A Patient’s Story: ‘PAE Allowed Me To Live My Life Again’

MALLINCKRODT INSTITUTE OF RADIOLOGY // WASHINGTON UNIVERSITY // ST. LOUIS
MIR’s community hospital partnerships bring imaging expertise to St. Louis County and beyond.
A NEW LEASE ON LIFE

Find out how prostatic artery embolization (PAE) can dramatically improve the lives of patients with benign prostatic hyperplasia.

BEYOND THE NUMBERS

After two decades as resident selection committee chair, Janice Semenkovich, MD, knows more than a few ways to spot a successful candidate.

BENCH TO BUSINESS

What does it take to transform science happening in a lab into a successful commercial business?
A newly renovated Biosafety Level 3 (BSL-3) facility featuring an imaging suite will allow investigators to study the onset, progression and treatment of diseases in small animals infected by higher level pathogens. BSL-3 labs are equipped to study potentially lethal airborne agents and are required to meet certain standards, such as one-way directional airflow capabilities and multiple layers of personal protective equipment requirements.

The BSL-3 lab will extend preclinical imaging’s biggest strengths — the ability to perform noninvasive longitudinal studies and to produce disease metrics that are often analogous to those used in clinical studies — to infected animals. “Since the laboratory is located behind a barrier, we can support studies with essentially any disease model being studied on the floor,” says James D. Quirk, PhD, director of MIR’s Small Animal Magnetic Resonance Facility and an administrator of the BSL-3 project. “We could be studying tuberculosis-infected animals one day, decontaminate the lab, and then animals with COVID-19 the next.”

Funding for the imaging suite came about thanks to an NIH grant spearheaded by Joseph J. Ackerman, PhD, the William Greenleaf Eliot Professor Emeritus of Chemistry and a professor of radiology. Ackerman worked with the radiology and internal medicine departments to make the project possible, with additional contributions from neurology, pediatrics, OB-GYN, and the dean’s office. He says the collaboration will be a boon for research at the university, particularly in the infectious disease program.

“The lack of BSL-3 animal imaging facilities has meant researchers have not necessarily been thinking imaging-first for their own research,” says Ackerman. “This is a great opportunity because we’re providing them with access to analytical methods they previously didn’t have, especially in noninvasive imaging.”

Imaging Highlights from the BSL-3 Lab

- The lab’s MRI scanner is cryogen free and less than 5 feet in all three directions.
- Unlike most scanners, the magnetic field can safely be deactivated within a few hours which allows those in the lab to use electronic equipment and to decontaminate the space.
- The suite includes equipment for multiple modalities such as MR Solutions 7-Tesla preclinical MRI, Molecubes X-CUBE preclinical CT and Molecubes β-CUBE preclinical PET.
New research shows that a mathematical analysis of data obtained with a novel MRI approach can identify brain cell damage in people at early stages of Alzheimer’s, before tissue shrinkage is visible on traditional MRI scans and before cognitive symptoms arise.

“This could be a new way to use MRI to diagnose people with Alzheimer’s before they develop symptoms,” says senior author Dmitriy A. Yablonskiy, PhD, a professor of radiology at Mallinckrodt Institute of Radiology (MIR). “The technique takes only six minutes to acquire data and can be implemented on MRI scanners that are already used worldwide for patient diagnostics and clinical trials.”

Published in the Journal of Alzheimer’s Disease, the study relies on a new quantitative Gradient Echo (qGRE) MRI technique developed in the Yablonskiy lab to show brain areas that are no longer functioning due to a loss of healthy neurons. While traditional MRI is capable of showing where damaged areas of the brain have decreased in volume, the qGRE technique goes a step further, detecting the loss of neurons that precedes brain shrinkage and cognitive decline.

The study involved 70 people ages 60 to 90 who were recruited through the Charles F. and Joanne Knight Alzheimer Disease Research Center (Knight ADRC). Participants completed extensive clinical and cognitive testing to assess their level of cognitive impairment. The participant group included people with no cognitive impairment as well as those with very mild, mild or moderate impairments. Each participant underwent either a PET brain scan or a spinal tap to gauge the amount of amyloid plaques in his or her brain. They also underwent MRI brain scans.

Researchers applied the qGRE MRI technique to scan the hippocampus, the brain’s memory center and one of the earliest affected brain regions in Alzheimer’s. Results showed the hippocampus often contained a viable tissue section with relatively preserved neurons and a dark matter dead zone virtually devoid of healthy neurons. These dark matter areas were present in people who tested positive for amyloid but were not yet experiencing symptoms, and they grew larger as the disease progressed. Compared with traditional MRI measures of brain atrophy, biomarkers for dark matter correlated much better with individual cognitive scores for very mild to moderate dementia.

In the early 2000s, Tammie L.S. Benzinger, MD, PhD, a professor of radiology and of neurosurgery, and the Knight ADRC’s director of imaging studies, was among the pioneers at Mallinckrodt Institute of Radiology to use PET brain scans targeted against amyloid beta as a tool for detecting Alzheimer’s. In the current study, also co-authored by Benzinger, researchers documented the same relationship between neuronal loss and Alzheimer’s symptoms using the noninvasive qGRE MRI technique in living patients.

Yablonskiy and colleagues are among the many researchers now pursuing a low-cost, easily accessible test for Alzheimer’s as an alternative to the expensive PET brain scans and invasive spinal taps now used in research settings to assess the presence and progression of the disease. Such a test, especially one that can identify people at very early stages of disease, would provide a huge boost to Alzheimer’s research, drastically slashing the cost and the time necessary to screen patients for clinical trials, thus spurring the development of new treatments.

“Our qGRE test offers great potential as an early diagnostic tool for the preclinical stage of Alzheimer’s disease, thus providing a large window for therapeutic intervention,” he says. “It also has great potential as a noninvasive MRI technique available in a conventional clinical setting for the widespread screening that is necessary to get people with early Alzheimer’s into clinical drug trials.”

Dmitriy A. Yablonskiy, PhD (right), and colleagues have developed a novel MRI technique that could help provide a low-cost, easily accessible alternative for identifying Alzheimer’s disease early.
In the world of academic research, transforming science into business might feel like an elusive goal. But with a bit of patience, a lot of support and laser-focused determination, there’s almost always a path.

“There are ways to throw things on the other side of the fence,” says Daniel S. Marcus, PhD, professor of radiology. “Whether you catch it yourself or someone else catches it, there are ways to do it.”

Marcus’ journey to “the other side of the fence” began more than two decades ago as a postdoc in the Department of Psychology at Washington University in St. Louis. Today he is director of MIR’s Computational Imaging Research Center (CIRC) and chief scientific officer for Flywheel, a venture-backed biomedical research data platform.

In 2001, Marcus joined a lab run by Randy Buckner, PhD, now the Sosland Family Professor of Psychology and of Neuroscience at Harvard University. Buckner along with Mark Mintun, MD, then a professor of radiology at MIR, started the neuroimaging core for the university’s Alzheimer’s Disease Research Center.

