



Duke Dept of Medicine

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Alumni Report  
Summer 2017

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# BUILDING ON TRADITION

Continuing our innovative research, compassionate care,  
and mentored training at Duke



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## UPDATE FROM THE CHAIR

As one of the thousands of physicians who have come through Duke's internal medicine training programs over the last 75 years, I hope your training at Duke was as rewarding for you as it has been for me.

As I walk each day from the Department of Medicine offices in Duke University Hospital ('Duke North') to meetings in the green zone of the Duke Clinics ('Duke South'), I always look out the concourse windows toward the Duke Chapel. That brings back memories: I started here as an undergraduate, and then completed medical school, internal medicine residency, and infectious diseases fellowship, and joined the Duke faculty. I met Paul during my residency, and we were married in the Chapel 35 years ago, in the same place I recently stood when I joined the current medical students for the Hippocratic Oath Ceremony.

Duke is an institution that has had a profound influence on my life and career, and I see that same influence on the residents and fellows in our programs today. Soon, I will get to interact with them in a new role—on July 1, I will become Dean of the Duke School of Medicine.

I know I'm leaving the Department of Medicine in great shape, because the faculty and trainees here are exceptionally passionate about their work. They are among the top in the country, continuing to build on a strong Duke tradition of mentored training, productive research, and compassionate care to patients.



**Joseph Rogers, MD**, professor of medicine in the Division of Cardiology, will serve as interim chair during a national search for a permanent chair of the Department of Medicine. I wanted to make sure that the Department would be in great hands for this transition, and with Joe it clearly will.

We're sharing a selection of Department highlights in the following pages, and there's always more—find a steady stream of news, announcements, faculty profiles, and trainee features on our MedicineNews blog at <http://DukeMedicine.news>.

We'd enjoy featuring you, too. Send us news about your current work, and tell us how training at Duke prepared you for a career in medicine.

— Mary E. Klotman, MD

*Follow the Department of Medicine on Twitter @dukemedicine and Mary @MaryEKlotman.*

# 138

Resident research projects  
awarded funding



## HIGHLIGHTS FROM THE INTERNAL MEDICINE RESIDENCY PROGRAM

In our program, we often refer to the “Duke Family.” We are far more than colleagues or co-workers, but a group that is bonded by a common purpose—Duke Family lasts beyond the three years of training.

— Aimee Zaas, MD, MHS, Program Director

### Duke Medicine Residency Coaching Program

The new coaching program pairs Duke internal medicine residents with faculty members who coach them on their individual professional development throughout their training here.

Faculty coaches are trained to help residents excel and progress throughout their residency training, and to assist residents earlier when they can benefit from additional guidance and support. 170 residents are enrolled in the program and have been matched with 81 trained volunteer faculty coaches.

### Resident research

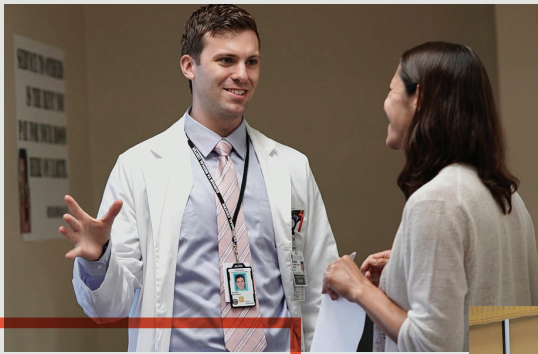
The program holds its annual Resident Research Night each spring, which includes a poster session and oral presentations by winners of the Califf Medicine Resident Research Awards, the annual research prizes dedicated to promoting clinical research during residency.

The winners for 2016–17 were selected from among 16 abstracts. They are: Julia Xu, MD, first place, “Factors related to progressive renal function decline in sickle cell disease” (Mentor: Marilyn Telen); Kahli Zietlow, MD, second place, “Comparative outcomes of patients with and without cognitive impairment, within a comprehensive peri-operative assessment program” (Mentor: Mitchell Heflin); and Landon Brown, MD, third place, “Predictors of net acid excretion in the chronic renal insufficiency cohort study” (Mentor: Julia Scialla).

