

NEWS AND NOTES

ISSUE 10 WINTER 2017

OF CATS & CAVITATION

Behind a potentially thrilling new development in the treatment of hypertrophic cardiomyopathy is a story of a sudden shift in perspective, the resultant lightbulb of an idea, several years of research, and the genetic legacy of a high percentage of Ragdoll and Maine Coon cats. It's the kind of story that could only unfold at an institution like the University of Michigan – where basic scientists work closely with their clinical counterparts in an intricate symbiosis that can yield extraordinary medicine.

Douglas L. Miller, Ph.D., who was recognized by the Academy of Radiology Research as a Distinguished Investigator in 2012, has spent decades studying the biological effects of ultrasound. He and some of his colleagues had been kicking the idea around for years: finding a therapeutic use for ultrasound with contrast agent as cavitation nuclei.

“It's actually grown into a little field by itself: trying to find a therapeutic use for ultrasound with contrast agents as cavitation nuclei,” says Dr. Miller. “It's been tried for gene therapy, drug delivery, trying to reduce blood clots. I think it was William Armstrong, M.D., who said, ‘Maybe it could be used to reduce heart muscle.’ And I remember thinking, ‘Well, why would you want to do that?’”

Turns out there's a good reason to want to do that. For decades, researchers and clinicians have tried to find new approaches to the vexing problem of treating hypertrophic cardiomyopathy (HC). The issues were obvious: surgical debulking of the thickened heart muscle was hugely invasive. Using alcohol ablation, it was difficult to precisely treat the affected area. For patients with apical HC, heart transplantation was often necessary after a long, slow decline. Was there any way to treat the condition that would be accurate, safe, long-lasting (or easily revised), and minimally invasive?



Douglas L. Miller, Ph.D.



Oliver Kripfgans, Ph.D.

In 2010, Dr. Miller was working with colleague Oliver Kripfgans, Ph.D., thinking up new ideas for a grant application, when Dr. Miller brought up using contrast agents and purposely high-frequency ultrasound to effect cardiac muscle cell death to treat HC. Perhaps the negative bioeffect could be “tamed” and delivered to a region of the heart where cell death was actually desired.

In 2012, their project, “Therapeutic Microlesioning by Contrast Echocardiography for Myocardial Reduction,” received five-year funding from the NIH National Heart, Blood and Lung Institute. Dr. Kripfgans, a research associate professor in the Department of Radiology whose research focuses on the clinical and physical aspects of medical ultrasound, is the study's primary investigator.

“Ultrasound cavitation has been studied in the past as something you don't want to have,” says Dr. Kripfgans, a German-born physicist who came to the U-M as a visiting scholar in 1996 and never left. “But just as a knife could be used to cause harm or to heal someone in an operation, in this case we're harnessing one of the negative side effects of

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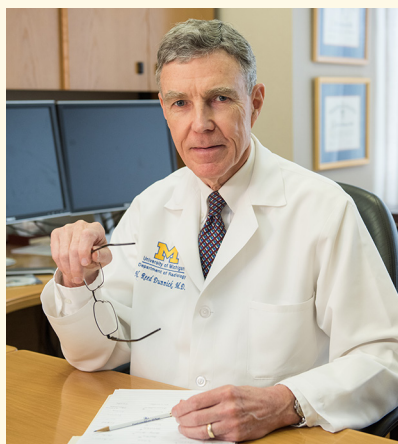
Letter from the Chair	2
Michael DiPietro, MD, Retires	3
Holt Professorship	5
RSNA 2016	6

New Residents	7
New Fellows	8
Departures	11
New Medical School Curriculum	12

Awards & Recognition	14
Resident Publications	16
Resident Research Projects	17
Alumni Notes	18

LETTER FROM THE CHAIR

Dear Michigan Radiology Alumni, Friends, and Family:



These are exciting times in American healthcare, with many changes anticipated in the way healthcare is delivered and funded. There has been tremendous consolidation within the healthcare industry, and the University of Michigan is no exception. “Michigan Medicine” is our new brand, which we

are extending across the state. In December, the purchase of Metro Health in Grand Rapids was completed, and we are now planning to extend Michigan-quality patient care to the western part of our state. These developments provide opportunities for Radiology to provide care for more patients and meet needs across the state – for example, since there is no comprehensive stroke center in the Grand Rapids area, we are in the process of hiring two neurointerventional radiologists to partner with a third physician on-site to provide these much-needed services to patients in their local community.

In Southeastern Michigan, we are six months away from opening the new West Ann Arbor facility; we plan to open an expansive new facility in Brighton in 18 months. We are also participating in planning meetings for a major expansion of East Ann Arbor. On the “hill” we are planning the construction of a new inpatient tower to be located on the site of the former Kresge Building. In order to reduce the heavy traffic on

the roads leading to the medical center, many clinics, especially those with the highest patient volumes, will be moved off-site.

We have almost completely transitioned to the new electronic health record. One of the last areas to migrate, Radiology, went live in October. Our associate chairs for information technology and clinical services, Jim Ellis, MD, and Ella Kazerooni, MD, respectively, did an outstanding job leading us through this transition. We were tremendously aided by Bud McKenzie, director of information technology for the Department of Radiology, and Steve Ramsey, who now holds the position of departmental applications director within Health Information Technology Services (HITS), supported by a team of many other contributors. To further integrate information technology with practicing physicians, we are recruiting a radiologist who will split time equally between clinical radiology and information technology.

This year, we celebrated the retirement of two outstanding pediatric radiologists, Ramiro Hernandez, MD, and Michael DiPietro, MD. Both served our department in many capacities, Ramiro as director of our Division of Pediatric Radiology for 22 years, and Michael as our Holt Professor for 12 years. In January, we installed Peter Strouse, MD, as the second Holt Professor. Mike was also honored with the Life Sciences Orchestra’s Spirit of the LSO Award for his many years of service, and by the endowment of the Michael A. DiPietro Principal Bassoon Chair.

Regards,

V. Reed Jennings, MD

2018 CME CONFERENCES

Radiology in the Desert
Scottsdale, AZ
February 26 - March 2, 2018



Radiology at the Seashore
Captiva Island, FL
March 12 - 16, 2018



MICHAEL DIPIETRO, MD, RETIRES

Michael A. DiPietro, M.D., former John F. Holt Collegiate Professor of Radiology, professor emeritus of radiology, and professor emeritus of pediatrics and communicable diseases in the Medical School, retired from active faculty status on December 31, 2016.

Born and raised in Albany, New York, Dr. DiPietro received his B.S. from Union College in 1970, and his M.D. from the State University of New York Upstate Medical Center in 1974. He is board certified in pediatrics and radiology, having completed internship, residencies, and fellowship training programs at the Children's Hospital of Pittsburgh (University of Pittsburgh), Yale-New Haven Hospital, and the Children's Hospital Medical Center in Boston (Harvard). He joined the University of Michigan faculty as an assistant professor in 1982 where he remained for his entire professional career. He became full professor in 1996. From 2005 to 2016, he was the inaugural John F. Holt Collegiate Professor of Radiology.

