Duke Chief Resident Oral History Project

Interview with Dr. Michael Mulvihill

With Justin Barr, 27 May 2021, Duke University Medical Center

Justin: Good afternoon. This is an interview with Dr. Michael Mulvihill as part of the Duke Chief resident oral history project. My name is Justin Bars. It's the 27th of May. We're at Duke University Medical Center. Thanks so much for joining us, Dr. Mulvihill. I really appreciate your time.

Dr. Mulvihill: Thank you.

Justin: I was hoping you could start a little bit with where you grew up, where you came from, where you went to undergraduate, and how you got interested in medicine as a profession?

Dr. Mulvihill: I appreciate you taking the time to speak with me today. I was born in Santa Monica outside of LA. I was there just for two years and then grew up in San Francisco where I was until the middle of High School. Then I finished High School in Salt Lake City, Utah. My dad's a general surgeon. He didn't do a fellowship. He practices mostly in hepatobiliary surgery, but we moved when he took a job from UCSF and then moved out to the University of Utah.

My mom is an obstetrician-gynecologist. She practiced up until we moved to Utah. They were both certainly my first introductions to medicine and to procedurally related specialties and to surgery really. They truthfully both really loved what they did, and that's part of really what attracted me to a career in medicine. My undergraduate training was at Pomona College outside of LA, and then I came out here to Duke for medical school.

Justin: You went to Pomona presuming you were going to be pre-med?

Dr. Mulvihill: Yes. Neurosciences was the catchall major for those who were interested in the medical specialties. I was a neuroscience major, a biochemistry minor, and then went straight from undergrad to medical school out here.

Justin: Do you have any key mentors in undergrad or any interesting research projects?

Dr. Mulvihill: I played a lot of water polo. I had a lot of fun with that.

Justin: You were on the varsity team, correct?

Dr. Mulvihill: That's correct. I do think that there's something to be said about team sports and leadership. I've actually really enjoyed staying in contact with that team

and certainly, it's fun coordinating with the ongoing pre-med students and such who were there. We're a varsity program in division III. There's not a lot of water polo overall. We'd play a full division I schedule and just get annihilated by mostly Eastern European, the collegiate teams out there. We get wailed on pretty hard, but we learn a lot from them. Dr. Kirk seems to emphasize a lot of learning through suffering. He and I hit it off early on from cycling, because he felt that cycling had really taught me to suffer and he was pretty sure that that would serve me well.

Justin: Was it tough being a varsity athlete and being pre-med at the same time?

Dr. Mulvihill: At the end of the day, they accommodated pretty well. I'm probably not the most exciting person on campus, but I managed to get things done, I guess. I really enjoyed my time out there. I met my wife, Tanya, there. We were next-door neighbors in our dorm, it was a co-ed setup. We met there. She took a year, did a post-bac program at the NIH when I started out at Duke, and then she went on to UCSF. We did a long-distance thing for those years until I matched into the general surgery program here, and then she came out here afterwards to do a medicine internship and then an ophthalmology residency.

Justin: What brought you all the way across the country to Duke for medical school?

Dr. Mulvihill: There were a couple of things that I was excited about Duke. They have an accelerated educational curriculum, and there is a built-in emphasis on research. I thought that something like that would suit me well. I hadn't spent really any meaningful amount of time out here, but I had looked at Duke for undergraduate as well and actually, I really enjoyed my recruiting weekend. I thought it was a place that I at least knew and would be fun. My godfather, Dr. [Ted] Pappas, and his wife and family live out here. It felt that this was an area that I was a little bit familiar with and had some ties to the area. I came out here then in 2008.

Justin: When you started medical school, were you already thinking surgery or open to any procedural type specialty?

Dr. Mulvihill: I was pretty interested in surgery and, I guess broadly, general surgery felt familiar. Then during my first year, I had met some of the current general surgery residents who then went on to join the four-three program. For better or for worse, I fell into the wrong crowd there with Mani. Mani Daneshmand was the first 4/3 resident.

Justin: How do you spell his name for the record?

Dr. Mulvihill: That's Mani, M-A-N-I, last name is Daneshmand, D-A-N-E-S-H-M-A-N-D. Mani was a very talented general surgery resident and then became the first to join the joint training program, of which I'm now a part. I think I met him, it was in my medical school years, I guess, was the first time that I had joined in cases with him, seen consults with him, hung out with him while he's on 3333, and he was the first one I'd gone on the heart and lung procurements and stuff with him and really had a

lot of fun as an informal introduction to cardiothoracic surgery. I think that that really solidified for me that what I wanted to do was continue on training in cardiothoracic surgery.

I think he was certainly an early mentor for me. I did cases with Dr. [Jacob] Schroder and with Dr. [Jack] Haney. I had a fun experience. I was the medical student on Haney's first solo lung procurement. To me, these were all the same. I don't really know what's happening. I'm just happy to be there and be a part of the team. Dr. Haney, as we go out to the University of Michigan, and it's a little surprising that Michigan, you're there all the way at Michigan and they're not taking the lungs, but he mentioned to me that the donor actually has already had an aortic valve replacement. We're actually doing a redo sternotomy lung transplant procurement as the first time that he's ever procured on his own. He keeps saying that he's on his own. I'm like, "Well, I'm here." He's like, "No, this is going to be a little different."

Of course, we got on the right ventricle and everything was a fiasco. Michigan has a beautiful new cardiovascular institute, but instead, we're in an ortho room asking for a redo sternotomy saw and they're like, "We have all the saws, we just don't know at all what you want." Certainly, a lot of the second half of my medical school training was I felt, especially now in hindsight, a lot of that was defined by the off curriculum sort of things and finding times to go and participate in transplant and learn from the residents there as an informal tag along kind of thing.

Justin: What was your formal research experience as a third year?

Dr. Mulvihill: As a third, I actually spent two years in the lab as a medical student. I went out to UCSF where Tanya was. I worked in the lab at David Jablons, a thoracic surgeon out there.

Justin: How do you spell his name?

Dr. Mulvihill: First name David, D-A-V-I-D, last name Jablons, J-A-B-L-O-N-S. His practice is mostly in lung cancer, and our work there was in the development of a PCR-based assay to stratify early-stage lung cancers into high and low risk of recurrence. We had some fun work there, mostly doing a whole lot of PCR from paraffin-embedded lung cancer samples from the lab. That, I think, was a productive experience. It was a high-quality time of life in terms of the hanging out with Tanya and then living in SF, just the two of us. That was a fun experience. Then he gave me a lot of a hard time about this ongoing interest more on the cardiac side of things, but I think at least he was reassured that I was pursuing training in surgery and training in CT surgery. I think those are the highlights and from medical school, and then I matriculated into the general surgery residency here in 2013.

Justin: What was the reputation of Duke Surgery as a residency program in 2013?

Dr. Mulvihill: I felt that I had a pretty good sense of the residency as a medical student who was here. I had done some internships with Dr. [Brian] Clary, C-L-A-R-

Y. I'd done rotations with Dr. [Thomas] D'Amico. I think I also did a rotation with Dr. [Doug] Tyler. Dr. Tyler and Dr. Clary have since left the institution. I felt like I had spent quite a bit of time on the services and knew the group, both the department of surgery and then the division of cardiothoracic surgery. I recognized that this was a very demanding program. I guess it was my intern year, I think we had an all-female chief class. That was Dawn Elfenbein's year. Yes, I think that was my internship chief class. I guess they were senior residence when I was a sub-I.

Kevin Shah was the surgical oncology fellow when I was a sub-I. I owe him a debt of gratitude. He actually probably was the one who had saved me more than anyone when I was on Dr. Clary sub-internship. Even coming down to the very last day. We must have ended up on a weekend or something. I don't know how it happened that I as the sub-I thought it would be a good idea to round in scrubs, but Kevin Shah had done so as well. We made it through rounds with Dr. Clary, and then he had made some comment, "Oh, it's the end of your sub-internship. We should go do brunch." I don't know why he would suggest brunch, but it seemed like the reasonable thing to do. Then he made a comment, "Oh, we'll just walk over down Erwin Road and we'll get some food." It seemed like a great plan, nods, and smiles.

He steps out and then Kevin Shah turned to me. He's like, "You definitely showed up here in scrubs." I was like, "Yes, absolutely." He said, "That's why if you were thinking more ahead, you would have dress clothes in a locker stashed away here. I'll deflect Dr. Clary for a minute." I lived on Erwin Road, so he's like, "You need to run home in such a way that he doesn't see you while he's driving there. Then you can change, and I'll give him some reason why you're going to meet us there instead." I was like, "I appreciate that." Which is a long-winded way of saying that I think I recognized that the program is very demanding, but I really enjoyed the people that I worked with here. I felt that as a student that people like Dr. Clary were great mentors, and people really took an interest in education.

I think the things that I thought of when I thought about staying here were that I would get great training in general, and then in cardiothoracic surgery, and that's what I wanted to do, and I felt that Duke would be a great place to do that. I did think that the people that I had worked with here were very committed to education and really valued their time with the residents. I do think a lot was expected of people. Certainly, there were folks in my medical school class who were interested in training in surgery and interested in training surgery really anywhere else. They had spent a lot of time up close with the program here and wanted to be elsewhere, but it still had a lot of allure for me. I thought that I really enjoyed my time in Durham and so I was excited about staying.

