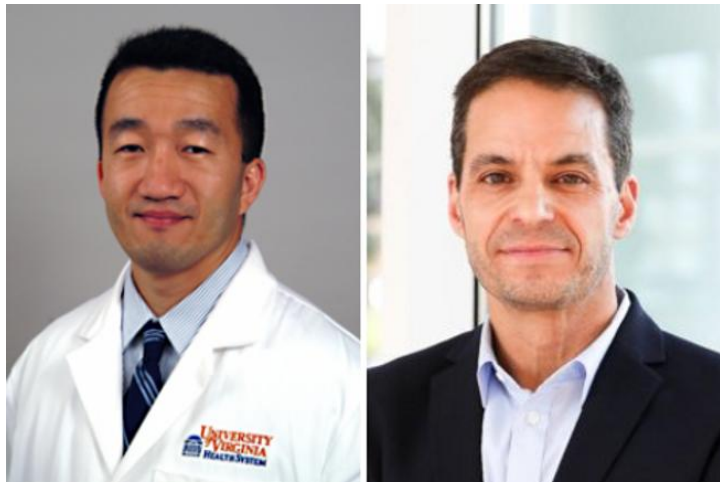# THRIVING

The iTHRIV Newsletter

December 2024

Contents

iTHRIV Pilot Grant Recipients Achieve Success in NIH Awards for Research Using Hyperpolarized Xenon MRI

iTHRIV Clinical Translational Research Pilot grant recipients, Jaime Mata, PhD and Y. Michael Shim, MD, and their colleague John P. Mugler, PhD, were recently awarded two, five-year NIH R01 grants totaling $7.4 million for research using hyperpolarized xenon-129 MRI to evaluate lung transplant rejection, and abnormalities in the lungs of electronic cigarette users. Drs. Mata and Mugler are University of Virginia (UVA) professors in the Department of Radiology and Medical Imaging, and Dr. Shim is a professor in the Department of Medicine, Division of Pulmonary and Critical Care. Data from their iTHRIV Pilot award, Advanced Immunoclinical Phenotyping of Rejection in Lung Transplantation, supported their successful extramural funding.

Lung transplantation is a therapy for many patients with end-stage lung diseases. Unfortunately, studies report that most transplant recipients die from rejection. Rejection occurs because the lung transplant recipient's body perceives the donor's lungs as foreign and rejects the transplanted lungs. Many now believe that a series of small rejections lead to terminal failure of the transplanted lungs. The supply of lungs for transplant is the biggest bottleneck to perform a lung transplant, and many patients die while waiting. Therefore, it is critical to detect rejection early and treat it aggressively so that already-transplanted lungs can give the longest possible survival benefit to the recipients. Some lung transplant centers (like UVA Health) perform routine invasive lung sampling procedures called a bronchoscopy, pulmonary function test, and clinical exam to diagnose rejection. Lung sampling is typically performed in the right middle or left upper part of the lung because those areas are easy and convenient to sample. Unfortunately, many patients develop rejection unpredictably, after lung samplings showing normal results. The failure to effectively diagnose the rejection by bronchoscopy raises questions. Are clinicians sampling correct parts of the lung to diagnose rejection, and can we improve our lung sampling techniques?

A specialized MRI technique called hyperpolarized gas MRI (HGMRI) has been used to visualize and detect specific parts of the lung with abnormalities. Research by Drs Shim and Mata now indicates that the rejection happens in moth-eaten-like random patterns

with normal and abnormal lung tissues alternating. These results suggest that the current way of sampling the right middle or left upper lung by bronchoscopy may be severely flawed.

In their iTHRIV pilot project, the researchers studied lung transplant patients who were scheduled to undergo surveillance bronchoscopy to detect rejection. The researchers first found the part of the patients' lung with rejection-like changes by HGMRI, then sampled the lung in two places, one normal and one abnormal area of the lung. These two areas of the lung from the same patient were compared to determine if abnormal findings in HGMRI correlate with rejection.