An exemplary educator and clinician, Dr. DiPietro is an internationally recognized leader in the field of pediatric radiology. Among his clinical interests have been pediatric spinal canal sonography, pediatric brachial plexus sonography, pediatric cranial sonography, and pediatric musculoskeletal sonography. He has authored numerous articles in leading peer-reviewed journals, has been a frequent speaker at national symposia, and has been actively involved in many prominent professional associations, including the American Academy of Pediatrics, the American Institute of Ultrasound in Medicine, the Society of Pediatric Radiology, the American Academy of Pediatrics, the John Caffey Society, and the Musculoskeletal Ultrasound Society. The remarkable quality of his work was recognized by numerous awards, including both silver (1990) and bronze (1998) medals from the Society of Pediatric Radiology, two Certificates of Merit (1994 and 2013), one Cum Laude (2012) and one Magna Cum Laude (2013) from the Radiological Society of North America, and the Andres Giedion Award (2009) from the Swiss Society of Radiology. An award-winning teacher and mentor, Dr. DiPietro oversaw the training and development of a generation of medical students, residents, and fellows. He is one of only two Society for Pediatric Radiology members ever to receive both of the society's annual teaching awards: The Jack O. Haller Award in 2009 and the Ed Singleton – Hooshang Taybi Award in 2016. He is among the few U-M medical faculty to be inducted into the Dean's League of Educational Excellence (2012) and the Dean's League of Clinical Excellence (2015). In 2012, he received the Dean's Medical School Lifetime Achievement Award in Clinical Care, nominated by Neurosurgery. The U-M's annual Michael A. DiPietro Lectureship in Pediatric Radiology commenced in 2014.

At Dr. DiPietro's side throughout his career has been his wife, Alice Fishman, a librarian and archivist. A lifelong avid

bassoonist, Dr. DiPietro was a founder of the U-M Life Sciences Orchestra (LSO) and also played with the Campus Symphony Orchestra. He was twice awarded the annual Spirit of the LSO Award. The orchestra's principal bassoonist chair was recently endowed in his honor.

He says he has greatly enjoyed working alongside the wonderful colleagues and associates in his department and in C.S. Mott Children's Hospital, as well as his interactions with many students, residents and fellows over the years, watching them grow in their careers.

"I have always considered the way I practice pediatric radiology as very clinically-oriented, with much patient and parental contact, especially in ultrasound," he says. "I think it is important to remember that there is a person, and life history, behind every image."

In retirement, Dr. DiPietro continues part-time in the Department finishing up research and helping with the clinical load as needed. He's now free to accept more invitations to perform chamber and orchestral music and to travel more with his wife. He plans to audit music, art and history classes on campus.

From his earliest days in medicine, Dr. DiPietro has looked far beyond his role as clinician/researcher to observe and absorb the power of human interaction in medicine.

"I've been involved in medicine since the summer of 1967, starting as an orderly, then as a surgical technician before entering medical school," he says. "Working in the trenches makes one realize that everyone on the team is important, whether it is maintenance, transport, patient services, clerical, imaging technologists or physician colleagues. Treat people with the respect they deserve and they will give their best."

"Listen to people: your co-workers, parents, patients. Know what it is like to be in their shoes. Years ago, I heard a prominent U-M dermatologist/surgeon state: 'Your patients want to know how much you care before they care how much you know.'"

"Over the decades, I knew several people who were instrumental and helpful in my career. I can honor their memories, but I cannot pay them back directly. All I can do is pass knowledge forward and help others when I can."

The University of Michigan Department of Radiology thanks Dr. DiPietro for his many years of extraordinary service to this institution.



Michael DiPietro, MD



Dr. Satoshi Minoshima, Dr. Milton Gross, Department Chair
Dr. N. Reed Dunnick, and Dr. Kirk Frey (left to right).

The University of Michigan Department of Radiology recently had Satoshi Minoshima, M.D., Ph.D., present “From Molecular Brain Imaging to Value-driven Imaging Practice” for the 3rd Annual Beierwaltes Lecture. Dr. Minoshima was a U-M radiology faculty member from 1992-2000. He is currently Professor and Chair of the Department of Radiology at the University of Utah.

The Beierwaltes Lecture honors Dr. William H. Beierwaltes, who became a U-M faculty member in 1945 and obtained Emeritus status in 1987. His contributions in molecular and functional imaging of the thyroid and adrenal glands set the standard for clinical practice for many years. He is also widely recognized for his training and mentorship of hundreds of physicians and physicists in training around the world.

For more information, please see <http://victors.us/beierwalteslecture>.

continued from page 1

ultrasound and using it for good. These contrast agents are generally very safe to use for imaging as long as the acoustic intensity is low, but when you dial the intensity up, it becomes dangerous on one hand, but therapeutic on the other. If we can focus that energy on the sections of the heart that are enlarged, we can allow the contrast agent to create scattered microlesions. Any microscars will be absorbed by the body.”

Ideally, the goal is to reduce the area of enlargement by 20%. Working with rat models, Drs. Kripfgans and Miller have been consistently reducing the affected area by between 15-20%.

The researchers have recently applied for the next level of funding for their work. If they get it, they’ll see if they can achieve the same percentage of reduction on larger hearts.

Here’s where the cats come in.

Explains Dr. Kripfgans, “There are animals that actually suffer from hypertrophic cardiomyopathy: Ragdoll and Maine Coon cats. And there’s no treatment for these guys. We got in touch with the Michigan State University veterinary clinic and their cardiologist, Robert Sanders, DVM, was delighted that there might be a cure for

these cats that otherwise, unfortunately, most likely are going to die.”

If funding allows, Drs. Kripfgans and Miller will fine-tune the technique on a small pool of purpose-bred cats, but after that, they’ll offer the technique to cat owners who have no other options available. The goal, of course, goes far beyond veterinary medicine.

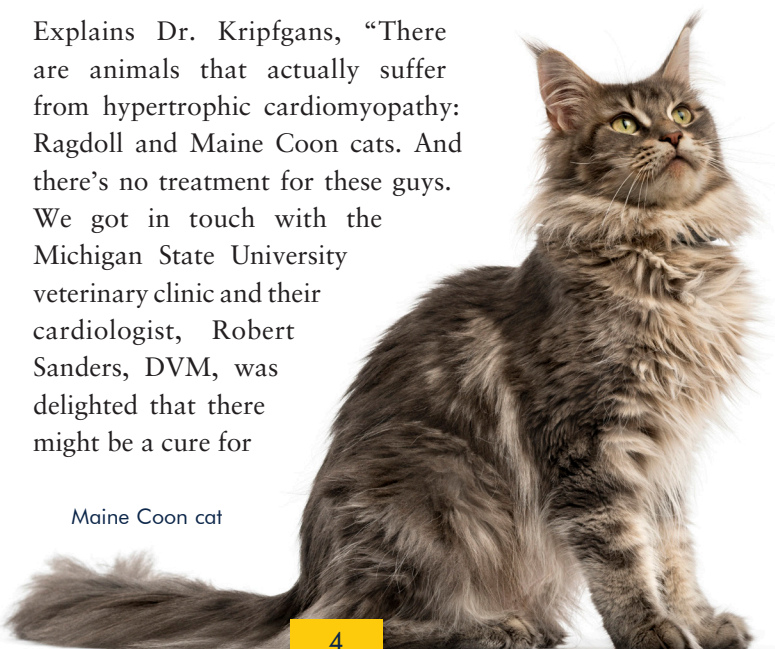
“The cats’ condition is genetically very close to humans’,” says Dr. Kripfgans. “We will be able to learn from their response to treatment what we would potentially see in humans.”

With funding and time, Drs. Kripfgans and Miller look forward to the day the treatment might be the first line of defense against hypertrophic cardiomyopathy. Particularly in the case of apical HC, the slow progression of the disease might be managed with this new technique.

“The beauty of the treatment, is that the most invasive part would be the IV injection of the contrast agent,” says Dr. Kripfgans. “There’s no surgery, no opening of the chest wall. Worst case scenario would be that it doesn’t work. In that case, you could still go with Plan B: ablation or surgery.”