“The Alzheimer’s Center had been around for a while but at that time it was just beginning to scale up its imaging research,” says Marcus. “Today we would look at the data and say ‘that’s not such a big study’ but back then it was very big.”

Marcus and Buckner soon recognized the need for tools to manage, process, review and share the data they were collecting, so they began developing a database system, which was called the Central Neuroimaging Data Archive (CNDA). As the software matured, they realized it could be useful to others and so made it open source. The open source version was named the Extensible Neuroimaging Archive Toolkit, which was soon shortened to XNAT. Today, XNAT is “the world’s most widely used open source imaging informatics platform,” says Marcus.

In 2005, Buckner left for Harvard University and Marcus joined MIR as an assistant professor. With support from MIR’s then-director R. Gilbert Jost, MD, and new NIH funding, Marcus set out to pursue his dream of a national network. But that dream was slow in the making.

The team had to deal with de-identifying data, insufficient network speed and a host of other challenges. They tried giving the platform away, hoping people would figure out how to run it. While some did, the enterprise software was complicated and many potential users sought some form of training.

“I don’t know how it would go in other departments but I’ve been extremely supported at MIR,” says Daniel S. Marcus, PhD.

“It was clearly filling a niche but a lot of people were also struggling,” he says. “They would ask for consulting but we had no mechanism to do this within the university.”

So Marcus created one. In 2009, he founded Radiologics, a company that would provide consulting services for XNAT users. He hired Timothy Olsen — a former coder in Buckner’s lab — as a part-time consultant. While the open source development continued at the university, Radiologics was a fully independent, bootstrap operation.

By fall of 2020, Radiologics was a thriving business with 18 employees and Marcus, whose involvement was limited to one day a week and off hours, recognized it was time to make some changes. Around the same time the team was seeking investor opportunities, they got a call from Jim Olson, chief executive officer of Flywheel, with a different kind of offer: a merger. Born out of research done at Stanford University, Flywheel had a platform similar to Radiologics’ but with a focus on life science and pharma industry clients. Despite having received term sheets from investors to take their company to the next level, the team decided in favor of the merger.

“The vision could just be bigger,” says Marcus. “Combining the Radiologics and Flywheel data networks would create the biggest possible data resource and have the greatest impact in supporting collaborative research.”

In July 2021, Marcus began a nine-month, 50% sabbatical so he could split his time between the new business entity and his role at MIR. But by December 2021, he realized he was having “too much fun” at Flywheel to completely step away as planned. He approached MIR...
Pamela K. Woodard, MD, the Hugh Monroe Wilson Professor of Radiology, has received three back-to-back honors for her significant contributions to the field. Woodard is a noted cardiovascular imaging researcher whose early involvement as a principal investigator in an NIH-funded landmark trial established a new standard of care for diagnosing blood clots in the lungs.

Woodard, who serves as senior vice chair and division director of radiology research facilities, also led a team that developed a nanoparticle-based imaging agent to illuminate dangerous plaque in arteries. For this pioneering work, she was presented with the 2021 Outstanding Researcher Award from the Radiological Society of North America (RSNA) at the society’s 107th Scientific Assembly and Annual Meeting.

Next, Woodard was named to the American Institute for Medical and Biological Engineering’s College of Fellows, an honor that is limited to the top 2% of medical and biological engineers. “AIMBE highlights the relationship between radiology and biomedical engineering, and our goal at Mallinckrodt Institute of Radiology is to strengthen that bond,” says Woodard, who is also a professor of biomedical engineering. “I think having people with a foot in both camps allows for a more diverse research portfolio for both the McKelvey School of Engineering and MIR.”

Woodard was then elected to the American Association for the Advancement of Science’s (AAAS) 2022 fellowship class, one of the scientific community’s most prestigious honors. She highlights how radiology intersects with the multidisciplinary mission of AAAS. “As a radiologist, imaging research is no longer just technology assessment. It’s using the technology in research to reveal mechanistic information about the disease process and to provide information on how to treat the patient on a precision imaging level to direct or predict patient outcomes.”

All three honors emphasize Woodard’s commitment to translational research — a tenet she aims to impart in cultivating the next generation of investigators as director of MIR’s Training Opportunities in Translational Imaging Education and Research (TOP-TIER) program. She also notes the department’s extensive resources help clinician-scientists translate imaging research to the patient. In the same vein, MIR Director Richard L. Wahl, MD, cites Woodard’s recognition as “emblematic of the team science approach at MIR,” noting her as “a careful thinker who knows how to build effective teams.”

Notably, radiologists are sparsely represented in the pool of AAAS and AIMBE fellows. Woodard — who completed a cardiothoracic imaging fellowship at MIR — who completed a cardiothoracic imaging fellowship at MIR — hopes to set an example, particularly for trainees and women, and to inspire them to reach for new heights. “If something’s never happened, you tend to think that it never will. But I’m hoping that this recognition motivates others in radiology, especially women, to pursue clinical translational research in imaging and to realize that they can and will be successful.”

Pamela K. Woodard, MD, was honored with the RSNA Outstanding Researcher Award, which is given annually to one imaging scientist who has fundamentally changed the future of radiology.
2022 MIR Research Symposium

Held in the Eric P. Newman Education Center on May 24, the MIR Research Symposium featured more than 60 posters showcasing an array of ongoing basic and clinical research conducted by MIR investigators. MIR alumnus Pratik Mukherjee, MD, PhD, professor of radiology at University of California, San Francisco, delivered the keynote address. Tammie L.S. Benzinger, MD, PhD, Abhinav K. Jha, PhD, Adam Q. Bauer, PhD, and Dean F. Wong, MD, PhD, gave supporting lectures presenting their research.

a. The symposium featured four supporting lectures from MIR faculty. b. Lecture topics included machine learning, imaging markers of traumatic brain injury and Alzheimer’s disease, PET/SPECT brain imaging and optical neuroimaging. c. Robert J. Gropler, MD, senior vice chair and division director of radiological sciences d. Keynote speaker Pratik Mukherjee, MD, PhD e. The scientific session allowed participants to explore the multitude of basic and clinical research happening at MIR. f. Attendees could explore more than 60 scientific posters covering topics ranging from Alzheimer’s disease to radiopharmaceuticals. g. The lectures were a hybrid format, with participants able to attend in-person in EPNEC (here) or via Zoom. h. The symposium draws interest from across MIR’s research and clinical enterprises, including faculty, fellows, residents, postdocs, students and staff. i. Supporting lecturers included MIR faculty members Adam Q. Bauer, PhD (front left), Abhinav K. Jha, PhD (back left), Dean F. Wong, MD, PhD (front center), and Tammie L.S. Benzinger, MD, PhD (front right).
“What PAE did for me is help me enjoy life and do everything I want to do,” says Bob Mondschein, a recent retiree and avid swimmer.
Bob Mondschein was looking forward to retirement, which for him meant spending more time helping people enjoy the once-in-a-lifetime experience of riding in their dream cars — Ferraris, Porsches, Lamborghinis, you name it. But instead of relishing laps around the racetrack in luxury rides, he was preoccupied with an ongoing concern: ‘Where’s the restroom?’

