, URM's professor of Radiology/Imaging Sciences, Neurosurgery and Otolaryngology, recently authored and published *Differential Diagnosis in Neuroimaging*, a three-book series covering the brain and meninges, head and neck, and spine. Meyers, director of the Radiology residency program, created the volumes using high-quality MRI, CT, PET, PET/

**Scott Tobis (Res '13)** has joined Sansum Clinic Medical Staff, Urology, Foothill Medical & Surgical Center in Santa Barbara, Calif.. Tobis received his medical degree from Dartmouth Medical School and completed his general surgery internship and urologic surgery residency at the University of Rochester. He completed his fellowship in robotic surgery and urologic oncology at City of Hope National Medical Center. His areas of expertise include prostate cancer, bladder and kidney cancer, low testosterone and urinary infections.

## PhD Alumni

**Phil Greenland (MD '74, PhD '78)** – See MD Class of 1974

## Graduate Alumni

**Daniel Mendelson (MS '93, MD '95, Res '98, Flw '00)** – See MD Class of 1995



## University Alumni

1964

**Alan Dattner, MD**, writes: "In my career, I have developed an ability to treat inflammatory skin disorders that otherwise defy treatment, using primarily counseling, diet and natural supplements. After graduating from the UR, I did my medical training and residency at the NYU School of Medicine and was a visiting scientist at the National Cancer Institute's Dermatology branch, where we did further studies on the nature of immune recognition. This went on to become the topic of two Nobel Prizes (Benacerraf in 1980, Doherty and Zinkernagel in 1996). It seems that "recognition" is a parallel metaphor in both the immune and psychological realms. As a result of my findings, the UR asked me to start a Division of Dermatology. Instead of accepting that prestigious opportunity, however, my psychosomatic and nutritional interests in alternative medicine led me to join an early integrative medicine clinic associated with the IntegralYoga Institute. Our lab studies on HLA-dependent immunospecificity led me to understand scientifically how different foods, microbes or environmental antigens could precipitate the same disease in different people, and how modulating this exposure could calm skin conditions. I have been fortunate to be able to explore this new paradigm for skin and other inflammatory conditions in my practice. Through the use of supplements and herbs, numerous patients I've worked with have recovered from chronic skin conditions as diverse as acne, hidradenitis and lymphomatoid papulosis. Previously these conditions were thought to be incurable or controllable only with powerful suppressive medications. My book, *Radiant Skin from the Inside Out*, describes how I do this. I live in New Rochelle with my wife Shohama, who does spiritual mentoring, and I practice in New Rochelle and Manhattan. We have a daughter Alicia, and spend holidays in Sarasota, Fla."



*Amanda Pannu, Vivian Jiang, and Amber Robins*

### Family Medicine Residents Named to National Leadership Positions

Three third-year residents from the Department of Family Medicine residency program were recently named to national leadership positions in the American Academy of Family Physicians (AAFP). They were chosen from more than 1,000 AAFP residents across the country, but more significantly, this is the first time three residents from the same program have been elected.

"The faculty and residents of the Family Medicine program are to be congratulated for engaging residents in the leadership process," said Stanley Kozakowski, MD, FAAFP, who directs the AAFP's medical education division. "These leaders will help our national organizations create a better future for our patients, their families, and communities. With residents such as these, the future of family medicine is very bright."

More than 1,300 medical students and 1,000 residents from across the country attend the AAFP conference each year, during which the students and residents elect their national leaders.

**Amber Robins**, (MD' 14, Res '17), MBA, was elected as the resident representative to the Society of Teachers of Family Medicine

(STFM) board of directors and **Vivian Jiang, MD** (Res '17), was elected as one of two resident representatives to the AAFP congress of delegates. **Amanda Pannu, MD** (Res '17), was appointed as the resident representative to the Family Medicine review committee.

"We strongly support the involvement of our residents in leadership activities," said **Stephen Schultz, MD** (Res '96), director of the Family Medicine residency program. "One of the distinctions of our program is that we offer a political advocacy and leadership track to support residents who are interested in the policy-making process that shapes the way health care is delivered in the U.S."