I think the other thing that was a decision for me was, I knew I was interested in cardiothoracic surgery, and I've met with a lot of people about whether or not to train in an integrated model. At the end of the day, I did not apply to any of the integrated programs. Duke at that time didn't have an integrated program, and so the prevailing opinion was that, the way they would plan to train in a cardiothoracic surgeon was

either through the traditional fellowship model or else through the 4/3. I don't think Mani had graduated yet, so they had residents in the 4/3 program but they weren't finished yet. The 4/3 was very much in its infancy and the I6 hadn't yet opened up. Obviously, in hindsight, plans were in the works for the I6. As soon as I started, then they announced that they were going to take an I6 resident for the following year.

Justin: Regrets that you didn't do the integrator, or that it wasn't an option for you?

Dr. Mulvihill: In all honesty, I asked them if they were interested in backfilling. I told them that if there were a way to have my first year fit in such a way that I could proceed on as a PGY2 in the I6 that I'd be interested in doing so. They weren't set up to back fill it. I think of my class of interns, so that's Patrick Davis, Tunde Yerokun, Dave Ranney, and myself who all stayed here, I think we all probably separately asked Dr. D'Amico if we could backfill into the I6. I think there was a lot of enthusiasm from that class, and then I started with Alice Wang and Shanna Sprinkle. So six of us who at least at the beginning were considering careers in CT surgery, and then Mithun Shenoi was definitely not interested in CT surgery. We were on very different wavelengths.

My class ended up split up quite a bit. Mithun spent no time in the lab, and then Patrick spent one year in the lab. Tunde and Dave, and Alice spent the traditional two years in the lab, and then I spent three. Shanna, I guess technically spent three as well. Our class of seven ended up graduating across four different years, so we all split off in different ways in that way. Patrick, Dave, Tundae, and I all have since stayed on and finishing CT here.

Justin: Who was chair when you started?

Dr. Mulvihill: Dr. Pappas was the chair of surgery when I started.

Justin: Was it weird having your godfather as the chair of surgery?

Dr. Mulvihill: Yes and no. I didn't want to feel like I was hiding that from people, and certainly I would acknowledge it. I don't think he was ever any easier on me than he would've been if he had just met me when I started in July of 2013. I think it definitely gave me some sense of comfort as I started, and some sense of belonging. It's probably a sense of privilege that I had some additional safety net there in the sense of room and protection as I started. I think it be wrong for me not to acknowledge that I had an advantage in just the sense of knowing a little bit more about the place, and having people that I had a pretty decent relationship with who would have my back and support. I think in the day-to-day, it's not something that came up. I think there's no doubt that it gave me a sense of security that at least there are people here who really are my allies.

Justin: What was intern year like for you?

Dr. Mulvihill: It's funny. In advance this was like, "Oh, I should really think about these things and try to remember what exactly was that I was doing." It feels almost more informed by what I see the interns now doing.

Justin: That's usually my next question, so you're now managing interns. How did your experience differ from interns of 2021? If you want to answer this question in concert.

Dr. Mulvihill: It's hard thinking all the way back to intern year, and I think it's definitely colored by my experiences since then, because I recognize that my natural inclination is to say how much harder… Really, it's almost immeasurably so. I don't think it's that profoundly different than what our interns are doing now. When I started, we had the night float system. I had my month or two of nights here. I had weeks of nights at the VA and at Duke Regional and at Raleigh. I think that my class was the first, or at least that year I think was the first year that we sent residents to Duke Raleigh, I think actually that was a new rotation for both the interns and for the SAR1 who started out there as well. I think there was a lot of excitement about expanding into this new area. Everyone likes to joke about it as a surgery camp. There was this sense that, "This is a hospital that is run really well without you guys, and now we're just going to bring you in. At some point, it will accommodate and learn to lean on you more. Right now, this is really good and everything runs really smoothly."

I think those were rotations that people really enjoyed. I guess that I was working really as hard as I could. Truthfully, it felt fair to me in that sense. It was I think basically exactly what I thought was going to be asked of me in terms of the standards that I would keep in terms of taking care of patients, and being a reliable and trustworthy member of the team. As I think about it, it felt it was what I was expecting. I think that it was a benefit of being here before and doing sub-I's and rotations and such. I thought I knew what I was getting into, and it felt about what I was going to get into.

Justin: Any fun stories from intern year?

Dr. Mulvihill: No. For such a seminal part of our lives, it all runs together to be quite honest with you.

Justin: Well, Meza talks about burning down the Regional Hospital…

Dr. Mulvihill: He set the bar high with lighting a patient on fire. Those things that you thought everyone learned from how to resuscitate a patient, it turns out in the heat of the moment, you just blow right by it. I don't have anything of that caliber, truthfully, to offer. How's the timing worked out? My intern year, Tanya was a fourth-year at UCSF.

The whole year was basically surgery camp for me. It was a fairly singular focus on internship. We had a nice intern dorm. Patrick and I both, we lived in separate

apartments in over at Trinity Commons, just down the street. I think Tunde and Dave, I think were roommates in a two-bedroom place there. I want to say that Alice also had an apartment there. It was something like six out of seven of us lived right there. Tunde, of course, drove to work, and it should be emphasized in the record that Tunde would drive from Trinity Commons over to the research drive parking garage, which is literally just kitty-corner from the parking garage.

The rest of us, it would just be an easy walk in, but it was nice that we were all there and around. It was easy, at least in that sense, having that network of people. You don't have a lot of time and always somebody is working, but at least someone from your class is around to hangout. At least, that was fun. Since Tanya is away, this is what I'm doing every day, all day, but it all works out. I guess it was either right at the time that we started, or shortly thereafter that we switched from the old medical record over to Epic. I remember Kyla Bennett, she must have been the first-year vascular fellow at about that time, whenever we had switched over. I remember that she was so happy that I was able to figure out how to order blood for her patient. It's so stupid. We all know how to do it now, but it's that blood administration.

I remember her being so frustrated with someone who couldn't figure out how she was going to actually transfuse this patient, and then I showed her the order panel thing. She told one of these Maestro superusers who had these vests that he needed to surrender his vest. She's like, "This belongs to my intern now because he actually was able to order blood," because the superuser was like, "Oh, well, I'm very good at Epic. I have no idea what you're talking about blood transfusion." It's probably an order somewhere, and she's like, "I get it. I need this person to have red cells going in now." That was probably one of the major changes that year.

Justin: When you started intern year, you started with Epic?

Dr. Mulvihill: We started with Epic. Go live was sometime right around, as I recall. I don't think I actually used the old GE order set thing at all. I think it was right around that time. We were basically starting fresh with Epic at that time. I guess the other thing that happened in that year is that that's when Dr. Kirk started, I guess, in the latter half of that year. It's in about that range. Dr. Pappas was the chair when I started, and then that year, Dr. Kirk took over.

Justin: Any major changes when he arrived?

Dr. Mulvihill: The naked, cut open and paralyzed story. I can't possibly be the first one to share that story, but that I think was while we were interns.

Justin: I think it had to have been JARs because Soni [Nag] told me that story also.

Dr. Mulvihill: Oh, was that during our Jar year? It may well have been during our Jar year, but I think the long and short of it was -- I think that what particularly kicked off the matter, as it were, the one particular meeting that everyone remembers getting hauled in for, was that we used to publish this intern Survival Guide. Part of that had

instructions as to how to navigate the complexities of the VA, because you would just show up, and suddenly there are all these CPRS things to do, and no one knew what to do.

One of the tasks was to write an H&P for the patients who would be operated on the next day, because you would have seen them from over 30 days out, and so they needed a new H&P, the attending needed to sign it first thing unless it was Dr. Shortell, and then it needed to be submitted a month in advance kind of thing. There were some comment in the guide that went, "Yes, just go ahead and put a physical exam that's the same as whatever you can find." There was even some allusion to, "It seems like this is a little bit of fraud, but it will be okay because it's the only way to get things done at the VA."

It was something to that effect that was basically like, "Yes, this is a lie. It's the only way it's going to happen. You just got to do it." I think it caused a serious disconnect in Dr. Kirk's mind that this happened at all, and that the residents would publish this written thing that's like, "Here's how to lie at the VA." He was fairly apoplectic about it. For all those reasons, it just wouldn't compute that we would think that this is the way to conduct ourselves. We had an all-hands meeting over in the conference room. That was his talk, then, about how important it was that we not lie.

The comment was to highlight how vulnerable our surgical patients are, that our patients lie there paralyzed, naked, and cut open, which is quite a visceral analogy. They put a remarkable amount of trust, because you wouldn't just lie there paralyzed, naked and cut open for anybody, but they've chosen you. He told us in very clear terms because he wants to be absolutely clear: "If you lie, I will fire you." He probably said it three or four times, trying to just highlight to us that this was the bar.