### Narrative Medicine workshop

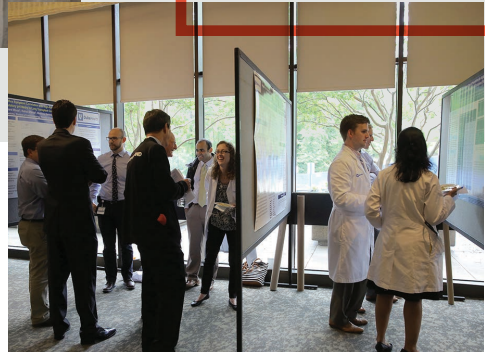
In 2016, the program held a one-day workshop on the craft of writing, part of a new initiative called the Duke Narrative Medicine Project. More recently, residents gathered at the home of David Pisetsky, MD, PhD, faculty mentor to the narrative medicine group, for a workshop where residents shared their writing and provided feedback.

“Narrative medicine allows physicians to reflect on difficult, funny, or moving experiences through



**47**  
Published manuscripts  
in peer-review journals

**48**  
Resident presentations at  
national scientific meetings



writing,” said current resident Megan Dupuis, MD, PhD. “Having shared experiences across levels of training improves resilience, brings people closer together, and prevents burnout.”

### Residents help lead Duke Outpatient Clinic redesign

In 2012, internal medicine faculty and residents approached the Duke University Health System with the goal of improving patient care and enhancing the educational experience at the Duke Outpatient Clinic (DOC), a hospital-based adult primary care clinic located in north Durham that serves more than 5,000 unique patients and conducts more than 20,000 provider visits per year. Two-thirds of the encounters in the clinic are performed by residents, and at the time approximately 40 percent of patients seen at the DOC were on Medicaid and 10–15 percent were uninsured.

Over a year-long planning process, and with help from countless others, the team looked at data on patient admissions and physician transitions; conducted focus groups; examined financial data; and researched the literature, said Adia Ross, MD, MHA, a medical instructor (General Internal Medicine), who was one of the project’s resident leaders.

The team proposed establishing a new program for patients with high rates of care utilization, supported by an interdisciplinary team of providers with backgrounds in medicine and behavioral health. They proposed changing the way residents

were scheduled at the DOC to increase continuity with patients and attendings.

“This experience was absolutely invaluable. We developed our own ideas, researched the literature, called other institutions to determine how they were addressing similar issues, and made our action list,” said Jennifer Rymer, MD, MBA, a current fellow at Duke and resident participant on the project.

Over three years, the DOC redesign achieved consistent double-digit year-on-year reductions in ED visits and hospitalizations of DOC primary care patients at Duke University Hospital, reported Alex Cho, MD, MBA, assistant professor (General Internal Medicine) and a faculty leader for the project.

### Fellowship Match

The 2016–17 fellowship match will see our senior residents continuing on to fellowship training or taking jobs at Duke and around the world. In the last five years, 92 percent of residents continued on to internal medicine subspecialty training: 22 percent into cardiology, 14 percent into hematology/oncology and 10 percent into gastroenterology, among many others.

“Our residents work incredibly hard and benefit from outstanding mentorship here at Duke,” said Aimee Zaas. “We look forward to hearing about their many accomplishments in the years to come.”



# HIGHLIGHTS FROM THE FELLOWSHIP PROGRAMS

The Duke Department of Medicine Fellowship Programs and Advanced Training Programs offer outstanding medical training for physicians interested in focusing their skills in cardiovascular disease, infectious diseases, geriatrics, endocrinology, nephrology and other subspecialties.

## Cardiovascular Disease

The program continues to recruit and train the next generation of leaders in cardiovascular clinical care, research and education; two-thirds of our fellows accept academic faculty appointments after training. Fellows have published more than 50 first-author manuscripts in the past year. Jennifer Rymer, MD, received the Walter Floyd Endowed Fellowship Award for her outstanding clinical skills. Daniel Friedman, MD, received the Joseph Greenfield Scholar in Cardiology Award for contributions to outcomes research on cardiac implantable electronic devices. Alex Fanaroff, MD, received an American Heart Association Fellow to Faculty Career Development Award for his research on critical care use in acute coronary syndromes. Zak Loring, MD, was awarded the 2017 Heart Rhythm Society Young Investigators' Award for clinical research.

## Endocrinology

Current fellow Reilly Coch, MD, is a former medicine/pediatric resident at Duke who practiced primary care for eight years and then returned for training in Endocrinology to learn "a better way to treat diabetes than what we were doing in our practice." Fellow Afreen Shariff, MBBS, has developed expertise in the endocrinopathies associated with immunotherapy of malignancy and has established collaborations with the Duke Cancer Institute to co-manage these patients.