Residents who choose to participate in the track learn about legislative issues that affect patients, medical education and healthcare policy, develop an advocacy issue of personal interest, and serve on a New York State Academy of Family Physicians Commission. They also lobby in Albany, N.Y. and Washington, D.C. with state senators and representatives, as well as national leaders.

## Donald A. (D.A.) Henderson, MD



**Donald A. (D.A.) Henderson ('54MD)**, a renowned epidemiologist credited with the global eradication of smallpox, died Aug. 19, 2016 in Towson, Md. at the age of 87.

Dr. Henderson was revered for leading, and winning, the World Health

Organization's (WHO) war on smallpox. For more than a decade, he and his team of "eradicators"—scientists, doctors, nurses, linguists, medical technicians, soldiers and academics—tracked down everyone infected with the lethal disease across 50 countries. They immunized all those within a ring of proximity to the infected, shutting down its spread and saving tens of millions of lives.

"Dr. Henderson's work exemplifies everything we aspire to accomplish across the Medical Center," said Mark B. Taubman, MD, CEO of URM and dean of the School of Medicine and Dentistry. "We work to understand the molecular causes of disease so knowledge can be applied to urgent health care needs at home and across the globe."

Growing up in Lakeland, Ohio, Henderson knew he wanted to be a physician and was leaning toward cardiology. During his undergraduate years at Oberlin College, a smallpox outbreak in New York City sparked his interest in epidemiology. In 1955, he landed a position at the Centers for Disease Control and Prevention (CDC) Epidemic Intelligence Service. He worked closely under the CDC's then-chief epidemiologist, Alex Langmuir, MD.

"Through him, I discovered the excitement and challenge of epidemiology and its special attraction in requiring solutions that bring together epidemiologic insights, clinical observations, sociologic characteristics, laboratory findings, and all matter of other insights in solving what are wonderfully fascinating puzzles," Dr. Henderson said in a 2005 interview in *Epidemiology*.

In 1977, Dr. Henderson became dean of what is now the Johns Hopkins Bloomberg School of Public Health. He also emerged as a leading expert on bioterrorism, and in 1998 founded the Center for Civilian Biodefense Studies at Hopkins. After the Sept. 11, 2001 terrorist attacks and subsequent anthrax mailings, he served under President George W. Bush as director of the newly formed Office of Public Health Preparedness. In 2002, he received the Presidential Medal of Freedom, the nation's highest civilian honor.

Throughout his career, he maintained a strong connection to Rochester, returning for class reunions and speaking at URM on the subject of bioterrorism. He said he was often guided by the Romano and Engel biospsychosocial philosophy of medicine he learned as a medical student in Rochester.

"(I was taught to) take time, question the patient thoroughly, listen carefully," Dr. Henderson said in a 2002 interview with *Rochester Medicine*. "More often than you can imagine, the patient has a remarkably keen insight and understanding of his problem, and will effectively provide you the diagnosis before you do the physical examination or laboratory study," he said.

## Thomas H. Shepard, MD



**Thomas Hill Shepard ('48 MD)**, professor emeritus of Pediatrics at the University of Washington (UW), passed away on Oct. 3, 2016 at the age of 93.

Admired and loved by the many students, fellows and

colleagues, Dr. Shepard is remembered for his extraordinary contributions to teratology. He is best known for publishing the first edition of the *Catalog of Teratogenic Agents* in 1973. Now in its 13th edition, the catalog has served for decades as a basic tool in experimental teratology and is used worldwide to counsel pregnant women.

Dr. Shepard earned his bachelor's degree at Amherst College in 1945. Following medical school at the University of Rochester, he joined the Department of Pediatrics at UW where he spent his entire career. He completed a fellowship in pediatric endocrinology at Johns Hopkins in 1954, then went on to complete training in teratology at the University of Florida and later at the Carnegie Institute in Wash., D.C.

"Tom brought his Rochester training as a medical student and pediatric resident into marvelous perspective of medical science, having both a critical eye for the aberrant and a keen ability to understand the contributing factors to birth defects," said Richard K. Miller, PhD, director of MotherToBaby UR Medicine and professor of the Department of Obstetrics and Gynecology.

