

CHANGING MEDICINE.
CHANGING LIVES.®

Foundations & Innovations

Department of Internal Medicine

internalmedicineiowa.org   

 UNIVERSITY OF IOWA
CARVER COLLEGE
OF MEDICINE

University of Iowa Health Care



E. Dale Abel, MD, PhD

Chair/Department Executive Officer,
Department of Internal Medicine
Director, Division of Endocrinology and Metabolism,
Department of Internal Medicine
Director, Fraternal Order of Eagles Diabetes Research Center
Professor of Internal Medicine - Endocrinology and Metabolism
Professor of Biochemistry
Professor of Biomedical Engineering (BME)

From the Chair

Academic medicine is epitomized by our tripartite mission. As such, we have structured this issue of *Foundations & Innovations* to align with our three core missions: patient care, research, and education. As you read in each section about our advancements and investments in the future of health care, you will recognize that although distinct in some ways, our three missions are intimately intertwined. Our expert faculty at the University of Iowa ensure that all the patients we see are provided access both to cutting-edge advanced therapeutics and procedures and to compassionate and supportive care. The reach of the Department of Internal Medicine extends physically and digitally to every corner of Iowa and often beyond the borders of our nation. We treat the whole patient at Iowa, ensuring that each individual that we care for has access not only to clinicians but to allied health professionals such as genetic counselors, physiologists, social workers, and nurse practitioners as appropriate to ensure a continuum of care that reaches beyond our physical department.

Rigor in research is woven into our DNA. Our decades-long history of world-class excellence in cardiovascular medicine is matched by our growth in understanding lung diseases like sarcoidosis and cystic fibrosis, our advances in diabetes research and leadership in studies of

inflammation or mechanisms of vascular thrombosis. Prowess in the laboratory is matched by our depth in implementation science and outcomes research. We continue to contribute to global efforts against infectious diseases, from novel vectors for delivering hepatitis C treatments to re-engineering procedures designed to reduce healthcare-associated infections. As such, our ongoing discoveries have not only impacted and prolonged the lives of individual patients but are influencing how entire populations should be managed.

Educators, fellows, residents, and students all find the University of Iowa a fertile ground for experiments in new training models, while still ensuring that fundamental skills, knowledge, and experience are acquired. Given the numbers of publications, presentations on the national stage, and awards that our trainees accrue before they leave, it is difficult for our residents and fellows to leave Iowa City without significant achievements under their belt.

This publication also acknowledges a small sample of alumni, patients, and their families, whose generosity and shared commitment to improving human health has helped us toward our goals. Each of the three components of our mission are exemplified by three unique stories and how they have contributed to our mission.

Patient Care





2

Internal Medicine has two nationally ranked specialty (*U.S. News & World Report*) “2018-19 Best Hospitals”):

- Cancer
- Pulmonology



3

Internal Medicine has three high-performing specialties (*U.S. News & World Report* “2018-19 Best Hospitals”):

- Gastroenterology and GI surgery
- Geriatrics
- Nephrology



Reaccreditation

- The Echo Lab received a three-year term of accreditation
- UI HCCC designated “High Performing Site”
- For the third year in a row UI HCCC Adult and Pediatric Blood & Marrow Transplant Program rated an “Outperformer”



3

Iowa hospitals using the Virtual Hospitalist Service:

- Iowa Specialty Hospital - Belmond
- Iowa Specialty Hospital - Clarion
- Van Buren County Hospital - Keosauqua



70

primary and specialty clinics in Iowa, Illinois, and South Dakota



5

new outpatient facilities in Iowa City, Johnston, Cedar Rapids, Cedar Falls/ Waterloo



638

Total faculty
– 390 primary
– 205 voluntary
– 43 secondary



174

Fellows and residents in training

 **Int Med at Iowa**
@IntMedatIowa 

Congratulations to the new Clinical Chief of Cardiology, Dr. Chris Benson!
internalmedicineiowa.org/2017/06/30/benson...



    5:35 AM - 30 June 2017

 **Carver College of Medicine**
@IowaMed 

Maia Hightower, professor of @IntMedatIowa, was named one of the most powerful women in health care.
ow.ly/44XT30cbL8U



    4:05 PM - 31 May 2017

 **Int Med at Iowa**
@IntMedatIowa 

Congratulations to Dr. Zuhair Ballas, winner of the 2017 UIP Best Consulting Provider award!
<https://medicine.uiowa.edu/uiphysicians/clinical-awards...>



    8:18 AM - 19 Oct 2017



Heart and Vascular Center

Late last year, University of Iowa Health Care opened the doors to its new Heart and Vascular Center (HVC). Years in the planning and in construction, the HVC now resides in a 30,000-square-foot clinic, which features:

- 27 patient examination rooms with space to accommodate family members
- Three minor procedure rooms
- 10 echocardiography and vascular imaging suites
- On-site cardiopulmonary exercise/stress echocardiography capabilities
- Patient education and conference facilities
- Same-day scheduling for clinic appointments

The new clinic brings together all heart and vascular outpatient services into one location, increasing convenience for patients and families and allowing for greater collaboration and coordination among clinical staff.



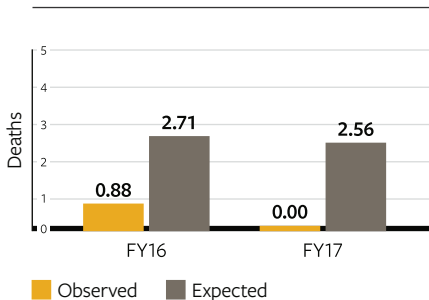
2,200
OR/ASC procedures

40,000+
outpatient visits

40,000+
procedures

67,000+
imaging and diagnostic tests

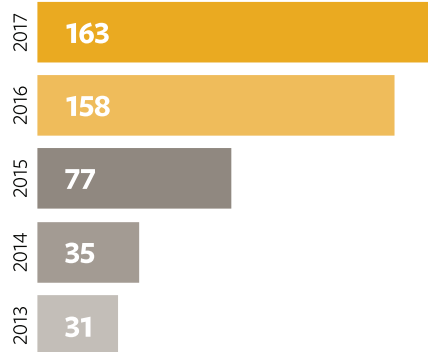
UI Health Care Transcatheter Aortic Valve Replacement
Inpatient Mortality Rate



Source: Vizient Clinical Data Base/Resource Manager used by permission of Vizient. All rights reserved.

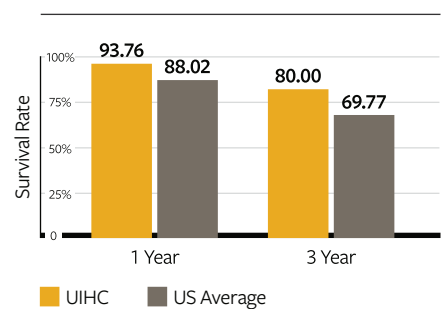
See page 11 for a detailed description of the Vizient database.

UI Health Care TAVR and MitraClip Procedures



Source: University of Iowa Health Care data

UI Health Care Adult Lung Post-Transplant
1-Year and 3-Year Survival Rate



Source: Scientific Registry of Transplant Recipients (SRTR) Jan 2018.

Drs. Diana Jalal and Nabeel Hamzeh
return to Iowa – both bring big
grants, new treatments



Diana Jalal

Dr. Diana Jalal, Clinical Associate Professor of Internal Medicine and Deputy Chief of Medicine at the VA, was awarded a four-year, \$2.3M, multi-institutional grant from the NIH's National Heart, Lung, and Blood Institute to study curcumin supplementation for improving vascular and cognitive function in chronic kidney disease (CKD). Patients with CKD are at increased risk of death from cardiovascular disease (CVD). Inflammation, oxidative stress, and vascular dysfunction (impaired endothelial function and increased large elastic artery stiffness) are highly prevalent in CKD and contribute to the high incidence of CVD in this patient population. In addition, patients with CKD suffer from high rates of cognitive decline for which effective therapies are lacking.

Curcumin, the active ingredient in the spice turmeric, is a natural polyphenol with anti-inflammatory and antioxidant characteristics. Preliminary data in old mice and healthy middle-aged (MA)/older adult humans indicate that curcumin administration improves endothelial dysfunction and large artery stiffness by reducing oxidative stress and inflammation. Additionally, 12 weeks of curcumin supplementation has improved episodic memory in MA/older adults. This grant will allow Dr. Jalal to extend these findings in healthy MA/older adults to patients with CKD, testing the hypothesis that curcumin improves vascular endothelial function and large elastic artery stiffness in MA/older adults with later-stage CKD.

Dr. Jalal joined the University of Iowa in September 2017 as Clinical Associate Professor in the Division of Nephrology and Hypertension and the VA.

Nabeel Hamzeh

Dr. Nabeel Hamzeh returned to Iowa to join the Division of Pulmonary, Critical Care, and Occupational Medicine, as an Associate Professor in September 2017. Dr. Hamzeh completed his Internal Medicine residency here at Iowa, alongside his wife, Dr. Diana Jalal. Following residency, Dr. Hamzeh completed a fellowship at Baylor College of Medicine in Pulmonary, Critical Care, and Sleep Medicine. He was then appointed a faculty member at the University of Texas Health Sciences Center in Houston, where he began to develop a program in sarcoidosis.