He was, again, I think extremely surprised that this is where we needed to start from, but it was clear that it needed to be said. I imagine that a lot of residents, everyone who was involved in that probably remembers having to be a part of that meeting. I think there was a certain amount of irony -- I talked with multiple people after that meeting. There was some discussion about like, "Man, he made that very, very clear, but I'm pretty sure I'm still supposed to gently massage my duty hours and do the usual white lies that keep things moving."

I think we all found some amount of humor and like, "Okay, we're definitely not going to lie, but I might occasionally lie in my duty hours if it just makes things a little easier." You could say, "Mike, you're a real dumb-dumb," because he's made it very clear, "Do not lie." I think that probably a lot of us still felt that there's always some nuance in these things and duty hours have obviously been a long term: if you feel like you're logging them honestly, that's appropriate. That must have been second year. I very well could have been a JAR.

Justin: Time flies when you have fun.

Dr. Mulvihill: Yes. It's type two fun. Type two fun, the fun in hindsight kind of thing. It'll probably be even more fun 10 more years removed from it.

Justin: Do you think your intern experience and the current intern experience is different or that its basically the same thing eight years later?

Dr. Mulvihill: I think that they're basically the same thing. I think that there still is a central tenet that doing something just shy the 80 hours a week, provides you a lot of rapid experience that's not replicated in the way other people have apprentice sorts of things. I think we still learn a lot from direct contact of taking care of patients, and we learned from our senior residents, and we learned from our co-residents that are all helping us take care of patients. I think there probably is increased emphasis on structured training curricula. I think we had a Wednesday morning conference. Of course back in the day of things started at 7:00 AM. The 6:00 AM stuff was a Kirk change.

Justin: He's moving it back next year.

Dr. Mulvihill: I heard. It's moving back the day that we leave. To our chief class, it actually is literally our last day here. Then the next day, everyone says, "You know it'd be better? 7:00 AM meetings."

The way that came about was sort of a classic, trap that we walked into with Kirk, but that attendance at some of those teaching conferences was poor. He said, "Okay, let's take a look at this. What are the barriers? Why are people not making it to this conference?" A lot of us didn't have the foresight to realize that if we answered that it had to do with going to the operating room, that there would be an easy solution to that, but we went ahead and said, "They page us that the patient's in the room and that they're asleep, and we got to go start taking care of things." He said, "That, thankfully, is such an easy thing, because we can just start an hour earlier, and then you'll have plenty of time." We were all like, "Oh," we'd like walked right into that."

Then we switched the conferences to 6:00 AM. Then that was going to be when we would get to everything in time that we would do a 7:00 AM meeting. The 8:00 AM is still you're running into, it's time to get going, but you would have far fewer conflicts in that way. We're getting rid of it the day after we leave actually. It's not next year. It's the day after we're done. Back to 7:00 AM.

I think those were the main changes. I think, as I recall, Dr. Kirk's starting here, he had a real interest in looking critically at the residency and trying to have data around what works and what doesn't work in the residency. I think one of the hallmarks for when Dr. Kirk started was that one of the things that he wanted to examine with the residency was what works and what doesn't work. I think what we felt was something that needed to be evaluated was the relationship with fellows. I think it must have been about that first year when we had three vascular fellows for a year. Because I think maybe they had previously taken two every other year. Then they ended up with two, and then they took an additional one, or they took three, and then there

were three vascular fellows, and everyone had felt that the case numbers really don't support that, and we would end up being the losers in that relationship. Things were re-evaluated. Then we've had one each year. We've switched to having one each year and that seems to have worked now up until the time that now we've started the integrated program, and the whole thing starts over again.

I don't think we had an endocrine fellow when I started. I think that was one that was felt very reasonably when we looked at endocrine volume and we looked at how much endocrine volume all the residents are achieving, that you could legitimately say that the addition of an endocrine fellow would not harm our experience. I think we were excited that he wanted to tackle some of those issues that felt very resident-specific. I think we felt from the onset that he was very involved in wanting to examine what works and what doesn't work in the residency. He wanted to be around. He spoke with us about evaluating what had worked in the Sabiston era and what are the things that are worth bringing back and what are the things that are not worth bringing back? He felt that the chairman's rounds…so that we hadn't been doing that previously, so that became a Thursday afternoon time to spend with the medical students and to just go and walk around.

I think people like to tell that story about Dr. Sabiston rounding at the VA and the residents scrambling to hide a patient from him. We knew we're not really going to actually go through this process of truly hiding a patient from Dr. Kirk. But it was always comical when people would find patients to present to him that clearly hadn't done well, or that there have been questionable decision making. You'd look at this and you'd be like, "Why would you do it? You've got an entire service of patients to choose to present to him." We're just walking into a trap here. Let's make sure that we buff up the service and have everything really tight and find some people like, "Look they're day three. They're doing really well. This is great." "Look, we make good decisions here, the patient's really happy." I thought it was fun, then to have some new involvement, and the students really enjoyed that. I think he wanted to look at what the student experience was when they were working on the surgical services and what the resident experience was. I think he really wanted to start by critically evaluating all those sorts of things.

Justin: Sounds like he made a pretty substantial impact on the department.

Dr. Mulvihill: I think so. Yes. I think that his presence was felt from the beginning. Obviously, he knew Duke very well from the time that he'd spent here. I remember him telling us that he really viewed this as his dream job. That being the chair of surgery at Duke was the thing that he really wanted to do, and the way that he wanted to make an impact in the world of surgery.

Justin: Do you still think that's true?

Dr. Mulvihill: I do think so. I think it's tough for me to read overall his thoughts. I'm sure that he has found that there are aspects of this that he's enjoyed more than he thought he would, and then aspects of it that he probably hasn't enjoyed as much as

he would. I think, how I read his experience is colored a bit by my experiences with dad as a chair. Dad was a chair for just over 10 years at the University of Utah. The way he described it was that he was very excited at the beginning and the recruitment process. Part of it was, "Hey, here's this department that we think is running pretty well, but there is an opportunity to look at it and find what are the things that you can fix." He had broken it up to me of basically, you can find all these things that you want to fix. Then it becomes basically the problems that you can fix and then the problems that you can't fix, and that at some point, there's some natural transition of like, "I did the things that I really set out to do, that I thought were really important." Then at some point, you start realizing that there are some of these things that maybe you get mired into.

I think we had a lot of enthusiasm that Dr. Kirk really felt that, "Hey, here are the residency-related issues that I would like to tackle on here. What can I do to make changes in the residency program and move things forward?" I think he had a lot of enthusiasm and excitement about all that. I wouldn't say overall, I guess he's still early in his time here, but I'm sure that there's something of a transition to like, "Wow. Now this whole PDC thing sure is exciting." This truthfully, we had this town hall that about the PDC transition. Honestly, it came across as somewhat fatalistic, that it was basically, "This is the thing that's going to happen. We just need to figure it out."

It feels different than at the beginning when it was what are the residency and the clinically related things that we're going to tackle, and where are we going to take this department, to now, "Hey, we got to do this gigantic financial restructuring." I'm sure that enthusiasm for giant financial restructuring was not high. It's not what he would give a talk about at a recruitment talk or something. I'm sure that his focus has shifted a bit. Hopefully, he feels that there's the same enthusiasm. I'm sure that the problems are maybe a little less exciting than maybe what was there at the outset. Certainly, he's had a real significant impact in our day-to-day, how our weeks are structured and how we approach this residency.

Justin: You finish intern year, you start Jar year?

Dr. Mulvihill: Yes.

Justin: Some people think Jar year is the hardest year of the residency. What are your thoughts on that?

Dr. Mulvihill: It's definitely a demanding time. I think to me, I have a real clear moment that I remember in my second year, when I was the consult resident, seeing a patient down in the ED who'd had a bile duct injury after a cholecystectomy, and I don't know how so much of the workup had been done, either there was an outside hospital MRI to look at, but she'd ended up in the ED, and I staffed this console with Dr. Clary. Dr. Clary met me down in the emergency department, and we see this patient together, and then we were sitting down in B pod, and he wants to take time to look through this MRI. I remember thinking, "Oh, this is a great opportunity, here's

really a world class hepatobiliary surgeon who wants to talk to me of bile duct injuries. We're going to look at this MRI."

I remember just sitting there like, "I can't, I don't want to learn anything right now." That's what I realized, I was like, "Wait, I have so much to do, and you're stacking up pages as you're sitting there," and like, "Oh, let's talk about assessment of bile duct injuries on an MRI." You try something like a forced grin about I'm like, "Oh, this is this is really great." I was just like, "Sir, I really appreciate it, but I don't want to learn anything right now, I got to go get this cholecystitis patient admitted, or go figure out whatever else is going on."

That was a moment there of realizing, "Wow, I need to find a way to get back to the stuff that matters here with this and have this not just be, I just need to grind my way through the work I should be learning about every patient, I should have some opportunity to learn about the stuff that I'm doing, but I definitely had a real time there where I felt, "I'm just trying to get the service stuff done and I almost don't want to try to learn more about it." I was like, "Sir, so what you're saying is vanc, zosyn, and get him upstairs." It's just like, as long as we're in agreement, I'm giving her antibiotics, I'm getting some fluids started, I'm not giving her heparin yet, so I can admit that I can admit to Dr. Clary.