## Gastroenterology

GI fellow Yuval Patel, MD, received an Advanced/Hepatology Transplant Fellowship Award from the American Association for the Study of Liver Disease and was named the trainee representative to the American Society of Transplantation Liver and Intestinal Transplantation Community of Practice Executive Committee this year. Six GI fellows had poster presentations at 2017 Digestive

Disease Week. Brian Sullivan, MD, won the 2017 Fellows' Vignette at the North Carolina Society of Gastroenterology.

## Geriatrics

Over the last five years, the program has trained 22 geriatricians. They practice in 10 states, many holding faculty positions in academic medical centers and leading innovative care programs. The program enhances training in care outside of the hospital and clinic through our HRSA-funded Geriatric Workforce Enhancement Program. Fellows get a dedicated month-long academic elective and are using that for research on how to improve outcomes for older adults with dementia, falls and fractures across the spectrum of care settings.

## Hematology-Oncology

Recent graduate Tian Zhang, MD, joined the Duke faculty and published a review of Cabozatinib in GU malignancies. Sandip Patel, MD, is on the faculty at UCSD and is interested in immunotherapy of cancer



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Fellows

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Training grants

and early phase clinical trials. He was featured in The Cancer Letter in January 2017. Erika Hamilton, MD, was appointed, in 2016, as the director of breast and gynecological cancer research at the Sarah Cannon Cancer Research Institute in Nashville.

## Infectious Diseases

The program has placed more than 90 percent of graduating fellows into an academic position. In 2016, six of the eight senior fellows were supported by NIH T32 grants. Eileen Maziarz, MD, a former trainee, will become associate program director to help our 14 current fellows.

## Nephrology

The program's 10 nephrology fellows have authored 20 abstracts at national meetings, 10 book chapters, seven editorial/ review articles, and 12 peer-reviewed original research articles. Harpreet Singh, MD, chief fellow, will chair the nephrology fellowship work-life balance committee. Dinushika Mohottige, MD, MPH, will serve as chief resident for ambulatory medicine for the internal medicine residency program.

John Stanifer, MD, served as chief fellow at the DCRI.

## Pulmonary, Allergy, and Critical Care Medicine

The program has 16 fellows. This year, Sailaja Allamneni, MD, won the best clinical abstract award at the Triangle Visiting Pulmonary Scholars symposium. Armando Bedoya, MD, won an American Thoracic Society Minority Trainee Development Scholarship, and Nina Chen, MD, received an ATS Fellows Track Symposium Award. Stephen Bergin, MD, had publications in Clinical Infectious Diseases, Clinics in Chest Medicine and Lancet Infectious Diseases.

## Rheumatology and Immunology

The program has nine fellows, three who are combined medicine/pediatrics. Current fellows Atul Kapila, MD, and Tayseer Haroun, MBBS, co-authored a recent case report in The Rheumatologist. Dr. Haroun and fellow Malithi Jayasundara, MBBS, completed data collection on

patient-generated data about pregnancy and autoimmune diseases; they intend to submit the results as an abstract to the 2017 American College of Rheumatology annual scientific meeting and then as an original research manuscript.

## Pathways

**Management and Leadership Pathway for Residents** is an innovative GME program designed to develop physician executives, and has graduated six Internal Medicine trainees since 2010. Graduates have taken leadership roles in redesigning primary care at Duke, helped launch insurance products in North Carolina, led major hospital service lines in Raleigh, and have run oncology programs in Seattle, WA. **The Global Health Pathway for Residents and Fellows** seeks to develop academic leaders in global health from across the Medical Center. Since 2008, nine Internal Medicine residents and six sub-specialty fellows have participated leading to more than 75 publications. Fourteen trainees have successfully competed for Fogarty Global Health Fellowships.



**GOWTHAMI AREPALLY, MD**

In 2016, the Duke School of Medicine selected 38 of its faculty for the new Duke Health Scholars and Duke Health Fellows Program. With funds from the Duke University Health System, the program supports the research efforts of early to mid-career clinician-scientists at Duke. Among the faculty honored are 14 individuals from the Department of Medicine, including Gowthami Arepally, MD, associate professor of medicine in the Division of Hematology.

### **Accelerating techniques to detect & prevent heparin-induced thrombocytopenia**

When Dr. Arepally started a research rotation during her medical residency at Emory University, she expected to soak up some basic science and then get back to becoming a clinician.