"He was truly a gentleman, scholar and friend," Miller recalled. He and Dr. Shepard worked together for more than 25 years as members of the TERIS (Teratogen Information System) scientific review board. "There were always passionate discussions concerning the teratogenicity of the agents which Tom calmly contributed to debate," said Miller. "His 'Shepard's Criteria' have established for the medical community how to define a teratogen, which was recently used by the CDC for the ZIKA virus."

Dr. Shepard founded the Division of Human Embryology and Teratology at UW in 1964 and served as its director until his retirement in 1993. In addition to his work as an author and researcher, he performed clinical duties and taught in UW's Department of Pediatrics and Seattle Children's Hospital.

A native of Milwaukee, Dr. Shepard discovered his first love—sailing—while spending childhood summers with his grandparents in Marblehead, Mass. He married Alice Kelly in 1946. They had three daughters: Annie, Donna, and Betsy. Alice died in 2004 and in 2006 he married Gretchen McCoy. An old-fashioned pediatrician to the very end, Dr. Shepard at age 90 was still helping his daughter Ann, a school nurse, with hearing tests at her school.

Close friends and family said Dr. Shepard never took his good fortune for granted. They recalled how he would often hoist a glass of wine at cocktail hour and joyfully shout, "Hallelujah!"



## Ling (Irene) Tang Yu, MD



**Dr. I. Ling (Irene) Tang Yu (Res '46, Flw '50)**, a retired pediatrician and a generous Rochester philanthropist, died Jan. 29, 2017 in San Mateo, Calif. She was 100 years old.

Dr. Yu was the widow of Dr. Paul N. Yu ('46 Res, '48M), former chief of Cardiology at URM, who died in 1991. They had four daughters: Pauline, Diane, Lorraine and Corrine.

Rochester alumnus Jules Cohen ('53, MD '57) was also a close friend and extended family member, and co-authored the biography *Paul Yu Remembered*, in which Dr. Irene Yu wrote, "In our family of four daughters, Paul considered Jules his adopted son." The book includes a chronicle of the Yu's courtship and their convergent paths to Rochester.

Born in China, Dr. Irene Yu graduated from medical school in 1940 and worked as an assistant pediatrician and medic treating war-related casualties at the municipal hospital in Chongqing. In 1942, she joined Dr. Paul Yu at the National Medical College and worked as an assistant resident pediatrician. They were married in 1944.

The following year, she won a major national fellowship from the Ministry of Education that enabled her to complete postgraduate studies at Duke University, and she completed further training at Willard Parker Hospital for Contagious Diseases in New York City. On the recommendation of Duke's medical school dean, URM selected her as an assistant resident in Pediatrics, followed by a two-year Pediatrics research fellowship. There, she advocated for her husband and helped him secure a paid fellowship under then-chair of Medicine, Dr. William McCann. The Yus were reunited in Rochester in 1946.

While raising their daughters in Rochester, Dr. Irene Yu worked at medical facilities including the UR's University Health Service, and held posts at Holley Central School District, Monroe Developmental Center and SUNY Brockport's Health Sciences Division.

Pillars of the URM community, the Yus were generous supporters of the medical school, and established the Paul N. Yu Professorship in Cardiology. After her husband's death, Dr. Irene Yu funded a charitable trust that will eventually flow to the Dr. Paul N. Yu Heart Center at the University.

"Irene continued the support of medicine here at Strong, and her family is very loyal to their Rochester roots," said the first Yu Professor in Cardiology Bradford C. Berk, MD, PhD, former URM CEO who now directs the University of Rochester Neurorestoration Institute. "I am very grateful for the endowed Yu professorship which allowed me to pursue new avenues of research."

Donations in her memory may be made to: The Paul N. Yu Heart Center, URM, 300 East River Rd., Box 270032, Rochester, N.Y., 14627.

## In Memoriam

Word has reached us of the passing of the following alumni and friends. The School of Medicine and Dentistry expresses its sympathy to their loved ones.