I realize I hate when the emergency department doesn't want to hear anything about a patient, they just want a name. I literally just came up from downstairs with this lady with a complex problem, and literally the only thing they wanted to know, they're just like, "Oh, it's Milano." You're like, "Yes, like the cookie, M-I-L-A-N-O." They're like, "Okay, great, that's all we need." I hate that. I think I was really disappointed in myself when I realized that there were times in second year when it was just, "I just need, can I admit to Clary, NPO, IV antibiotics." There were challenges with it, but it's just a function of how much work needed to get done. I guess it's changed now. We had 7704, we had the trauma Jar, but we didn't have the same division of labor. The trauma Jar actually ended up as a really nice rotation. You basically would cover a lot of the breast oncology cases, and 2222 was expected to just cover your pager indefinitely until you came back from the ASC.

Trauma Jar was basically just you would walk around in the morning and you may or may not have to see the traumas during the day, because 2222 could do that. For many years, I think, we felt that all the problems in the residency can be solved by just making one rotation worse. I don't know actually, in hindsight, which is better. It's probably zero-sum. There's some amount of work that needs to get done and if you make 2222 better, you make other services a little bit more demanding and some might say worse. I think my second year the overall feeling was let's just make 2222 just really bad, but it's at the benefit of the other rotations.

7704, our trauma Jar, will be better and that's good, and just have one rotation that just nobody likes to do that work. But then I really enjoyed my time…I guess the DUMP, Duke medical, originally the Duke University Medical Pavilion, truly the DUMP, but now the DMP, I think had just opened in that year, either intern or Jar

year, so seven West, it used to be the 3200 resident, but I did a number of months as the seven west resident [cardiothoracic ICU], really enjoyed that. There were rotations that I really enjoy, even though those weren't conventionally high operative times. There's still a lot that I think I liked about that.

Justin: How were your VA Jar experience?

Dr. Mulvihill: I was the first resident to do a robot colon case at the VA.

Justin: With what attending?

Dr. Mulvihill: It was Dr. [Ben] Hopkins. It was great because Georgia Beasley, write that down, this is George Beasley's fault, I was supposed to do a Seigler right colon, because we had two good colorectal rooms that day, and then Dr. Hopkins wanted to do this case on the robot. He had had me post this case as a robot-assisted low anterior resection. That morning, he made it abundantly clear that his intent had always been to do an APR. There, of course, were much controversy, in that I'm having to run out, I literally had to run out and talk to the wife that we were doing an APR instead. Then it turned into some nine-hour robot assisted APR, and the poor guy had an NSTEMI that evening.

That was a highlight of my time there. Not only do I get to do the first VA robot-assisted colorectal case, I then got to present it shortly thereafter at M&M, which makes it sound far more negative than it was. Honestly I had a very good time at the VA. I've covered consults at the VA for many, many years now. Starting in what? 2014 as a VA Jar all the way through up till last year, I think as a SAR2 probably covering thoracic, I took some primary ER call at the VA. The better part of a decade I've covered consults at the VA, but I've enjoyed it.

I think there's definitely a lot of learning. All of a sudden you're the resident in proctoclinic, and Dr. Hopkins was definitely going to be in agreement with whatever you had done in the proctoclinic. Some of that was stressful, but it's stressful about having increased responsibility, and I think that that was fun, overall, more type two fun, I guess I would say. I'm pretty sure that Patrick only ever had one week as the VA Jar. Patrick won't acknowledge how easy he had it for many months of these sorts of things, but this would keep happening to Patrick, that somehow through the scheduling, that Patrick was not really going to do the VA Jar rotation.

Part of that was that he didn't go into the lab immediately. I think he was going to be the VA Jar in June, but since he was starting SAR1 year, they said, "Oh, that starts in mid-June, so actually, you only have two weeks now." So he only ever actually did two weeks of the VA Jar rotation. I think he has logged more breast cases as an intern than anyone ever had, just, we would always, "Patrick can always go cover the cases and stuff."

VA Jar rotation and then what else? I guess we did the endoscopy rotation, so we did have the endoscopy rotation as Jars at that point. I was in the first class that they

realized that the endoscopy residents should be in the 2222 call pool. The year before, you were just on endoscopy, and you had four or five weekends off in a row, which was amazing, and then my year they were like, "Oh, we think you're a natural fit for 2222," and so we went back to working six days a week kind of thing.

Those are all the jar rotations, right?

Justin: Breast and endocrine.

Dr. Mulvihill: I did endocrine, I think, as a senior resident, I didn't do any endocrine as a Jar. I think I actually did the breast rotation as a senior resident. I think I did ad hoc months as a Jar and then did the formal rotation after the lab.

Justin: Speaking of the lab, you went there next, and you end up spending three years in the lab.

Dr. Mulvihill: I did spend three years in the lab.

Justin: In whose lab did you go? What was your research focusing on?

Dr. Mulvihill: I guess when we had our initial meetings with Dr. [David] Harpole about planning our lab time. Dr. Kirk originally wasn't here when I had started, but was obviously getting settled in and getting things started by the time it was time to figure out the lab work. I think when I had started residency, my overall thought was that I would do the clinical research training program with the DCRI, but through a lot of meetings, both with Dr. Pappas and Dr. Kirk and then with Dr. D'Amico and Dr. Smith, we thought it'd be a really good opportunity to work with Dr. Kirk.

I think the thing that really I was worried about working with him in his lab – I certainly had an interest in the basic science side of things and had an interest in heart transplantation and transplant generally, and I was a little nervous about, he's an abdominal transplant guy, even though I don't know anything about any of these, I felt, "Oh, well I really need to be working with the heart transplant folks." He made the point that he's pretty good at writing grants in abdominal transplant, and I probably don't want to compete with him writing grants for abdominal transplant, but that his goal is not to train me to do the exact same thing that he does. He thought that it was more of a feature than a bug that my interest was a little bit askew from his.

He thought, "Well Mike, if you would believe me that I have things to offer you, even though they're not heart transplant-related, we can probably find something in a direction that makes sense." We put together an F32 working with Dr. Milano where we would combine some of Dr. Kirk's knowledge from the fundamentals of immune biology and some of Dr. Milano's work about, basically we used this heterotopic heart transplant model to look at primary graft dysfunction after heart transplant, and we thought it would be good to understand the energetics of that with mitochondrial

dysfunction and then understand the subsequent immune consequences of that graft injury.

We actually put together a project that I was pretty excited about then, and of course, did not get funded on the first cycle. I had some foundation funding for that, which was nice, but didn't demonstrably change anything, but then it was funded through the F32 mechanism on the resubmission. That was fun. It felt like that was an objective measure of like, "Hey, someone thinks that there's some promise to this story." That was exciting. Then part of the catch with that would be that by the time of the funding starts, that that would fund additional time if I wanted to take that.

I met with a lot of people about, should I spend an additional year in the lab. I think the nature of the basic science projects is that all of that stuff takes you a really long time. It took a while to get some of this mouse model, heart transplant stuff up and running, and it took a long time getting some of Dr. Kirk's non-human primate studies going in renal transplant. Certainly, by the end of that first year, it made a lot more sense about what the nature of spending three years what that would look like, but also that it probably would get a lot more out of spending three years in the lab. The combination of having the funding secured and being able to see that through to completion, and then having a little more time to get that work done.

The other thing that entered into the equation, like I mentioned earlier with the nature of my class, with Patrick spending just one year in the lab and going on to the joint training program, he was the only one from his year, but then in my year, because Jim Meza spent an extra year in the lab, our class then, as it was shaping up, would be Dave, Tunde, Jim Meza and myself -- all four of us that would be applying for the joint training program.

Dr. [Matthew] Hartwig had joked that, "Well, if it came down to it, would you rather do an additional clinical year or do an additional year in the lab," that if you spent three years in the lab and then it would be either just me applying or Morgan Cox and myself applying, but either way, it didn't appear to be more than two people applying. Even though the choice would be between Mike and nobody, nobody still has a chance in that, but there would at least to be a better chance of joining the JTP and having everybody be able to stay. That seemed a reasonable trade to me as well. In all honesty, that then informed my decision to say, "Yes, I can spend an additional year in the lab. Quality of life is good. I've enjoyed myself and I enjoyed the science," and so stick around then, and then apply to Joint Training program, but one year behind Meza, Tunde, and Ranney. I think for all those reasons that that worked out well.

Justin: What were some things you accomplished in the lab?

Dr. Mulvihill: I think that Kannan Samy was--

Justin: How do you spell that?

Dr. Mulvihill: K-A-N-N-A-N, last name Samy, S-A-M-Y. Kannan Sammy was the resident who helped Dr. Kirk. He was a resident from Indiana, had traveled to Emory to work with Dr. Kirk and then Dr. Kirk moved to here, and so he continued his research fellowship here at Duke, but he got things settled in to the lab, but I think he and I were really the first to get any work published in Dr. Kirk's labs since he had moved out to here. I think I'm happy about helping get that lab started and start getting that research output going again.