Furthering his interest in building a clinical and research career in sarcoidosis, Dr. Hamzeh next sought an opportunity at National Jewish Health Center in Denver. The sarcoidosis program there grew further and Dr. Hamzeh was awarded his first NIH grants focusing on the disease. However, Dr. Hamzeh and Dr. Jalal soon realized they missed the teaching component of medicine and set their sights on moving back to Iowa City.

Dr. Hamzeh is now continuing his research through NIH R01 grants. His collaborative investigative efforts include epigenetic modifications of T-cell immunity in sarcoidosis and he is one of the principal investigators on a new project investigating the longitudinal changes in the immune response in sarcoidosis patients and its relationship to disease course. Dr. Hamzeh also serves as Director of the Interstitial Lung Diseases (ILD) program and has expanded the ILD and sarcoidosis programs at Iowa River Landing. He has also started working with fellows in the Pulmonary and Critical Care Fellowship.



GI Faculty Build a New Bridge to China

It started with an idea in the Division of Gastroenterology and Hepatology and became an international collaboration, when two branches of interventional GI—from different corners of the world—converged.

Dr. Mingyan Cai—a visiting surgeon from Zhongshan Hospital Fudan University in Shanghai, China—completed a three-month training rotation in endoscopic ultrasonography at University of Iowa Hospitals and Clinics under the mentorship of Drs. Rami El Abiad and Henning Gerke. During that rotation, Dr. Cai shared her expertise in tunnel endoscopy, specifically peroral endoscopic myotomy (POEM), a novel technique for treating achalasia, a rare disorder that prohibits or restricts food from passing through the esophagus into the stomach. Dr. Cai also shared her knowledge of endoscopic submucosal dissection (ESD), a treatment for GI tumors and early cancers. Nearly a year later, Dr. El Abiad accepted Dr. Cai's invitation to visit Zhongshan Hospital in Shanghai. He spent three weeks training in ESD and in endoscopic full-thickness resection (EFTR), another technique for treating GI tumors and early cancers. While there, Dr. El Abiad also attended the annual Shanghai International Endoscopy Symposium and worked closely with Dr. Pinghong Zhou, a minimally

invasive surgeon. Dr. Zhou is a pioneer in tunnel endoscopy and the head of the Zhongshan Hospital Endoscopy Center.

The next month it was Dr. Zhou's turn to travel to Iowa City. While at UIHC, he gave two lectures on cardiothoracic and minimally invasive surgery and shared his experience in tunnel endoscopy. Dr. Zhou presented innovative techniques in performing submucosal endoscopy and another technique useful in treating a variety of GI diseases called NOTES (natural orifice transluminal endoscopic surgery).

The trading of expertise and original and innovative techniques in the ever-growing field of interventional endoscopy is further evidence that international collaboration can be a great success. Dr. Cai, now a leader in endoscopic ultrasonography in China, took her newly gained knowledge from Dr. Gerke and Dr. El Abiad back to Shanghai, where she now passes on her Iowa experience to trainees and fellow physicians. Dr. El Abiad, in his turn, has utilized his new skills in ESD and EFTR to push the boundaries of interventional GI, treating more GI conditions without surgery. His connections there led to trainees here learning lessons that Dr. Zhou had to offer. By reaching beyond our borders, the GI Division has allowed UIHC to offer therapeutics that only a few centers in the United States provide and opened our institution to many future opportunities.



Faculty members from Iowa have been collaborating with physicians from Shanghai, China to share knowledge and innovations in interventional endoscopy.



Maggie Armstrong with Dr. Richard J. Smith, director of the Iowa Institute of Human Genetics (left) and Dr. Christie Thomas (middle).

Maggie Armstrong: Genetics Counselor

Maggie Armstrong is the newest member of our genetic counseling team in the Department of Internal Medicine. Ms. Armstrong will work in both the Divisions of Cardiovascular Medicine and of Nephrology and Hypertension. Ms. Armstrong received her MS in Medical and Molecular Genetics from Indiana University School of Medicine and her BS in Biology from Drake University. While at IU, Ms. Armstrong provided genetic counseling in a number of different clinics related to neurology, oncology, and cardiovascular medicine, both at the Riley Hospital for Children as well as the St. Vincent Hospital in Indianapolis. She has also worked with the Holden Comprehensive Cancer Center at the University of Iowa. Ms. Armstrong is a member of the National Society of Genetic Counselors and has extensive volunteer experience. She enjoys running, hiking,

watching movies, wine nights with friends, spending time at the lake with family, and spoiling her nieces.

The Department recognizes that as Iowans increasingly obtain vast amounts of information about their own unique genetic code, the need for and importance of skilled professionals trained to interpret that data also increases. We are committed to investing in that future by recruiting genetic counselors with Master's degrees from accredited programs who have been trained in both medical genetics and counseling. Our genetic counselors are capable of helping patients understand and adapt to complex genetic information so that they and their loved ones can make informed choices regarding their healthcare.

Talking It Through

For 90 minutes every other week, about a dozen people share a small, comfortable space and talk about their cancer. They talk about how it felt to learn of their diagnosis, they talk about wrangling with insurance companies, they talk about the next round of treatment, they talk about their fear that remission may end. And as they talk, as they listen and share and find commonality in each other's stories, something remarkable happens: they get better. Their tumors may not recede and their co-payments may not reduce, but under the guidance of a trained psychologist, the participants feel less alone, less depressed.

That was the goal of Dr. Arwa Aburizik when she designed the group psychological interventions in the Holden Comprehensive Cancer Center more than a year ago. Dr. Aburizik is a psycho-oncologist with dual training in Internal Medicine and in Psychiatry. In research and in conversation with other institutions, she had found that tackling the psychosocial challenges that arise with cancer could improve a person's quality of life. Studies have shown that group therapy in cancer patients helped to diminish fatigue, anxiety, and depression. A variety of therapy styles including meaning-centered, supportive-expressive, and acceptance-commitment therapies (ACT) eased existential distress in patients with advanced cancer.

Each session begins with five minutes of guided relaxation exercise, and ends with five minutes of a mini didactic—typical of the ACT school. Alternatively, there could be some kind of reading—a poem or brief story with a learning point. The rest of the time is up to the participants, free to discuss whatever is weighing them or has brought them joy. But Dr. Aburizik is on hand to steer the conversation, keeping the focus on acceptance

of their disease and commitment to healing, in addition to other psycho-educational keypoints. “Stories stay, lessons leave” is the mantra of the sessions.”



Arwa Aburizik, MD, MS

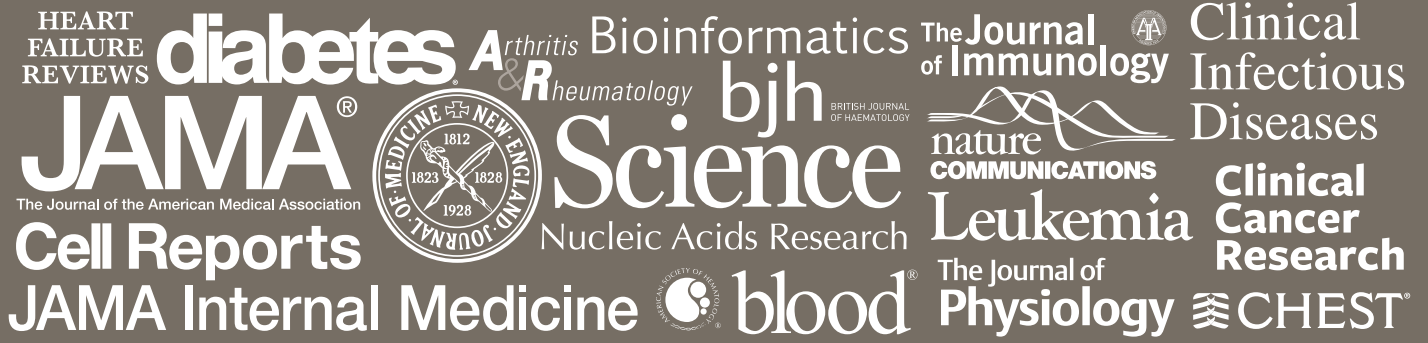
Although the members do as much or more of the work in the sessions, Dr. Aburizik is clear about distinctions. “This is not just a support group. This is therapy.” The focus, she says, is on providing participants with an environment and tools they can use “to manage the whole-person needs” during, and even after, the more familiar methods of cancer treatment like radiation and chemotherapy.

Eventually, as participation in the group grows beyond its 12-person limit, Dr. Aburizik hopes to begin forming groups that have deliberate and beneficial dynamics, based on ages, personality types, types of cancers, or stages of treatment. As she refines the group sessions, the members of the group practice a similar refinement, session by session.