But the puzzles the young doctor encountered at a bench there were too engaging—and too important—to turn away from.

Instead, Arepally decided to merge the experimental with the clinical, and since then one domain has deepened the other. “It’s that back and forth that is so gratifying,” said Arepally.

From the start, Arepally’s research has probed molecular steps that produce heparin-induced thrombocytopenia (HIT).

Arepally’s insights into just how HIT happens have opened doors to better detecting and preventing HIT. “Gow’s scientific contributions to the field of HIT biology have been transformative,” said Michael D. Gunn, MD, chair of the Department’s Research Development Council.

And more weighty contributions may follow. Recent studies in the Arepally lab have decoded very early immune system triggers from heparin in blood that may be a roadmap to other drugs triggering allergy-like immune attacks.



# EXCELLENCE IN RESEARCH

## Parents pave a path

From watching how much her obstetrician mother and rehabilitation specialist physician father enjoyed their jobs, Arepally always wanted to be a doctor. She carried her plan to the United States when, at age 9, her family moved here from India. And she sustained it through four years at Mercer University and then medical studies at Vanderbilt University.

Hematology first seized her attention during residency at Emory University, partly because of expanding understanding of and successful treatments for blood cancers. Peering at abnormal blood cells with microscopes always reminded Arepally, however, that work remained to be done.

“I was mesmerized by the cells. The cells were so awful in terms of disease potential, but so beautiful to look at. I wondered how such beautiful cells could be so deadly,” Arepally said.

Arepally dug deep into basic science first at the University of Pennsylvania during a research fellowship. She analyzed the antibodies that stream toward platelets after doses of heparin alters a specific protein, platelet factor 4 (PF4), on their cell surfaces in the bloodstream. Linking drug to protein, it’s now known, alters the physical orientation of PF4 enough to make it look like an invader to some immune system scouts.

Arepally was the first to engineer a monoclonal antibody to PF4 and heparin, which is now patented and licensed to a biotechnology company to help diagnose HIT. Her research team was also first to create a mouse model for HIT (since improved), that uses copies of the engineered antibodies to create thrombosis and thrombocytopenia in lab animals.

All that helps her tell her patients why HIT must be treated. “When we see patients with this awful

**“I was mesmerized by the cells. The cells were so awful in terms of disease potential, but so beautiful to look at. I wondered how such beautiful cells could be so deadly.”**

— Gowthami Arepally, MD

disease we can now say: We know why this is happening. We can model it in mice,” Arepally said.

The Arepally lab has plumbed antibody activation of platelets, which activates risky clumping and clotting. Lab members also have articulated immunogenicity of heparin-like molecules, pointing the way to a FDA standard for screening the molecular weights of drugs to try to reduce their immunogenicity.

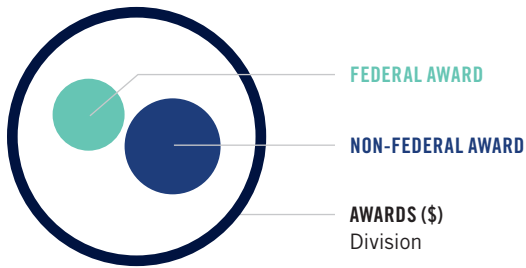
Arepally’s team is working on tools to better predict which cardiac surgery patients are more likely to develop mischief-making antibodies in their bloodstream. They have identified a molecular pathway active even before antibodies get produced. This upstream pathway, which involves B-cells and a complement immune response, is what lights the fuse for the antibody assault that follows. Arepally’s studies have identified certain qualities, electrical charge and structural profile among them, that increase the chances of immune attacks.

“This is what all scientists live for: making progress in one disease and hoping the knowledge you gain is applicable to a broader audience,” she said.

*Read more profiles of our Duke Health Scholars at [medicine.duke.edu](http://medicine.duke.edu)*

# RESEARCH FUNDING BY THE NUMBERS

From July 2015 to June 2016, Department of Medicine faculty received 521 new & competing awards totaling \$267M in new research funding. In the Blue Ridge Institute for Medical Research rankings (NIH funding for federal fiscal year 2016), the Department was fourth among internal medicine departments.