Dr. Kripfgans says that as a physicist, he cherishes the opportunity to work alongside clinicians who know first-hand what their patients need.

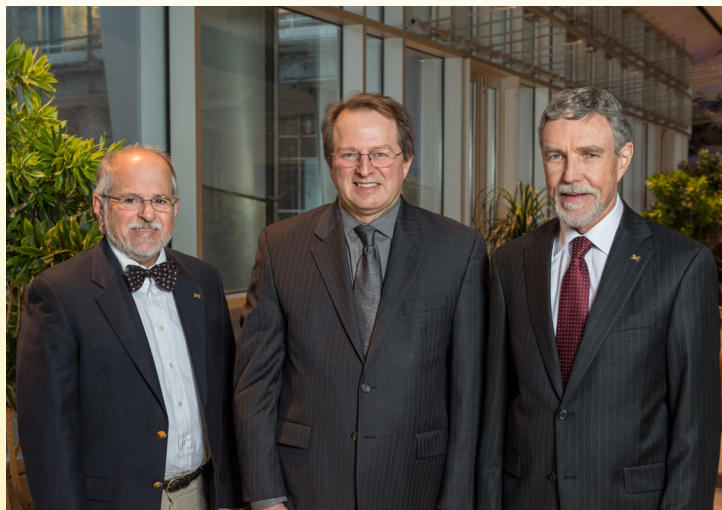
“They want to enable the next step in medicine – and they know where the hiccups are in treatment and diagnosis,” he says. “I came here in 1996, intending to stay for one year but this is a world-class university that allows you to explore anything you want. That is almost priceless.”



Maine Coon cat

SPOTLIGHT

HOLT PROFESSORSHIP INSTALLATION HELD



Dr. Michael A. DiPietro, Dr. Peter Strouse and Department Chair Dr. N. Reed Dunnick (left to right).

On January 3, Peter J. Strouse, M.D., F.A.C.R., succeeded Michael A. DiPietro, M.D., to become the second holder of the John F. Holt Collegiate Professorship in Radiology.

Over the course of his career, Strouse has contributed to 115 peer-reviewed manuscripts and 30 book chapters, with a focus on pediatric musculoskeletal and abdominal imaging as well as the diagnosis of child abuse. He was a Section Editor on musculoskeletal imaging for the 11th Edition of Caffey's Pediatric Diagnostic Imaging. He currently serves on the Board of Directors and is the 2018 President-elect of the Society for Pediatric Radiology (SPR), is President of the Society for Pediatric Radiology Research & Education Foundation and is a past President of the Society of Chairs of Radiology in Children's Hospitals. He is the North American Editor of the journal Pediatric Radiology. He has received numerous awards and honors for his work and is a frequent presenter at conferences and symposia worldwide.

Strouse says of his naming as the new Holt Collegiate Professor, "Dr. Holt was a very well-loved and respected man; I was privileged to meet him twice. To hold the professorship that bears his name is such an honor, especially when you consider who Jack Holt was and the high regard his colleagues had for him and how much he did for this institution and for the field of pediatric radiology."

Originally from Lansing, Michigan, Strouse earned his undergraduate degree in Chemical Engineering at Northwestern University. It was then that he realized a career in medicine –

and in particular, radiology – would allow him to successfully combine his fascination with science and technology with his desire to help people.

"Science-based engineers are problem solvers and doctors are problem-solvers too, so to some extent, we're medical engineers," says Dr. Strouse. "In terms of radiology, I loved the fact that we could see inside the body; that always fascinated me. And we interact with so many other physicians; we're the doctors' doctors," he adds.

After earning his medical degree from U-M in 1989, Strouse completed a residency in diagnostic radiology at Henry Ford Hospital in Detroit, followed by fellowships in pediatric radiology and cross-sectional imaging at Michigan. In 1995, he joined the U-M faculty as a pediatric radiologist. Today, he is a full Professor of Radiology and Director of the Section of Pediatric Radiology at C.S. Mott Children's Hospital – a position he has held since 2006. He served as Director of the Pediatric Radiology Fellowship Program from 2006-2014.

Under Strouse's leadership, the Section of Pediatric Radiology at Michigan has excelled in research, education and clinical radiology. He was instrumental in the design of the state-of-the-art Pediatric Radiology Department in the new C.S. Mott Children's Hospital that opened in 2011.

The late Dr. John (Jack) Holt had a similar passion for and dedication to pediatric radiology. One of his many, highly influential papers called attention to the number of unnecessary tibial osteotomies being performed on children in the 1950s. After Holt's death in 1996, colleagues began contributing toward a professorship in his honor, and in 2004, Dr. DiPietro was installed as the inaugural holder.

DiPietro says, "I am now about the same age Jack was when I first encountered him as he delivered the annual Neuhauser Lecture at the Society for Pediatric Radiology in Boston in 1977. The Holt Professorship has now been transferred from me to Peter Strouse, whom I first met when he was a resident. Peter advanced from student to colleague, from fellow to tenured professor, over the ensuing years. Now, as President-elect of SPR, Peter will choose the 2018 Neuhauser Lecturer. The cycle of knowledge continues. A teacher can have no greater satisfaction than to see a student succeed, assume the mantle, and again pass the torch."

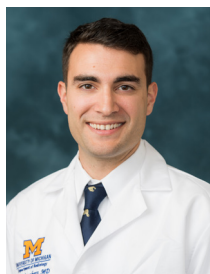
RSNA 2016 RECEPTION



Welcome

NEW RESIDENTS!

The Department of Radiology welcomed 11 new residents this year.



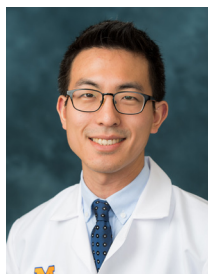
Ryan Aronberg, MD, MS

Undergraduate and Graduate School

Neuroscience, Johns Hopkins University

Medical School

Yale University School of Medicine

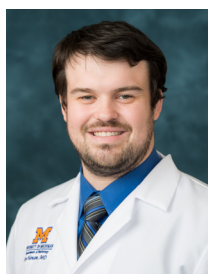


Steven Han, MD, MS

Undergraduate and Graduate School
Pharmaceutical Chemistry;
Health and Biopharmaceutical Economics,
Lehigh University

Medical School

Temple University School of Medicine



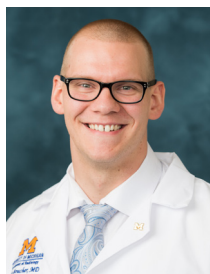
Gregory Hanson, MD

Undergraduate

Philosophy and Biochemistry,
University of Minnesota - Twin Cities

Medical School

Mayo Medical School



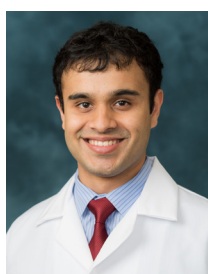
Felix Boucher, MD

Undergraduate

Biomedical Science,
Grand Valley State University

Medical School

Wayne State School of Medicine



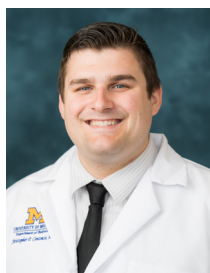
Omar Khan, MD

Undergraduate

Neuroscience and Behavioral Biology,
Emory University

Medical School

Wright State University Boonshoft
School of Medicine



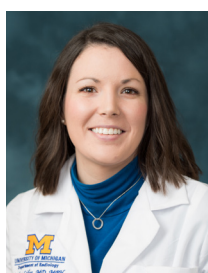
Christopher Centonze, MD

Undergraduate

Chemical Engineering,
University of Florida

Medical School

University of South Florida Health
Morsani College of Medicine



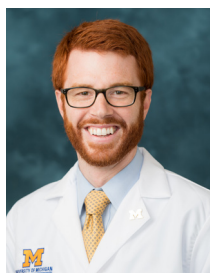
Amber Liles, MD, MPH

Undergraduate and Graduate School

Chemical Engineering;
Public Health Administration and Policy,
University of Oklahoma