Research



944 Publications by Int Med Faculty in 2018



University of Iowa Biomedical Science Program
@uiowabiomed

Kudos, Dr. Anil Chauhan!! Congrats on your \$5.3M R35 Award from the @nih_nhlbi!! <https://bit.ly/2HU0040> #uiowabiomed

UNIVERSITY OF IOWA
R35
EMERGING INVESTIGATOR AWARD
ANIL CHAUHAN, MTECH, PHD
Professor of Hematology, Oncology and Blood and Marrow Transplantation

5:02 PM - 22 Mar 2018

Carver College of Medicine
@lowaMed

Congratulations to Lee-Ann Allen, professor of @IntMedatlowa, on being elected as Fellow in the American Academy of Microbiology! <http://bit.ly/2D1qv3z>

4:30 PM - 11 Jan 2018

Carver College of Medicine
@lowaMed

Professor of @IntMedatlowa, Dale Abel identifies multiple roles of glucose metabolism in platelet in new study. <http://ow.ly/yCJc30e7k9H>

6:51 AM - 21 Aug 2017

University of Iowa Biomedical Science Program
@uiowabiomed

DID YOU KNOW? There are **272** research labs @lowaMed alone, w/research conducted in **11** buildings!! <http://bit.ly/2iol8O5> ❤️🔬

CHAD GRUETER, PHD
ASSISTANT PROFESSOR
INTERNAL MEDICINE

RACHEL MINERATH
GRADUATE STUDENT
PHARMACOLOGY

12:29 PM - 19 JUL 2017

American Heart IA
@AHAlowa

Congrats to Dr. Allyn Mark, professor at @uiowa @lowaMed, for being awarded the nat'l Excellence Award for Hypertension Research at #HTN17!

Congratulations
Excellence Award for Hypertension Research

Allyn L. Mark, M.D.
University of Iowa
Carver College of Medicine

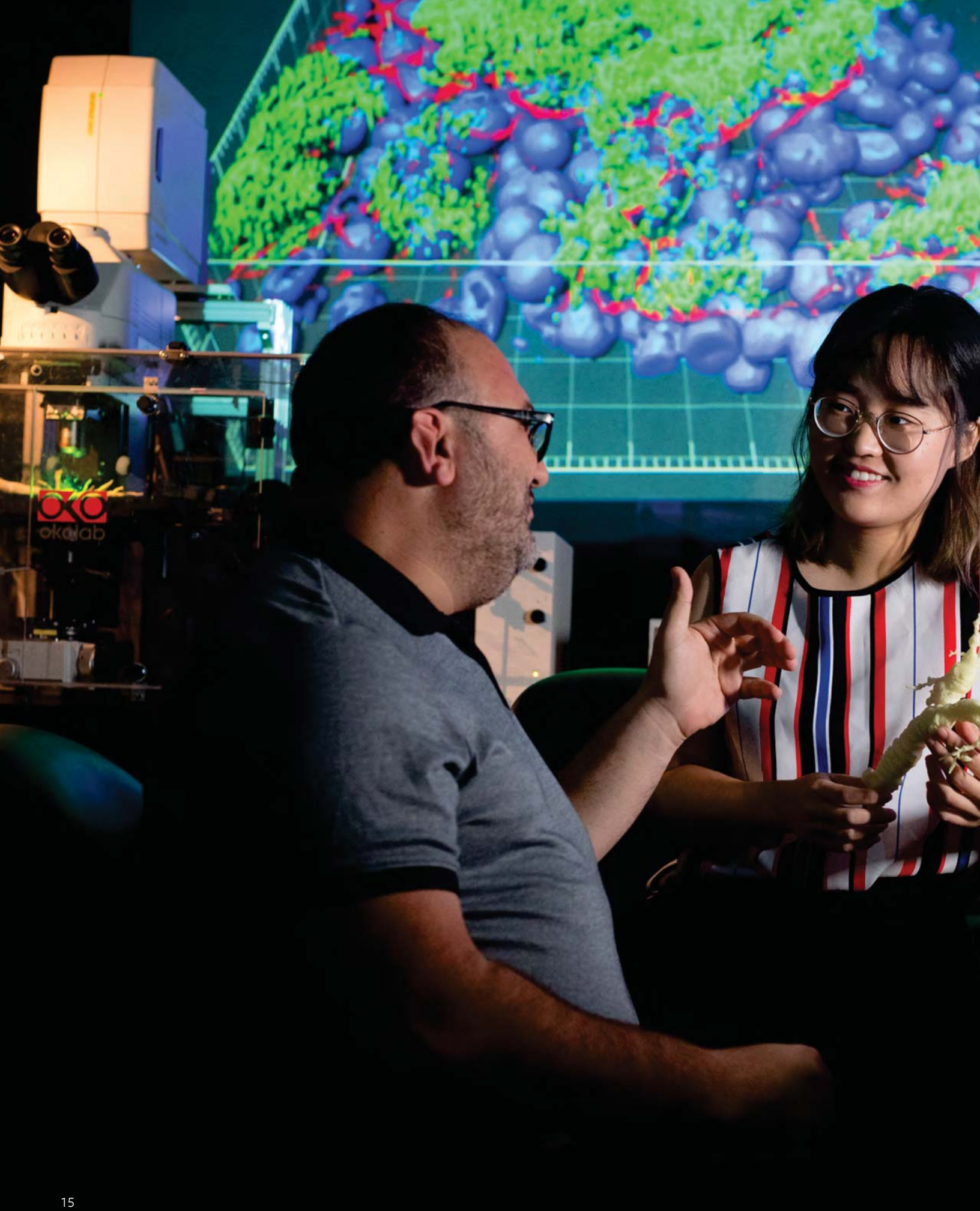
American Heart Association | American Stroke Association
It's is why™

10:00 AM - 17 Sep 2017

Carver College of Medicine
@lowaMed

Michael Welsh, professor of @IntMedatlowa, discovers new findings may have implications for treating PTSD. ow.ly/wJnT30dN8Jq

6:32 AM - 21 July 2017





Lowering Airway Mucus pH

Dr. Mahmoud Abu Alaiwa, Assistant Professor of Pulmonary, Critical Care, and Occupational Medicine, has recently begun work on an early-career grant from the National Institutes of Health (NIH). The Ko8 award is also known as a Mentored Clinical Scientists Research Career Development Award and will provide support and protected time to Dr. Abu Alaiwa under the mentorship of Dr. Michael Welsh, Director of the Pappajohn Biomedical Institute.

Dr. Abu Alaiwa's grant is titled "Mechanisms of Mucociliary Transport (MCT) in Cystic Fibrosis (CF) Airway Disease." In patients with CF, an inability to breathe freely comes from impaired MCT. The lower the pH of the airway mucus, the higher its viscosity and the greater difficulty the cilia have in moving the mucus out. Members of the Welsh Lab have been studying the MCT and CF in pigs, which have remarkably similar pulmonary systems to humans, more so than rodents.

In Dr. Abu Alaiwa's grant study, he will assess the effects of various agents on the biophysical properties of isolated airway mucus as well as MCT in newborn CF pigs. The first assessment will be done via passive rheology, a technique that allows for tiny particles' movement to be tracked. The second will use computed tomography, scanning to correlate how the changes in mucus viscosity affect the pigs' MCT.

The NIH grant will not only give Dr. Abu Alaiwa time and support for him to gain new insight into our understanding of the mechanisms of cystic fibrosis and to identify potential therapeutic targets, but it will also help him develop as a physician scientist. Under Dr. Welsh's guidance, his skills as a grant and manuscript writer and reviewer will sharpen, as will his own already strong skills as a lab manager and mentor to junior scientists.

ID'ing Specific Immune Cell Cytokine

One of the benefits of working in the Abboud Cardiovascular Research Center (ACRC) is that researchers have ready access to collaborators.

A recent publication in the *Journal of Allergy and Clinical Immunology* shows the results of one such collaboration within the ACRC. The article both identifies a specific immune cell cytokine in hypertensive rats that impairs the normal relaxation of aortic vessels and a means of preventing it. Identifying this mechanism presents a potential therapeutic target in the treatment of human hypertension.

Dr. François Abboud and Dr. Madhu Singh have been studying the link between the immune system and high blood pressure. In fact, Dr. Singh points out, there is “evidence that hypertension may be considered as an autoimmune disease.” Though what happens at the cellular and molecular levels is less understood and thus the focus of Dr. Abboud and Dr. Singh’s work with spontaneously hypertensive rats (SHR). The benefit of using SHRs is their close resemblance to human hypertension, so the research team could look for changes in the immune cell populations of the SHRs from birth as they developed hypertension over time.