Sources: Duke School of Medicine, Blue Ridge Institute for Medical Research



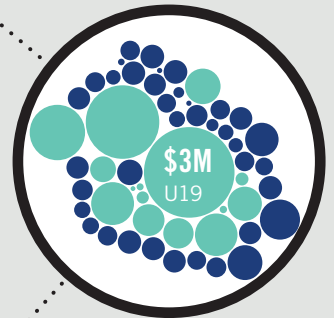
**13 (\$1.4M)**  
Endocrinology,  
Metabolism,  
& Nutrition



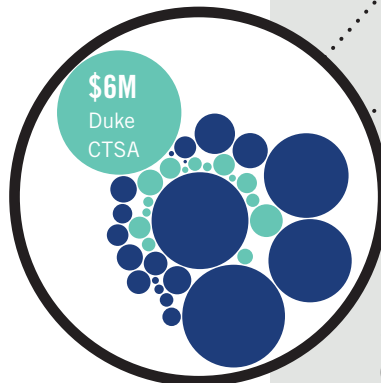
**12 (\$3M)**  
Geriatrics



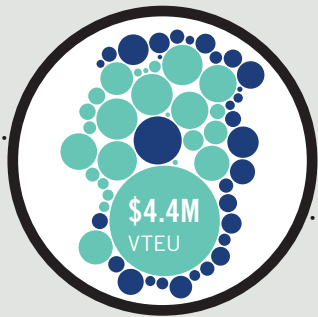
**16 (\$1.6M)**  
Nephrology



**55 (\$15M)**  
Hematologic  
Malignancies &  
Cellular Therapy



**36 (\$22M)**  
General Internal Medicine



**60 (\$15M)**  
Infectious Diseases



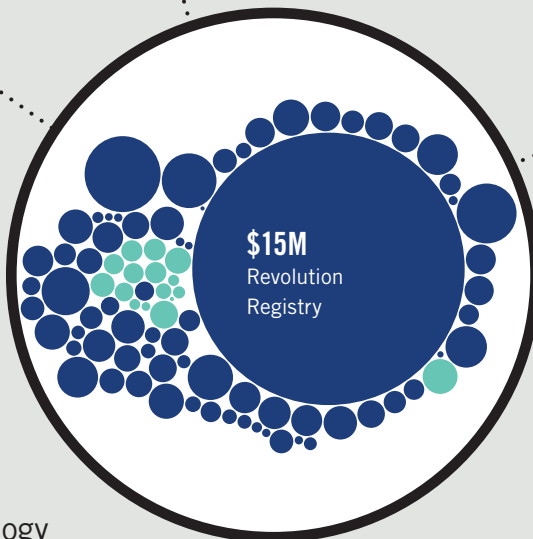
**22 (\$4M)**  
Hematology



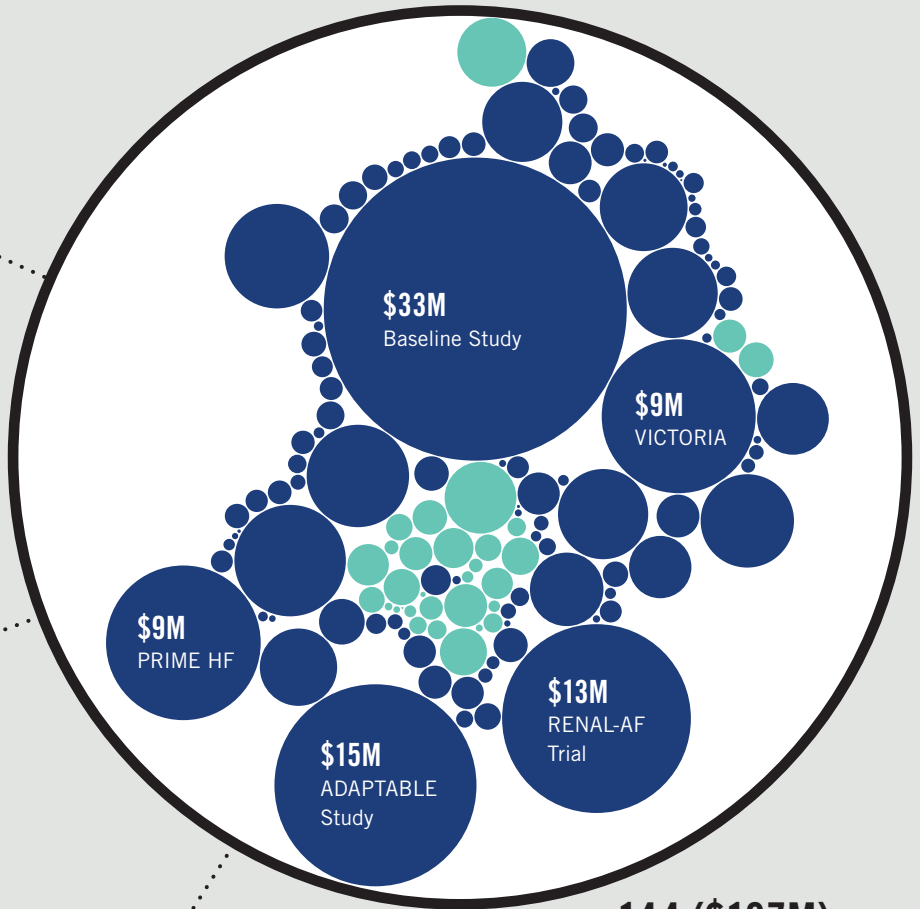
**27 (\$6M)**  
Gastroenterology



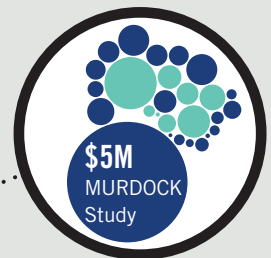
**14 (\$2M)**  
Rheumatology  
& Immunology



**92 (\$50M)**  
Medical Oncology



**144 (\$137M)**  
Cardiology



**30 (\$10M)**  
Pulmonary, Allergy,  
& Critical Care  
Medicine

# CLINICAL CARE HIGHLIGHTS

The Department and its specialties continued to focus on increasing access to meet the demands of our patients in Durham and surrounding counties. We're also concentrating on developing new and innovative models of healthcare delivery aligned with the changing healthcare environment. New partnerships between Duke Health and WakeMed Health & Hospitals, as well as multidisciplinary clinics at Duke Hospital, reflect the growth of our patient care and clinical innovations.

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## Heart Care Plus and Cancer Care Plus

Duke Health and WakeMed Health & Hospitals are combining their heart programs in a single heart service, to be known as Heart Care Plus. The two systems are also partnering on Cancer Care Plus to deliver value-based cancer care throughout Wake County. Cancer Care Plus is anchored at Duke Raleigh Hospital and combines a variety of Wake County-based Duke Cancer Institute specialty services, locations, and cancer clinical research programs with the surgical cancer capabilities at WakeMed's hospitals in Raleigh and Cary.

