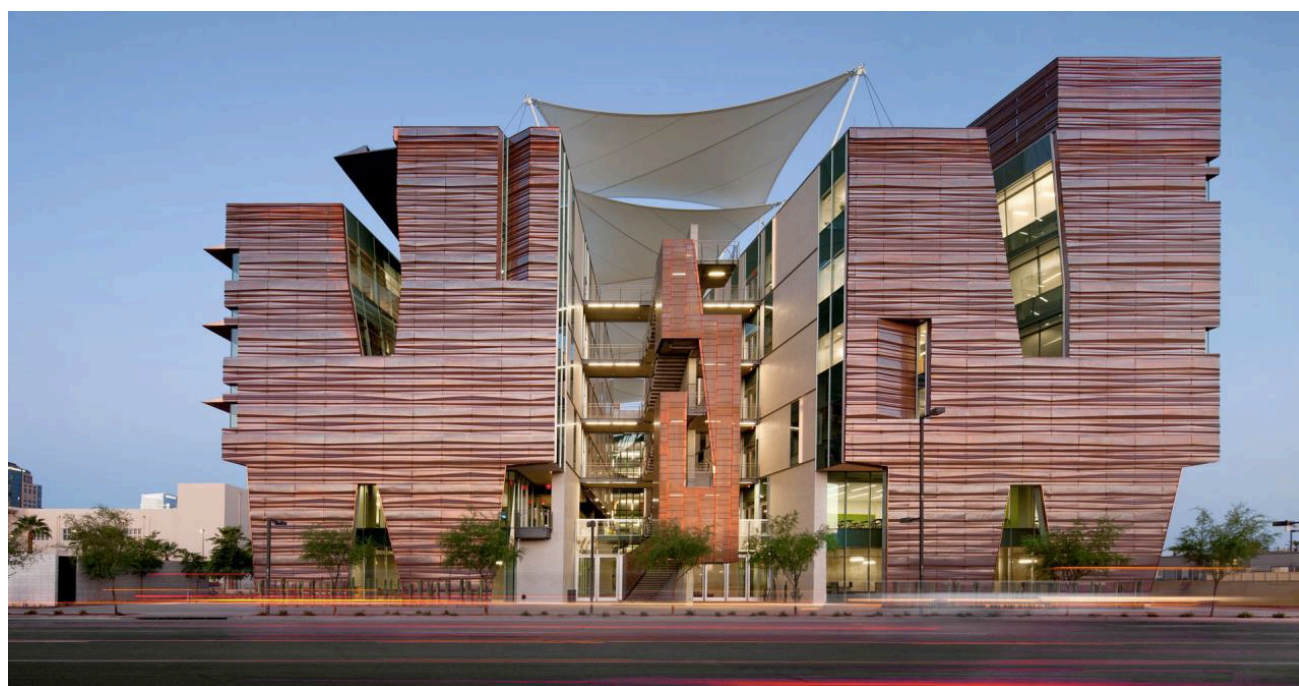


# SPECIALTY REPORT

In This Issue | Radiology



## Featured Interview

### **Dr. Kevin Hirsch**

*Interim Chair for the Department of Radiology-University of Arizona College of Medicine-Phoenix; Chair for the Radiology Department, Banner University Medical Center*

PAGE 02

### **Dr. Daniel Gridley**

*Chair of Radiology, Valleywise Health*

PAGE 04

### **Dr. Mary Connell**

*Associate Program Director, Allied Valleywise-St. Joseph's Hospital*

PAGE 07

### **Dr. Courtney Mitchell**

*Radiology Residency Program Director, Allied Valleywise-St. Joseph's and Creighton School of Medicine*

PAGE 09

### **Dr. Phil Cheung**

*Alumnus, Resident - Stanford University*

PAGE 13

### **Dr. James Lish**

*Alumnus, Resident - St. Joseph's Hospital & Creighton School of Medicine*

PAGE 15

### **Lexi Tatum**

*MS4 Applying to Radiology*

PAGE 17

## ***Interim Chair for the Department of Radiology - University of Arizona College of Medicine-Phoenix; Chair for the Radiology Department, Banner University Medical Center: Kevin Hirsch, MD***

*Dr. Hirsch specializes in Interventional Radiology – Oncology with a focus on liver cancer, hepatobiliary disease, advanced PE/DVT treatment, ischemic stroke intervention, and trauma intervention. He received his medical degree from University of Southern California - Keck School of Medicine, completed internship in Internal Medicine at University of California San Francisco – Fresno, completed residency training in radiology at Los Angeles County - USC Medical Center, and completed a fellowship in Interventional Radiology at Los Angeles County - USC Medical Center.*



### **What drew you to Interventional Radiology as a specialty?**

I was fortunate to fall into Radiology and later Interventional Radiology (IR). A good friend of mine was interested in radiology and I had some difficulty deciding what specialty to go into. I decided kind of late because I didn't have much exposure to Radiology or IR. However, I soon fell in love with it, initially doing diagnostic radiology. Once, I had my IR rotation nothing else was as great. It is probably easier to find exposure to IR as a student today, but in the past, it was a niche specialty. In the beginning I enjoyed it and the more I did it the more I loved it.

### **How has the field changed throughout your career and how do you anticipate it changing?**

The biggest change I have seen in Interventional Radiology is the recognition that IR cannot just be a technical specialty. Meaning that Interventional Radiologists have to take responsibility for their patients and provide a complete clinical presence including a consultation service with pre-procedure evaluation and post-procedure follow up with patients, just like a surgeon would function.

In the past IR was much more procedurally focused without a strong clinical presence. However, the problem with that was Interventional Radiologists were not fully responsible for their patients. I think it is important that physicians not only be good at a particular procedure but also that physicians care for patients as a whole. Over my career I have seen IR become much more clinical.

### **What challenges do you think future Interventional Radiologists will face?**

A challenge future Interventional Radiologists will face is other specialties learning and doing what we do. As we introduce new techniques and procedures, and then mastering them, other physicians in other specialties will pick them up. A theoretical challenge is that other specialties are going to take over what we do. However, the history of IR would say otherwise due to the innovative nature of IR. There is always a new and innovative, minimally invasive treatment being created. There is always something new on the horizon. What we are doing now is not what we will do in 5 years, which speaks to the creative nature of IR.