“Think about all the places you go and all the things you do, and this monkey on your back is ‘Where's the restroom? How far is the restroom?’” Mondschein says. “You have to plan your life around that.”

Mondschein’s symptoms were hallmarks of benign prostatic hyperplasia (BPH), or benign overgrowth of the prostate gland. When the prostate gland becomes enlarged, the blockage of urine flow out of the bladder can cause a slew of uncomfortable symptoms: the frequent, urgent need to urinate; weak or inconsistent urine stream; or inability to completely empty the bladder, to name a few. BPH is a common condition experienced by about half of men between ages 51 and 60, and as high as 80% in men older than 70.

“It wasn’t just the frequency [of urination] and the waking up at night,” Mondschein says. “It was the urgency. I could be talking to you here and I would have to say ‘Excuse me, I'll be right back.’” Despite experiencing a variety of symptoms throughout the last decade, the urinary urgency quickly made his day-to-day activities a challenge. With his quality of life stretched thin and diminishing returns on the medications he was taking, Mondschein began researching surgical options to eliminate his BPH once and for all.

A New Lease on Life with PAE
The options he found left him less than enthused, a bit intimidated and wondering if he could simply tough it out. Then a friend mentioned a minimally invasive procedure called PAE.

**Discovering PAE**

PAE, or prostatic artery embolization, is a minimally invasive therapy used to treat BPH. After learning that Mallinckrodt Institute of Radiology (MIR) was performing PAE procedures, Mondschein met with Nassir Rostambeigi, MD, an interventional radiologist who explained to him the benefits of PAE. The impact of BPH on patients is innumerable, but there’s hope, says Rostambeigi, an assistant professor of radiology. “It’s a disease process that can have an impact on numerous aspects of a patient’s life but is dramatically improved after this procedure.”

PAE consists of inserting a noodle-size catheter into the wrist or groin then, using imaging guidance, passing it through the arteries into the prostatic arteries and finally injecting microspheres to cut off the blood supply to the prostate. As a result, the prostate gland shrinks, alleviating BPH symptoms. While there are other surgical options such as transurethral resection of the prostate (TURP) and holmium laser enucleation of the prostate (HoLEP), both require general anesthesia and hospitalization. PAE can be a viable alternative for patients whose lower urinary tract symptoms aren’t well controlled by medications; patients who either don’t wish to undergo invasive surgical treatments or are not eligible candidates; and elderly patients with large prostate volume who are on anticoagulants or are otherwise not good surgical candidates. PAE also is not associated with sexual side effects or significant bleeding.

“**How many opportunities do you have to have a procedure done by someone who teaches the procedure?**”

Not only did the PAE procedure fit Mondschein’s specific medical needs, but he was also comforted by the subspecialized expertise offered by Rostambeigi and the interventional radiology (IR) team at MIR. “How many opportunities do you have to have a procedure done by someone who teaches the procedure?” he says. “He even called me two or three times when I was asking some follow-up questions, which I thought was an extinct practice.”

As recognized experts and innovators in IR, MIR physicians have been using advanced imaging modalities and performing techniques like the ones used in PAE for years, which makes them adept at newer procedures like PAE. IR patients typically go home the same day after a procedure and there are shorter recovery times and a smaller number of complications. “It checked every possible box for ‘Go!’” says Mondschein, “and I just put the accelerator down.”

During the outpatient procedure, patients are given intravenous medications for pain and anxiety so they’re comfortable and still. “You’re sedated, awake to a degree but relaxed,” says Mondschein. “I had the utmost confidence in Rostambeigi. He’s a skilled operator working slowly and meticulously. I found it fascinating.”

Mondschein was able to go home after the procedure and, after a few days of mild discomfort, was back to his normal life. “Being basically comfortable after three days? Compared to other procedures, that’s just night and day,” he says of his recovery. “It’s everything that I hoped for. It’s been life-altering. No side effects, no permanent changes.” Much of the benefit of the PAE procedure starts as soon as one week after the procedure and continuously improves, maximizing by one to three months.
Breaking the Ice
While statistics show that BPH affects millions of men, that doesn’t mean all men are openly discussing the sensitive topic among their peers.
“A lot of guys like me, waking up five times a night to go to the bathroom — you get good at it,” says Mondschein. “And you endure it. You’re tough; you can handle this. But when the urgency set in, that was it — it was over. I could not function like I normally function.”

Rather than suffering in silence until symptoms become unbearable, Mondschein stresses the importance of vulnerable, honest conversations about the sometimes sensitive topic. “Break the ice with the people that you know are dealing with this,” he says. “This is a great option for them to know about, and you would be doing a good deed to let them know about PAE.”

These days, whether Mondschein is taking a long swim or instructing someone on driving an elite sports car, his decisions don’t revolve around where the closest bathroom is located. “For me, PAE allowed me to live my life.”

Prostatic Artery Embolization: At A Glance

- PAE treats BPH and can be performed as an outpatient procedure and without general anesthesia.
- About 50% of men between ages 51 and 60 have BPH; as high as 80% in men older than 70.
- For patients who aren’t candidates for or don’t wish to undergo invasive surgical treatments, PAE may be a viable alternative. For example, elderly patients who cannot safely undergo general anesthesia or are on anticoagulants, or younger sexually active men.
- The procedure involves using imaging guidance to place a catheter into the prostatic artery and inject microspheres to cut off blood supply to the prostate.
- PAE has a success rate of 85% after one year and more than 75% long-term.
- No major adverse events are seen with PAE. Repeat PAE or performing surgical interventions after PAE are both possible.
Adventures in Resident Recruitment

by Marie Spadoni

Janice W. Semenkovich, MD, associate professor of radiology, joined MIR’s radiology resident selection committee in 1992. Nine years later she was named its chair and has been a driving force in shaping clinical faculty at MIR ever since. Semenkovich provides the first screen of all resident applications, always completing a holistic review without any electronic filters. She also interviews every single applicant — for diagnostic radiology, integrated interventional radiology, as well as the research track. Semenkovich, an MIR alumna, also serves as a faculty advisor for fourth-year medical students.
Opposite: During the 2021-2022 recruitment season, Semenkovich personally screened about 900 applications.

How did you first get involved with the selection committee and what led to you becoming chair?

After completing my residency and two fellowships at MIR, I took a faculty job at the University of Texas. I had my first experience with residency selection there. When I arrived at MIR, Stuart Sagel was the selection chair and he invited me to join him on the committee. At that time only three people were involved: Dennis Balfe, Stuart and me. After Stuart stepped down as selection chair, Gil Jost, our department chair at that time, asked me to take over.

What are some significant changes you’ve seen over the years in residency recruitment in general and, specifically, in radiology?

I have worked hard to increase diversity of all kinds in our accepted resident classes. This continues to be a challenge as both women and underrepresented minorities are a very small percentage of the overall applicant pool. When I was a resident, there were so few women we did not even have a female call room. We carried a mattress into the library to sleep. This year, for the first time we matched more women than men into the diagnostic and research tracks. I am also committed to sending MIR graduates everywhere. We now have graduates practicing in 49 states and some in international locations.

What is the overall selection process at MIR like?