Norman L. Avnet (MD '53, Res '56)  
Robert J. Baliff (MD '57)  
Gerald R. Berg (MD '67)  
Daniel Francis Cahill (MS '62, PhD '70)  
Richard James Collins (MD '47, Res '49)  
Jerald L. Connelly ('50, PhD '58)  
Ann Connors-Adler (PhD '74, MD '82, Res '85)  
William L. Craver (Res '93)  
Fredrick T. Cross (MS '61, PhD '67)  
Merle Clark Cunningham ('66, MD '71)  
Gordon D. Currie (Res '53)  
Gregory August Curt (MD '77)  
Stanley S. Dunkelman ('52, Res '56)  
Donald M. Eldredge (MD '55)  
Marvin Allen Epstein (MD '48)  
Donald E. Faulkner (MS '62)  
Albert Fink (MD '54)  
Dwight W. Fitterer (MD '57)  
William G. Gamble (MD '59)  
Robert Eugene George (MS '61)  
Malcolm Gorin (MD '60)  
William Gough (MD '76)  
Donald Roy Grinols (Res '61)  
Wilbur Y. Hallett (MD '53)  
Donald E. Hammer (MD '66)  
Donald A. Henderson (MD '54, Hnr '77)  
Alan R. Johnson (MD '57)  
Paul H. Keyes ('47, MS '47)  
Martin F. King (MD '64)  
Daniel W. Kramer (MD '47)  
George A. Krikos (PhD '59)  
Paul G. Kuehn (MD '52)  
Stephen James Lambrinos MD ('04, MD '10)  
Stanley A. Leavy (MD '40)  
David John Lechner (MD '73)  
Susan Rae Levy (MD '79)  
William C. Luft ('52, MD '56)  
Paul D. Mahoney (RES '88)  
Charles H. Marino ('50, Res '57)  
Theodore C. Max (MD '54, Res '61)  
Aaron Miller (MD '50)  
Roger F. Milnes (MD '47)  
George F. Munro (PhD '69, MD '70)  
Robert D. Neubecker (46, MD '49)  
Arthur M. Pappas (MD '57)  
John Thomas Parente (MD '48)  
Edward J. Roche ('46, MD '50)  
Robert E. Rowland (PhD '64)  
Marc Allen Rozner (PhD '80)  
James L. Secrest ('45, MD '48)  
Gustav J. Selbach (MD '58)  
Jane Shumway (Res '54)  
Francis J. Sobkowski (PhD '66)  
Dirk J. Spruyt (MD '54)  
Lawrence Paul Tarnacki (MS '92)  
Philip L. Townes (PhD '53, MD '59, Res '60, Res '63)  
James D. Tulloch (MD '63)  
Murphy Thomas Wagner (MS '62)  
I. Ling Tang Yu (Res '46, MS '50)  
Edward J. Zebrowski (MD '53)

**Y**ou wrote a fine article: "What Will It Take?" in *Rochester Medicine* 2016 Vol 2. However, I take exception to your opening paragraph wherein you state dean George Whipple was "notorious for his anti-Semitism and unabashed bigotry toward African Americans" and that he systematically excluded students based on race and religion..."

Rather, having known Dr. Whipple as a medical student in the Class of 1956, I would think that he loved the field of medicine so

much that he systematically chose those students whom he felt would learn the craft well and perform as doctors and researchers as well or better than their peers at that time.

My class consisted of only 60 students; we were not given our grades and were told we would all graduate (there was one who dropped out, for whatever reason). Yes, there was just one black student but in my Amherst College class there were none. All schools throughout the country, I believe, were discriminatory in the sense that they wanted students who could do the work required for graduation and perform well in their subsequent careers so as to reflect

positively on the school. This may in present day thinking be a "legacy of racism" as you say in your article, but in those days it was normal procedure, I would think.

Please let me know where you got your information regarding George Whipple or else print a retraction of some sort. I'm sure that poor man is turning over in his grave and writhing at your somewhat careless and poor choice of words.

– Richard C. Elton (MD '56)  
Lancaster, Calif.

**I** was going down South Corridor recently, passed the suite of the Public Relations office on the first floor, and grabbed *Rochester Medicine*. When I came to the cover article, I was blown away.

I retired at the end of 2012, and have continued to be involved with the Medical Center in several different ways. I'm now on a contract to teach evidence-based health sciences literacy to chaplains. I started in 1990 in a one-year position with the Chaplaincy Services office in Strong, and never left. John Hansen, (now associate dean of Admissions for the medical school), was course director at the time and gave me the opportunity to work as a chaplain with first-year medical students in the human anatomy dissection lab.