I enjoyed the non-human primate studies that we did in renal transplants. I enjoyed understanding how large animal research works, and certainly how Dr. Kirk and Dr. Knechtle, they're obviously both very successful in a competitive funding environment. I was really excited to get to learn from them and then to have a grant successfully funded with them. I think I really felt like I was learning a lot from how to design a question and write a competitive grant and have something get funded and learn to communicate the science that I want to do to other people in such a way that they would think that it's meritorious.

I was really proud to have that funded. Then the other arm of the work that I did was in the health services research, and I think that's work that I did mostly with Dr. Hartwig. That's H-A-R-T-W-I-G. That was more clinically oriented work in heart and lung transplants. That stuff felt fairly contemporary. We were looking at topics about increased risk donors, understanding what the utility of a hepatitis positive or an antibody positive, but nucleic acid testing negative donor would mean for heart and lung transplant. It felt like we were doing studies that really reflected questions that we had clinically.

I enjoyed that work as well. Then I guess I got married. I got married during my research fellowship, in the sense that everyone at Duke can take one life step forward in the lab: if you're already married, you start a family, and if you're not married, you should get married, maybe find the right person. That was my one life step forward, I guess.

Justin: Because Tanya had come here for her ophthalmology residency?

Dr. Mulvihill: Yes. She did her internship here. She did the medicine internship and then she then started. Much as I felt that my lab time was productive, Tanya technically did complete an entire ophthalmology residency in those three years. Every time I think, "Oh, I got a lot done in the lab," she reminds me that she actually went from someone who had just done a medicine internship and knows literally nothing about the eye to being then a board-eligible ophthalmologist in that same time. That probably tempers my sense of how much I got done in the lab. You got a lot of monkey transplants done, but in the big scheme of things I actually now have a marketable skill, which just seems more impressive.

Justin: Well, it's nice that you guys can banter back and forth. Then we're SAR1 year. Who's now in your class?

Dr. Mulvihill: This is the class then that I'm finishing with. My class is really their class. That's Morgan Cox, Soni Nag, Cecilia Ong, Brian Ezekian and Megan now Turley, and Shannon Sprinkle for the year. She did her SAR1year with us. Then Brian Gilmore was the notable…unfortunately, they really did hide the fact that it was a significant downgrade that they knew that those would be big shoes to fill, and they were disappointed, then, with what they got. We have a little group chat going and it's still a picture of all of them, and then a half-assed Photoshoped-picture of me over Brian Gilmore's face, but it basically is just their class, literally with me tacked onto the side of it. I was excited to work with all of them.

I think that class had really wanted to prioritize spending-- They've viewed our class as all off on their own and not a very cohesive class, and maybe that was the case for the preceding years as well. I think there were some classes that maybe had some dynamics where either there were separate cliques or there was the cardiac people and then the other people, or they weren't felt to have been such a cohesive class. This class then, that I guess is what became the 2021 class, I think from the very beginning had always been together really well.

Let's see, Tosan had started with them and Rhea had started with them. They even were so together they even still felt like Rhea was part of their class. I think Rhea even has come to some of the events and such. I think part of this is also something of a dig at Migaly, that he wasn't able to keep her here.

She obviously has gone on, she's done very well up at the Brigham. I'm pretty sure she was at Brigham, but it seems like she's done very well up there and so I think they still lord that over at Migaly a little bit, that he couldn't keep the right resident, and then they got stuck with Mike instead. That was our class.

This was then the year that I applied into the 4-3. It was as a full-time general surgery year, but I guess milestone-wise for me, what was exciting was then finally applying into the 4-3. Again, I was the only one applying, so it was literally we could take nobody or we could take Mike. They almost uniformly told me that nobody still had a pretty good shot right up to the very end, but I was happy to then be a part of the joint training program, which really only changed my rotations starting in the SAR 2 year.

I don't want to say that SAR one is the fly-over year, because I think it was important in terms of coming back from the lab, and certainly it's a high-intensity year. I think a lot of us feel that our SAR one rotation up at Duke Regional was really a formative time. Obviously, there are a lot of fans of that rotation, and people have recognized how important that is in our training, that we now even have chief residents who have control over their schedules and choose to go over there as the general surgery chief over there.

I think as a SAR one then, it was really formative, we worked really hard. I was fortunate then, maybe it was only the second time that I rotated out there that Dr. [Martin] Taormina had started out there, but for the time that I was there, I did a lot of

cases with Dr. [Ellen] Dillavou, a lot of cases with Dr. Taormina, and there really was a sense, especially as I'm excited about the JTP and really I'm out of the lab, "Hey, I really want to learn to sew." I really feel like I learned a lot from both of them. I think a lot of people in our residency feel that, especially for anyone who feels like that they're going to sew things together with a blue stitch. They were a funny compliment to one another. They have very different styles, they approach things very differently, and I think they're both very good at what they do, and it was funny sometimes realizing things that work really worked well for you in one room don't necessarily work in the other room. The had very different styles, but you really felt like you were learning a lot there. I think that that was a time really of a lot of growth. Oh, I think I covered the VA, I covered thoracic surgery at the VA with Dr. [David] Harpole, did some fun open lobes over there. It again was exciting, "Okay, well, I'm finally operating above the diaphragm, I'm operating the chest, this is what I've been wanting to do for so long." That was fun.

What other rotations?

Justin: Raleigh.

Dr. Mulvihill: Oh, yes, I went down to Raleigh, I also did a lot of thoracic surgery with Dave White down at Raleigh. It's funny, we have these anonymized case reports that Dr. Migaly quarterly sends to our class. Technically they're anonymized, but from many years out, you can tell who's who in terms, "Oh, well, who are these people who have logged hundreds of vascular cases?" You're like, "Well, there are two in my class."

I think especially at this point with the JTP, I've logged hundreds of thoracic cases, and you look at this anonymous and you're like, "Why is this thing even anonymous?" Only one person has done like 300 and something thoracic cases. All of cardiac and thoracic cases count as thoracic for general surgery. And you're like, "Oh, that's clearly Morgan, that's clear Soni." We start differentiating ourselves a little more in SAR one year, which I think is fun. Even though the schedules broadly look about the same, I think your SAR one year, everyone is starting to have some agency in what cases they're doing and seeking out cases, that they are finally taking ownership of their education.

I think that to me was an exciting part of that year, was starting to realize I really want to think about what I want to be getting out of this program, not what this program is providing to me, but that I'm going to get out there and find what I really need and seek out the training that I'm looking for. I think there was a lot of excitement in that regard. Trauma, I guess we do 2222 nights, and it's mostly that it's only two weeks kind of a thing.

I set up my schedule, that was when Maya was going to be born, or when we were expecting Maya. It's always funny, Dr. Migaly always makes a comment about, "Mike taking paternity leave." For the record, I took one night of paternity leave, in that mostly through having a sense that we were expecting Maya midway through the

month, and so I had the month of March, then I was on nights for two weeks and then vacation, then April I was on vacation, and then nights.

The hope was that Maya would arrive midway through the month, and I would have four weeks off, and Migaly makes it seem like, "Mike took paternity leave." I didn't take paternity leave, I was fortunate that we were expecting her when we were putting together the schedule, and I was able to put together a schedule that would give me four weeks of vacation.

He's really funny, because he'd asked me at some point about helping set up Josh Watson's schedule and he's like, "How did we do your paternity leave?" I was like, "You didn't give me any paternity leave." What happened was that I was at work that night, and I remember that Dr. [Steve] Vaslef was on and I want to say that Jina Kim must have been the inhouse chief and Brian Shaw was covering. What would he have been covering?

Justin: He had to be an intern.

Dr. Mulvihill: I think, yes, was he an intern then?

Justin: He's two years below me.

Dr. Mulvihill: Yes. Then Tanya called me at like 11:00 PM and I was like, "Oh, cool, we must be having the baby now." Her water had broken. So everybody here had stepped up. It's funny, there's a quote about there are graveyards full of irreplaceable men. We sometimes get roped into this thinking that, "Well, I'm basically irreplaceable, and that if I leave, this whole thing falls apart."

Then you realize, you're like, "Here I am, the 2222 night resident,, I'm a senior person, I'm an irreplaceable job here," and then you realize your wife calls you that her water is broken and it turns out you can just leave. You're like, "It's going to be fine, we've got a great team of people, everyone's going to manage this." I knew that Vaslef was around if anything went astray. Maya was breach so we were going to do a C-section. So then I drove home and collected her and then came back. Then I'm right back to like 5700, hanging out just two floors above. I should probably say that was an important rotation for me actually. It was great being able to take really four uninterrupted weeks off and then when I came back, it was really just to nights and so then had two more weeks where I'm at least around during the day kind of thing before I started further rotations.

That, I really liked. It's probably different for people depending on if that's your first child or second child, but it was our first and so I was really excited to take a month off. It was just my vacation for the year. It's not like I pulled some feat…we've still got probably room to go in how we address leave for residents, but it worked out really well in that regard.

Justin: In SAR two year, you start JTP?