Medical School

University of Oklahoma College of Medicine



Michael Connolly, MD

Undergraduate

Organic Chemistry and Zoology,
University of Wisconsin

Medical School

Medical College of Wisconsin



Stephanie Spann, MD

Undergraduate

Neuroscience and Behavioral Biology,
Emory University

Medical School

Baylor University College of Medicine



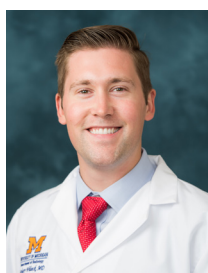
Karen Grajewski, MD

Undergraduate

Biology, University of Michigan

Medical School

University of Michigan
Medical School



Zachary Wilseck, MD

Undergraduate

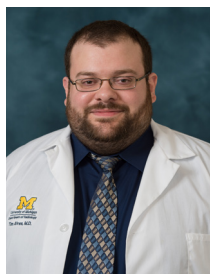
Human Biology,
Michigan State University

Medical School

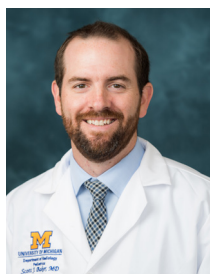
Michigan State University
College of Human Medicine

Welcome NEW FELLOWS!

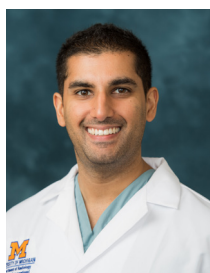
The Department of Radiology welcomed 25 fellows this year.



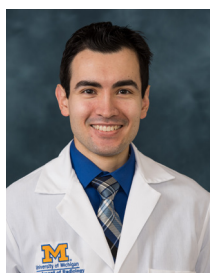
Timothy Alves, MD
Musculoskeletal
Residency,
University of Michigan



Scott Baker, MD
Pediatric Radiology
Residency,
University of Toledo



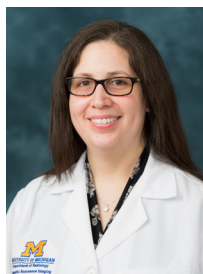
Amit Bhakoo, MD
Vascular/Interventional Radiology
Residency,
Mount Sinai Medical Center –
Miami Beach



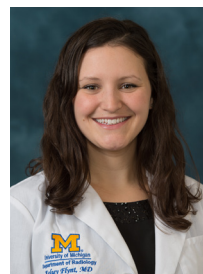
David Brandel, MD
Musculoskeletal
Residency,
University of Michigan



Jordan Castle, MD
Vascular/Interventional Radiology
Residency,
The Ohio State University



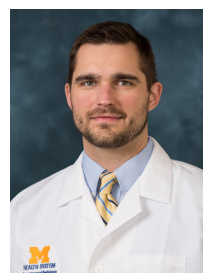
Nicole Curci, MD
Abdominal
Residency,
Case Western Reserve
Metro Health



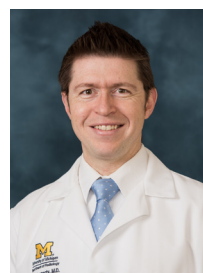
Kelsey Flynt, MD
Breast Imaging
Residency,
University of Michigan



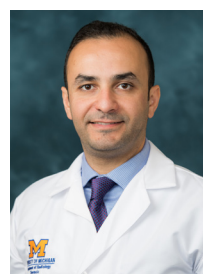
Ciprian Gradinaru, MD
Neuroradiology
Residency,
Henry Ford Hospital



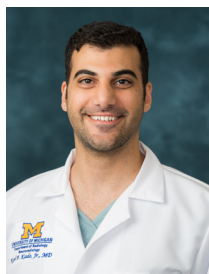
Julius Griaudzde, MD
Neuroradiology
Residency,
University of Michigan



Ezra Haggerty, MD
Neuroradiology
Residency,
University of Michigan



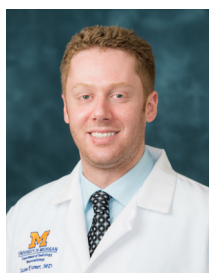
Aws Shawkat Hamid, MBChB
Cardiothoracic
Residency,
Jordan University of Science
and Technology



Karl Kado, MD
Neuroradiology
 Residency,
 Oakwood Hospital



Matthew Osher, MD
Vascular/Interventional Radiology
 Residency,
 Providence Hospital



Jason Kramer, MD
Neuroradiology
 Residency,
 Beaumont Health System



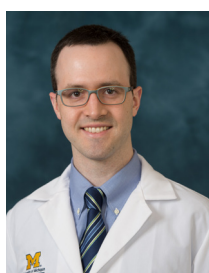
Roshni Parikh, MD
Abdominal
 Residency,
 University Hospitals-
 Case Medical Center



Matthew Meadows, MD
Vascular/Interventional Radiology
 Residency,
 Tripler Army Medical Center



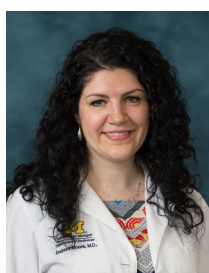
Nicholas Reeser, MD
Cardiothoracic
 Residency,
 Henry Ford Hospital



Benjamin Mervak, MD
Abdominal
 Residency,
 University of Michigan



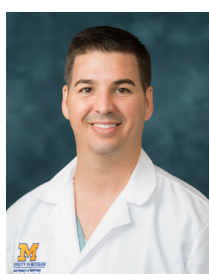
Emmanuel Reyes, MD
Musculoskeletal
 Residency,
 University of Michigan



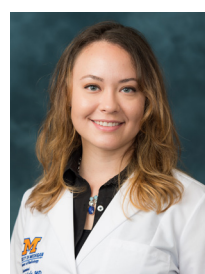
Andreea Moore, MD
Neuroradiology
 Residency,
 University of Michigan



Nicholas Romano, MD
Vascular/Interventional Radiology
 Residency,
 Medical College of Wisconsin



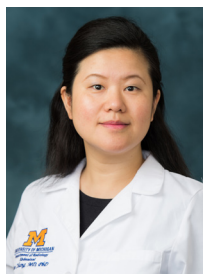
Douglas Murray, MD
Vascular/Interventional Radiology
 Residency,
 The Ohio State University



Michelle Sakala, MD
Abdominal
 Residency,
 Wake Forest Baptist Medical Center



Brian Smiley, MD
Cardiothoracic
 Residency,
 Wayne State University-
 Detroit Medical



Maggie Zhang, BM
Abdominal
 Residency,
 Providence Hospital

*25 Years
 of Leadership*



N. REED DUNNICK, M.D.

COME CELEBRATE LEADERSHIP WITH DR. DUNNICK!