That led to clinical appointments in the SMD and SON, which, over the years, included research work. Today I continue to work directly with first-years to help them organize and conduct a memorial service at the conclusion of their dissection course. It's a means of closure for them and the faculty, and a way to recognize and honor each body that was voluntarily donated through the Anatomical Gift Program.

I state all this as context for my response to your extensive (and intensive!) article on diversity.

I remember vividly that in 1991-92, a young academic physician from Harvard Medical School came to Rochester looking to talk to the relatively large number of undergraduate medical students at the SMD who were from Haiti. In my role, I helped him make the contacts. Now internationally recognized, Paul Farmer, MD, PhD, had just recently opened a clinic in rural Haiti and was recruiting native Haitians from American medical schools to assist him.

At that time, The SMD had an unusually large number of Haitian students because it was a way to put on paper that the school had "students of color." The lack of differentiating the origin of those students masked the fact that the "students of color" were not African American. An underrepresented minority was not being counted in a meaningful way. (This was well before John Hansen assumed his admission director's role). The Haitian students in the SMD were from more privileged backgrounds, speaking French as a first language and English as a second language. Paul Farmer was looking for people who spoke Creole, the language of people who were poor and lacked access to decent education. Paul was compiling a cohort of native Haitians with U.S. training, who could also serve as translators of Creole for other recruits. Alas, the SMD pool did not meet these criteria.

I tell this to illustrate how very different SMD approached the factor of racial/ethnic

diversity at that time—with a very different standard than currently applied. Your account—which is open and honest about the struggles over time—is so very refreshing and appreciated. From my back-row perspective, you wrote a very courageous piece.

My father worked in advertising so I get the role of public relations. My wife and I support URM financially and receive various PR publications, and I appreciate their role in fundraising. These publications typically do not disclose the kinds of tensions and conflicts that are so real in 21st century medical education or health sciences services. The issue for me is not that these problems exist. The issue is what the institution is doing about it. So to read an honest story in one of these PR publications is so refreshing.

Your story, with a true plot, went beyond a simple chronology of facts. It gave us insight, and with human faces, literally. The story is a real catalyst, another way to mobilize people to take yet another step in the right direction. And, in the language of public health, the story appearing in this particular publication helps normalize the direction in which executive leadership is moving.

Again, thanks for the continuing courage to see this all the way through. As the doctors say to the medical students on the floors when something is done very well, "Strong work."

– James Evinger, MDiv  
URMC Adjunct Assistant Professor



**I** was interested in your latest **Rochester Medicine** magazine as I was a resident in the **Plastic Surgery** program under Dr. (Robert M.) McCormack 1978-1980, and have been in private practice since 1980 in Fall River, Mass.

My inquiry is to ask "What is diversity?" How do you as an institution define it?

This letter is prompted by an experience I had in 2011 when my son, Matt, decided after a long hard road of 17 years starting and selling a business—and after finally graduating from Roger Williams University cum laude in 2010 with a GPA of 3.6 in Philosophy—that he wanted to go to medical school. He was 34 years old. He applied to the MD schools and his application was not even read, even though his MCAT score was 32. He then applied to DO schools and was readily admitted, and is now

in his 4th year looking forward to a residency in Internal Medicine.

Is this applicant not worthy of "diversity"? He brings with him the experience of 16 years of starting and growing a business while attending college part-time, and is now married with one daughter. Oh, I forgot to tell you that he is white, male, the son of an MD and it took him 17 years to complete his education. Maybe he should have looked back in his ancestry like Senator Warren did for some fraction of genetic racial diversity.

I would conclude with the thought that I think MD medical schools are missing out on a large segment of the "diverse" pool of applicants.

Thank you for your time and excellent publication.

—Donald Clukies, MD (Res '80)

*Plastic Surgery of Southern New England, PC  
Fall River, Mass.*

**R**eally loved that story. Wish I wrote it! The guy who was in the elevator who was assumed to be a janitor really struck me because we all make assumptions about other people based on their appearances all the time. But they're also based on what we've experienced, our personal histories. I would like to think I wouldn't

make that assumption, but I don't know for sure.

I did a similar story on the need for diversity in the Rochester school district; not an easy subject. Anyway, loved that story!

—Tim Louis Macaluso  
*Staff Writer, CITY NEWSPAPER*

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