Dr. Mulvihill: Yes, and so then I'd started JTP. I was really excited about finally beginning that process, and I think it was probably harder than I had anticipated, just that it's difficult going back and forth, and even with many years of experience of JTP residents, I think it's always tough figuring out what everybody has done over the course of that year, because you show up and then you disappear, and then you're on cardiac for the first time, but it's midway through the year. Then Dr. Haney doesn't want a scrub, and so he times out and then leaves, and you're staring at this person who doesn't have an incision on their chest yet and you're like, "When is he coming back? Should I just make a skin incision? Am I comfortable with how the chest is marked?" He's like, "Well, yes, I want to come back when the mam's down and we're ready to cannulate." You're like, "Oh, I need to remind you that while it's later on in the year, this is in fact my first cardiac rotation and I still have ways to go in learning this."

So I think that there was a lot, over the course of that year of, "Oh, wow, well, this is what's going to be expected of me, this is where I need to get to," but I think one of the things that lends itself nicely to education in cardiac is just that there are a lot of clear component parts of the operation, so can you do the sternotomy by yourself? Can you do the Lima takedown by yourself? Can you cannulate and go on cardiopulmonary bypass by yourself?

I don't think we're doing any cases where people are then putting the cross-clamp on and sewing distals by themselves; it's honestly just a two-person job, but it breaks it up into these phases. Then the reverse of, "Well, okay, if the attending takes the cross-clamp off, at what point between the cross-clamp coming off and the staples all being in or the skin sewn shut, when in that period can the attending leave?"

There are a lot of these phases, and it's felt, especially for cases like CABG, that there's a sense of, "Okay, where am I in my progress here, and what do I start to feel comfortable with?" It's felt like there are much more clear milestones over the course of the cardiac training about what phase am I in this operation when I know that I need help? I think, yes, SAR-2 year feels more that there were these clear objectives that what I need to be meeting in my cardiac surgery months.

Then my general surgery months, so let's define them by in-house chief, covering as the acute care surgery chief resident. I guess, also, we have some time as the night chief. Then a couple months as the vascular chief, all of which I think all of those services, you do a lot more variety of operations than we were doing on the cardiac service where it's like, "Hey, here, let's talk about CABG, about our exposure is going to be the same for each of these things. We can break this up into pieces." Vascular would be something probably pretty different each day, and we're going to approach it in different ways or with an attending who likes to do it in a different way. It felt a little bit more of like we're learning day-to-day thing and try to make it through everything that you can. Then where else? I've done VA thoracic an awful lot, I've covered that service quite a bit and I'm sure I spent a couple more months over there as the SAR two VA thoracic resident.

Justin: Blue or gold as a SAR two?

Dr. Mulvihill: I did not. I didn't cover hepatobiliary until I was a chief resident. I guess I covered it as an intern. I know I've remarked about this to Dr. [Peter] Allen, and I think it's really funny that I had a lot of exposure and obviously with dad does a lot of hepatobiliary surgery and I had grown up with a lot of that. Dr. Clary was actually dad's sub-I at UCSF, and so there was another one of these connections of more people affiliated with hepatobiliary surgery that had mentored me, and so it was funny to then cover those services as an intern, but then have really truly no clinical experience with hepatobiliary surgery here at Duke, I guess, until I was a chief.

I had done some hepatobiliary cases with Dr. [Kevin] Shah down in Raleigh, but not this sustained continued experience until I was chief. Then I always get a bunch of flak that I of course never rotated with Dr. Migaly. Obviously, I never made my schedule until I was a chief, so I don't really bear any responsibility for not rotating with him as a JAR or as a SAR one or as a SAR two, which other people have certainly rotated with him during those times, but I didn't rotate with him. Then as a chief, then I guess that's totally on me, when I put my schedule together, I did not rotate with him. I guess I just did one month of hepatobiliary surgery as chief. Overall I was surprised because, again, I felt like I really knew the residency and knew how things were structured, but I was still surprised because I still think of that as such a core, it's very high-end general surgery, but it still felt like very core general surgery.

We're supposed to be the ones that are comfortable around the pancreas, and yet I don't encounter the pancreas until one intense month with Dr. Allen where we were going to do a lot of hepatobiliary surgery, but otherwise, I was surprised at how little I did all the way until then. I did one pancreas resection at the VA as a chief, and I think did one down in Raleigh and then maybe some distal pancreatectomies.

Overall, I think that was something that I was actually very surprised by just in terms of how things were structured, and I think, if you speak with Dr. Allen, I think he would say he's pretty surprised that we don't have anybody in between the interns and the chiefs gaining the experience. It works. We still have plenty of people who are interested in hepatobiliary surgery, but we don't really recruit people in the way that you might think of, "Hey, let's spend time in the operating room, let's do some whipples together and then you decide that you're going to be a hepatobiliary surgeon." It doesn't appear to work that way, because anybody covering hepatobiliary cases is basically already matched to their fellowship, or at least has already applied.

Justin: I think part of it is—well, I shouldn't inject my views into your interview. Happy to discuss it afterwards.

In the middle of your SAR two year COVID-19, of course, hit the world, so how did that affect your year and the residency experience?

Dr. Mulvihill: Let's see. That would be around March of last year. I think I was actually on the cardiac surgery services. I'd spent some time with both in the early time when, here in Durham, we were a little delayed in terms of there was a broad national response while the virus was really confined just to narrow geographic regions. There was this disconnect of folks who were in the areas like New York that were hit hard early, and then there were us where we had a lot of preparation and there was a lot of talk, and then we started keeping residents home, we had switched to this platoon model.

Jim Meza was the official COVID chief, and he got tasked with basically designing a new residency system where you could keep effectively two-thirds of the residents out of the hospital. There was a day team. You were either on days or nights or out, and the night team was reduced, and not everybody was there at night, so it ended up working, you really weren't working that much, but it was weird because we would all stare and we'd refresh…we had a dashboard thing that would tell us what the Duke census was like, and it was hardly anybody.

There would be a lot of whispers about, "Oh, somebody is getting tested for COVID or there's a COVID rule-out," but there was a ton that we didn't know nationally, and so there was a ton of uncertainty about that. It was an odd feeling to then say, "Well, we're going to make a lot of preparations for this," and there's basically one woman with COVID. I think there was a lot of thought that went into what the response should look like, how are we going to protect residents, and where are our residents going to fit in?

At what point does this outstrip any educational benefit, and is this service that isn't worth it for us? What is our responsibility as residents to the care of these patients with this novel disease and we don't really know what we're doing? There was this back and forth then about, "Well, should the attending be the only one who goes into the rooms, or only one person should see them, or at what point is minimizing contact productive?"

I think we all felt that we were basically in our own little residency pond, and whatever was going to happen to one of us would happen to all of us. On the CT side, I think we encountered more COVID early because there were questions about putting these patients on ECMO, and how are we going to put them on ECMO safely. Then nobody else wanted to do their traches because they had COVID and they were intubated and it was time to do their trache. There was much back and forth. Originally, it was only going to be the attendings. Then very promptly, it was just, "Okay, we're just going back to normal and so the residents are going to come back and do the COVID ECMO traches and stuff. I guess I would say that I felt that the program did spend a lot of effort trying to figure out what they could do to keep us safe and try to find some way to still get us the training that we need so that we're not just burning what's turned into over a year of this.

We obviously switched what cases we were able to do. Yes, it felt very premature that we shut a lot of things down, and there was this long wait while we figured out

how we were going to manage what ended up being a very small number of patients. It wasn't until much later in all of this that then we brought everybody back. We started doing all the elective cases. Then we started having a lot of patients with COVID. It was a funny series of events of trying to understand what really are the motivations to this.

It's a difficult question, then, that the health system needs to keep taking care of patients who don't have COVID. I think part of it felt like an early return to normalcy on the cardiac services. Dr. Smith was fairly clear about patients with severe cardiac disease really stand a greater chance of dying of that in the immediate future than of COVID. That we should maybe adjust our risk tolerance such that we try to get these patients through to the operating room.

I'm sure we have the actual numbers with it, but by and large, there was less of a decline in the elective volume for the cardiac services. For those of us who were on the services, it became a very busy time because we had switched to a platoon model, but then all the attendings were doing all their elective cases. In some ways, it was good, like, "Oh, bummer about the COVID, but good news, we've got more cases per person than we've had previously." You would do a more intense week, and then the other platoon would then pick up and they were like, "Oh, this is great, we got more cases than we can handle."

Certainly, compared to our peers who aren't in medicine, it was a weird feeling of basically being back to totally normal day-to-day work. Our family, we did little family zoom get-togethers on Sundays to check in because isn't everybody so isolated? Tanya and I would still be on this call like, "Yes, we had a totally normal week. We worked all day. We did our elective cases. We saw the patients. We don't go out anyway. It's basically business as usual." It's like, "Oh, yes, we haven't seen our other friends in a while," but generally don't see our other friends. I guess particularly then within the family or to people basically a normal life in the hospital, or things where you're still in this stay-at-home thing, because we really didn't spend that much time at home.

We did those first few weeks with the platoons. I forget when we moved things, I think it was basically before the new year. I don't want to say abandoned, but we basically decided that the platoon system wasn't needed, but we would keep it in our back pocket if things were to deteriorate and we needed to pull everybody back. It changed things most dramatically there in those early months when there was a lot of uncertainty about things.