### What are you looking for in the next generation of Interventional Radiologists?

For the next generation I hope to see continued growth in clinical presence, taking ownership of patients and providing complete care. I also see IR being integrated with other specialties and IR physicians being collaborative. I hope the next generation expands the field to create more solutions for problems that are less and less invasive. On the horizon I see nanotechnology, AI, robotic procedures, and gene therapy integrated with IR. We are definitely looking for physicians who not only will advance the field but also provide empathetic, compassionate care. You can have technical skill, but it is caring for the whole person that truly makes a difference. For the next generation we hope to have candidates who have the whole package. Some skills that are helpful for IR is having good hand eye coordination, being able to visualize things in 3D, and having fine motor skills. However, the combination of a deep understanding of pathophysiology, clinical care, technical skills and empathy is what will make a great IR physician.

**“You can have technical skill, but it is caring for the whole person that truly makes a difference.”**

### What does a typical day look like for you?

My days start at 6 to 6:30am. I have young kids and help get them going in the morning. I get to work between 7:30 and 8 am. I have meetings scheduled on most days. On clinic days, which are once a week, I have new and follow up patients. The rest of the days are filled with procedures. The smaller cases include biopsies and drainage procedures. I perform many complex and challenging cases as well. The interesting thing about IR is that it crosses so many disease states, body systems, and specialties. You are never just stuck in one part of the body such as the arteries or veins for example. My days usually end about 6:30 or 7 pm if I am not on call.

### Do you feel that research experience is important when choosing interventional radiology residents?

An interest in research is definitely important but past experience is not critical. We do a fair amount of research and are trying to publish. We hope to have an IR/DR residency program at BUMCP within the next few years. Students should recognize that publishing and validating what we do is very important.

### What is your favorite part about being an IR physician?

My favorite part about being an IR physician is being able to do good deeds at work. My wife is a pediatric nurse and we both get to help people at work and impact people's lives. That to me is really meaningful in addition to having a job that is challenging, makes me think, and is creative. Also, with Interventional Radiology you can get a lot of immediate gratification. Overall, with IR I am able to change people's lives for the better.

### What do you do to balance your professional life and personal life?

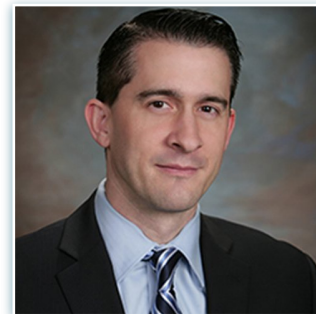
I have four kids, three of them are little (six & under), so spending time with family is the biggest part of my personal life. I also try to spend time with friends, extended family, stay active, and watch movies in my free time. Additionally, I have a medical device development company with one of my partners. We have a few devices in development. My favorite movie is Inception. I ensure that I get in that quality time with family to balance my professional and personal life.

**- Nisha Rehman, MS1**



## ***Chair of Radiology, Valleywise Health: Daniel Gridley, MD***

*Dr. Gridley serves as the Department Chair of Radiology at Valleywise Health Medical Center. He attended medical school at the University of Nebraska in Omaha, NE and completed residency in diagnostic radiology at St. Joseph's Medical Center in Phoenix, AZ. He further specialized in neuroradiology through a fellowship at the Barrow Neurological Institute at St. Joseph's Medical Center and in musculoskeletal imaging through a visiting fellowship at SimonMed in North Scottsdale.*



### **What drew you toward radiology as a specialty?**

Radiology interfaces with so many different specialties, that as a radiologist, you are a consultant with primary care physicians and different medical specialties. In a given day, one can interact with the neurosurgery team and the oncology team, offering a lot of diversity and variety in medicine. These collegial interactions are really rewarding to me and a lot of people who go into radiology. It is also very intellectually stimulating, always requiring us to think because of the multidisciplinary approach.

### **How much patient interaction do you have as a radiologist?**

Certain specialties within radiology have more patient contact than others. Women's imaging is a good example, where every day you are interfacing and speaking with patients, providing them with results and, hopefully, relief for their concerns. Interventional radiology uses imaging to diagnose and treat patients through minimally invasive techniques, so each procedure allows them to be face to face with our patients. For my team, musculoskeletal radiology and neuroradiology, patient interactions come from the variety of procedures we perform, such as arthrograms and injections for the spine and pain management. This morning, I interacted with three patients by performing two spine injections and a joint aspiration. There is a perception that there is not a lot of interaction in radiology, but not only do you get a lot of interaction with your colleagues, you also get a lot of interaction with your patients depending on the subspecialty of radiology that you choose.

### **What was your specific path towards radiology?**

I, like many students, loved everything that I did. Every rotation was the next specialty I was going into because I loved it. At first, I was going into psychiatry, then I started leaning towards pediatrics, then internal medicine. Early in my fourth year, I started to go downstairs to get the radiology results for some of my patients, and I started asking the radiologists questions and reviewing the results with them. All the radiologists seemed so nice, intelligent, and open to teaching. I thought it was a lot of fun. I didn't know much about it before then, so I subsequently did a rotation down in radiology and, after a few days, I knew that I wanted to go into radiology.

### **What is your favorite part about being a radiologist?**

There are two separate parts of my response to that question. The first part revolves around reading and interpreting imaging. I like interpreting imaging because it provides me with constant stimulation through a variety of different studies, (CT, MRI, X-ray), and it provides diversity in my activities throughout my day. The work is so diverse and fast-paced that the day flies by quickly. And second, as an administrator here, I am able to help with academics, research, education, finance, and strategic planning. The combination of diversity of radiology between different imaging studies and procedures and the challenges with administration means there is never a dull moment in the day. I love it because I get here at 6 AM, and by 4-5 PM I am surprised the day is over.

## How do you balance your clinical practice and administrative responsibilities?

I try to secure a minimum of three hours of clinical time every day. Today, I actually have seven hours of clinical time, which is spectacular because I have more time to teach my residents and medical students, perform procedures, and read studies. However, with the new hospital being built, the new multi-specialty clinic in Peoria, and new outpatient clinics and other expansion, I am finding there are more and more meetings in my schedule to plan and develop these projects. On average, I have five to six hours of meetings and two to three hours of clinical time. I coordinate with my residents within those open times to meet and go through cases.