## Cardiology

Manesh Patel was named chief of the division to succeed Chris O'Connor. Dr. Patel trained at Duke and was chief resident here. The division expanded signature programs for TAVR, arrhythmia ablation, left atrial occlusion, VAD, and imaging. Outpatient services have also grown, with new programs in Women's Health, renewed focus on preventative cardiology, and a growing cardio-oncology initiative in collaboration with the Duke Cancer Institute. The inaugural Duke-Stanford Cardiovascular Research Symposium was held in May and honored Duke's Robert Lefkowitz, who received the Nobel Prize for Chemistry 2012. The two-day event highlighted innovative research programs at both institutions.

## Endocrinology, Metabolism, and Nutrition

The division partnered with the Department of Orthopaedic Surgery and the Department of Anesthesiology on a pre-operative diabetes management program, and with the Department of Surgery on the Endocrinology-Bariatric Surgery clinic and an endocrine neoplasia program for management and investigation of thyroid cancer.

## Gastroenterology

Duke's liver transplant program has performed more than 1,000 transplants since 1984, including 98 in 2016, when it had the highest one-year and three-year survival rates in the country. The division also saw double-digit growth of GI services in Durham and Wake County over the past three years.

## General Internal Medicine

At the Durham VA Medical Center, Duke faculty members David Simel and Joel Boggan are helping to forward best practices, successfully achieving higher vaccination rates for asplenic patients. GIM faculty have received support from the Duke Institute for Health Innovation (DIHI) for projects developing a dashboard for end-of-life treatment for oncology patients, improving inpatient goals of care conversations, and a population-health approach to advance care planning in primary care.

## Geriatrics

The division received a DIHI 2017 Innovation Grant for the Perioperative Optimization of Senior Health program, which provides integrated care coordination for older adults undergoing elective surgeries, utilizing expertise from geriatrics, general surgery, and anesthesia teams at Duke.