Then I think that people felt like overall had what they needed to do to be able to do their jobs. A good friend of mine is a hospitalist here who ended up, because he's junior, rounding on the COVID patients for quite some time. Any patient, no matter what disease they had, if they also had COVID, they were then his patient. He seemed to get along okay with the PPE that they gave him. There was a feeling that the face shields make a bigger difference than we realized originally. Who really

knows, but the hospitalists got back to caring for COVID patients every day. It felt like, "Okay, I guess we've got to take care of them every day as well."

Unfortunately, we did have COVID in our residency. Honestly, I think we were all very pessimistic at the beginning. We all felt that like if one person got COVID, we just assumed that everybody would. That even though we were going to do our best to take appropriate precautions, that it just seemed that we all have such close contact as a residency in terms of where we are during the day and we're all working together basically six feet apart to whatever confines are available, but I think we all had something of a sense that it would basically be a binary thing that either no one in the residency has COVID or else everyone in the residency has COVID.

I was surprised we're not done with this. One of our anesthesiologists this week, he's vaccinated, but got COVID. One of our residents who's vaccinated got COVID. I think that was surprising. It's going to happen. It's not 100% effective, it's 95 or something. It made total sense. There's still these reminders that this is still around, but I think the difference between what I thought I got right about COVID and what I definitely didn't get right about COVID, I was surprised that it didn't impact more people all at once.

It's still, I guess, is ongoing. Like I said, I think it was still a bit of a surprise because I just got an exposure notification here over the weekend. It wasn't all that surprising, because he was telling me about how his wife and kid have COVID. I was like, "Okay." Then the next day I got an email about, "Oh, you've had a low-risk exposure because someone has COVID." I was like, "Oh, that must be him." Sure enough, it was him.

Then I was talking to the attending anesthesiologist, and I was like, "Well, you know that his family has COVID." She was like, "What? No one told us that." It's still a year into this. Even with vaccinating so many people, we still run into it. We're going to be wearing masks forever, I presume. Someone at some point can tell us right or wrong with that. We were already wearing the mask to round on the lung transplant and heart transplant recipients. I assume that we'll just have to keep wearing masks.

Justin: I think masks in the hospital are now a thing.

Dr. Mulvihill: I guess that'd be interesting to see. I think that's just a permanent thing now. I don't wear glasses so I don't mind it nearly as much. That seems to stratify whether people are okay with masks in the hospital all day or not.

Justin: You get through COVID, then you start your chief year?

Dr. Mulvihill: Yes.

Justin: What's chief year like?

Dr. Mulvihill: Chief year was something that I was excited about, obviously, for many years. Again, the progression of agency about your own training was definitely appealing. There's some exciting sense of having a little bit more control over your schedule and thinking about what rotations are really important for you. Certainly, some sense of trepidation that, well, at the end of all this, I'm supposed to actually be able to do these things independently.

If you asked the narrow question about, "Well, Mike, you just got to get through this gallbladder totally independently, and there's no attending in the hospital," because that's what you're supposed to do starting July in a few weeks from now, and that question has always felt a lot more difficult to answer for me maybe than it should, but I think if you're honest about it, there are really easy gallbladders where you're like, "Yes, I don't care who's around. I'll do this with a medical student, I'll do this with whatever scope you give me. I don't care," but there are a lot of gallbladders where I'd be really mad if Dr. Novick tells me, "Oh, you only get the zero degree scope because that's how I like to do it, with a zero degree scope. Yes, the medical student is the only one who's going to help you," then I'd be really nervous about that gallbladder.

I think all of us have realized that it's a little intimidating realizing that we're almost at the end of this, and that if we were going out into practice, what are the things that we would have to be doing all of a sudden by ourselves? I was surprised overall, most of the services that I cover so like abdominal transplant this year, hepatobiliary surgery with Dr. Allen and Dr. [Michael] Lidsky, a lot of those end up being high complexity cases that I'm doing with an attending, and often yes, I feel really good doing a Whipple in just a few hours with Dr. Allen, and you're like, "Oh, I'm really good at surgery."

He's over there laughing at you on the other side of table like, "Yes. Oh, Mike, yes, you're really good at this, good job." It's funny then being confronted with just like, "Hey, would you want to tackle a difficult gallbladder or a really difficult hernia totally independently right now?" I think if I'm honest with myself, I think my answer would be no, and I think I would still want the help of a more senior partner.

I think there are plenty of cases, and I feel comfortable with a number of cases, that I would feel comfortable doing totally independently. I think a lot of us, not hide behind, but are protected by the fact that we're continuing on in fellowship. No one who's graduated before me since I've started here has gone out into practice without doing a fellowship. I don't have the answer to that question of like, "Hey, would any of your co-residents want to go out and hang a shingle and start doing acute care surgery or just bread and butter general surgery on their own?" I don't objectively know how to answer that because no one has done it since I've been here.

I think really this year has been a little bit more introspection than about what has the purpose been and what have we really tried to get out of this and what can we say that our readiness is when we leave? Especially, for me, with the hybrid thing with cardiothoracic surgery, certainly, by the end of this year, I feel very comfortable with

where I am in cardiothoracic surgery ,because I've effectively completed a year of fellowship with that.

When I started my SAR two rotations in CT surgery, did I feel comfortable with that? I think I did. I did feel ready to proceed on with fellowship. I think, as a SAR one, I did the VA thoracic rotation, and then, as a JTP, I did the VA thoracic rotation, and you're like "Well, yes, I was prepared for this. I did it the year before. I've done the same thing before, and so, of course, I feel ready for fellowship."

To that end, yes, I'm happy with where things are at. Yes, I feel like I've transitioned in the fellowship fairly seamlessly in little two-month blocks. It's a little bit different than this idea of, "Oh, well, I finished, and now I can just go do whatever I wanted to do in general surgery." My dad didn't do a fellowship. He had thought about doing one, and then he had a job lined up at UCSF instead, and so started on the faculty there, and so he was like, "Why bother doing a fellowship? If I want to do hepatobiliary surgery, I'll just do hepatobiliary surgery."

Well, none of us have that opportunity. Those days appear to be long gone for any general surgery graduate. I don't think there are many general surgery graduates who get to then just decide, "Well, I'm going to have a pancreas-based practice." Even our fellowship-trained surg onc folks don't necessarily get to do the case-mix that they want, that they're picking up whatever is available kind of thing.

I think that's now on the back-end of things has felt like probably the biggest difference between where I thought I would be at at the end of all this. I can't tell, when I think about the graduating chiefs, I think I've always thought of the graduating chiefs as, by and large, a pretty competent class, they're going on to good fellowships, and they're going to go do high-end things.

I've always thought of them as very well-prepared for that, and I think they are, and I feel that way about my training. I don't know, now, if I go back and think about, "Oh, well, which of them on the inside felt like they could just go be doing general surgery on their own?" We probably all should have some amount of fear about that. It should be, even the easy cases, probably should be a little bit intimidating when we finish. If they're all super easy, you probably just trained for too long. There should be some amount of apprehension at any point switching over.

Tanya, she's basically seeing patients in clinic now as a fellow that she's booking for her own elective surgery time. She's in this funny dynamic of like, "Well, I get to be the fellow with the decision-making and the workup, but now I'm a little nervous about if I can actually take this case on in August."

Yes, we don't quite face that then just by nature of all of us are continuing on to do fellowships. I think we're all very excited about where things have ended from a readiness to fellowship standpoint, but I think we all are still making our peace with, "Yes, if I was actually doing general surgery, would I be finishing right at the spot that I want to, or would I want to be seeking out additional training?"

I think it ends up being really personal for everyone. I think a lot of it is what case are you envisioning when people are talking about like, "Well, Mike, can you do a gallbladder by yourself?" Like, "Oh, yes, if you bring me some nice Watters gallbladder that's never seen a hint of Cholecystitis," you're like, "Yes, I can take that thing down, fire some clips, and be out of there, and high fives all around."

Some of the gallbladders I've done this year, you're like, "Yes, I'm glad I've got someone else around whose name is on the door because I'd be a little nervous having my name on the door for that case." I think that's been one of the big takeaways from this year is really thinking about where we've gotten to, and is that enough, or what do we want out of this.

Justin: What were some of the major initiatives your class tried to accomplish in your chief year? Do you think you've been successful?

Dr. Mulvihill: In the broader context of the past two years, certainly at the national level, broadly defined, the Black Lives Matter movement has come up and has been a part of the national conversation, and certainly in the healthcare setting the questions of diversity and inclusion have come up more. I guess that feels like at the beginning of the year, I know that the students from the medical school, I think, had been ahead of the Department of Surgery in terms of thinking about what works and what doesn't work at the medical school and university level from a diversity-inclusion standpoint.

I know, the SNMA there had written letters and tried to be very objective with the administration about, "Hey, where can you really commit to making real change in this institution?" I think people have phrased it that, by and large, the training programs don't necessarily look like the patients that we take care of here, and that there remains a gap there. I think it's important that we understand that, oftentimes, patients do feel more comfortable being taken care of by people who look like them, who speak their language, who can understand, and are more culturally competent with their needs.