The Department of Radiology is sponsoring a day of CME on April 21, 2017 to honor Dr. N. Reed Dunnick's last 25 years of leading the Department of Radiology as Chair. The topic will be on leadership and its importance to physicians. A world-renowned group of speakers is scheduled including:

- Ronald Arenson, MD, Chair, Department of Radiology, University of California-San Francisco will discuss leadership in radiology and the work of Dr. Dunnick.
- James Thrall, MD, Chair-Emeritus, Department of Radiology, Massachusetts General Hospital. Of note, Dr. Thrall is a former faculty member in our department. He will discuss the role of leadership, the Department of Radiology as leaders in our field, and the future ahead.
- N. Reed Dunnick, MD, Chair, Department of Radiology, University of Michigan, will speak on his perspectives and lessons learned on leadership and leadership development.
- John U. Bacon, New York Times best-selling author and Ann Arbor native, and faculty at the University of Michigan School of Education, will discuss the leadership imperative from all of us as physicians, formally and informally, with examples from the medical and sports worlds.
- Shirli Kopelman, MS, PhD, Professor of Management and Organization at the University of Michigan's Ross School of Business, will discuss how to enable leaders to make a positive impact.

Join us for a morning of CME lectures, followed by a dinner reception at the Michigan League. Invitations have been sent out; please contact Carly Davis at cbrandre@med.umich.edu for more information.

The University of Michigan Medical School is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians. The University of Michigan Medical School designates this live activity for a maximum of 2.5 AMA PRA Category 1 Credit(s)[™]. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

DEPARTURES

We will miss our departed colleagues, but we look forward to following their careers and developing new collaborations in the future. The institutions they join are truly fortunate!



Catherine Brandon, MD, MS, came to U-M in 2006 and quickly established herself as an essential member of our faculty, working on research, quality, educational and clinical initiatives. She has a degree in anthropology, a master's degree in health management and has served as the Director of several breast imaging centers. She is "retiring" to North Carolina, where she will further develop her skills in creative writing.



Hero Hussain, MD, came to U-M in 1999 as an entry level faculty, and by 2015 was the Saroja Adusumilli Professor of Radiology. Her accomplishments included NIH grant funding, Radiology teacher of the year and the gratification of the many referring physicians who relied upon her expertise in MRI. In order to be closer to family, she has taken a position as Vice Chair of Radiology at the American University of Beirut.



El-Sayed Ibrahim, PhD, MSE, MSc, a graduate of Johns Hopkins' Electrical and Computer Engineering program, El-Sayed was well prepared for his work in MRI. He held positions at the University of Florida and Mayo Clinic before coming to U-M to join our MR physics team. He soon became our expert on cardiac MR imaging and an emerging national leader in the field. After two years on faculty, he accepted a position with General Electric Healthcare.



Ursula Knoepp, MD, came to U-M in 2008 to join our Division of Emergency Radiology, where she excelled in providing great clinical service to our colleagues in Emergency Medicine. Following her residency at Brown University, Ursula took a fellowship in body imaging at the Beth Israel Deaconess Medical Center in Boston. She has joined the Department of Radiology at St Joseph's Hospital in Ann Arbor.



Edward Richer, MD, after taking his radiology residency and fellowship in pediatric radiology at Emory University, his first faculty position was at the University of Kentucky. He joined our team of pediatric radiologists at the Mott Children's Hospital in January 2015 and quickly established himself as an excellent clinical radiologist and outstanding teacher. He recently married and is returning to Atlanta to join the faculty at Emory University.



Jeff Wesolowski, MD, MHSA, after serving 9 years as a faculty in our Division of Neuroradiology, he accepted a position in private practice in the Seattle, Washington area. Jeff also served as Associate Residency Training Program Director and the Medical Director of the Radiology Ambulatory Care Unit in Brighton. Despite his many duties, he was able to earn a Master's Degree in Health Services Administration from the University of Michigan School of Public Health.

2017 UNIVERSITY OF MICHIGAN RADIOLOGY TAILGATE SEPTEMBER 16

Join us for our annual football tailgate prior to the University of Michigan Wolverines vs. Air Force Falcons football game on September 16, 2017. More information will be coming about this event. Hotel rooms fill up quickly on game day weekends. Reserve a room now! Game time is yet to be determined.



NEW MEDICAL SCHOOL CURRICULUM STRESSES LEADERSHIP, DEEPER CONNECTION WITH FACULTY

For Radiology's own Kate Klein, M.D., it's an opportunity for gentle outreach



Radiologist Kate Klein, M.D., leads the Diagnostic and Therapeutic Technologies branch of the new curriculum and co-teaches a doctoring course.

As the practice of medicine exists on a continuum of change, so, too, does the practice of medical education. Change is necessary; change is good. Gone, for example, are the days of all-male classes, of rote learning, of graduating medical school without ever having actually treated a patient.

The University of Michigan has been at the forefront of curriculum development in medicine and in 2013, the Medical School began the process of developing a radically different, forward-looking curriculum. At its core, the new curriculum is intended to produce not just physicians, but leaders in healthcare. Department of Radiology faculty have been deeply involved in both the development and implementation of the new curriculum.

The 2015 matriculating class was the first to begin this new journey in medical education at Michigan. And what an incoming class it was. At an average age of 25, forty percent came from a non-biological science background. They were leading startup companies, inventing products, solving problems. Now they were ready to reenter academia, ready for medicine.

A generation ago, their first day might have involved class after class in large lecture halls. Today, with the new curriculum up and running, that first day involves being assigned to one of four “M-Homes” – designed to foster a

sense of community among students and faculty. Within each M-Home is a group of 10-12 students, matched with two mentoring faculty. These cohorts will stay together throughout the four years of medical school, bonding, studying, supporting each other.

The new curriculum design resembles that of a tree. The M1 and M2 years form the “trunk”: an intense melding of scientific learning, clinical experience (from Day 1) and the development of critical learning, thinking and leadership skills.

“We’re moving basic science right into the clinic,” said then-Dean James Woolliscroft, M.D., in 2015, as the new curriculum was announced. “Our students will be mastering those concepts much earlier in their training.”

During the M3 and M4 years, students advance to “branches” as they begin to narrow down their interests and focus on a specialty. There are four branches to choose from: Patients and Populations, Systems-focused and Hospital-based Practice, Procedures-based Care, and Diagnostic and Therapeutic Technologies.

Again, creating strong leaders in healthcare is central to the mission of this new paradigm in medical education. David Fessell, M.D., an associate professor of radiology, heads the leadership core of the curriculum.

“We’ve always been so great at teaching the technical side of medicine, the facts and the figures,” says Fessell. “(But now), instead of teaching things that in a few years will be out of date, we’re giving students skills in lifelong learning: how to build teams to focus on a clinical problem, how to communicate a vision, how to address the transformative changes that are occurring in healthcare and be leaders in the forefront of that change.”

Every medical student group meets weekly for a “doctoring” course, learning critical basics: taking a medical history, communicating with other providers, transforming all that basic science into accurate diagnosis and compassionate care. There are additional sessions on ethics, informed consent, diversity and more. 120 faculty members applied for 30 spots to lead the doctoring course for the inaugural M1 groups.

Radiology's own Kate Klein, M.D., won a coveted spot. Together with internist Paul Fine, M.D., she's been working intensively with Group #9.

"We're Klein, Fine, and Group #9," she laughs, adding that the experience of mentoring these brilliant, young medical students has been deeply fulfilling. And, she says, it's a great opportunity to share with them her love of the field of radiology.

Her doctoring course students witness first-hand the level of Klein's involvement with her patients. Klein, who specializes in breast imaging, says that some of the students in her doctoring course – and even their friends from other groups – have been asking to shadow her. She welcomes their interest.

Working closely with her group has allowed her to dispel the nagging myth that radiologists don't have the opportunity to directly connect with patients.

For example, she notes a recent patient interaction. "I did a biopsy on Friday and the results were positive for cancer, and I called the patient and spent 35 minutes on the phone with her," she says. "We are the first step of a breast cancer journey. I'm heavily involved with the Breast Cancer Clinic tumor board, discussing patient-centered care plans."