In part 1 of this pilot project, 12 patients were imaged using HGMRI. As hypothesized, HGMRI was able to differentiate focal regions in the transplanted lungs that are abnormal and not performing well. The researchers developed an imaging tool that fuses the HGMRI images with the CT scan and produces a detailed 3D "path map" for the bronchoscopy, from the trachea all the way to the focal lung abnormality. With this imaging analysis tool, the researchers can provide 3D guidance ahead of the bronchoscopy procedure, helping in a novel and unparalleled way the planning of the bronchoscopy procedure. In part 2 of the project, the researchers were able to sample the abnormally functioning regions of the allografts (transplanted lung) with an unmatched planning and precision. The researchers also have been able to determine normal functioning regions of the allografts for comparison. The results were impactful. In several participants, the researchers were able to correlate initial allograft rejection from the standard clinical pathology samples with the abnormal HGMRI ventilation and gas exchange imaging. This new pre-bronchoscopy personalized planning developed for this project is already having a tremendous impact in how clinicians perform their bronchoscopies post transplantation. It is also helping the patients receive a more precise, potentially earlier diagnosis and earlier modified treatment plan in case of abnormal lung function or signs of early lung rejection.

To learn more about the exciting ongoing work of this team, see the article in UVA Medicine in Motion: Scientists Earn $7.4 Million for Lung Research Using Hyperpolarized Xenon MRI - Research - Medicine in Motion News

iDRIV Scholars Program and Leadership Academy: Empowering Future Leaders

iDRIV Leadership Academy participants and leaders share a celebratory lunch marking the completion of the series.

The inspiring Diverse Researchers in Virginia (iDRIV) Scholars Program is founded on a dual commitment of supporting the success of exceptional investigators and building a diverse research community to bring more treatments to all people more quickly. This initiative ([accepting applications through December 18th](#)) aims to accelerate the research careers of early-career and aspiring faculty at the University of Virginia through education, coaching, mentoring, and sponsorship tailored to biomedical science researchers. iDRIV has graduated 32 scholars over the past four years. (1)

Building on this foundation, the iDRIV Leadership Academy serves as a natural extension of the iDRIV Program. It aims to enhance the leadership skills of early-career professionals, equipping them with the tools needed to navigate and excel in their careers. By combining professional development with a focus on authentic leadership, the Academy empowers participants to become effective leaders who can advocate for themselves and their communities.

Celebrating the Success of Our First iDRIV Leadership Academy Cohort!We are excited to share the successful completion of the inaugural iDRIV Leadership Academy! Under the leadership of Dr. Marquita Taylor, Associate Director of Diversity, Equity, and Inclusion for the UVA Comprehensive Cancer Center (UVA CCC), the Academy represents a collaborative effort between iTHRIV, the UVA CCC, and the National Institutes of Health (NIH).

The iDRIV Leadership Academy aims to enhance leadership skills, foster professional networks, and develop strategies to overcome barriers to success.

Dr. Marquita Taylor, Associate Director of Diversity, Equity, and Inclusion for the UVA Comprehensive Cancer Center

The first cohort featured a vibrant mix of fellows, clinical instructors, and post-doctoral candidates, all eager to evolve their leadership skills in a supportive environment. Participants engaged in six interactive sessions that covered essential topics such as Authentic Leadership, Emotional Intelligence, and Cultural Empowerment, encouraging reflection and providing actionable strategies for effective leadership. Each participant who completed the Academy received a stipend to support their ongoing professional development, reinforcing the application of their new skills. Additionally, the Academy facilitated valuable connections among participants and mentors, creating a supportive community that extends beyond the sessions.

The impact of the iDRIV Leadership Academy is evident in the pre- and post-Academy survey results, which showcase significant improvements in participants' confidence levels. Notably, confidence in being their authentic selves in the workplace increased dramatically, with many participants moving from "Somewhat Confident" to "Very Confident." Additionally, participants reported enhanced confidence in leading teams effectively, reflecting a notable shift from "Not Confident" to "Confident." Understanding of emotional intelligence also improved significantly, with most participants feeling "Confident" or "Very Confident" after completing the Academy. Furthermore, there was an increase in confidence regarding interactions with diverse cultural

backgrounds, underscoring the Academy's emphasis on inclusivity. Participants unanimously agreed that the Academy expanded their professional networks and provided strategies for overcoming challenges. Many reported forming peer support groups that continue to foster collaboration and growth.

Looking Ahead

The success of the iDRIV Leadership Academy sets a promising foundation for future cohorts. As we continue to cultivate the next generation of leaders in biomedical research, we remain committed to ensuring that diverse voices are heard and valued in the scientific community.