There currently are 19 committee members for diagnostic. I provide the first screen of all the applications. I have always done a holistic review and do not apply any electronic filters. Other members may interview for half a day or a full day. A small group of our committee helps with additional reviews of applications that passed the initial screen. Up to five or more physicians may review an individual application in some cases.

Do chief residents participate in the interview process?

Our chief residents play a vital role. They hold a virtual evening session for applicants and interview candidates. We could not recruit without our other resident volunteers who attend breakout sessions, evening sessions and conduct our virtual tour.

Reading Is Fundamental

Semenkovich says reading is a big part of her preparation. “I read three national papers daily and also keep up on all St. Louis news,” she says. “I read on topics ranging from fishing to fashion, since I never know what applicants may want to know about us.” She also has a couple of book recommendations for anyone interested in resident selection.

“Blind Eye: The Terrifying Story of a Doctor Who Got Away With Murder”
by James Stewart

This is why I spend so much time reading every single word of every application and will sometimes call medical school deans when something seems off.

“Lexicon of Intentionally Ambiguous Recommendations (L.I.A.R.)”
by Robert Thornton

A humorous take on writing what the Los Angeles Times terms litigation-proof phrases. Even the highly touted standardized letters are often masters of obfuscation. I estimate that 90% to 100% of these letters rank applicants in the 90th -100th percentile.
You yourself are an alumna of MIR. Can you share a definitive moment or experience from your own training that has most informed your recruitment process?

There is a misconception that radiologists don’t need good interpersonal skills. Our radiologists have an exceptional personal touch since they often are called on to establish rapport with a patient who may be having the worst day of their life. I always think, “Would I want this person to review my images?” or “Would I want to see this person if I were ill?” The model faculty member from my time, both as a resident and fellow, was Daniel Biello. He always remembered that there was a real person associated with every image. Even while terminally ill, he made time for others and listened to everyone’s concerns.

What is your personal interview style?

I have been able to elicit some surprising confessions over the years. I am not afraid to ask uncomfortable or difficult questions. I do not micromanage my interview committee but have never found standardized questions to provide helpful information. And yes, there are dumb questions. “What are your strengths and weaknesses?” is probably the worst.

What challenges did the pandemic present to the recruitment process?

We had to move to all virtual interviews, virtual information sessions and virtual evenings with our residents. I lost track of how many virtual sessions I attended that discussed how to do virtual sessions. We also had to change how we provide information about our program. Our marketing team created a candidate website and resident testimonial videos that were instrumental in providing extensive information online. Pre-pandemic we were easily able to showcase all that St. Louis and the immediate neighborhood have to offer. A walking tour of the Medical Campus never failed to impress. Now we offer a comprehensive resident-led virtual campus tour. And I could not have had successful recruitment seasons without Missi Varner, MIR’s residency coordinator.

Can you share a moment or experience you’ll never forget?

One time I told an applicant from an urbane East Coast city that we were “not some cow town” but had many cultural attractions. That same day I learned that an overturned cattle truck closed down Interstate 64 in St. Louis that morning and escaped cattle were running loose on the highway.

If you could give only one piece of advice to a candidate, what would it be?

Ignore most advice about essays. We want a personal statement, not a lecture that explains what radiologists do. Be yourself. We really want to get to know you.

Left: Semenkovich was invited to join the selection committee by then chair Stuart Sagel, MD, here with her in circa 1981 at MIR’s first CT scanner.
"She was performing holistic reviews long before they became trendy. Many great radiologists were discovered because of Janice’s thoughtful approach to their applications and her ability to look beyond the numbers."

Sanjeev Bhalla, MD
Vice Chair, Education
Chief, Cardiothoracic Imaging

"Janice’s attention to resident selection is unparalleled. The incredible quality and diversity of our residents is a true testament to the countless hours that she puts into resident selection and leading the committee."

Jennifer E. Gould, MD
Director, Diagnostic Radiology Residency Program

"She pioneered principles of what we now describe as holistic review before there was such a term. Getting to know each applicant’s story and understanding their personality and values is a process that takes time and great effort, but also underscores the care and thoughtfulness that must exist in order to optimize selection efforts. Dr. Semenkovich continues to provide a model that, to this day, scores of us endeavor to achieve."

Jason W. Stephenson, MD
Associate Dean, University of Wisconsin School of Medicine and Public Health
MIR Diagnostic Radiology Residency (’09), MSK Fellowship (’10)

"It is hard to overstate the impact Janice Semenkovich has had on MIR. Through her meticulous review of every application and eidetic memory for those details, she ensured that our residents would excel in our training program. Many MIR clinical leaders, accomplished researchers and award-winning teachers came up through the selection process headed by Janice."

Robert McKinstry, MD, PhD
Senior Vice Chair and Division Director, Diagnostic Imaging

"I first met Janice during my interview and chose Mallinckrodt, in large part, because of the wonderful interaction I had with her that day. The last three years have only confirmed my initial impressions of her, as she continues to be an incredible role model, mentor and friend."

Katharina F. Feister, MD
Chief Resident
Diagnostic Radiology (‘23)
A longstanding model for community hospitals providing in-house imaging has been to staff their departments by contracting with independent radiology groups. While this practice continues, another model has developed to meet the health-care industry’s increasing emphasis on improved patient outcomes and service.

Community hospitals now are entering into partnerships with academic radiology departments to ensure quality of care. At Mallinckrodt Institute of Radiology (MIR), these partnerships are overseen by its community radiology section.

“The definition of community radiology is imaging done in a nonacademic setting,” says vice chair for community radiology, Michael W. Penney, MD. “This represents the majority of all radiology in the country since most imaging is done at community hospitals and clinics.”

There is a distinction between contracting with independent radiology groups versus partnering with an academic radiology department like MIR, however. MIR has one of the country’s largest residency and fellowship training programs and is a leader in advancing imaging technology and treatments through research.
“Those factors mean we have a faculty of board-certified, subspecialty radiologists covering every type of imaging,” says Penney, also an associate professor of radiology. “This in-depth expertise is available to support our community radiology physicians with interpreting advanced imaging — musculoskeletal MRI, body MRI, PET CT — or obtaining a second opinion. The accuracy of our exams often eliminates the need for more imaging, ultimately reducing patients’ exposure to radiation.”

MIR’s expertise also provides a basis for developing best practices and standardizing protocols across community hospitals, as well as opportunities for peer learning. “Our partnerships are based on shared values and goals that combine the experience of community hospital radiologists who work exclusively in a clinical setting with the additional resources offered by MIR,” says Penney. MIR community radiology partners with 11 BJC HealthCare hospitals and clinics, with locations in St. Charles County, north and west St. Louis County, and Sullivan, Missouri. “We also are partnered with Phelps Health in Rolla, Missouri, which serves more than 200,000 residents in a six-county area in south-central Missouri,” says Penney. “Phelps Health’s goal in partnering with us was to increase its ability to offer advanced, complicated imaging. Now at a distance of 100 miles from St. Louis, this hospital serving mainly rural areas is receiving world-class interpretations through electronic transmission.”