Ilana Fischer, an M2 from Denver, says, "Dr. Fine and Dr. Klein have been dynamic and flexible in how they apply the doctoring curriculum in class. Dr. Klein's enthusiasm for radiology has made me appreciate and better understand the fundamentals of imaging."

When Klein heard that the Medical School was looking for faculty to develop "initial clinical experiences" (ICEs), for individual students interested in exploring various specialties, she knew just what to do. She conceived and organized the Breast Cancer Experience in which students spend a half-day shadowing a breast imager, then a breast pathologist, then a nurse practitioner in a breast surgery unit, then a breast oncologist and radiation oncologist.

"They are so wide-eyed," she says of the participating students. "Any clinical experience they get, they are beaming."

Working with colleague Ashish Wasnik, M.D., she developed an ICE in abdominal radiology as well. Klein leads the Diagnostic and Therapeutic Technologies branch of the curriculum.

"As radiologists, we need to have more contact with medical students. There's been a lot of discussion as to why medical students have shown decreased interest in radiology for the past several years. There's starting to be a bit of a stigma. But my approach is, we need to take this radiology hat off and wear the medical student hat. No matter what specialty they go into, if I can be a role model, that's the win I'm looking for."

For Marisa Martin, Klein's comprehensive mentoring approach may be fanning a spark. "The best thing about the doctoring course has been the opportunity to build relationships with and learn from our faculty leaders," says Martin, an M2 from Bowling Green, Ohio.

"Drs. Klein and Fine frequently share their own clinical pearls and personal anecdotes in our sessions which, for me, has become the most valuable part of our weekly meetings," Martin continues. "In addition to their teaching roles, they have become excellent sources of support and advice."

"I am definitely thinking about radiology. I have worked with ultrasound through different student organizations, often under Dr. Klein's instruction, and I think it is amazing how much you can learn about a patient without making an incision."

"They're always enamored with how much clinical information we can extract from a single image," says Klein.

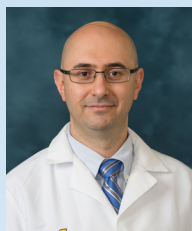
The new curriculum energizes the bonds between faculty and students and, with committed instructors like Klein, that energy may result in increased enthusiasm for the field of radiology.

For more information about the new curriculum and the process to create it, go to:
<http://curriculum.med.umich.edu/home>



M2 Marisa Martin,
a member of the
new curriculum's first
matriculating class.

FACULTY AWARDS + RECOGNITION



Shadi Azar, MBBS received the Academy of Radiology Leadership and Management Certificate.



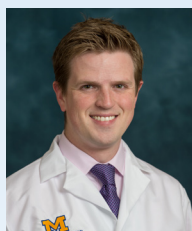
Paul Cronin, MB, BCh, BAO, MS became an Associate Editor of Radiology.



Nico Bohnen, MD, PhD was awarded grants from Axovant Sciences, NIH and KM Pharmaceuticals.



Matt Davenport, MD received the 2015 Editor's Recognition Award with Special Distinction from the RSNA.



Nicholas Burris, MD received a travel award from academy CIBR. In addition, Dr. Burris received a RSNA grant.



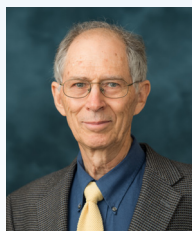
Yuni Dewaraja, PhD received a RSNA and NIH grant.



Ruth Carlos, MD and team produced a winning project for the most recent Stanford Medicine X Symplur Everyone Included Research Challenge and received a U.C. Alumni Award. In addition, Dr. Carlos received a NIH grant.



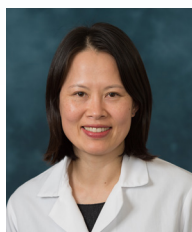
Mario Fabiilli, PhD received a grant from the Focused Ultrasound Foundation.



Paul Carson, PhD received a NIH grant.



Brad Foerster, MD received a grant from the Amyotrophic Lateral Sclerosis Association.



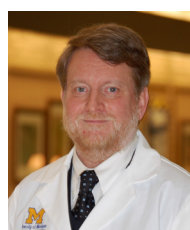
Suzanne Chong, MD, MS was elected to the ASER Executive Committee.



Brian Fowlkes, PhD received a grant from the Lesley Stevens Foundation. In addition, Dr. Fowlkes has become President-elect of AIUM and was made a fellow of the AAPM.



Richard Cohan, MD became consultant to the Editor of Radiology.



Kirk Frey, MD, PhD received a NIH Grant.



Craig Galban, PhD received a NIH grant. In addition, Dr. Galban was named Distinguished Investigator of the Academy of Radiology Research.



Jon Jacobson, MD was appointed as Chair of the Maintenance of Certification Committee, Musculoskeletal Section at the American Board of Radiology.



Ella Kazerooni, MD, MS received the Clinical & Health Services Research Award from UMHS and was elected to serve as a member of the UH/CVC Executive Committee representing hospital-based departments.



Michael Kilbourn, PhD received a grant from Adepto Pharmaceuticals.



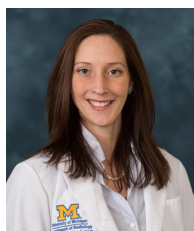
Robert Koeppe, PhD received a NIH grant.



Mel Korobkin, MD received a Gold Medal from the SCBT-MR.



Oliver Kripfgans, PhD was elected to the Board of Governors for AIUM. In addition, Dr. Kripfgans received grants from RSNA and from the Delta Dental Foundation.



Jessica Leschied, MB BCH received a Certificate of Merit from RSNA for her educational exhibit with Dr. Matthew Hermann.



Stephanie Patterson, MD has been elected as a fellow in the Society of Breast Imaging.



Joel Platt, MD became a Director-in-Succession of the SCBT/MR.



Peter Scott, PhD had an article published in the Royal Society of Chemistry. In addition, Dr. Scott received a grants from Industry and the NIH.



Gaurang Shah, MD has been recommended as a candidate for the College Nominating Committee for ACR.



Ethan Smith, MD received the RSNA Honored Educator Award.



Ashok Srinivasan, MD was selected as the 2017 ASNR International Outreach Professor for Thailand, nominated as Vice Chair of the Education Committee of the American Society of Head and Neck Radiology, and serves as the Chair of the Research Committee.



Jadranka Stojanovska, MD, MS received a NIH grant and a RSNA Seed Grant.



Peter Strouse, MD was installed as the John F. Holt Professor of Radiology.

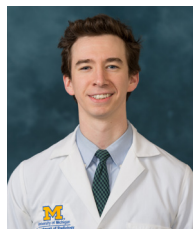
RESIDENT PUBLICATIONS

Residents with faculty in our department collaborate on a variety of research projects at our institution. The following published articles from our department show the level of activity of our residents and faculty mentors.