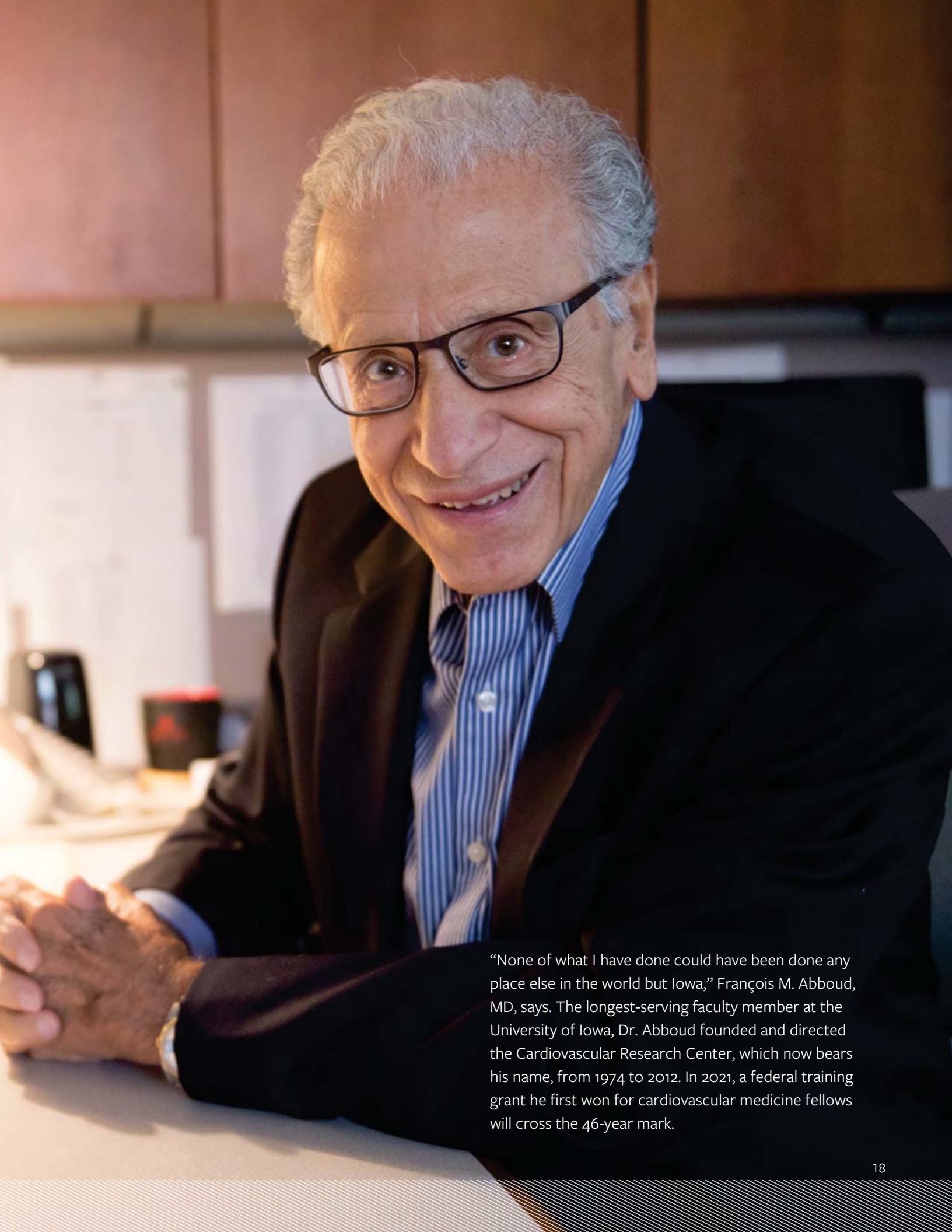


“We discovered an abnormally abundant population of immune cells in SHR spleen that express a CD161+ surface marker at birth,” Dr. Singh said. They then found a specific subset of this population contained unusually high amounts of a particular master regulator transcription factor ROR γ t that induces synthesis of the inflammatory cytokine interleukin-17F. Cytokines work like hormones but in very focused, localized ways, sending signals that often cause organ damage. They promote inflammation and have been linked to multiple sclerosis, Crohn’s disease, and lupus. IL-17F has not been previously linked to hypertension. But, Dr. Singh says:

Since hypertension is associated with vascular stiffness and inflammation, we surmised that the increased expression of IL-17F in SHRs might be causing inflammatory dysfunction of the blood vessels and resulting in hypertension. If this was true then treatment of normal blood vessels with IL-17F should cause functional defect, a loss of vasorelaxation in the standard experiments. To test this hypothesis, we sought help from our colleagues at the ACRC, Drs. Kaikobad Irani and Santosh Kumar. Indeed, treatment with IL-17F cytokine impaired the capacity of the aortic vascular smooth muscles to relax. Moreover, these effects were dependent on nitric oxide, a vasorelaxant that is released from the endothelium, a single layer of cells lining the blood vessels. Thus, IL-17F impaired the normal vasorelaxation of aortic vessels.

The research team did not stop there, but began to look for what determined the expression of the IL-17F cytokine and whether it could be suppressed. They began treating young SHRs with daily doses of digoxin, a known inhibitor of the RNA transcription factor ROR γ t producing the cytokine. As a preventive measure, these injections were successful in lowering the increase in blood pressure in the rats as they became older.

Other members of the ACRC, Dr. Mark Chapleau and Dr. David Meyerholz, were also part of this research team.



“None of what I have done could have been done any place else in the world but Iowa,” François M. Abboud, MD, says. The longest-serving faculty member at the University of Iowa, Dr. Abboud founded and directed the Cardiovascular Research Center, which now bears his name, from 1974 to 2012. In 2021, a federal training grant he first won for cardiovascular medicine fellows will cross the 46-year mark.

Using Hep C Virus to Direct RNA to Immune Cells

Dr. Jack Stapleton, Professor of Infectious Diseases, has just had his grant “Novel viral immune interference mechanisms: HCV as a model system” funded by a four-year, \$650,000 VA Merit grant. Dr. Stapleton provided a detailed description of what specific avenues of research this will fund:

Viruses have evolved mechanisms to evade recognition by the immune system of their infected human host. Viruses with an RNA genome like Zika, Polio virus, Dengue, and Hepatitis C virus [HCV] have a variety of proteins that interfere with various steps in immune cell function. In our last VA Merit Review grant, we discovered a new mechanism used by two RNA viruses to evade recognition by the host. This mechanism utilizes the virus RNA genome molecule to reduce the production of an enzyme that is necessary for normal function of human T cells. Since T cell function is critical for almost all aspects of the human immune response, a small reduction in function may explain how these viruses are able to establish infection, and in the case of hepatitis C virus, persist for decades in humans. Furthermore, by altering the RNA molecule to no longer reduce the T cell enzyme, improved immune responses to viral vaccines may be possible.

In this grant, in collaboration with Dr. Warren Schmidt of the Liver Clinic, we will examine how these viruses direct their RNA genome to immune cells both in the laboratory, and in immune cells obtained from infected people. We will also study how this RNA regulation of cellular processes affects liver cells, and the immune response to viral vaccines. The ultimate goal is to use this information to develop potential viral therapies and vaccines.

This is a continuation of investigations Dr. Stapleton and members of his laboratory have made into HCV mechanisms.

UI HIV CLINICS TIMELINE

1986

Stapleton recruited to UI to establish clinic (HIV patients seen in ID Clinic)

1988

State's first HIV clinic opens at the University of Iowa

1990

~200 patients from across the state treated

1992

UI's HIV program accepted into NIH AIDS Clinical Trials group and contributes to several seminal HIV treatment studies

1997

~ 255 patients treated at UI HIV clinic; life-saving HIV “cocktail” for treatment becomes widespread

1998 to Present

UI's HIV clinic obtains Ryan White Part C funding to enhance patient care

2000

UI's outreach HIV clinic opens in Waterloo (serves patients twice monthly)

2005

~445 patients treated at UI HIV clinics

2009 to Present

Ryan White Part B contract obtained through the Department of Public Health to enhance patient support services

2010

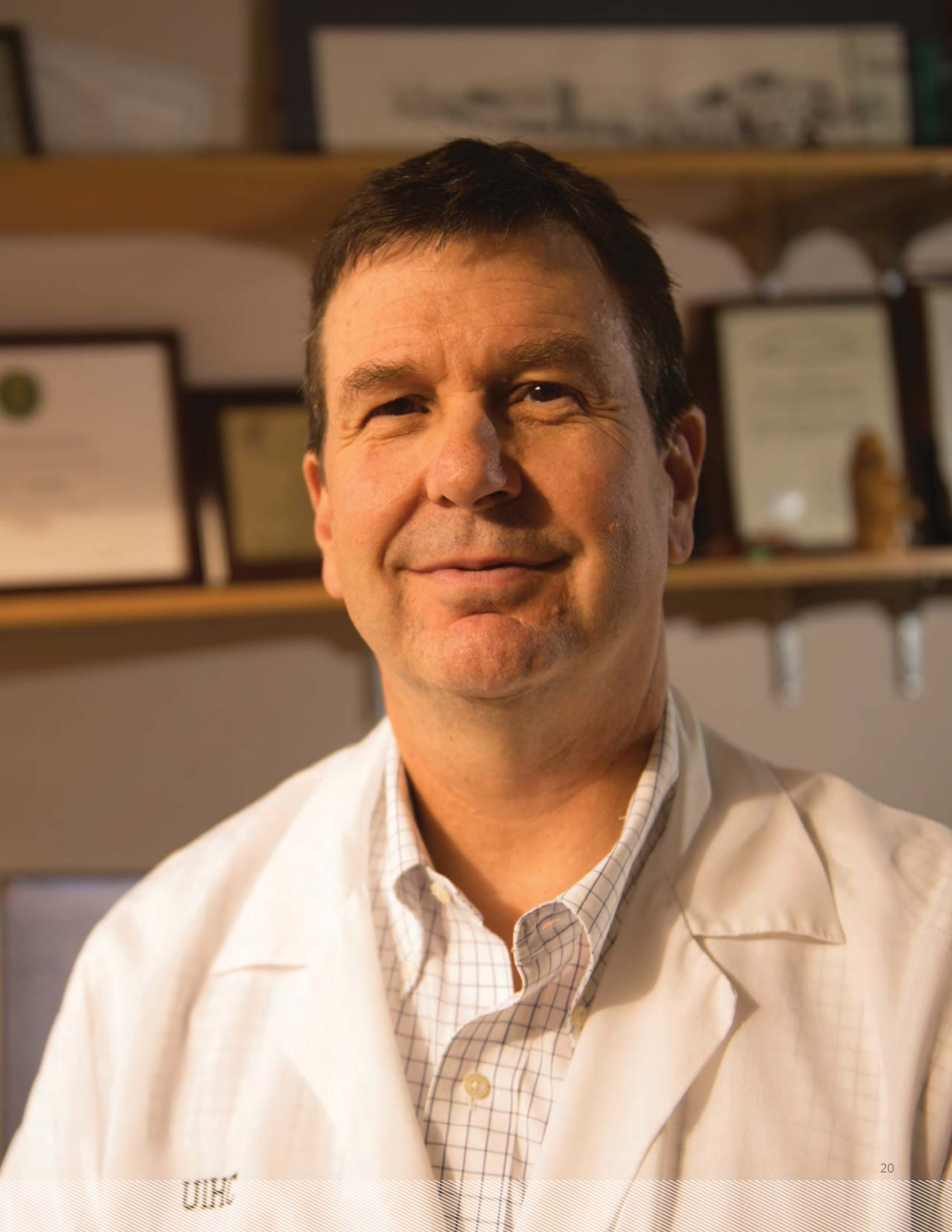
~ 570 patients treated at UI HIV clinics