## How does one get into your position as the Department Chair from the time you are a resident to now?

A part of it is hard work. I tell my residents that when you are just starting out, always say yes to opportunities. People asked if I wanted to work on quality improvement, invited me to work on strategic projects, or asked if I would teach residents on healthcare policy. Every one of the opportunities I followed up with and slowly kept developing my professional portfolio. A lot of it has to do with luck, being in the right place at the right time. The last radiology Chair was wrapping up his time here, so he decided to leave two years into my position. He said I was doing well in my capacity as Vice Chair, so they decided to promote me to interim Department Chair. After four years, my work was noticed and I was offered the position of Radiology Department Chair.

## How is the Department Chair different from Program Director?

The Program Director directly oversees the residents. They are focused on creating an environment that fosters training the best residents possible so they can be exceedingly successful once they graduate. If the residents have any issues or concerns they will go to

the Chief Resident and Program Director for resolution. If there are any other hurdles they can't get past, then it will escalate up to me. The Program Director will create schedules for the residents, evaluate the residents, coordinate and run residency selection, and be one of the first individuals that will address any issues the residents may have. As Department Chair, my job is to do anything I can to make the Program Director as successful as possible by removing as many obstacles as I can. In addition, I personally help to oversee a lot of the academics and research for the department.

## What are you looking for in the next generation of radiologists?

First, I'll step back in the past and say about 20 years ago, radiologists were described as physicians that preferred to sit in a room, read studies, and provide a service without having much interaction. Over

time, the amount of interaction the radiologists have has significantly increased. What we are looking for in the future residents are people who have good emotional intelligence, who are good at interpersonal communication skills, and who are good at bringing teams together and leading teams.

We are looking for those people who are willing to work and say yes to opportunities. Right now, we are lucky in that our residents embody this new direction. We have turned that corner. The residents that we have now are true leaders. We have a wellness leader and our radiology residents have served as presidents for the residency committee for the last two years. There is a very active resident and fellows section of the Arizona Radiological Society, and some of our residents serve on national committees. We see a lot of involvement by our residents, which is something we didn't see 10-15 years ago. That's what we are looking for going forward: somebody who can work really well with others, who has that emotional intelligence, and is leading teams. That will be the key for the future — being an integration center for patients' care and well-being as well as assisting or leading IT teams.

**“I tell my residents that when you are just starting out, always say yes to opportunities.”**

## How important is it for future incoming residents to have experience in research?

I have a personal bias that I do like to see more research in an application, but it is not required for our program. However, it definitely helps. Especially if you can get a first author publication it means that you can do your due diligence, you can work hard, and follow through with a project, which is a huge challenge. That says a lot and brings a lot to an application. One additional step on top of that is that performing research in the radiology department does indeed help you through interacting with radiologists and seeing the work they do and how the department functions. That says a lot and brings a lot to an application.

One additional step on top of that is that performing research in the radiology department does indeed help you through interacting with radiologists and seeing the work they do and how the department functions. This not only makes you feel more comfortable as an applicant going into this specialty, but will also allow you to know future colleagues or potential people that can help you get into residency. Though it is not required, it is important that you at least consider it.

## What skills and characteristics do you look for when evaluating candidates for residency?

The 3 I love to discuss are 1st, natural intellect, because we want residents who are going to be successful on boards in the future. The 2nd is somebody with a strong work ethic. We tell our residents that we want you to spend an hour a day doing independent study every single day. We can tell with time who does the independent study and who doesn't. We want those with the passion for medical imaging who will be here during the day then spend an hour after clinical duties completing practice questions, watching radiology videos, and reading.

**“ If you truly have an interest, get involved and reach out. We will help you out and you will get a glimpse of what the radiology world is like.”**

That is definitely what we are looking for: somebody who is a hard worker and who is willing to put in the work to be successful. Third, we like somebody who can be a part of our team. Somebody with great emotional intelligence and who is a great communicator, because we are a tight knit group, like a family, with our residency program. If you go even deeper, we absolutely love research and leadership activities. Being president or VP of your medical school class or interest groups definitely deepens your profile and makes us consider your application as a more competitive applicant.

## What advice do you have for medical students who are considering radiology?

I would say reach out to the radiology department as early as possible if you have any interest. Request shadowing and request time with the radiology team. When you are in rotations, come down to the radiology department and ask questions. Our team loves to interact with medical students and answer questions. The earlier the better. If you truly have an interest, get involved and reach out. We will help you out and you will get a glimpse of what the radiology world is like. If you have a continued interest, get involved in research, which will give you quality time with members of our radiology department for those projects and help you build the relationships with them and the rest of the radiology team.

**- Leeann Qubain, MS1**



## ***Associate Program Director, Valleywise Health: Mary Connell, MD***

*Dr. Mary Connell was one of the original founders of the DR residency at Valleywise in the early 2000's and has served as Residency Program Director for most of those years. Now that Valleywise and St. Joseph's DR residencies are merging under Creighton, she will serve as Associate Program Director for the allied program. She is board-certified in Diagnostic Radiology, and holds the Certificate for Additional Qualifications for Pediatric Radiology, a sub-specialty granted by the American Board of Radiology.*



### **Please tell us about yourself.**

I am an Arizona native and attended Arizona State for my undergraduate degree. I received my medical degree from Georgetown University School of Medicine in Washington D.C. and completed diagnostic radiology residency at St. Joseph's Hospital in Phoenix. I hold faculty positions as Clinical Associate Professor at Creighton University School of Medicine-Phoenix Regional Campus, and as Radiology Director and Clinical Associate Professor at University of Arizona College of Medicine-Phoenix.

### **What drew you to radiology as a specialty while in medical school?**

When I was a third year student, I liked every rotation and could see myself doing almost everything. I didn't have opportunity to look into radiology until first rotation of fourth year, when I took a radiology elective. Everything clicked all of a sudden. Radiology seemed to tie all the different specialties together. You get to see a little bit of everything.