“100 miles from St. Louis, this hospital serving mainly rural areas is receiving world-class interpretations through electronic transmission.”

Of the BJC hospital partners, Missouri Baptist Medical Center in west St. Louis County is the largest with 489 beds, and it serves as an acute-care community hospital. It recently was ranked as the No. 2 hospital in
the St. Louis area by U.S. News & World Report, and third statewide. It entered into a partnership with MIR community radiology in March 2021. Christopher O. Thornton, MD, serves as chief of radiology after having worked at the hospital for more than 20 years as a partner in an independent radiology group. Four of his colleagues made the transition to MIR as well.

“We’ve always maintained an excellent radiology department at Missouri Baptist, but now we have an improved administrative support system that has been of great help,” he says. “And we have access to input from MIR’s subspecialty radiologists for complicated imaging such as high-resolution CT, especially for interstitial lung disease. Having a dedicated chest radiologist read those scans has been especially helpful to our pulmonologists and their patients. This level of subspecialization expertise can prevent unnecessary biopsies for patients.”

Thornton and his private-practice colleagues who joined MIR are an example of how the community radiology section approaches new partnerships. “These are the physicians who in many cases have worked at their community hospitals for years. They know their hospital and the patients they serve,” says Penney. “Their knowledge is invaluable during both the transition period and going forward.”

“Most radiologists who remain in St. Louis have either trained at or have ties to MIR.”

Located in north St. Louis County, Christian Hospital’s partnership with MIR’s community radiology section began in January 2020. At the time, James G. Stewart, MD, Christian’s chief of radiology, had been a partner with the same independent radiology group as Thornton. He and his other private-practice colleagues at Christian were facing a staffing crisis for which MIR community radiology was the answer.

“Our location in north St. Louis County and the fact that we provide care to an underserved and frequently uninsured population made it difficult for us to recruit radiologists,” says Stewart. “In private practice, compensation is based on the number of

Above: There’s a distinction between independent radiology groups and an academic radiology department like MIR, says Michael W. Penney, MD, vice chair for community radiology. “We have a faculty of board certified, subspecialty radiologists covering every type of imaging.”

Left: Christopher Thornton, MD, is chief of radiology at Missouri Baptist Medical Center, MIR’s most recent community partnership.
procedures covered by insurance, which at Christian is lower than at other, more centrally located hospitals. We had a dedicated core of radiologists for whom service to these patients was a calling rather than a means of monetary reward. But we had gotten to the point of working shifts from 7 a.m. to 11 p.m., and that was unsustainable." The partnership with community radiology allowed the radiologists to concentrate on their work and leave the recruiting to MIR.

“We are located in an underserved area, and our aim is to make sure our patients’ health care is equivalent to the health care provided by community hospitals in other areas.”

The advances in imaging technology and the integral role radiology plays in diagnosing and treating today’s patients have resulted in a significant shortage of radiologists. Recruiting has become a challenge even with the name recognition and prestige associated with MIR and Washington University, says Penney. “But most radiologists who remain in St. Louis have either trained at or have ties to MIR. We know these young radiologists as residents and fellows, which makes it easier for us to recruit them into practices.”

Stewart cites the welcomed support from community radiology — both in staffing and assisting with complicated imaging cases — combined with recent investments by BJC into updated imaging equipment at Christian Hospital as the means by which he and his colleagues will reach their ultimate goal. “We are located in an underserved area, and our aim is to make sure our patients’ health care is equivalent to the health care provided by community hospitals in other areas of St. Louis County,” he says.

Meeting Patients Where They’re At

MIR’s community radiology team partners with 11 St. Louis-area hospitals and clinics to promote outreach efforts benefiting patients in underserved areas. Regularly scheduled mammathons feature extended weekday and weekend hours that allow women who otherwise aren’t available during regular business hours to receive mammograms. In addition, a mammography van travels to various locations within north St. Louis County and St. Charles County to provide additional screening opportunities. Uninsured women are referred to various support programs that provide funding for these preventive medicine procedures.

Another outreach effort under development will focus on lung cancer, the most common cancer diagnosis. The Centers for Medicare & Medicaid Services has revised its eligibility criteria for lung cancer screenings, expanding the pool of people eligible to receive low-dose CT scans for early detection of the disease. Counseling to determine a patient’s eligibility, to explain the importance of annual lung screenings, and to encourage maintaining smoking abstinence or stopping smoking are all elements that will be provided during the pre-screening process at MIR’s community hospital partners.

Penney describes the partnership between MIR and community hospitals as the best of both worlds. “This is a synergistic relationship between two aspects of radiology with their own niche in health care — academic and community. It allows for the expertise in both areas to come together and provide the best care possible for our patients.”

Above: James G. Stewart, MD, chief of radiology at Christian Hospital, welcomes the support from community radiology “both in staffing and assisting with complicated imaging cases.”
THE EVENS SOCIETY

Alumni Spotlight

We checked in with three members of the diagnostic radiology class of 2014 to revisit their training days and catch up on what they’re up to now: Joseph W. Owen, MD, associate professor of radiology at University of Kentucky College of Medicine; Hillary L. Shaw, MD, partner radiologist at Radia Inc., PS, in Seattle; and Noushin Yahyavi, MD, associate professor of radiology and associate vice chair of business affairs at University of Maryland School of Medicine.

Why did you choose MIR for your residency training?

Owen: When I was applying for residency, it was generally understood that MIR was the best radiology residency in the country. After interviewing at multiple programs, MIR stood out to me as a place that was highly focused on resident education.

Shaw: I was launched to Mallinckrodt by Dr. Richard Battafarano, our chief thoracic surgeon at University of Maryland School of Medicine when I was a medical student. He was formerly at WashU and recommended the entire chest section and institute as the best for radiology.

Did any faculty members leave a particularly strong impression on you? Any specific experiences/lessons that carried with you beyond MIR?

Owen: For me to list the number of faculty members that made a strong impression on me would almost be comical, because it would have been nearly everyone. The two attendings who have probably had the most impact on my career would have to be Katie Fowler, a great mentor who gave me lots of opportunity to explore my research ideas and connected me with people in the body MR world, and Cooky Menias, who has been an excellent sponsor by giving me multiple opportunities to be involved with books, publications and national societies.

Yahyavi: Many faculty have left a lasting impression on me from different perspectives: incredible dedication to patient care, outstanding teaching skills, extraordinary work ethics, and thinking outside the box for research. One habit that I have learned from MIR’s follow-up case conferences is to look at the original disease presentation (clinical and radiologic), monitor the treatment effects and how they evolve and follow up on biopsy/path results. I have tried to teach that to residents/fellows and start similarly themed conferences.

Shaw: I was grateful that I learned from luminaries like Sanjeev Bhalla who are dedicated to their field and teaching and whose excellence elevates the entire hospital. Barbara Monsees with her intelligence and skill caught my mother’s breast cancers when the hometown radiologists were missing them, so she saved her life. They were always role models for me of what radiologists’ added value can be and reminders of how I can come through for my patients and referring clinicians.

How would you describe your time at Mallinckrodt Institute of Radiology?