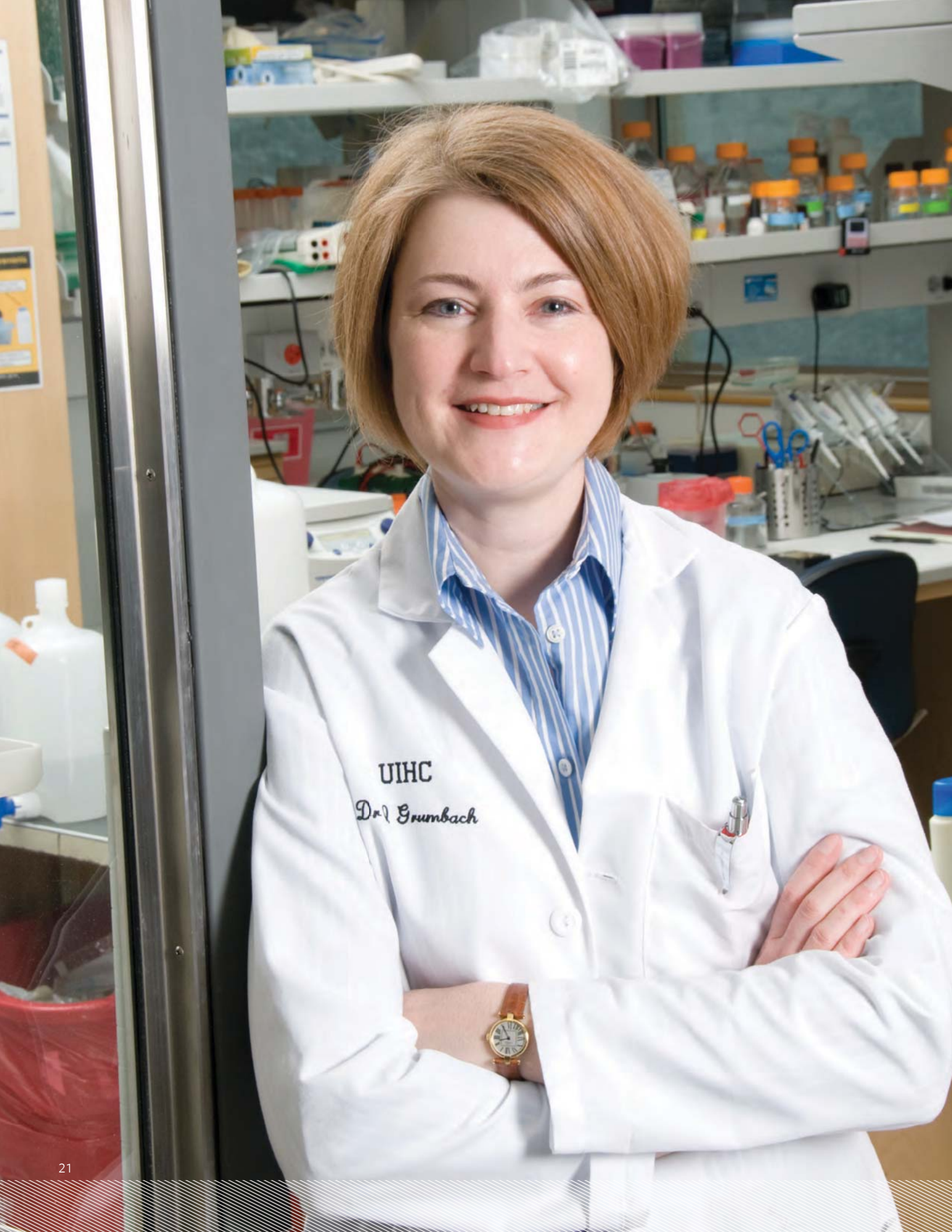
2013 to Present

UI HIV clinic receives HOPWA funding (Housing Opportunities for People with AIDS)

2018

~761 patients treated this year





Grumbach VA Merit Grant Funded

Dr. Isabella Grumbach, Professor of Cardiovascular Medicine and Vice Chair for Research, has been performing research under a four-year, \$650,000 VA Merit grant. Dr. Grumbach described what she and the researchers in her lab are studying:

At least 30% of the estimated three million veterans with hypertension do not reach the current target blood pressure. Hypertension causes remodeling of the vascular wall, leading to further increases in BP and end organ dysfunction. These effects are linked to 5,000 annual deaths among veterans. Oxidative stress by mitochondria has recently been recognized as a common denominator in hypertension, but mechanisms of how mitochondrial function in vascular smooth muscle cells drives hypertension and remodeling are unknown.

This builds on our recent discoveries that blocking the activity of the multifunctional Calcium/calmodulin-dependent kinase II (CaMKII) selectively in smooth muscle cells in the blood vessel wall is sufficient to block mitochondrial oxidative stress and prevent experimental hypertension. In this project, we will study how CaMKII in mitochondria drives oxidative stress and whether blocking it is a new avenue to prevent or treat hypertension in mice.



Thiel Examines Vessel Repair

William Thiel, PhD, Research Assistant Professor in Hematology, Oncology and Blood and Marrow Transplantation, has been awarded a five-year, \$1.9 million grant from the National Heart, Lung, and Blood Institute. This R01 will fund Dr. Thiel's murine model research into the cell-specific sequence of events leading to the renarrowing of blood vessels after revascularization procedures.

The primary mechanism responsible for many acute vascular disorders is pathological vascular smooth muscle cell (VSMC) activation. While drug-eluting stents containing cell growth inhibitors are effective in preventing reblockage of vessels, they also impair re-endothelialization of the vessel wall. To prevent pathological VSMC growth but not re-endothelialization, identification of the cell-surface proteins that might be targeted by agents able to distinguish between VSMCs and endothelial cells is crucial.

Dr. Thiel and his team will focus on defining the cell-surface proteins and mechanism of action by which VSMC-targeting aptamers modulate VSMC but not endothelial cell processes through the application of CRISPR-Cas9 technology. They will also determine the impact of these cell- and process-specific ligands on neointimal formation and re-endothelialization after acute vascular injury.



FOEDRC Investiture Reception Honors Adams and Imai

Two Chairs and a Professorship were formally bestowed on their inaugural appointees recently. Two of the three were endowed by the Fraternal Order of Eagles (FOE), its national membership each giving what they can to the larger goal of supporting the Diabetes Research Center (DRC).

The formal ceremony in which the newly endowed Chairs and Professorships were recognized was hosted by the University of Iowa Center for Advancement Lynette Marshall, the Center's Vice President and CEO.

After the ceremony, the FOE hosted a small reception on the fourth floor of the Pappajohn Biomedical Discovery Building, where much of the work of the DRC takes place. Friends, family, and colleagues were invited to celebrate the generosity of the FOE and the achievements of Drs. Yumi Imai and Christopher Adams, the FOE Professor and Chair, respectively, in Diabetes Research.



Imai Receives R01 and ADA Grants

Dr. Yumi Imai, Associate Professor of Endocrinology and Metabolism, recently learned that her NIH R01 grant with the National Institute of Diabetes and Digestive and Kidney Diseases has been renewed. This \$1,036,608 grant will continue to fuel Dr. Imai's research into the role of lipid droplet proteins in obesity and diabetes. Unregulated accumulation of lipids contributes to beta cell demise in type 2 diabetes. But by better understanding how intracellular trafficking of lipids are regulated temporally and spatially, Dr. Imai and researchers in her lab hope to identify a novel target to both enhance insulin secretion and better protect beta cells under diabetogenic stress.