Thank you to everyone involved in making this program a success! We look forward to seeing how our graduates will apply their skills and insights in their future endeavors. Visit our website at https://www.ithriv.org/idriv-program or contact Jennifer Phillips, iTHRIV Director of Research Workforce Education, at jvp8a@uvahealth.org for additional information about upcoming cohorts and initiatives!

References

1. Mata-McMurry LV, Phillips JV, Burks SG, Greene A, Syed S, Johnston KC. Inspiring diverse researchers in Virginia: Cultivating research excellence through a career-building program. J Clin Transl Sci. 2024 Jan 22;8(1):e27. doi: 10.1017/cts.2024.12. PMID: 38384914; PMCID: PMC10880007.

What is Translational Science? It's as Easy as Pie!

The National Center for Advancing Translational Sciences (NCATS) supports a national network of institutions to speed the translation of research discoveries into improved care: bringing more treatments to all people more quickly. This work is supported through the national Clinical and Translational Science Award (CTSA) program. There is a growing emphasis on the "translational science" aspect of the CTSA program and future CTSA pilot grants offered through the program will support projects in this area.

By providing Clinical Translational Science (CTS) pilot funding, the planned 2025 iTHRIV CTS Pilot Studies Program seeks to support innovative approaches to translational science projects (TS), and to foster collaboration across iTHRIV institutions. TS projects seek to understand the scientific and operational principles underlying the translational process. TS is focused on the general case that applies to any target or disease (see examples of TS projects here). iTHRIV seeks to help our research community understand the difference between "translational research" and "translational science". In the spirit of the holiday season, check out this helpful pie-based video from CTSA colleagues at the University of Rochester to begin planning for your next proposal!

To learn more about translational science research, contact Medard Ng, PhD, iTHRIV Pilot Studies Program Manager at htn3u@uvahealth.org.

iTHRIV Under the Microscope

Mattie Tenzer, Director of Health Analytics Research at Carilion Clinic, plays a pivotal role in supporting the iTHRIV iBERDI (integrated Biostatistics, Epidemiology, Research Design, and Informatics) initiative, a groundbreaking collaboration that enhances research and quality projects across Virginia. At Carilion, Mattie and her team provide critical support for projects from inception to completion, offering expertise in areas like data extraction, informatics, biostatistics, secure environments, and electronic medical record enhancement. Their work accelerates research solutions, empowering clients to make meaningful strides in healthcare innovation.

Mattie is a graduate of the University of Virginia, and her family has lived in Charlottesville Virginia for generations. Her professional career spans over 30 years, and her journey began at Massachusetts General Hospital, where she focused on cardiac research. She worked with nuclear MRI experiments and analyzed the results.

Over the past seven years, Mattie has led the growth of Carilion's research analytics department, which now handles an impressive 280 new projects annually. These projects span a wide range of collaborations, including partnerships with academic institutions like Virginia Tech, VCU, and UVA, as well as healthcare providers such as nursing homes and the VAMC. Additionally, they work with community service organizations and local schools, such as Fallon Park Elementary, to support programs that drive positive health outcomes.

Mattie's passion for research and dedication to helping others shines through in her leadership. "I love supporting researchers in their groundbreaking work," she says. "The opportunity to collaborate across the state through iTHRIV accelerates solution delivery and fosters shared learning and resources." Mattie will lead the community partner intake process for iTHRIV's iAID (iTHRIV Accelerating Impact with Data) program in our second NIH CTSA cycle. She will help community partners develop their research projects and assist with the overall coordination of this program.

When she's not supporting innovative health research, Mattie enjoys spending time with her family, including her three Stabyhouns—a fun fact that showcases her love for animals!

Through her leadership and commitment, Mattie Tenzer continues to make a lasting impact on healthcare research, supporting both local and statewide initiatives that improve the lives of individuals and communities alike.

Meet an iTHRIV Mentor

Dr. Craig Slingluff has been an extraordinary mentor who truly cares about my growth, not only as a surgeon or scientist, but also as a person. His selflessness and genuine interest in my development are evident in the thoughtful, tailored advice he offers, whether it's about my career, my research, or life. He is always readily available, whether to assist with a difficult case or provide clarity on a challenging research question. He is incredibly humble and I'm deeply grateful for his guidance, which has shaped how I approach both challenges and opportunities. Whenever I face a difficult decision, I often find myself asking, 'What would Craig do?'

Russell Witt, MD, iTHRIV Scholar (2024-2026 Cohort)