## Hematologic Malignancies and Cellular Therapy

With its home transplant study—in which patients receive their preparatory regimen and stem cells in the hospital and are discharged for home care on post-transplant day one—the division is seeking to determine whether outcomes at home are better than in the hospital given exposure to patients' own gut microbiota and minimizing exposure to hospital acquired infections while receiving home-based care.



## Hematology

The division expanded the apheresis service and added new research programs in apheresis; recruited a director of the sickle cell program and developed a pediatric/adult transition clinic in sickle cell; and expanded hematology services at Duke Raleigh Hospital.

## Infectious Diseases

The division runs the Duke Antimicrobial Stewardship Outreach Network for small, medium, and large hospitals in the Southeast to share insights into the use of critical antibiotics. The division also created a One Health focus for teaching and international management of infectious diseases outbreaks. The Transplant Infectious Diseases Program is one of the largest and most comprehensive in the world.

## Medical Oncology

The division initiated a molecular tumor board, with participation from clinicians across the Duke Cancer Institute, for reviewing somatic (and sometimes germline) mutations and other genomic alterations that are of uncertain significance. These are increasingly identified as a result of expanding use of next-generation molecular testing performed on cancer tissue and blood; a subset of these alterations may be targets for therapy.

## Nephrology

Myles Wolf was named chief of the division to succeed Tom Coffman. Dr. Wolf was previously at Northwestern University. The division expanded its services with a clinic in Wake County, new dialysis centers at Kerr Lake and RTP, and a consult service at Duke Hospital for patients on the regular floors who are not transplanted or on dialysis. Faculty helped to increase the volume of kidney transplants to more than 150 per year.

## Pulmonary, Allergy, and Critical Care Medicine

The division maintains one of the busiest lung transplant programs in the United States, with waiting times that are the shortest in the country and survival rates that consistently beat the national averages. A national search for a new chief of the division is underway.

## Duke Center for Applied Genomics and Precision Medicine

The Center's faculty have discovered and developed novel molecular signatures that can be assayed in blood and that enable accurate diagnosis of viral and bacterial infection. The program in systems pharmacogenomics has advanced understanding of aspirin's mechanism of action.

# VOICES OF MEDICINE

Jamy Ard, MD, returned to Duke in January 2017 as the Minority Recruitment and Retention Committee's Martin Luther King Jr. Distinguished Speaker at Medicine Grand Rounds.

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Dr. Ard is a professor of medicine and epidemiology and prevention at Wake Forest School of Medicine and co-director of the Weight Management Center at Wake Forest Baptist Health. He attended Duke University School of Medicine and completed residency in internal medicine at Duke, serving as chief resident from 2001-02. He shared a few thoughts on his training:

**Q: How did your training at Duke help you achieve your current career track?**

I owe my current career choice and research focus to my education, experiences and mentorship that I received at Duke. As a first-year medical student, I was introduced to the Rice Diet Program courtesy

of Bob Rosati. He and Frank Neelon let me hang out there and ask lots of questions about what they were doing. Eugene Oddone and several other faculty in General Internal Medicine worked with me as a student and trainee, teaching me fundamentals of clinical research. Laura Svetkey and the Duke Hypertension Center team adopted me as a medical student, allowing me to become part of the incredible research on the DASH diet. During residency, I got invaluable time from leaders like Ralph Corey, Dan Sexton, Bart Haynes, Diana McNeill, and Joe Greenfield. I also learned a tremendous amount from my fellow residents, chiefs, and my co-chiefs, Geoffrey Kunz and Manesh Patel.

**Q: Can you share a story about a key mentor from your time at Duke?**

Laura Svetkey, who I consider one of my main mentors at Duke and even now, was always so gracious to involve me in her work. I began working with Laura when I was a medical student, and as I think back, I realize the importance of the opportunities she provided for me. She allowed me to participate in investigator meetings for these incredible multi-center trials with high-level scientists from around the country and NIH. She was always supportive and advocated for my ideas within the investigator team. That was pretty incredible.

**Q: What advice do you have for Duke trainees?**

One of the keys to being successful in medicine is establishing good mentorship, and Duke is a place where people invest in developing the careers of young medical professionals. If you're a trainee at Duke, build a mentorship team that can assist you with your professional development, research program, and your personal growth.

## DEPARTMENT OF MEDICINE LEADERSHIP

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### **Design**

Thinkso Creative  
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### **Photography**

Ted Richardson  
Duke Photography  
Wake Forest Baptist Medical Center (p. 12)

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