Dr. Imai has also been awarded a \$345,000 grant from the American Diabetes Association, one of the ADA's Innovative Basic Science Awards. These funds will also be used to better understand how the lipid droplet proteins regulate insulin secretion.

Education





6

nationally ranked programs (*U.S. News & World Report* "2018 Best Graduate Schools"):

- Internal medicine
- Primary care
- Physician assistant
- Research
- Physical therapy
- Rural medicine



6

Carver College of Medicine-affiliated medical education centers across Iowa:

- Cedar Rapids
- Mason City
- Davenport
- Sioux City
- Des Moines
- Waterloo



66,800+

encounters at continuing medical education programs, including more than **62,000** physician encounters and **4,800** non-physician encounters

Carver College of Medicine
@IowaMed


Congrats to Professor of @IntMedatIowa Peter Densen for receiving the 2017 Ron Arky Award! <http://bit.ly/2wS95Q5>



12:47 PM - 25 Sept 2017

Int Med at Iowa
@IntMedatIowa

Scholarship is part of the residents' training. Faculty organized a lunch-time presentation so the residents could get a better idea of the range of options.



10:22 AM - 26 JAN 2018

Int Med at Iowa
@IntMedatIowa

Seven IntMed residents attended last weekend's @SocietyGIM regional meeting in Chicago. Who says Hawkeyes don't travel well?



11:26 AM - 19 Sept 2017

Int Med at Iowa
@IntMedatIowa

Say hi to the 2018-19 Internal Medicine Residency Program!

UI Graduate College, Carver College of Medicine and University of Iowa Health Care

Department of Internal Medicine Residency Program 2018-19



21 July 2018

Int Med at Iowa
@IntMedatIowa

At Iowa we like to mix some road biking with our ultrasound training.


<https://internalmedicineiowa.org/2017/08/01/iowa...>



2:25 PM - 1 Aug 2017

Int Med at Iowa
@IntMedatIowa

Welcome to all joining us today for the 39th Annual John B. Stokes Kidney Day!

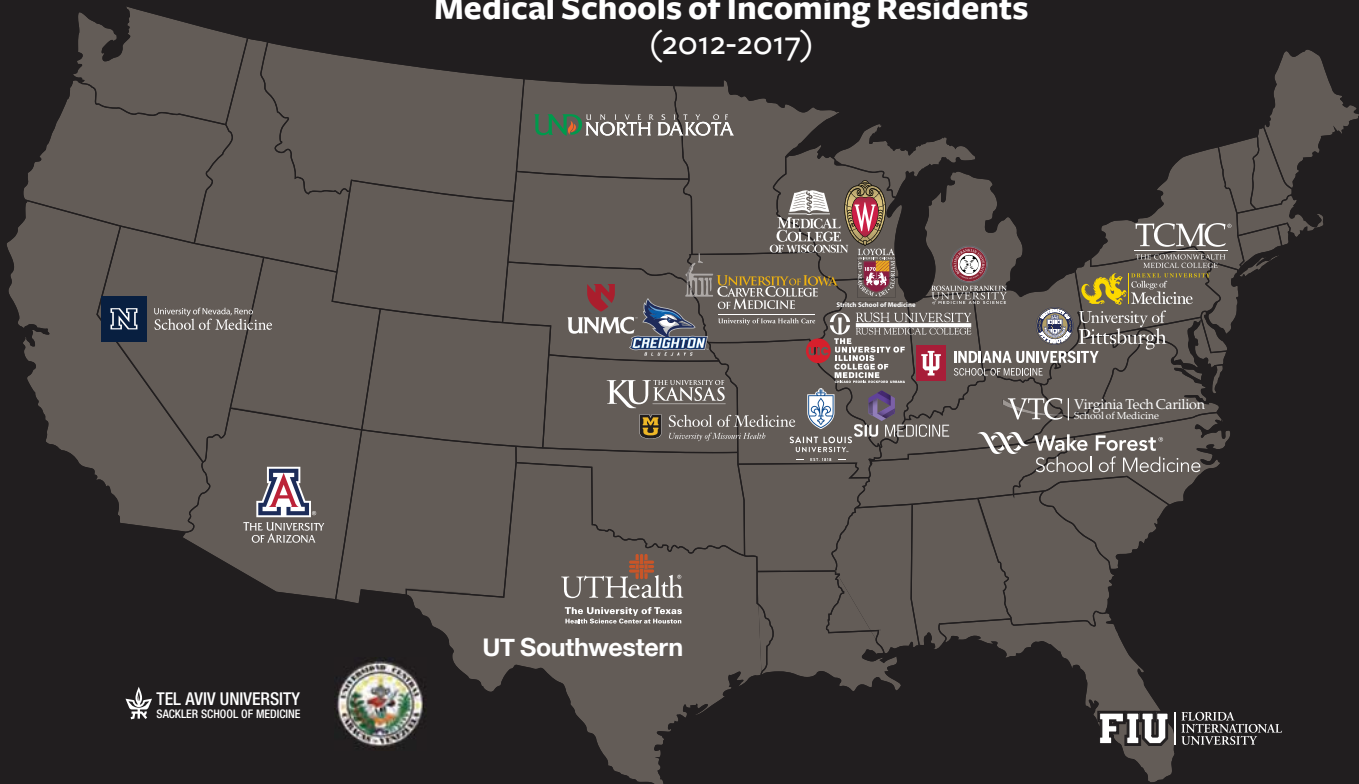


39th Annual John B. Stokes
IOWA KIDNEY DAY
University of Iowa Hospitals and Clinics
Medical Alumni Auditorium, E331 GH
Iowa City, Iowa

5:35 AM - 4 May 2017

Coming and Going

Medical Schools of Incoming Residents (2012-2017)



Fellowship Training Institutions of Outgoing Residents (2012-2017)



100% of our residents pursuing fellowships matched with either their first or second choices. Also—not counting our rising Chief Residents—7 of these 19 residents chose to remain at the University of Iowa, pursuing a variety of subspecialties.



New Resident Lounge

The long hours required during residency can only be tougher to bear when dealing with some basic logistical questions. In some programs, finding a quiet space to record dictations, to write evaluations, or even a fridge to trust with your lunch can be a challenge.

The Department and Residency Program leadership took these and many other factors into consideration when they designed a new space that the residents could call their own. Some of the features include badge-only access, comfortable couches and mod-style captain's chairs near freestanding charging posts, a separate dictation room, a fully functional kitchenette, and even a cable-connected TV for streaming some music or Netflix. (We'll leave it up to them to negotiate between a Pandora station or old episodes of *Parks & Rec.*)

All the walls of this new space are decorated with photographs from throughout the Carver College of Medicine's history. One only has to compare the faces in, say, this 19th-century class photo to the great diversity we see in our residents today to understand the ways in which our institution has always adapted to the world around it. Those pictures remind us all that, although we should respect and honor the traditions that have allowed us to reach this moment, we should also be aware of the critical ways in which we will always need to grow.



Highlights from the 5th Annual Quality and Safety Symposium

After the poster presentation session the evening before, attendees were primed for a full day of engaging topics from experts. The day began with a welcome from Dean of the Carver College of Medicine and Vice President for Medical Affairs Dr. Jean Robillard. Organizers Drs. Krista Johnson and Mike Brownlee gave a brief history of the symposium and explained how the day would proceed.

The first speaker of the day offered the audience of mostly health care providers the perspective of a parent. Alisha Loy listed her credentials as “Patient, Mom, BS, CRCST” as she shared the moving story of her child’s journey through the health care system as a means to encourage greater involvement of the patient and family in decisions. R. Erik Edens, MD, PhD, shared just a few of the many patient safety considerations that were incorporated into the design of the Stead Family Children’s Hospital. Dr. Maia Hightower, Chief Medical Information Officer, offered a re-vision for leadership in the digital era of health care. Angie Hoth, PharmD, MPH, gave a brief overview of how telemedicine has been employed to deliver pre-exposure prophylaxis medications to individuals at risk of contracting HIV. Azeez Butali, DDS, PhD, detailed an inspiring new mobile application for Nigerian mothers and how it has begun reducing child mortality rates in the country.

After the morning full-group presentations, attendees divided up into smaller breakout sessions. Dilek Ince, MD, and Bradley Ford, MD, PhD, used the example of their antimicrobial stewardship guide for how to move an idea into a product. Ethan Kuperman, MD, MSc; Jeydith Gutierrez Perez, MD; Kristin Goedken, MBA; and Evelyn Perry, MHA, led a group through hands-on experience with tools used in the Virtual Hospitalist Program. Justin Smock, MD, and Carly Kuehn, MD, described their approach to revising handoffs and teaching it to students and trainees. Anureet Walia, MD, and Eva Coulson, PharmD, gave an overview of the current state of the opioid crisis. Jeff Vande Berg, MS, walked his workshop through the creation of a process improvement map. Jennifer McDanel, PhD, MS, and Lynnette Kenne, BSN, MSN, outlined the steps and pitfalls in tackling a new process improvement project.

Workshops concluded, the attendees returned to the Medical Alumni Auditorium for lunch and to hear from Wendy Fiordellisi, MD, which posters had won in the previous evening’s judging. Some awardees were on hand to receive the audience’s applause.