1. MCost-Savings Analysis of Renal Scintigraphy, Stratified by Renal Function Thresholds: Mercaptoacetyltriglycine Versus Diethylene Triamine Penta-Acetic Acid. Parikh KR, Davenport MS, Viglianti BL, Hubers D, Brown RK. J Am Coll Radiol. 2016 Jul;13(7):801-11. doi: 10.1016/j.jacr.2016.01.009.
2. Effect of Fixed-Volume and Weight-Based Dosing Regimens on the Cost and Volume of Administered Iodinated Contrast Material at Abdominal CT. Davenport MS, Parikh KR, Mayo-Smith WW, Israel GM, Brown RK, Ellis JH. J Am Coll Radiol. 2016 Dec 21. pii: S1546-1440(16)30876-6. doi: 10.1016/j.jacr.2016.09.001. [Epub ahead of print] PMID: 28017270
3. Frostbite: Spectrum of Imaging Findings and Guidelines for Management. Millet JD, Brown RK, Levi B, Kraft CT, Jacobson JA, Gross MD, Wong KK. Radiographics. 2016 Nov-Dec;36(7):2154-2169. PMID: 27494386
4. JOURNAL CLUB: Patient Perception of Radiology and Radiologists: A Survey Analysis of Academic and Community Institutions. Domina JG, Bhatti ZS, Brown RK, Kazerooni EA, Kasotakis MJ, Khalatbari S. AJR Am J Roentgenol. 2016 Aug 4:1-9. [Epub ahead of print] PMID: 27490330
5. MR enterography-histology comparison in resected pediatric small bowel Crohn disease strictures: can imaging predict fibrosis? Barkmeier DT, Dillman JR, Al-Hawary M, Heider A, Davenport MS, Smith EA, Adler J. Pediatr Radiol. 2016 Apr;46(4):498-507. doi: 10.1007/s00247-015-3506-6. PMID: 26638000
6. Barkmeier DT, Dillman JR, Al-Hawary M, Heider A, Davenport MS, Smith EA, Adler J. Pediatr Radiol. 2016 Apr;46(4):498-507. doi: 10.1007/s00247-015-3506-6. PMID: 26638000
7. Neurovascular emergencies: imaging diagnosis and neurointerventional treatment. Rahman WT, Griauszde J, Chaudhary N, Pandey AS, Gemmete JJ, Chong ST. Emerg Radiol. 2016 Oct 7. [Epub ahead of print] PMID: 27718098
8. Paragangliomas of the Head and Neck. Woolen S, Gemmete JJ. Neuroimaging Clin N Am. 2016 May;26(2):259-78. doi: 10.1016/j.nic.2015.12.005. Review. PMID: 27154608
9. Post-operative colon and urinary diversions: surgical techniques, anatomy, and imaging findings. Wasnik AP, Patel NA, Maturen KE, Regenbogen SE, Kaza RK, Al-Hawary MM. Abdom Radiol (NY). 2016 Sep 1. [Epub ahead of print] Review. PMID: 27585659
10. Reinterpretation of Outside Hospital MRI Abdomen Examinations in Patients With Cirrhosis: Is the OPTN Mandate Necessary? Rahman WT, Hussain HK, Parikh ND, Davenport MS. AJR Am J Roentgenol. 2016 Jul 19:1-7. [Epub ahead of print] PMID: 27440522
11. Role of Clinical Decision Tools in the Diagnosis of Pulmonary Embolism. AJR Am J Roentgenol. 2016 Dec 13:1-11. [Epub ahead of print] Sherk WM, Stojanovska J. PMID: 27959579
12. Sonographic diagnosis of partial versus complete molar pregnancy: A reappraisal. Savage JL, Maturen KE, Mowers EL, Pasque KB, Wasnik AP, Dalton VK, Bell JD. J Clin Ultrasound. 2017 Feb;45(2):72-78. doi: 10.1002/jcu.22410. PMID: 27696434
13. Treatment of Residual Facial Arteriovenous Malformations after Embolization with Percutaneous Cryotherapy. Woolen S, Gemmete JJ. J Vasc Interv Radiol. 2016 Oct;27(10):1570-5. doi: 10.1016/j.jvir.2016.05.027. PMID: 27670993
14. Ultrasound of the Gruberi Bursa With Cadaveric and MRI Correlation. Gaetke-Udager K, Jacobson JA, Bhatti ZS, Smith J, Parameswaran A, Fessell DP. AJR Am J Roentgenol. 2016 Aug;207(2):386-91. doi: 10.2214/AJR.15.15955. PMID: 27305451
15. Value of pelvis CT during follow-up of patients with pancreatic adenocarcinoma. Bailey JJ, Ellis JH, Davenport MS, Cohan RH, Nan B, Parameswaran A, Hsu L, Sahai V, Francis IR. Abdom Radiol (NY). 2017 Jan;42(1):211-215. doi: 10.1007/s00261-016-0869-6. PMID: 27519836

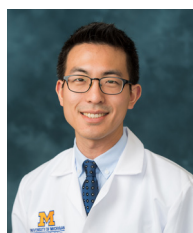
SELECTED RESIDENT RESEARCH PROJECTS

All of our residents are required to participate in at least one research project over the course of their residency and many residents are involved in more than one project. Faculty members mentor residents on their projects which are presented at local, national, and international meetings. Many of the residents' projects result in published manuscripts. Listed below are a few recent examples.



Jason Bailey, MD
Class of 2017

Mentored by James Ellis, MD, Matthew Davenport, MD, Richard Cohan, MD, Bin Nan, PhD, Aishwarya Parameswaran, MS, Lin Hsu, MD, Vaibhav Sahai, MBBS, Isaac R. Francis, MD. "Value of pelvis CT during follow-up of patients with pancreatic adenocarcinoma." Presented at Radiological Society of North America, Chicago, IL. November 2016.



Steven Han, MD, MS
Class of 2021

Mentored by Matt Meadows, MD, Jeffrey Chick, MD, Kyle Cooper, MD, David Williams, MD. "Thick and Thin." Society of Interventional Radiology, Washington, DC. March 2017.



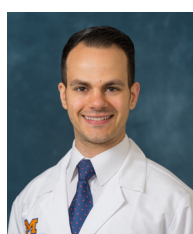
Rosan Patel, MD
Class of 2018

Mentored by Adam Wright, MD, Corrie Yablon, MD, Jon Jacobson, MD, Suzanne Chong, MD. "MRI for Suspected Osteomyelitis in the Neuropathic Foot in the Emergency Department." Presented at: The American Society of Emergency Radiology, San Francisco, CA. September 2016; Radiological Society of North America, Chicago, IL. November 2016.



Tania Rahman, MD
Class of 2018

Mentored by Julius Griauszde, MD, Suzanne Chong, MD. "Neurovascular Emergencies: Imaging Diagnosis and Neurointerventional Therapy." Educational Exhibit at the American Society of Emergency Radiology Annual Meeting. September 14-17, 2016. San Francisco, CA.



Elias Taxakis, MD
Class of 2019

Mentored by Qian Dong, MD. "Imaging Evaluation of Peripheral Nerve Tumors and Tumor-like Conditions." Presented at Radiological Society of North America, Chicago, IL. November 2016.

ALUMNI NOTES



Dorit Adler, MD, Stephen Levine and Michelle Silver.

“After 29 years in UM Radiology, I retired in 2009, continuing my work in Breast Imaging on a per diem basis during half the year, spending the other half similarly in private practice in Tucson, AZ, as well as my ongoing involvement with the ABR, also based in Tucson. Per diem work was terminated at UM Radiology and eventually in Tucson so full retirement occurred a bit sooner than expected. Since I loved my clinical work, it was an adjustment but I am happy to say that I now fully enjoy the benefits of retirement.

I continue to split my time between Ann Arbor and Tucson with occasional trips to my home town of LA. Having also completed my work with the ABR, I was honored to receive a Lifetime Service Award in 2015. I keep busy with volunteering, taking classes, swimming, tennis, yoga, Pilates, traveling, seeing old friends, making new ones, and many walks with “Mr. Mischief,” our 9 year-old rescue dog, Simba. A bonus this year is having my daughter, Michelle, and her boyfriend, Stephen, working in Tucson and living nearby. After attending UW Madison and UM for her MPH, Michelle will start the Master

of Science in Physician Assistant (PA) Studies at Rush University in Chicago to become a PA. I feel fortunate to have such a wonderful life and always enjoy seeing my old colleagues and friends at U of M!”