### **What are your roles and responsibilities as a Program Director?**

My main responsibility is to make sure all the i's are dotted and t's are crossed when it comes to keeping the program credentialed. I also need to make sure all the residents are on track for graduation. I enjoy mentoring the trainees to help them decide what they want to sub-specialize in as well as what clinical setting they want to work in.

### **In addition to your role in medical education, are you also involved in clinical practice? Describe a typical work day for yourself.**

Most weeks I work less than 40 hours a week. In our practice we take turns covering the weekends - it's only four weekends a year. We have a set of radiologists to cover nights so I don't have to do that in this stage of my career, and I don't have to take call. Most days I start at 8; I check my emails, check on the residents, run meetings. During the day I will intermittently check out cases with the residents. I am fortunate not to have to work many nights or weekends.

### **What is your favorite part about being a radiologist? What is your favorite part about working in academic medicine?**

With regard to interpreting imaging exams, it's very challenging and interesting to put together the clinical puzzle with the imaging. As a radiologist, I feel we are the ones who often solve the puzzle of what's going on with the patient. My favorite part about working in academic medicine is working with the students and residents - they keep me from falling behind on technology! They're also about the same age as my kids so I feel I can relate to them. When I had kids at home, it was crucial for me to have a predictable schedule, with few nights and weekends. That is so important not only for working and/or single moms, but for any parent who wants to be very involved with their kids.

### **What are the most challenging parts about radiology?**

Keeping up with all the changes! Unless you moderate your day, you also spend a lot of time sitting, so I wear an Apple watch and make sure I get up for a walk and get some sunshine. Many people think you can't see patients as a radiologist, but there are opportunities to do ultrasound and procedures such as nerve blocks and injections if you want patient interaction.

### **Can you share more about fellowships after radiology residency for those students interested?**

Most people who complete a radiology residency choose to do a fellowship for a few reasons: it increases your chances of having a very good job; and there is so much to learn in radiology, it helps to focus on one area. Radiology subspecialties include neuroradiology, body imaging, cardiothoracic, pediatric, musculoskeletal, women's imaging, and nuclear medicine. Fellowships in radiology are usually one year. I chose pediatrics for my subspecialty, because all of the other subspecialties are very focused, whereas in pediatric radiology you cover a whole gamut of pediatric pathology as well as all of the different imaging modalities.

**“Many people think you can't see patients as a radiologist, but there are opportunities to do ultrasound and procedures such as nerve blocks and injections if you want patient interaction.”**

### **Is research experience an important factor when choosing radiology residents?**

Research plays a role, but it's not the most important factor. We look for people who are really going to enjoy radiology, appreciate solving a puzzle, people who are curious, ethical, have professionalism - and fun-loving too! Life is not all work!

### **Speaking of fun-loving, what do you do to balance your professional and personal life?**

I like to do yoga, play with my grandkids, and grow a vegetable garden.

### **Is there any other advice you would give to someone considering radiology?**

It's not for everybody, but I think everybody should at least take a look at it. You don't know whether or not it's going to click. For the people I've seen radiology click, it just seems like a fit. They tend to be visual learners and can extract a lot of information from looking at images. Not surprisingly, folks who have spent a lot of time playing video games tend to do really well with interpreting imaging exams. Some students are frightened away from pursuing a career in imaging because of the complex physics they have to master. I never was thrilled with the physics, but you CAN learn it by just biting off a little piece at a time and building on a foundation.

**- Fathima Haseefa, MS1**



## ***Radiology Residency Program Director, St. Joseph's Hospital & Creighton School of Medicine, Phoenix: Courtney Mitchell, MD***

*Courtney "Corie" Mitchell, M.D., is the radiology residency Program Director at St. Joseph's Hospital and Medical Center and for the combined Creighton University School of Medicine, Phoenix. Dr. Mitchell attended the University of Arizona College of Medicine-Tucson for medical school and attended radiology residency at St. Joseph's. She completed a pediatric radiology fellowship at Stanford University.*



### **What drew you to radiology as a specialty?**

I didn't know anything about radiology when I was a medical student, so I didn't give it much of a chance initially. However, after going into a different specialty (ophthalmology) and being a transitional intern, I started to really understand radiology in the full capacity that it is. I was attracted to many things about it. Most notably, I appreciated that it gave radiologists the ability to be integral in medical decision making for patients. Moreover, as I recognized how many specialties relied on imaging, I valued how much it enabled radiologists to be highly involved in patient care despite working primarily from behind the scenes. After being presented with this new perspective, I realized how much I loved this field, and decided to pursue it.

### **Did you have a mentor as a medical student or resident?**

As a medical student, no. My story's a little different because, again, I was going for ophthalmology initially. So, my medical school mentorship was very different compared to the mentorship I had while I was in my radiology residency. In residency, I absolutely had a mentor. I was here (at St. Joe's), and my mentor was my program director. That person later became the chair of the department, and now he is the Dean of Creighton. It's funny because that person also happens to be a pediatric radiologist. When someone sees something in you, it can help give you confidence.

Radiology could have taken me in a hundred different directions, but I ended up in pediatrics, and I think that this can at least partially be attributed to my mentor's guidance.

### **What are your roles and responsibilities as a Program Director?**

I am responsible for the resident learners in my program, as well as selecting those who will become a part of our program. So, I interview candidates and figure out what types of students would best fit in our program and culture. Once students are accepted, I am responsible for their learning, professional development, and for ensuring that they have a good support system. Moreover, I aid students with fellowship program applications and obtaining jobs. I also oversee the curriculum and teaching that goes on in the department to ensure that learners are being properly exposed to the many subspecialties of radiology. I accomplish this by making sure residents have enough cases, experience at the reading station, call time, and other necessities that will help mold them into well-trained individuals. In addition, I am responsible for ensuring that learners have opportunities for research.

### **How is balancing medical education with your clinical practice?**

It takes a lot of balance. It takes the team. All of us are doing the same thing – taking care of our patients and educating our residents while giving them the best opportunities that we can. It is a challenge to balance these many things, but I love what I do, which makes it feel less like work.