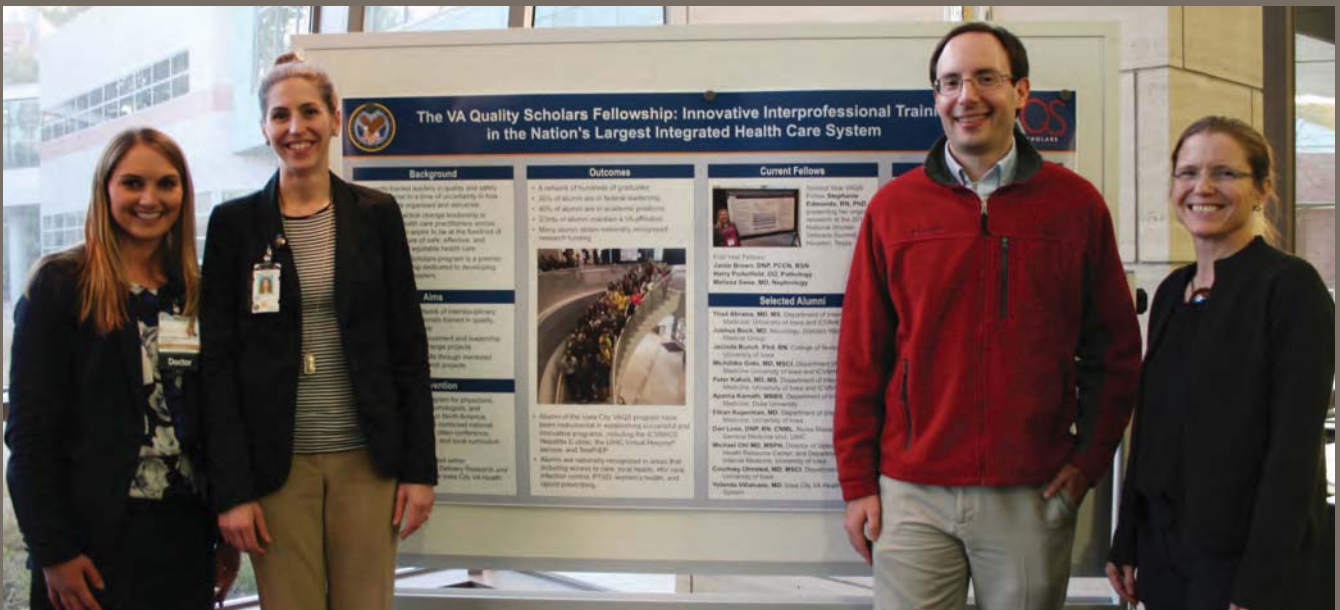
Dr. Hightower then introduced the symposium’s keynote speaker, David Bates, MD, MSc, Professor of Medicine at Harvard Medical School. Dr. Bates explained to a packed

house the possibilities for health care and the risks and limitations posed by the aggregation of previously unimaginable amounts of information.

The afternoon began with a presentation from Ken Nepple, MD, FACS, on incorporating informatics into improvement efforts. This was followed by a panel discussion on a different side to patient safety, ensuring the provider’s safety when patients or families become disruptive. Security expert Doug Vance; Vicki Kijewski, MD; Dana Cook, MSN, RN-BC; Wendy Hochreiter, MNS, RN, CNL; and Lance Clemens, MS, LISW, each provided their perspective on de-escalating or even preventing dangerous situations. Tom Collins, MD, MCHDS, FACS, and LouAnn Montgomery, PhD, RN-BC, presented plans for the new Simulation Education center to be built at UIHC.

As a last innovation of the day, Dr. Fiordellisi then introduced four presentations pulled from the submissions made to the poster session. Though one also turned out to be an award-winner, these presenters were chosen by a committee of reviewers because of their diversity of topics and for audience interest. It would be surprising if this new part of the day’s schedule did not become a tradition. Presentations came from Brian Hoff, PharmD, BCPS; Eric Epping, MD, PhD; Emily Neddermeyer, PharmD; and Jeydith Gutierrez Perez, MD.





A Focus on Improvement

Most academic medical institutions and even private practices hold Morbidity and Mortality (M&M) conferences. M&M sessions provide opportunities for health care providers to review and discuss the details of recent cases that resulted in adverse outcomes. A closed-door forum such as this helps both trainee and veteran alike learn from complications or missteps, as well as how to identify warning signs or symptoms that could potentially go unnoticed.



In a few academic medical centers, however, including the Department of Internal Medicine, a third letter, I, is added to the monthly M&M conference, putting an equal emphasis on improvement. The MMI conference reaches beyond the facts and symptoms of a particular case, discussing a broad range of event inputs from communication among team members to equipment and working conditions, any of which may have contributed to the event.

Although all cases are treated with confidentiality, some have more positive endings. True, many can be difficult to analyze given their gravity, but the MMI conference maintains an approach that values any outcome as a teachable moment, an important opportunity for both education and positive growth. Attendees are encouraged to brainstorm as many inputs that led to the outcome as potential changes in process or

documentation that could forestall hazards or that could help clarify roles and responsibilities in a variety of situations.

Attendees of MMI conferences are multidisciplinary, but they are “wonderful ways to include residents in patient safety culture,” says Dr. Carly Kuehn, Clinical Assistant Professor. As the former Chief Resident of Quality and Patient Safety, Dr. Kuehn was responsible in part for organizing the monthly meetings along with faculty on the MMI committee. The committee identifies the individual who will present the case study and often arranges for a faculty member to also present if additional instruction or clarification is needed.

MMI conferences remain focused on results, on positive steps toward change. Dr. Kuehn notes that just in the last year, MMI conferences have produced a number of new approaches. They have led to hospital-wide Code Blue simulations, which help care teams prepare for environments in which knowing what to expect and how to behave can be critical. MMI conferences this year have also addressed alarm safety and ways in which specific medications might be better restricted to services where they are most commonly used.



Highlights from Progress in Internal Medicine

For two days, health care providers of all stripes from around the state and region met in downtown Iowa City for a tradition that stretches back 34 years. Taking advantage of the University of Iowa Homecoming, the CME conference draws between 150 and 200 attendees each year. And although reunions with classmates and colleagues are a part of the draw, what gets people to sit in the same hotel conference room for two days is the programming.

Progress: Learning Together in the 21st Century is its full name and conference organizers place a special emphasis on the word “Together” in the subtitle. This point was stressed in opening remarks from the Dean of the College of Pharmacy, Donald E. Letendre. Each topic of focus, whether it was telemedicine, breaking difficult news, or managing benzodiazepines, typically combined a physician with a pharmacist. The pairing and diversity of perspective around an issue helped broaden the appeal for attendees.

Every year, Progress is organized around a few subspecialties, rotating through all within internal medicine. This year’s Progress focused on cardiology, pulmonology, hospital medicine, nephrology, and general internal medicine. In February, conference organizers began meeting to identify topics within those subspecialties that they believed are of pressing interest to area providers and other potential conference attendees. Over the following months, speakers are identified and engaging presentations are crafted well in advance of the October event.

Nearly forty pharmacists, physicians, nurse practitioners, industry leaders, and clinic directors presented updates and detailed analyses on nearly twenty different topics to about two hundred attendees.





Why did you choose Iowa?

“I liked the program’s environment, which is dedicated to education whilst remaining un-stuffy, as well as the structure of X+Y and the breadth of opportunities available. I wanted a program that focused on producing competent general internists, while also providing strong support for specialization since I know it will take me until the last possible minute to pick a specific career path. Also, the high proportion of time we are allowed to wear scrubs, relatively low cost of living, and having free lunch a lot of days were nice pluses.”

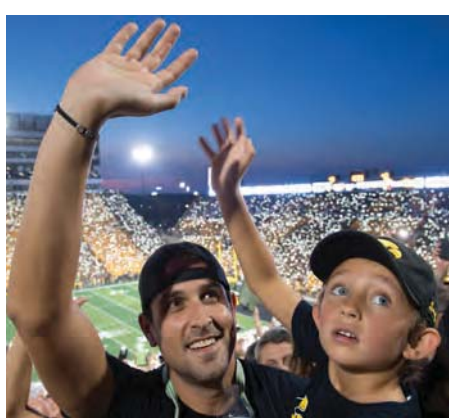
Why did you pursue Internal Medicine?

“It is a haven for the chronically indecisive, with more possible career variety than in any other specialty. I also like the focus on each person as a whole rather than zoning in on a particular part, and the mental entertainment of geeking out about many many different things on a daily basis.”

Alissa Kauffman, MD

What have you enjoyed about the Iowa City area? What has surprised you?

“I knew nothing about this place when I moved here for med school, but then really didn’t want to leave after 4 years. It has its own personality and balances small town charm and convenience with (many of) the offerings of a larger city. And now there is a Trader Joe’s.”





Philanthropy



L to R: Alli Ingman, Aaron Olesen, Megan Rife, and Andrea Chambers

Philanthropy has enhanced much of the activity featured in this publication. Research discoveries, innovative training methods, life-saving care, and more emerge in part because of private gifts and endowments.