Dorit D. Adler, MD, MPH, FACR (Faculty 1984-2009)

“I landed a position as an assistant professor at National Chiao Tung University in Hsinchu, Taiwan in 2013, working in biomedical engineering. I am mainly examining the effects of ultrasound on nanoparticles and vice versa - earlier studies show that nanoparticle presence during sonication improves the ability of moderate intensity ultrasound to kill cancerous cells relative to normal ones. Two masters students that I advised have just graduated, and their work forms a manuscript that I’m writing up - basically we show that polystyrene nanoparticle presence has no detectable effect on net inertial cavitation levels. The reaction assay was unfortunately unsuitable for measuring inertial cavitation in the presence of gold or silver nanoparticles.

Another item that has been published (Mol. Divers. 2016; 20(3): 741-745) relates to an accidental discovery I made with randomly generated molecular fingerprints. A manuscript that I am revising shows that ultrasonically generated water mists have the potential for being a decent substitute for flammable colored powders that tragically resulted in the explosion June 27, 2015. Here, my hope is that I’d be able to secure funding from businesses willing to develop the idea further.”

Nelson Chen, PhD (Researcher, 2001-2008)

“Since finishing my fellowship in 1994, I have been a member of the Abdominal Imaging Section at the Cleveland Clinic. I am currently Professor of Radiology and Director of Abdominal Imaging Research. I have focused my research on the GU tract and investigated issues such as renal tumor ablation, adrenal disorders, and CT dose reduction. I have been actively involved in committee work for the SAR, RSNA, ARRS and am currently GU Panel Chair for the ACR Appropriateness Criteria. My family enjoys the many cultural and outdoor activities that Cleveland has to offer and has been energized by the resurgence of (some of) our sports teams. My wife, Erica, has given up clinical Emergency Medicine practice and serves as a consultant on physician documentation, ICD10, and Quality. My older son, Scott, graduated from Yale and is currently completing a Masters in Political Thought and Intellectual History at the University of Cambridge. My old younger son, Alex, is busy choosing the Aerospace Engineering program he will attend after finishing his senior year of high school. It’s great that the Michigan Abdominal Group is so active in academic radiology; I’m always happy to run into old colleagues virtually any meeting that I attend. I still haven’t given up my Michigan football tickets, so be on the lookout for me at games!”

Erick M. Remer, MD, FACR, FSAR (Fellow, 1994)

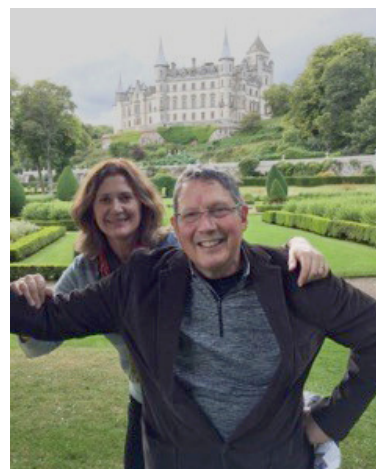


Erica, Alex, Scott, and Erick Remer at the Alhambra, Granada, Spain

ALUMNI NOTES

"I completed my residency at Michigan in 1990, one of the infamous "nine men". During my fourth year as a resident, I spent almost the entire year in breast imaging. One of the breast imaging fellows de-committed and I helped fill the gap. I then followed Dr. Gross to Henry Ford for a year to complete a body imaging fellowship while he was chairman.

I have since then been in TRA ("U of M South") with many other Michigan grads in Toledo, and working within the large ProMedica HealthSystem as Medical Director of ProMedica Breast Care at The Toledo Hospital. Our breast care center is the busy hub for the ProMedica Metro Toledo area (a centralized model) where we read all mammograms in the region from the various facilities and where we perform all work ups. About 48,000 studies are interpreted at this center each year. We are staffed with three breast imagers, sub-specialty trained technologists and a tremendous support staff. We take pride in the fact that we are fully digital with tomosynthesis, have multiple dedicated breast ultrasound rooms, a busy stereotactic practice, a dedicated Breast MRI machine and on site Molecular Breast Imaging. We read all studies (including MRI and MBI) real time and are open on Saturdays! In addition, we perform about 8 biopsies per day, most of them "same day." This has provided a great backdrop for patient satisfaction and care within the system.



Robin and wife, Denise in the Scottish Highlands

I believe part of my professional success has been the result of the excellent training I had at Michigan that gave me the confidence to "keep moving forward." In an effort to provide adjunct breast screening for the dense mammogram, we were early adopters of Molecular Breast Imaging (MBI) and are now the largest volume facility in the world offering this technology. Last August, we published our initial experience with MBI in the AJR which was received with great enthusiasm. Other publications are forth coming. ProMedica has established a new relationship with the local medical school (UTMC) and soon we will be teaching residents and medical students. One of my goals would include the development of a breast imaging fellowship here.

Outside of work, I enjoy gardening, cooking, travel, reading and spending time with my wife (Denise) of almost 30 years who I met at U of M as a resident (she was a mammography tech). Two recent amazing trips included Scotland (and drinking Scotch, of course!) as well as the Bourbon Trail in Kentucky. (Drs) Dan Dessner (pediatric fellowship at Michigan) and his wife Jonna were along for the experience. We have two wonderful children, Paige (who is entering Berkeley Optometry school this fall in California—where I was born) and Nick who is finishing his third year at Miami, OH.

I enjoy my periodic trips to Ann Arbor and hope to get up there again soon!"

Robin Shermis, MD, MPH, FACR (Resident, Class of 1990)

ALUMNI INFORMATION UPDATE

Please go to <http://victors.us/radiologyupdate> to update your contact information (mailing address, e-mail, etc.). You can also send your updates directly to Carly Davis at cbrandre@med.umich.edu

James H. Thrall (M.D. 1968) received the Distinguished Achievement Award from the University of Michigan Medical Center Alumni Society. The award honors Michigan alumni who have typified the Michigan tradition of excellence and have brought credit to the University by their personal accomplishments and professional achievements in the science and art of medicine. After graduation from the U-M Medical School he trained in radiology and nuclear medicine at the Walter Reed Army Medical Center. He returned to U-M as a faculty from 1975 to 1983, when he accepted the position of Chair of the Department of Radiology at the Henry Ford Hospital in Detroit. In 1988, he became the Juan M. Taveras Professor of Radiology at Harvard Medical School and Radiologist-in-Chief at the Massachusetts General Hospital. An elected member of the Institute of Medicine of the National Academies of the United States, Dr. Thrall is the author of more than 300 scientific publications and the founding editor of the "Requisites in Radiology" textbook series. He is a past Chair of the Board of Chancellors and President of the ACR and gold medalist of the ACR, ARRS, AUR, and RSNA.





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UNIVERSITY OF MICHIGAN

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GIVING BACK...

The Department of Radiology at the University of Michigan is most grateful to our family of alumni who have supported our programs in education, training and research. Over a century's worth of excellence has been enhanced through your generosity. We hope you will continue being a part of this legacy by considering a gift to the following priorities:



KYUNG J. CHO COLLEGIATE PROFESSORSHIP

Establishment of the \$500,000 endowment
victors.us/choprof



TERRY M. SILVER COLLEGIATE PROFESSORSHIP

Establishment of the \$500,000 endowment
victors.us/silverprof



BASIC RADIOLOGICAL SCIENCES ENDOWMENT FUND

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