### **Describe a typical workday for yourself.**

I wake up early and get to the hospital. In the morning, I often write a ton of emails, go over many cases, and go to meetings. I do my best to fit in a teaching session, either a lecture or cases with the residents. Then, I work. Some of my workday consists of reading more cases, working with residents, learning, teaching, mentoring, and more. I may also do a procedural case, like a fluoroscopy case on a baby, for instance. Of course, each day is different. Eventually the day is over, and I go home where I get to spend time with my two little kids and firefighter husband.

### **Do you have any advice for medical students on how they can get a more accurate representation of what it is like to be a radiology resident?**

That is a really good question because if you take radiology for what it is without diving into it, your view of the specialty may be disillusioned. I think reaching out to someone in the field, getting a better picture of resident life, meeting residents and hearing about their experience, and going to conferences are all great ways to help a medical student get a more accurate depiction of what this field is like. I think getting exposed to the resident's perspective—the *learner's* perspective—is very different compared to simply watching radiologists read images. Another suggestion would be to get involved in a case. If there is a way to get engaged in a rotation and practice doing imaging, that would be an amazing way to gain insight into what it's like to be a radiologist. Ask questions – find out why people picked radiology. Ask if they have any regrets or if there is anything they'd rather do. No one leaves radiology – ever! I can name many specialties people have left to come to radiology, but not vice versa.

### **What is your favorite part about being a radiologist and favorite part about working in academic medicine?**

My favorite part about both being a radiologist and working in academic medicine is working with the residents. However, if I were to isolate imaging,

I would say that my favorite part is helping the clinicians guide the care of patients. There are many times when the radiologist is very influential in what needs to be done next with regard to patient care.

### **What are the most challenging parts about radiology?**

The volume – getting it all done. There are only so many hours in a day, so we have to be accurate, speedy, concise, and able to read a lot of cases. It can be a challenge to shove all of these tasks into the confines of the time we are allotted. The paperwork, meetings, and other tasks we have can take away from our physician role and patient care, which takes more time and can potentially stretch you thin.

### **What are you looking for in the next generation of radiologists?**

I'm looking for team-player, patient-centered imagers who support their patients and their healthcare team.

**“There are many times when the radiologist is very influential in what needs to be done next with regard to patient care.”**

### **Is research experience an important factor when choosing radiology residents?**

Most definitely. We get so many applicants, and this is a competitive field, so we have to somehow streamline the process of picking applicants. Showing that you are willing to dive into the scholarly component of radiology is one way to demonstrate to residency programs your interest and commitment to the specialty. It's a necessary part of an applicant.

### **Do many radiology residents choose to continue research?**

Everyone in a radiology residency program has to complete some research. Some residents love research and some have other passions, like education. But, at the end of the day, everyone has to complete a project in order to graduate.

### **What are some important residency program factors that medical students should take note of when on the interview trail?**

That's such a good question because everyone is different, so it is important to emphasize the need to fit with the residency program that you choose. You need to ask yourself what's important to you and what you want your career to look like. If you want to teach or do research, identify programs that will enable you to get those experiences. You also need to ask yourself if you fit in with the culture of that program – do you strive in a program that is more aggressive or are you more successful when you are supported in different ways? Each person is going to be unique in what makes them tick and figuring out what that is for you is essential. I think it is important to meet the residents at different programs while you're on the interview trail. If a program isn't letting you meet and interact with their residents when you come for an interview, you're potentially not getting the whole story with regard to what that program is all about. Residents are the ones living through the program, day in and day out, so getting an understanding of their experience is invaluable.

### **Can you share more about fellowships after radiology residency for those students who are interested?**

Most people in radiology will do a fellowship. There are a few outliers here and there, in particular people who are excited to get into a certain location or job. Such individuals may decide to go straight into general practice. It depends on whatever the goals are for that particular resident, but most people do something, and there are so many choices! I did peds, but there is also body, MRI, neuro, musculoskeletal, women's imaging, interventional, and the list goes on. The abundance of opportunities is another great thing about radiology. You can tailor your professional life into what makes you the happiest. For instance, if you don't like procedures, you can go into a subspecialty in which procedures are limited. If you do love procedures, you can go into a procedure-centric subspecialty fellowship.

### **What drew you to the position of Program Director for radiology at St. Joe's?**

As a former resident here, I came back with the intent to continue the legacy of having this be an amazing place for people to learn, as well as make improvements where possible if there was any such opportunity. I had so many supportive people along my journey, so I wanted to give back and be that entity for the residency.

### **What is your favorite activity to do in Phoenix?**

I am a sports nut! I love watching sports—in person or on T.V.! I also love eating food.

- Amanda Schaaf, MS1

### **Educational Pathway for Radiology Residency**

#### *Advanced – PGY-2-4*

Years 2-4 of Radiology at the advanced match site, and Year 1 done either as a preliminary or transitional year.

#### *Preliminary Year – PGY-1*

Specialty one-year programs in the PGY-1 year that provide prerequisite training for an advanced program such as Radiology.

#### *Transitional Year – PGY-1*

A flexible internship in which an intern in the PGY-1 year is exposed to many fields (OB/GYN, Internal Medicine, Pediatrics and Surgery, etc.). These individuals rotate through different hospital departments every few months. Historically, these programs are more competitive than preliminary programs to get into.

*PGY stands for postgraduate year (after medical school).*

## Diagnostic Radiology (DR) vs. Interventional Radiology (IR)

**Diagnostic Radiology (DR)** involves the use of imaging methodologies (including x-rays, radionuclides, ultrasound, and electromagnetic radiation) to diagnose and treat disease. Diagnostic radiologists correlate imaging findings with other examinations and clinical findings, and also act as expert consultants to referring physicians by interpreting medical images, generating reports, and using test results to recommend further tests or treatments. Training is a total of 5 years in length, including 1 preliminary or transitional year of clinical training (usually via internal medicine or general surgery), then 4 years of radiology residency.

**Interventional Radiology (IR)**, on the other hand, involves performing minimally invasive, image-guided procedures to target specific organs in the diagnosis and treatment of benign and malignant conditions. Interventional radiologists rely on the use of images generated by DR equipment in therapies including embolization, angioplasty, stent placement, thrombus management, drainage, and ablation. There are a few different paths for IR-bound individuals, as shown below.