Owen: My residency and fellowship years at MIR were the most rewarding years of my educational and professional life. The exceptional people around me every day pushed me to work harder, to learn more and to improve every day. The demanding nature of the program and the high standards the residents are held to result in a graduating class of residents that can go anywhere in the country and be successful in any position.

Shaw: I remember prognosticating my night depending on if I saw the helivac incoming when I’d be finishing my runs in Forest Park before my night float shifts. My training at MIR made me feel capable and confident to read any study and cover any shift from the start when I began my new job in private practice.

Left: Yahyavi gave a Fast 5 talk on AI and health disparities at the Radiological Society of North America’s 2021 meeting in Chicago.
Alumni Weekend 2022

The Evens Society’s mission is to foster a sense of family and community among current and future alumni of MIR. And what better way to celebrate this mission than the upcoming Alumni Weekend. The event, held on September 9–10 in St. Louis, kicks off with a welcome cocktail reception at the top of the historic Chase Park Plaza. The next day begins with breakfast, followed by a series of educational programs and an afternoon of resident-led tours of MIR’s campus. The weekend’s grand finale happens on Saturday evening with an elegant gala dinner and the prestigious Evens Society Honors. Don’t miss this chance to visit with old friends, make new connections and celebrate the enduring legacy of Mallinckrodt Institute of Radiology.

To register online, go to mir.wustl.edu/alumniweekend2022. For questions, email Teresa Carson at carsonta@wustl.edu.

In what way did your training at MIR prepare you for your career path?

**Yahyavi:** I am grateful for the outstanding teaching, mentorships and friendships that I cherish to this date. MIR has given me a wide network of friends and colleagues in different practice settings and leadership roles across the country. I have been offered to engage in multiple national radiology leadership roles thanks to my former and current MIR mentors and friends.

What are some of your interests beyond radiology?

**Shaw:** When I am not at work, I train for long distance running with Club Northwest and lift at the gym. I often watch my friend’s dog, Sir Prince Philip, whom I love very much and is the world champion Pomeranian 5K runner (16:21).

**Owen:** Currently, my wife and I are on a 6-month mini-sabbatical and are traveling all the way around the world with our three children. It has been an incredible experience and something that we will remember forever. You can check what we are up to on our blog www.NoBedtimesNoBorders.com.

Right Top: Owen and his family are currently traveling the world, which has included adventures like climbing the Caminito del Rey walkway in Spain.

Right Bottom: In addition to running, Shaw unwinds by spending cherished time with Sir Prince Philip, her friend’s Pomeranian that she often watches.
FYI

New Hires

Krystle Barhaghi, MD
Instructor in Radiology

Michael A. Beal, MD
Assistant Professor of Radiology

Louis M. Bonacorsi, MD
Instructor in Radiology

Daniel C. Castro, PhD
Assistant Professor of Radiology

George M. Cyriac, MD
Instructor in Radiology

Aimilia Gastounioti, PhD
Assistant Professor of Radiology

Matthew Glasser, MD, PhD
Instructor in Radiology

Daniel P. Harwood, MD
Instructor in Radiology

Resten Imaoka, MD
Instructor in Radiology

José Marcio Luna, MD
Instructor in Radiology

Carlos A. Mahia, MD
Assistant Professor of Radiology

Scott A. Marek, PhD
Assistant Professor of Radiology

Elizabeth G. McFarland, MD
Assistant Professor of Radiology

Arash Nazeri, MD
Assistant Professor of Radiology

Benjamin E. Northrup, MD
Assistant Professor of Radiology

Patricia M. Ribeiro Pereira, PhD
Assistant Professor of Radiology

Ikḅal Şencan--Encoding, PhD
Assistant Professor of Radiology

Steven C. Sauk, MD
Assistant Professor of Radiology

Promotions

Trevor J. Andrews, PhD
Associate Professor of Radiology

Andrew J. Bierhals, MD
Professor of Radiology

Arianna C. Buckley, MD
Assistant Professor of Radiology

Arindam Rano Chatterjee, MD
Associate Professor of Radiology

Jennifer E. Gould, MD
Professor of Radiology

Gloria J. Guzmán Pérez-Carrillo, MD
Associate Professor of Radiology

Amin H. Jahromi, MD, PhD
Assistant Professor of Radiology

Mariam A. Malik, MD
Assistant Professor of Radiology

Jaimee E. Mannix, MD
Assistant Professor of Radiology

Mikhail V. Milchenko, PhD
Assistant Professor of Radiology

Thomas H. Schindler, MD, PhD
Professor of Radiology

Anup S. Shetty, MD
Associate Professor of Radiology

Benjamin S. Strnad, MD
Assistant Professor of Radiology

Muriah D. Wheelock, PhD
Assistant Professor of Radiology

MIR Chief Residents
2022-2023

From Left:
Allison M. Khoo, MD
Grant M. Riesberg, MD
Adeel Haq, MD (Nuclear Medicine)
Katharina F. Feister, MD
Joseph P. Culver, PhD, the Sherwood Moore Professor of Radiology, was named director of the Biophotonics Research Center (BRC), which harnesses the power of light to develop methods for understanding, diagnosing and treating human diseases. The BRC, part of MIR’s Division of Radiological Sciences, consists of an interdisciplinary and collaborative team of investigators focused on developing complete solutions — from conception to implementation, and validation to human clinical care.

Culver’s work has been at the leading edge of functional and molecular biological imaging, particularly in leveraging noninvasive optical measurements and advancing diffuse optical tomography (DOT) technology. His group has developed optical neuroimaging technologies to map brain function in humans and animals, including a portable, wearable cap that is particularly useful for studying children, intensive care patients and people with deep brain stimulators and other implants that cannot be used safely in an MRI machine. Culver also serves as co-director of Washington University’s Imaging Sciences Pathway and its Imaging Sciences PhD program.

Hongyu An, PhD, professor of radiology, was selected as the next director of the Biomedical MR Center (BMRC), which advances and applies MRI and magnetic resonance spectroscopy techniques and data analysis procedures for the study of biological systems. BMRC investigators’ research helps provide a more complete understanding of the complex microstructure and governing biophysical and physiologic determinants of healthy and diseased mammalian tissues in the intact functioning state.

Also the associate director of the Center for Clinical Imaging Research, An is renowned for her expertise in magnetic resonance physics, pulse sequences and image reconstruction analysis. Her work has led to the first validated MR approach to measure cerebral oxygen extraction fraction in humans. This technique has helped answer key questions regarding the neuro-pathological impact of sickle cell disease in children, acute ischemic stroke and stroke risk prediction. An’s impressive publication record and robust extramural funding record highlight these advances.

Grants

Hongyu An, PhD, professor of radiology, was awarded a $650,898 grant from the National Institute of Biomedical Imaging and Bioengineering for research titled “Robust and Rapid 3D High-Resolution Cranial Bone Imaging for Pediatric Patients Using MRI.” She also received a $430,869 grant from the National Institute on Aging for her work “Neuroinflammation in Cerebral Small Vessel Disease using PET/MR Imaging.”