The following pages highlight the stories of a few generous donors and their areas of donation.

To become a part of the future of Internal Medicine at the University of Iowa contact:

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Center for Advancement

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Cystic Fibrosis Research



Morris Knopf shares his family's story and how they came to support our mission.

Following Sam's birth in November 2002 and his diagnosis of cystic fibrosis, we began participating in fund-raising activities for the Cystic Fibrosis Foundation. Within a couple of years, we had engaged family, friends and colleagues to support the CF Foundation. Some 5-6 years ago, we had read an article in the Iowa alumni magazine about research at the University of Iowa, College of Medicine, relating to cystic fibrosis. Lana and I did some research and then initially decided to split our annual donations for cystic fibrosis research between the CF Foundation and a research fund established and maintained by the Iowa Center for Advancement for cystic fibrosis. We then had the opportunity, through the Center's representatives, to meet some of the Iowa research personnel at the College of Medicine and to tour the research laboratories. This led to our decision to focus our efforts on the University of Iowa research program and to set up a designated fund in Sam's name to accomplish that goal. And we did that with an initial donation and then decided to solicit family, friends

and colleagues on an annual basis to donate to that designated Fund. Their support has been so gratifying. Perhaps the most satisfying aspect, however, is seeing specific research equipment or projects supported by moneys from Sam's CF Fund. To believe that your university is a leader in medical research and to then have that belief confirmed by first-hand experience is very rewarding.

Sam is an amazing young man who has a love of Lego and all things related to engineering. He is resilient, funny, smart, outgoing and incredibly brave in dealing with his daily CF treatments and procedures. Sam still finds time to be involved on his high school robotics team, high school golf team, theater and music while working a few hours a week at his neighborhood grocery store. On top of all this, he maintains a B+ average in his accelerated classes at Highland Park High School in St. Paul. Sam also loves spending time with friends from Temple whom he has known since kindergarten. In the words of Sam's mother, Elise, "Sam is most definitely my 'carpe diem' child." We are all so thankful for CF research and investments.

Sam's comment on having a Fund in his name at the University of Iowa: "It's just mind blowing that just a few donations from family and friends can make a visible difference in working to cure CF and it is awesome to have a Research Fund in my name at the University of Iowa because of my family's Hawkeye passion."



The Jared and Carol Hills Polycystic Kidney Disease Research Fund



University of Iowa graduates Jared S. and Carol Tangen Hills of Cedar Rapids have made a very generous gift to advance the university's research efforts on polycystic kidney disease (PKD), an inherited disorder affecting nearly one in 1,000 Americans.

Their gift will support the Jared and Carol Hills Polycystic Kidney Disease Research Fund, which they established in 2011. A portion of this gift will also create a new fund; Jared and Carol Hills Professorship in Nephrology, both established through the UI Center for Advancement. Their gift will help researchers in the UI Roy J. and Lucille A. Carver College of Medicine to better understand the causes of, and identify possible treatments for, PKD.

The gift from the Hills will allow UI PKD researchers to test the feasibility of new ideas and subsequently pursue the most promising lines of investigation. Such studies often can help secure additional research support from national organizations and federal agencies. Another possible use of the Hills PKD Research Fund is to attract and retain leading PKD scientists at the UI.

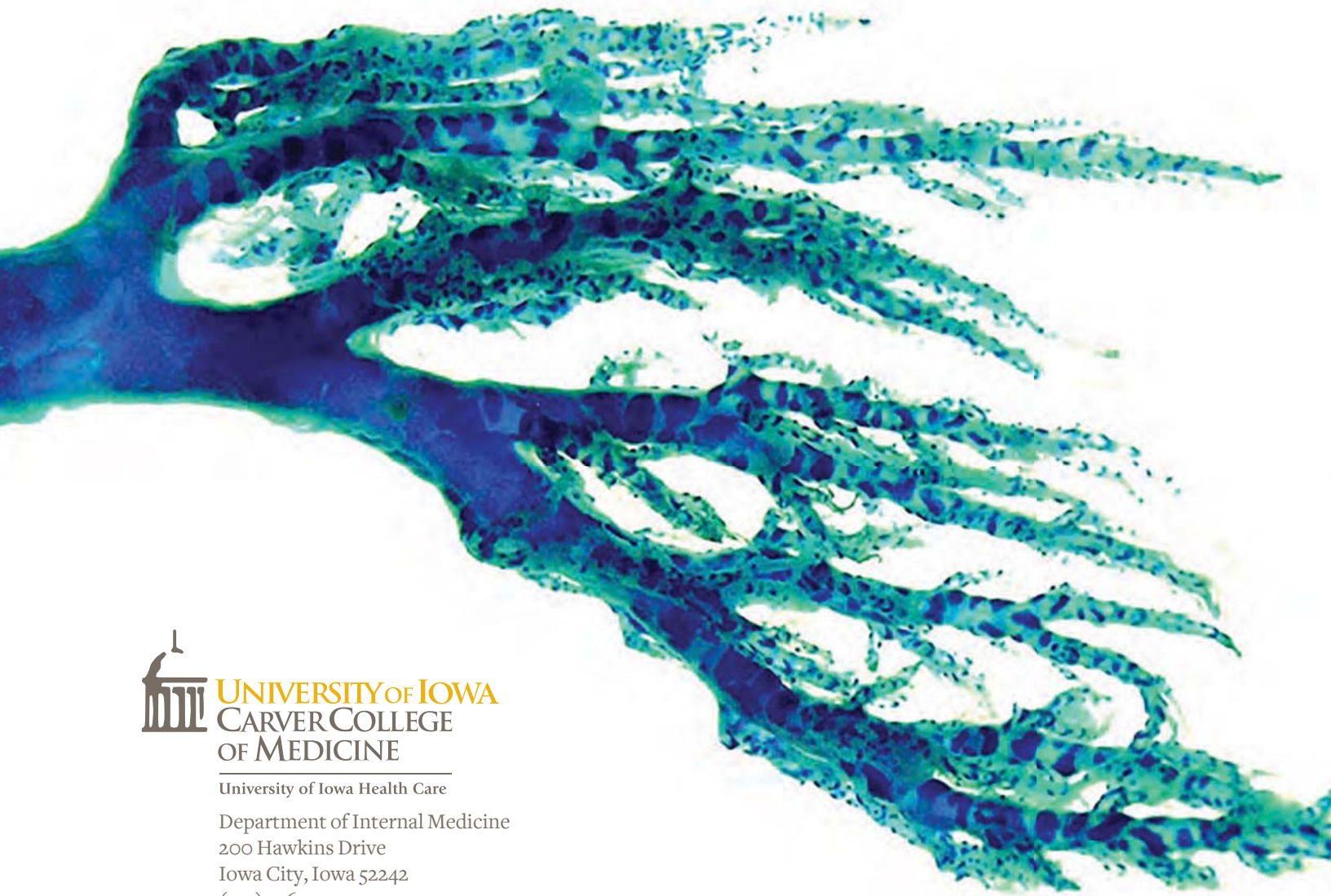
"We have great confidence that the researchers at the University of Iowa can make significant contributions to finding better treatments for a disease that has affected our family," says Carol Hills. "We hope that one day there will be a cure."

Jared received a bachelor's degree in engineering from the UI in 1959; he is president of Divine Engineering Inc. in Cedar Rapids. Carol Hills received her bachelor's degree in nursing from the UI in 1959 and was a nurse in the Cedar Rapids Community Schools. Jared and Carol have remained strong supporters of the University of Iowa in the areas of Engineering, Nursing and Nephrology. The Hills family has a personal connection to PKD and they believe strongly in the University of Iowa and its researchers. Jared Hills has PKD and received a kidney transplant in February 2007. "I am so thankful for the kidney donation from our niece," he says. "It made a new man out of me." Their gift is motivated by this connection, and their desire to help find new treatments and cures for this disease. In addition, their family has received exceptional care at the University of Iowa Hospitals and Clinics over the years. Jared and Carol have given more than \$4 million to the University of Iowa to date.

Supporting Palliative Care

Jeffery Ford and Lynette Marshall are from Iowa City, where they champion the great work of the University of Iowa. They have supported Iowa in many areas—most recently through an unrestricted gift to the Supportive and Palliative Care Program. Jeffery was diagnosed with septic shock while in California and was transferred to University of Iowa Hospitals and Clinics where he stayed for quite some time as he recovered from his condition. Along with his wife, Lynette, and their family, they are grateful for the care they received from the Supportive and Palliative Care team. At a time when they needed every resource our hospital could offer, they were fortunate enough to receive great care and have a good outcome. They hope their gift can increase patient and family access to the palliative care team early in diagnosis and treatment of any life-threatening illness or trauma.





UNIVERSITY OF IOWA
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Cover image: Scanning Electron Microscope image of Pseudomonas bacteria growing in a biofilm. Pseudomonas is one of the most common bacteria that chronically infect Cystic Fibrosis (CF) patients. Image courtesy of Michael Welsh and Thomas Moniger.

Image above: Light microscope image of the airway structure of a newborn non-CF piglet. The CF pig model, developed at Iowa, is a powerful tool in the study of CF. Image courtesy of Joseph Zabner, Thomas Moniger and Peter Taft.

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