- Janki Desai, MS1

### TRAINING PATHWAYS

YEAR	Integrated IR Residency	Traditional Pathway Offered until June 30, 2020	Independent IR Residency Offered starting July 1, 2020	Independent IR Residency with ESIR Offered starting July 1, 2020
PGY-1	1 year of ACGME approved non-radiology clinical training (internship)			
PGY-2	Diagnostic radiology training + 3 IR rotations	Diagnostic radiology residency	Diagnostic radiology residency	Diagnostic radiology residency with ESIR: Program requires completion of 12 IR or IR-related rotations and, at least, 500 image-guided procedures within the IR domain.
PGY-3				
PGY-4				
PGY-5	2 years of IR training	1 year of IR fellowship training	2 years of IR residency training	1 year of IR residency training
PGY-6				
PGY-7	N/A	N/A		N/A
Total years of training	6	6	7	6

Sources: American Medical Association, American College of Radiology, Society for Interventional Radiology & Society of Interventional Radiology website (<https://www.sirweb.org/learning-center/ir-residency/>)



## Alumnus: Philip Cheung, MD

*Philip Cheung, MD, MEng is an alumnus of The University of Arizona College of Medicine - Phoenix and is currently completing an integrated diagnostic and interventional radiology residency at Stanford University.*



### What led you to pursue radiology?

Sheer blind luck. I came in thinking that I might like surgery for the hands-on aspect or medicine for the long-term relationships involved with taking care of people. It was challenging. I wanted to be the person who could have that long-term relationship with patients, but also be the doctor who could fix their problem. That is why surgery drew me. I also really enjoyed the Maricopa radiology lectures, and during my third year rotations I loved everything. I thought super long and hard about surgery. In my third year, I spent two weeks on an Interventional Radiology rotation, and the first case I saw was a cryoablation of a renal cell carcinoma. They used liquid argon through a needle to freeze and kill the tumor, then they slapped a band-aid on the patient and called it a day. I enjoyed that rotation a lot, learned a ton and had a good experience.

Through the rest of third year I was thinking about interventional radiology for a really long time, but I wasn't sure how much I liked diagnostic radiology (DR) as well. By fourth year, IR was approved as a new primary specialty, and still tightly connected with diagnostic radiology. It was scary thinking about being in the first class of IR without any background knowledge. I started with diagnostic radiology at Maricopa during my fourth year. I made sure to also schedule my IR rotations early, so I could get the necessary letters of recommendation. If I turned out to not like it, I could abort and try again for another specialty.

It turns out I enjoyed diagnostic radiology because it's almost like what you're trained to do in med school. You're provided the entire patient presentation, labs, and imaging, and using this information, you have to find the diagnosis.

I'm currently in an IR/DR integrated program, so I get to be someone's doctor and also do diagnostic readings and experience those different fields of medicine. As I progress further in my career, I can shift more time into the IR realm of things or the DR realm.

### Would you elaborate more about the integrated interventional and diagnostic radiology residency?

The way it works is that you do a one-year internship in medicine. Then it's a five-year combined program, and you come out as an IR and DR physician. You could also do a four-year radiology residency and then two years independent residency for interventional radiology for a total of seven years including the internship year. The reason it's called an independent residency is because interventional radiology was made into its own primary residency, hence the name change. The third option is that you go through early specialization in interventional radiology, and if you go to a program with this training you do a year of internship, four years of DR, then one year of independent IR residency.

### What did you do to prepare for the application to residency?

I came into medical school with a Master's in Biomedical Engineering, so I had spent time in a translational lab. I came in a little more published than the average student, which was helpful in applying to a competitive specialty. It's advisable to have a decent amount of academic productivity. For IR specifically, it's worthwhile to try to do research in IR largely because it is a small niche specialty. Some people apply because it sounds cool, but there is so much demand for limited spots.

It helps to bolster your application by proving that you understand what the specialty and the work entails.

UA is nice because we start fourth year so early that I was able to submit my letters of recommendation earlier than most applicants. I received a decent number of interview invites and got a decent STEP 1 score. Getting a high STEP1 is about keeping the doors open instead of getting into a residency program. It does not guarantee anything, but it keeps the doors open. I studied really hard for it, and I also did well in my third- and fourth-year rotations. You're applying for a job, so you want to put together a strong application and approach it from that perspective.

Everyone defaults into the mindset of applying to medical school again. It's not. You're going to be someone's doctor. You need to tell people that you've worked really hard to be in the position that you're in, and that you care and don't want to cause anyone harm. You want to show that you will do everything possible to avoid that. It's worth taking a regular step back especially when you study so many hours in a day. Your studies are about acquiring knowledge about safely taking care of a human being.

### **What advice do you have for students to narrow down their specialty interest?**

As early as medical students are, even early third year, you shouldn't be too dead set on any one specialty. Most of us haven't had enough exposure to make an informed decision.

The dominant thing that drives one's choice is exposure to people in a specialty that sold them on it. Above everything, it's about a good team and a good time in third year that determines what you focus on more in the fourth year.

**“I think values and interest are the most important factors to consider first, and then look at secondary factors such as pay, work hours, etc”**

You should study, have a good time, and be open to everything. Think about the personalities and disease processes because you have to be interested in it. It doesn't matter if you make a ton of money, but if you hate the disease processes you are treating, then that's not a good decision. Look at what interests you.

Consider the patient population as well and what you get to do that coincides with your personality. I really like fixing things. That pushes me down the surgery road, and I also like the longitudinal care of patients that pushes me down the primary care road. If one of those factors is dominant, then use that to move yourself down one of those paths. Notice what stands out to you, and what you would really hate. Then start narrowing down what you enjoy. I used the careers in medicine website on AAMC to learn more statistics

about the specialty including scores, most common cases, work hours, etc. It's pretty helpful.

The pay is also something to consider because it is a real factor, however I do NOT recommend someone go into a specialty for the pay. I used it to learn about dermatology, and discovered that the first most common treated condition was acne, which I hated. I was doing a lot of ruling in and ruling out. Most of us don't have a ton of experience in the specialty or know what the practice/clinic is like, so we come with a gap of information. We need to know what information we need that will change our decision making when going into a specialty.

Focus on what you could see yourself doing for the rest of your life. I think values and interest are the most important factors to consider first, and then look at secondary factors such as pay, work hours, etc.