This year, I think our class is proud of working with Dr. Migaly in trying to push for reevaluating how we recruit residents into the training program, what should we look for. I think it's highlighted the fact that we don't, at the end of the day, have a good sense of what makes a good general surgery resident, or at least it's tough to distill it down into things you can write down on paper, or certainly can distill down into a number. At the end of the day, we have to rank everyone in some ordinal fashion. As chiefs, we participate a little bit more in the application process, we sit in on the meetings. I can't say that I was the most courageous in advocating for people in those meetings, but other chiefs really hopped in and helped actually guide the conversation about how we're selecting people and ranking people. I think that that actually showed a lot of skill and a lot of insight from their perspective about articulating what does it take to find and recruit good applicants.

I think our class is proud of being part of the conversation in that regard. The application process here has always been very opaque. I think that there's one piece of paper that people will give feedback to, or they answer a couple of questions about a candidate, but broadly it's, "What did you feel about this candidate?" Then it all just happens in rank meeting and they say, "Well, we don't actually have to have anything really, we don't have to have much to guide us from an objective standpoint."

I know that Dr. Migaly has tried to invest a lot of time and effort into re-evaluating that process, and I think it's still a work in process. I think he would say that there still is a lot that we don't understand about our own biases in a selection process. I think that that's something that we feel we didn't start it. This is an issue that's been longstanding, but it feels like it's picked up steam this year.

I think part of reevaluating the whole application process via virtual interviews has brought that to the forefront. So it's different now, and I think we'll have to understand whether that works, however you want to define success with that. I think Dr. Migaly is very excited about the incoming class that we've recruited. I think it remains to be seen how all that will work.

I think our class, at the beginning of all this, I think we felt we would like for a large fraction of the residency to all get together and feel included in more and maybe have more robust interactions outside of the hospital. We were not successful. If anything, now, unfortunately, the interns feel more isolated, and I worry that I may introduce myself to one of them if I run into them. I haven't worked with all the interns this year, and part of that's being on cardiac and we don't always have interns there, but we haven't had nearly as robust of an opportunity to interact with them and get large portions of the residency together. I think it was a bit of a disconnect for us, that that was something that we were excited about, but the nature of this year was such that there really wasn't going to be that kind of an interaction. So I don't think we were particularly successful. There was definitely this gap between the environment that we would like to see where a number of people casually want to get together outside of work or we realized that we have similar interests and we spend more time together outside of work, but it didn't really play out. We are awarded no points on that one.

There were small changes, questions about understanding to what degree do we expect everyone to put their personal life on pause to participate in this residency, I think is something that we thought a lot about. I think everyone, even the medical students choosing their fields, I think that they're pretty savvy in interpreting what residencies expect out of them in terms of to what extent can you have some life or any obligations outside of your residency. When I was an intern, one of the chief residents had commented that she had a house plant, and that was really the only thing that one might expect a surgical resident to take care of outside of the hospital. That that was basically the standard, that you could assume that the residency would understand if you had to take care of your house plant, and if that meant that every

other week you had to be home to water the damn thing, that we've made enough accommodations to whatever you have to do outside of the hospital. I think that we've probably changed that in some degree.

I think it's been funny, this question about wellness days for residents, but I think fundamentally we all want to be here and we all want to do the work, and if you give us enough of an excuse to just say, "Oh, my program won't let me go to the dentist," we'll just not go to the dentist. We continue to recruit people who really enjoy being here and who want to work, and I think they recognized that probably there's something to be said for occasional dental hygiene, but it's almost easier to just be, "Look, I work more than business hours, six days a week. I'm just not going to go to the dentist."

Our view was that the only way you could get this group of residents who have been so gas lit by this idea that they're totally irreplaceable, the only way to get them to go see their primary care physician or something would be just to tell them that they have a quarterly day that's just assigned. I don't know, we don't yet have an answer really to say to what extent that's successful or that more people made it to doctor's appointments. We're not going to have numbers around that.

I think it's still something of an experiment to say, "Well, if you just assign people time off during business hours, will they go get their car serviced?" I've gotten messages from Subaru for six months about not doing some airbag recall. You're just like, "I don't know when I'm supposed to do this thing." I'm going to try to do it in between residency and fellowship. I didn't even get any wellness days this year. We don't have them on cardiac, unsurprisingly.

Although Jack Haney is working on some plan for every month you'll have an administrative…we're not ready to call it a wellness day, but we're calling it an admin day, when you would just round and then be done. It's awkward, because then it's like our current cardiac admin chief even jokes with everyone when they have an admin day come up. He's like, "Well, I've got a CABG for you, but you're welcome to just go home if you'd rather," and it's 0% of people really are asking to go home.

You basically have to just assign them and just tell them, "Hey, I'm sorry, you can't do this case. You have to go do something productive outside of the hospital, or else just stay in a call room and study for your boards," which is what the person who had their administrative day was like, "I can't go home. I'm not going to get anything done, so I'm just going to stay here and study."

I think there's a lot of that is still a work in progress, but I think hopefully there's room for some sort of a conversation about that. Part of the comparison is really, do we compare ourselves to other surgery programs? Is that the bar that we should hold ourselves to? Should we hold ourselves to competitive fields? If you say, "Well, what do Apple and Google do for parental leave, or wellness things," and you say, "Well, I don't know. Is that the standard that we need to hold?" It's tough to say if what we do makes any difference to them people who are considering a career in computer

sciences versus medicine. Would they say, "Surgery has changed their parental leave. Now I will end up following a career in Med--" Those people, they're already differentiated enough that it doesn't make much of a difference, I don't think. There's something to be said within the field of surgery that is certainly compelling.

We've tried to position ourselves as training leaders in surgery, and we probably can find ways to lead as a department against other departments of surgery. If we're going to compete for the best people, I think people are going to notice these sorts of things. There's some competition aspect of being able to show that we at least think about these issues and that we're exploring ways to address them, because I think it's a service industry, and we have to make ourselves appealing. I don't want to say we have to, but we think that we should position ourselves as attractive to the best of the medical students who are considering a career in surgery. I think part of it probably involves making those changes.

Justin: You said that you're headed to fellowship next year and obviously staying here for cardiac. Is there an aspect of cardiac you plan on pursuing?

Dr. Mulvihill: I really enjoy heart failure and end-stage lung disease, so I do really like transplant. Heart failure itself can be, you have some amount of an elective practice from an elective mechanical support kind of a thing, and I do really enjoy transplant. I think that still is something that's so much fun. I think those are great operations, both heart transplant and lung transplant. I still find them interesting clinical problems, and the scientific aspect is still appealing. My hope is that there would be room to continue working in heart failure and lung transplant.

Justin: How do you see your career playing out?

Dr. Mulvihill: It's hard to think really much more than the two years--

Justin: Tomorrow. [chuckles]

Mulvihill: Yes, exactly. Tomorrow. I think part of it probably involves growing up in academic medicine, but certainly clinically it's all I know, and that to me has always been what appeals to me. I like the teaching aspect of being in a university setting. I do still enjoy working with medical students, and I think also part of that is that a lot of niche heart and lung failure is managed in the academic setting. That to me has felt like the natural fit and what I would like to position myself for.

I've enjoyed the lab side of things. I think I am maybe a little more pessimistic than Dr. Kirk about what the surgeon-scientist model looks like. I guess only time really will tell. It's hard for our cardiac surgeons who are trying to have some scientific career going. The natural inclination is that they should be generating RVUs for the university. I don't know what, really, the options will be available there. Patrick Davis is starting up at Yale next year and has an opportunity there where he has time protected to get his science off the ground. Those things still exist. I think they're less

common now, and so it would be nice to find a spot like that where I could try to get some amount of science off the ground.

I think what I'm totally realistic with things, I've always thought it's crazy that Dr. Kirk and Dr. Knechtle, still even this far in their career, basically, it's like subsistence lab work. They always try to have overlapping grants, but to some extent, it came up in our lab meetings about, "Well, if this grant doesn't get funded, are we going to have to sacrifice a bunch of animals, or are we not going to be able to bridge to the next grant?" It's crazy to think that even people who've been so productive and so reliable in terms of their contributions to science still are basically in very narrow timeframes. That aspect of things is still really intimidating for me starting out. You say, "Well, if they still have to worry about this, what is the likelihood that I, as someone who would be busy on the CT side, would be able to continue to compete for grant funding?" I think it's really intimidating, so that's I think somewhat of an open question, and we'll see where that goes.

Justin: We've been talking for about two hours. Is there anything I haven't asked you that you want to make sure we get on the record? By the way, Gulack has the record at two and a half, so you're still safe.

Dr. Mulvihill: I don't think so. Yes, we really went through year by year there. I have a little better sense of how I feel about this program now.

Justin: I'm glad this was useful.

Dr. Mulvihill: I think that's it.

Justin: All right. Well, thank you very much. I really appreciate it.

Mulvihill: Yes, appreciate it.

[01:53:12] [END OF AUDIO]