Adam T. Eggebrecht, PhD, assistant professor of radiology, received a two-year, $452,702 grant from the National Institute of Mental Health. He will lead a study that investigates the brain function underlying motor imitation in children with autism spectrum disorder.

Manu S. Goyal, MD, associate professor of radiology, and Andrei G. Vlassenko, MD, PhD, associate professor of radiology, were awarded a $2.3 million grant from the National Institute on Aging. They’ll use PET imaging to investigate whether white matter glucose use is relevant to white matter hyperintensities in humans.

Tamara Hershey, PhD, the James S. McDonnell Professor of Cognitive Neuroscience, received a $680,376 grant from the National Institute of Diabetes and Digestive and Kidney Diseases. Her research focuses on the relationship between Type 2 diabetes symptoms and brain development risks for children and adolescents.

An Named Director of Biomedical MR Center

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Abhinav K. Jha, PhD, assistant professor of biomedical engineering and of radiology, was awarded a $493,000 grant from the National Institutes of Health. His research focuses on training a deep-learning algorithm that identifies and segments non-small cell lung cancer tumors in PET imaging simulations.

Daniel S. Marcus, PhD, professor of radiology, received a one-year, $2 million grant from the National Institutes of Health for research titled “A high performance research image repository (RIR) for the Washington University Center of High Performance Computing.”

Aristeidis Sotiras, PhD, assistant professor of radiology, received a five-year, $2.8 million grant from the National Institute on Aging for his research “Advanced machine learning algorithms that integrate multi-modal neuroimaging to quantify the heterogeneity in Alzheimer’s disease.”

Shuo Wang, PhD, assistant professor of radiology, was awarded a $404,933 grant from the National Institute of Mental Health. His project is titled “Model-Based Investigation of Aberrant Neural Face Representation in Autism.”

Qing Wang, PhD, assistant professor of radiology, received a $781,126 grant from the National Institute on Aging to develop and establish a novel compressed sensing-based diffusion MRI technique to non-invasively and reliably image neuroinflammation in Alzheimer’s disease.

Jinbin Xu, PhD, professor of radiology, was awarded a $433,125 grant from the National Institute on Aging for “Optimization of imaging mass cytometry, a single-cell spatial proteomics technology, for the study of Alzheimer’s disease.”

Dmitriy A. Yablonskiy, PhD, professor of radiology, received a $2.2 million grant from the National Institute on Aging to research a new in vivo MRI-based neuroimaging biomarker that would detect neurodegeneration in earlier stages of Alzheimer’s disease.
Wahl Closes Out His SNMMI Presidency

After a year of service as the president of the Society of Nuclear Medicine and Molecular Imaging (SNMMI), MIR Director Richard L. Wahl, MD, has passed the torch to Munir Ghesani, MD, of Mount Sinai Health System. Wahl delivered his president’s address during the SNMMI annual meeting held June 11 - 14 in Vancouver. From appearing in local media outlets to discuss groundbreaking nuclear medicine therapies to advising Congress on nuclear medicine funding initiatives, Wahl’s tenure focused on ensuring nuclear medicine physicians have a role in the future of pharmaceutical therapy in order to provide optimal patient care.

A few other highlights of his SNMMI tenure include:

- New diagnostic and therapeutic agents (Pluvicto, Novartis) transform the field.
- The Mars Shot Fund aims to raise $100 million to help pay for research.
- The board of directors approves the term “nuclear oncologist.”
- The board funds nuclear oncology fellowships.
- The artificial intelligence task force develops the RELIANCE guidelines, “a set of best practices for evaluating algorithms that may be ready to be deployed in clinical practice,” according to SNMMI.
Honors/Awards

Hongyu An, PhD, professor of radiology, Yuan-Chuan Tai, PhD, associate professor of radiology, and Dean F. Wong, MD, PhD, professor of radiology, received the Distinguished Investigator Award from the Academy for Radiology and Biomedical Imaging Research. This prestigious award honors those who’ve made outstanding contributions to medical imaging.

David H. Ballard, MD, assistant professor of radiology, Vincent M. Melnick, MD, associate professor of radiology, and William D. Middleton, MD, professor of radiology, won the RSNA Honored Educator Award. The award acknowledges those most invested in furthering radiologic education in their field of study.

Tammie L.S. Benzinger, MD, PhD, professor of radiology, was named an American Association for Women in Radiology Fellow. This honor recognizes those who’ve influenced others with their teaching, clinical care, research and leadership.

Tammie L.S. Benzinger, MD, PhD, professor of radiology, Matthew F. Glasser, MD, PhD, instructor in radiology, and Abraham Z. Snyder, MD, PhD, professor of radiology, have been recognized as Highly Cited Researchers by the Institute for Scientific Information. The list identifies those who demonstrate significant and broad influence in their field based on the production of multiple highly cited papers that rank in the top 1% by citations.

Sanjeev Bhalla, MD, professor of radiology and vice chair for education, was selected to join the Canadian Association of Radiologists Journal’s International Advisory Board.

Farrokh Dehdashti, MD, the Drs. Barry A. and Marilyn J. Siegel Professor of Radiology, Richard L. Wahl, MD, Elizabeth E. Mallinckrodt Professor of Radiology and director of Mallinckrodt Institute of Radiology, Jerold W. Wallis, MD, associate professor of radiology, and Dean F. Wong, MD, PhD, professor of radiology, were named fellows of the Society of Nuclear Medicine and Molecular Imaging. The fellowship recognizes long-time SNMMI members’ distinguished service to the society and their exceptional achievement in the field of nuclear medicine and molecular imaging.

Joy A. Haven, PhD, executive director of business affairs for MIR, received the Category 1 Association of Administrators in Academic Radiology (AAARAD) award for Outstanding Service for demonstrating excellence in leadership or service advancing the work or organizations of AAARAD and SCARD (Society of Chairs of Academic Radiology).

Malak Itani, MD, assistant professor of radiology, was elected as a fellow of the Society of Radiologists in Ultrasound. This honor recognizes those who have made substantial contributions to the field of ultrasound.

Malak Itani, MD, assistant professor of radiology, and Demetrios A. Raptis, MD, assistant professor of radiology, received the 2021 Outstanding Reviewers Award from the Canadian Association of Radiologists Journal. This award recognizes dedicated volunteer service and high-quality reviews completed on behalf of the journal.

Jack W. Jennings, MD, PhD, professor of radiology, was elected president of the American Society of Spine Radiology.

Christopher D. Malone, MD, assistant professor of radiology, received the Research in Training Award from the Society of Interventional Radiology. The award provides investigators an opportunity to share knowledge, techniques and methodologies with another educational institution’s research lab.

Constantine A. Raptis, MD, associate professor of radiology, was inducted into the Academy of Educators at Washington University School of Medicine in St. Louis. The academy is an institutional collaboration of educators who foster a culture of educational excellence and a community of health science education leaders.

Anup S. Shetty, MD, associate professor of radiology, was awarded the Rising Star Award by Washington University School of Medicine in St. Louis’ Academy of Educators. The award recognizes an educator’s exceptional promise through their educational service, leadership or scholarly contributions.