**- Nia Nikkhahmanesh, MS1**

## Alumnus: James Lish, MD

*James Lish, M.D., is a graduate from the University of Arizona College of Medicine-Phoenix. He completed his internal medicine internship year at Banner University Medical Center Phoenix and is currently a third-year radiology resident at Creighton University Radiology Residency Phoenix at St. Joseph's Hospital and Medical Center and Valleywise Medical Center.*



### What led you to pursue radiology over other specialties?

I chose radiology initially because I liked everything. I liked that it requires a more in-depth understanding of everything. I have a bit of a short attention span, so the prospect of going through each case in 10-15 minutes and then immediately moving onto the next interesting case was appealing to me. Also, the lifestyle is excellent. As far as residencies go, it is a relatively manageable schedule. Most radiologists in practice work normal business hours, though you can do some call. Money is also good, so it is a good job in that regard as well. All of these things together lent themselves to an easy choice for me.

### How did your medical school experience impact your decision, if at all?

For me, I had an idea before medical school that I might want to do radiology because I worked in the ER. There, I had the chance to take the initiative and look up patients' scans, try to read them, and guess what the radiologist might say.

However, during medical school I did swing around from specialty to specialty – I found I had an interest in a number of things, including family medicine, surgery, etc. As far as lectures, we didn't get a ton of radiology lectures, so that didn't make a big impact on me. I think my radiology rotation was helpful, but at the same time, it still didn't give me an accurate depiction of what radiology entailed. You can't really have a strong understanding of what radiology is until you are actually doing it.

My experiences talking and hanging out with radiologists gave me a clearer depiction of the specialty. It was during those times that I was able to see the vast knowledge that radiologists have. I was inspired by their ability to come to a concise differential based on small snippets of information.

### Did you have any mentors or experiences during your path that helped solidify your interest in radiology?

Yes. During medical school, I started up the radiology interest group. I invited Dr. Richardson, who is now the Regional Dean of Creighton University Phoenix and who used to be our Chair of Radiology, to one of our lunch talks. I also met Dr. Connell, who is the Assistant Program Director of our radiology program at Valleywise, when she also came to talk to us. Then, I met Dr. Mitchell, my Program Director here at St. Joe's. Of course, most of this occurred after I was pretty set on radiology, but meeting these individuals and making these connections further encouraged my decision to pursue it.

### After deciding on radiology, what did you do to prepare for the residency application process?

I think the biggest thing was doing well on Step 1. After that, I think making those important connections was a great way to prepare for the application process. To current medical students - if you want to stay in town for residency, it's good to go and meet the program directors. If I ever found myself doing a rotation and I got done with the day early, I'd try to find a couple of interesting cases and go down to radiology to go over them with a resident or the radiologist. Getting exposure like that or even getting involved in a research project is a really great way to make connections.

### Did you do research in radiology while in medical school?

Yes, I did a couple of case presentations and got involved in a project. It is a bonus if something comes out of your research, but the time you spend with those you work with and the willingness and enthusiasm that you show means more. The connections you make and relationships you build are the most important.



### **Do you have anything you'd like to communicate to medical students who are thinking of pursuing radiology?**

I think it's a really good field. I remember some of the fears I had about it as a medical student – like it becoming outsourced overseas, but I've found that this is not a real concern. The laws are such that final reads cannot be made from outside of the country.

Another fear was the possibility of artificial intelligence (AI) taking over radiology jobs. I've seen what is out there, AI-wise, and it is far from being capable of replacing radiologists. This won't be a real concern in our careers. If anything, it will make our jobs better.

One other rumor I remember hearing was the fear that there would be a decreased demand for radiologists because there would be a reduction in the need for imaging, but this is not true at all. The number of studies keeps increasing, so we need more radiologists. Moreover, as we train more physicians, physician assistants, and nurse practitioners, the demand for imaging will go up. Our increasing elderly population also increases the demand for radiologists. So, if medical students have any economic fears, I would say that it is not something to worry about.

### **What is your experience like thus far as a radiology resident?**

It has been awesome. There is a very steep learning curve. You complete medical school and your internship year, but in those 5 years you don't learn much of anything related to radiology – specifically, on how to do radiology. So, when you get to day one of residency, you don't know much, and in those first six months, you are learning as much as you can, preparing for the moment when you become the person people call with questions. Initially, there is always someone who can advise you when you are unsure of something. Then, for second year and third year, it gets to the point when you start doing nights by yourself. There is still always an attending available for you to call if you find yourself needing to. But, by then you typically don't need to because you have more experience and confidence at that point.

Essentially, you learn very fast initially, and after that it is more about filling in the holes, learning and growing. Every day is exciting for me. I've never woken up and been depressed about having to get up to do radiology. I did feel this way in other specialty experiences, but never radiology.

### **In your opinion, what is the best part of the job?**

I think the best part is the satisfaction that comes when you are able to answer a question for someone. I like being a person that has the answers, so it is really fulfilling when a doctor or team of doctors come to radiology with questions about a particular patient and I am able to give them a diagnosis by looking at the scan. Moreover, regarding this residency in particular I really like the support and collegiality among everyone here. The culture is very positive and emphasizes wellness, which I appreciate a lot.

### **What would you say is the hardest part about radiology residency?**

I think the hardest part is the beginning when you don't know what you're doing. It's like this stepwise challenge. First, you're learning, and then you're taking call. Eventually, you're by yourself on call, and then you take your boards. By the last year, you've learned most of what you need to know, so at that point you are just filling in any gaps of knowledge.

### **Do you have any suggestions for how medical students can get a more accurate representation of what it is like to be a radiologist?**

Something I would suggest for all medical students would be to read *Learning Radiology*. It goes through the basics of radiology. Also, for medical students on radiology rotations, I suggest asking the radiologist or radiology resident if there is anything they could do to make the experience more realistic. For instance, residents here at St. Joe's all have teaching files that they can use to allow medical students to practice interpreting images. Sometimes I've had medical students look at a chest x-ray and type on the report what they think they see. Then, I'll go over it with them before we send it out.

**- Amanda Schaaf, MS1**



## ***Fourth-Year Perspective: Alexia Tatem***

*Alexia Tatem is a fourth-year medical student at the University of Arizona College of Medicine - Phoenix. She was born and raised in Phoenix, Arizona and obtained her undergraduate degree from the University of Arizona in mathematics. Hobbies include yoga, running, and cheering on the UArizona Wildcat sports teams!*



### **What do you wish you would have done differently in the first three years of medical school to prepare you for now?**

Looking back, I don't think I would have done much differently. I was involved and embraced every opportunity that I had. For me, that's what I'd recommend people do: get involved and keep an open mind because you might be surprised by what you like. I know so many people come into school thinking they want to do one specialty and then change their mind, so I recommend people keep an open mind and get involved.

### **What were you involved in?**

Fortunately, I was exposed to radiology early so I knew it was something I might want to do. I got involved in the radiology interest group, which helped me get connected to mentors, residents, and upperclassmen interested in radiology. I was also involved in some of the CHIP programs. I volunteered at the Wesley Clinic, which I thought was an amazing environment and made me consider family medicine for a while because I loved it so much. I was the CHIP leader for the Night at the Children's Museum, which was a fantastic experience. For radiology, I also got involved in research, which I think was a good way to see what it was like and meet more people in the field.

### **When and how did you become interested in radiology?**

I became interested in radiology during my first year of medical school. I signed up for a capstone because I had never spent any time in radiology and wanted to see what it was like. After that, I reached out to attendings and residents I knew, and they were able to get me connected with the right mentors. I was co-leader for the Diagnostic Radiology Interest Group,

began a research project, and spent more time shadowing. I kept an open mind throughout my third-year clerkships and loved every rotation, but I always came back to radiology. I wanted to ensure it was the right field for me, so I did a rotation at the beginning of my fourth year and loved it. Since you don't get to do a radiology rotation until your fourth year and, even then, it's an elective, I think it's important to get involved early and see what it's like because you won't have that opportunity during your third-year clerkships.

### **Did you have any mentors or experiences during your path that helped you solidify your interest?**

Yes, I was lucky to have several amazing mentors throughout medical school. I worked closely with Dr. Mary Connell, the radiology Program Director at Maricopa (now Valleywise). She was an incredible mentor and got me connected with projects and different residents to share their experiences. I would also include my scholarly project mentor, Dr. Paul Bendheim. He is not a radiologist but has been a great professional advisor. I think it's really important to have mentors - even outside of your specialty.

### **What advice would you give to students considering a future in radiology?**

I think it's a unique field in that you don't get exposed to it much in medical school. In medical school you learn how to be a doctor, such as an internal medicine or family medicine doctor, but you don't really learn how to be a radiologist. If anyone thinks they are interested in radiology, I would recommend trying to find additional experiences and spend time shadowing. Finding a mentor in the field can make a huge difference.

### Is there a particular subspecialty you are interested in at this point?

I spent some time in breast imaging and thought that was a great field. You get to do image interpretation, perform procedures, and still have that patient interaction. However, it is definitely early, so I know I might change my mind!

### Is there anything else you'd like to share?

While medical school can be immensely stressful, I want to encourage students to have fun and embrace this time. I know it's easy to get caught up in the stress of things, but we are so privileged to be medical students. Remind yourself how humbling it felt to put on that white coat for the first time and what a privilege it is to take care of others. We are so fortunate to be future doctors!

- Nicole Boardman, MS1

## Diagnostic Radiology Interest Group at UACOM-P

### Leadership Co-Chairs

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### Faculty Advisor:

- Dr. Mary Connell, MD

### Mission Statement:

The purpose of the Radiology Interest Group at the University of Arizona College of Medicine Phoenix is to expose students to the field of diagnostic radiological medicine. The Diagnostic Radiology Interest Group will organize and host a variety of events including lunch presentations by radiologists and hands-on workshop experiences, and provide students with shadowing experiences in various radiological sub-specialties.

## Interventional Radiology Interest Group at UACOM-P

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- Dr. Eric vanSonnenberg

### Mission Statement:

The purpose of the Interventional Radiology Interest Group at the University of Arizona College of Medicine Phoenix is to expose students to the field of interventional radiological medicine.

**Specialty Report Newsletter Editors:** Janki Desai, Nicole Boardman, Fathima Haseefa, Nia Nikkahanesh, Leann Qubain, Amanda Schaaf, Nisha Rehman

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If you have any suggestions for articles of interest, corrections, or comments for how we could enhance the newsletter, please do not hesitate to contact us at [lshahpatel@email.arizona.edu](mailto:lshahpatel@email.arizona.edu) and [comphx-specialtyinfo@email.arizona.edu](mailto:comphx-specialtyinfo@email.arizona.edu)

## STATS TO KNOW

Summary Statistics on US Allopathic Seniors, 2018- Diagnostic Radiology		
Measure	Matched (n=621)	Unmatched (n=71)
Mean number contiguous ranks	12.5	6.8
Mean number distinct specialties ranked	1.6	1.9
Mean USMLE Step 1 score	240	223
Mean USMLE Step 2 score	249	235
Mean number of research experiences	3.7	3.2
Mean number of abstracts, presentations, & publications	6.0	3.9
Mean number of work experiences	2.9	3.3
Mean number of volunteer experiences	6.4	5.4
Percentage who are AOA members	15.8	7.0
Percentage who graduated from one of the 40 US medical schools with the highest NIH funding	30.0	14.1
Percentage who have a Ph.D degree	4.6	4.6
Percentage who have another graduate degree	16.8	24.6

Summary Statistics on US Allopathic Seniors, 2018- Interventional Radiology		
Measure	Matched (n=621)	Unmatched (n=71)
Mean number contiguous ranks	5.4	2.5
Mean number distinct specialties ranked	2.3	2.5
Mean USMLE Step 1 score	246	242
Mean USMLE Step 2 score	255	248
Mean number of research experiences	4.4	3.8
Mean number of abstracts, presentations, & publications	8.4	7.3
Mean number of work experiences	3.2	2.6
Mean number of volunteer experiences	6.8	6.1
Percentage who are AOA members	30.5	12.0
Percentage who graduated from one of the 40 US medical schools with the highest NIH funding	30.5	30.1
Percentage who have a Ph.D degree	6.1	4.9
Percentage who have another graduate degree	15.2	11.1