Richard L. Wahl, MD, Elizabeth E. Mallinckrodt Professor of Radiology and director of Mallinckrodt Institute of Radiology, was made the namesake of a new grant from the Education and Research Foundation for the Society of Nuclear Medicine and Molecular Imaging. The Richard L. Wahl Mid-Career Leadership Award supports the career advancement and educational endeavors of mid-career nuclear medicine physicians.
The Thirty-Sixth Annual Daniel R. Biello Memorial Lecture

Umar Mahmood, MD, PhD, professor of radiology at Harvard Medical School, presented “Precision Imaging to Guide Targeted Cancer Therapy” at the thirty-sixth annual Daniel R. Biello Memorial Lecture in May. Mahmood’s research focuses on the applications of molecular imaging to guide precision medicine, particularly in developing and applying PET and optical imaging technologies for disease characterization and therapy optimization. Mahmood also serves as Massachusetts General Hospital’s director of the Center for Precision Imaging, division chief of nuclear medicine and molecular imaging and associate chair for imaging sciences.

The Twenty-Eighth Annual Hyman R. Senturia Lecture

Ambrose J. Huang, MD, assistant professor of radiology at Harvard Medical School, presented “Are You There T1? It’s Me, Marrow (MRI of Bone Marrow)” at the twenty-eighth annual Hyman R. Senturia Memorial Lecture in January. His clinical interests include epidural steroid injections, interventional spine procedures including spine injections, metastatic bone disease and thermal ablation of bone tumors. A 2007 alumnus of MIR’s residency program, Huang went on to complete a musculoskeletal imaging and intervention fellowship at Massachusetts General Hospital, where he now serves as the division director.

IR Chief Residents 2022-2023

From Left: Philip A. Velez, MD Francisco J. Gortes, MD
Michael D. Darcy, MD, professor of radiology and former chief of interventional radiology at MIR, is all about the details. Whether he’s teaching students in the angio suite about the best angle for inserting a catheter or fine-tuning the instillation of lidocaine to reduce a patient’s pain, his eye for the small details that make a big difference is a hallmark of a career that spans more than three decades.

Pioneering Procedures

Darcy describes his career trajectory as “one of those stories where luck sends you in the right direction.” He completed his fellowship in cardiovascular and interventional radiology (IR) at the University of Minnesota at the same time Kurt Amplatz, MD, and his team were doing some of the seminal early work in IR. “It was an exciting time, because new procedures were being developed almost daily,” Darcy says.

In 1989, Darcy responded to an ad for an open position at MIR. At the time, the fledging IR department had just two faculty members: Daniel D. Picus, MD, and Marshall E. Hicks, MD. “I was impressed not only by the collegiality and friendliness of the environment but how they were really committed to doing the clinical work and not just procedures, which I viewed as really important to the future of IR,” he says. “And they were doing such cutting-edge techniques as cholangioscopy and removal of gallstones, which I had not seen before. So MIR looked like a great opportunity.”

Darcy soon gained recognition for his own cutting-edge technique. In 1991, he performed the first transjugular intrahepatic portosystemic shunt (TIPS) procedure at Washington University. “We’ve taken what was viewed as a last-ditch exotic procedure and turned it into something that is now a routine part of clinical care for patients with portal hypertension,” he says. “It has been a huge addition to the overall treatment of patients with cirrhosis, not only in terms of improving survival but improving quality of life.”

The miniaturization of IR tools — stents, balloons, catheters — over the years has enabled Darcy and his MIR colleagues to continue advancing the frontiers of interventional radiology. “Everything is smaller, which enables you to get further into locations we couldn’t reach before,” he says. “It allows you to do procedures, such as embolize a vessel in a bleeding branch of a colon, that decades ago simply weren’t an option.”

Groundwork for Growth

The team took over IR services at Barnes-Jewish West County Hospital and established a dedicated IR lab at St. Louis Children’s Hospital that expanded the number and types of services available. During Darcy’s tenure, the IR faculty nearly tripled, from six to 17, and four physician assistants joined the team as well. “I’m proud that I was able to recruit a lot of good physicians into our practice and mold our section into one that has maintained a reputation as one of the best IR sections in the country,” he says.

Teaching the next generation of top IR practitioners has always been Darcy’s most relished role at MIR. “From my very first day as an IR fellow, it was clear that he was on a mission as a teacher,” says James R. Duncan, MD, professor of radiology and chief of interventional radiology at MIR. “He took the time and offered tips. He had a ‘paying it forward’ philosophy,” adds Duncan, who was named chief in 2019 after Darcy stepped down.

Indeed, it is in his role as teacher that Darcy’s attention to detail really shines. “My goal is to take trainees from just doing basic catheter work and turn them into someone who can do things with finesse,” he says. Darcy emphasizes that not only is technical skill important, but also developing an overall awareness of what’s going on with the patient. “What are they seeing on the screen? What are they hearing from the patient? The nurses? That attention to detail is critical, as is persistence. If the first technique doesn’t work, try other things until you succeed.”
A Gold Medal Career

In 2020, Darcy won the Distinguished Clinician Award from Washington University School of Medicine. “It was so gratifying to be recognized as a clinician and not just as a radiologist,” he says. “IR has struggled for years to achieve recognition as a clinical specialty. We have certain responsibilities for our patients that diagnostic staff don’t have, so it was rewarding to see the efforts we have put into clinical care be recognized.”

In 2021, he received the Gold Medal from the Society of Interventional Radiology (SIR) in recognition of his three decades of service to and leadership of the organization. Earlier, in 2017, the society had tapped him to give the prestigious Charles T. Dotter Lecture. “SIR enriched not just my career but my life,” he says. “When I was SIR’s president, I always felt like I was with friends, working for the betterment of our specialty. My involvement in SIR gained exposure for our program and kept us aware of the front-line issues of IR. It was gratifying that I and others at Mallinckrodt could help mold the direction of the specialty.”

The Next Chapter — In Detail

Although Darcy is retiring from his full-time faculty position in June, he certainly will not be idle. He has kept an appointment at MIR, so that he might give an occasional lecture and perhaps offer mentored sessions on the IR simulator. When he talks about his retirement “play” to-do list, it is a long and enthusiastic one: learn Spanish. Play guitar. Volunteer at the Humane Society. Travel more. But foremost, he will spend more time on his longtime passion for furniture making. His arts and crafts-style pieces grace nearly every room of his home, beautiful and enduring expressions of his signature attention to detail.

Opposite: Darcy (left) with Kevin Burton, MD, one of the first fellows he taught at MIR.
Top: Darcy (right) with co-fellows Tony Smith, MD, and Andrew Craigg, MD, from his time at the University of Minnesota.
Middle: With his wife, Susan Darcy, at a St. Louis Cardinals game in 2016. Bottom: Darcy (left) shows a valvulotome, a catheter-based surgical device, to a colleague.
Evens Society Alumni Weekend

Join us for MIR’s second Evens Society Alumni Weekend. See page 21 for more information.

SEPTEMBER 9 ~ 10
The Chase Park Plaza
212 North Kingshighway Boulevard
Saint Louis, Missouri