



***THRIVING***  
The iTHRIV Newsletter  
October 2024

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## Remembering Dr. Warren Bickel



Colleagues across the integrated Translational Health Research Institute of Virginia (iTHRIV) mourn the passing of Dr. Warren Bickel, who was a founding leader of iTHRIV, a tremendous researcher and transformational leader. Dr. Bickel played a crucial role in establishing and maturing our research collaboration.

Mike Friedlander, a friend and colleague of Warren's, captures his essence perfectly: "Warren truly helped put Roanoke on the map in the fields of health sciences and biomedical research. His impact as a genuinely remarkable person will be deeply missed, along with his infectious smile and sense of humor."<sup>1</sup>

Read more about Dr. Bickel and his work, in the following articles:

[In memoriam: Warren Bickel, professor and global pioneer in addiction recovery research | Virginia Tech News | Virginia Tech \(vt.edu\)](#)

<sup>1</sup> [Addiction and recovery expert Warren Bickel, who spearheaded Fralin Biomedical Research Institute's growth, dies at 68 - Cardinal News](#)

## 2024 Biomedical Data Science Innovation Lab Highlights



The Biomedical Data Science Innovation Lab (BDSIL) is a pioneering initiative that combines the realms of biomedical research and data science. This unique experience brings together early career researchers and faculty members spanning diverse disciplines such as medicine, basic science, translational research, biomedical engineering, computer science, biostatistics, and mathematics. The primary objective of the BDSIL is to foster interdisciplinary collaboration and stimulate innovation by addressing specific challenges in the biosciences through the application of cutting-edge data science methods. The goal of the 2024 Biomedical Data Science Innovation Lab (BDSIL) was to foster the formation of new collaborations which will generate creative strategies on the use of data science approaches for creating new strategic partnerships between AI developers, biomedical researchers, and educators.

At the heart of BDSIL's mission is the cultivation of new, multidisciplinary partnerships. These collaborations are meticulously facilitated to tackle challenges in biomedicine where data science plays a pivotal role. Thirty-one faculty and researchers from across the country were selected to participate in the 2024 cohort. Sixty-four percent of participants were early career or Assistant Professor researchers. They brought their ideas, data, creativity, enthusiasm, and team spirit to the June 2024 workshop in San Diego, California as they collaborated on the many issues surrounding generative AI in today's context. Participants from iTHRIV institutions included:

- Andrew Barros (UVA)
- Xuan Wang (Virginia Tech)

The BDSIL experience is characterized by a multifaceted approach. Participants engage in weekly webinars throughout the year featuring thought leaders in the field, gaining insights into the latest developments and best practices. Virtual ‘micro-lab’ activities spread throughout the year provide interactive opportunities to discuss data science approaches to real-world challenges, advancing interdisciplinarity, and innovative thinking. Finally, a cornerstone of BDSIL is the five-day mentored and facilitated grant and manuscript development workshop. This intensive collaborative setting serves as a catalyst for translating ideas into tangible outcomes.

The emphasis on mentorship ensures that participants receive guidance from experienced professionals, enhancing the quality and viability of their proposals and manuscripts. The ultimate goal is to not only generate new knowledge but also to facilitate the development of projects that have the potential to secure extramural funding. The 2024 BDSIL Mentor Team was composed of five senior investigators that brought their experience, encouragement, and support to the developing participant teams. Mentors met with the teams as they formed to provide feedback, guidance, and direction. They reinforced the positive aspects of potential team projects while asking clarifying questions about areas in need of improvement. 2024 Mentors included: Dr. Prince Afriyie (University of Virginia), Dr. Besa Bauta (New York University), Dr. Maryam Vareth (University of California, Berkeley), Dr. Brian Wright (University of Virginia), and Dr. Qing Zeng (George Washington University).

Additionally, at various times during the BDSIL, it is important to be challenged, pushed, and encouraged. That’s where provocateurs come in — Dr. Russ Altman (Stanford University) and Dr. Mona Kasra (University of Virginia) gave short, disruptive, and thought-provoking lectures about their experiences to further inspire innovation among participants.

The BDSIL experience facilitates the generation of new peer-reviewed research articles which underscores the commitment to contributing meaningfully to the scientific literature and the career paths of our participants.

Throughout all BDSIL activities, the concept of Team Science is omnipresent. Recognizing that complex challenges in biomedicine require collaborative efforts, the program fosters a culture of teamwork. Participants are encouraged to leverage diverse expertise, perspectives, and skills, emphasizing that breakthroughs often emerge at the intersection of disciplines. The BDSIL represents a dynamic and forward-thinking initiative at the crossroads of biomedical science and modern computational applications. By nurturing collaboration, fostering innovation, and embracing the principles of Team Science, BDSIL stands as a beacon in the quest to unravel the complexities of biomedicine through the transformative power of data science.

At the conclusion of the 2024 in-person lab, participants created eight research projects and aim to develop these projects over the next few months and years with the intent to submit for funding and get published.

Plans are underway for the 2025 BDSIL: Quantitative Approaches in Spatial Multi-Omics for Guiding Personalized Medicine. Applications are scheduled to open November 15th. Learn more by visiting the website: <https://www.innovation.lab.virginia.edu/>

The BDSIL is led by Director John Van Horn, PhD, M.Eng at the University of Virginia. The BDSIL is based in the School of Arts and Sciences and the School of Data Science at the University of Virginia, and supported by a grant from the National Institute of General Medical Sciences (R25GM139080) and iTHRIV (UL1TR003015).

## iTHRIV Pilot Grant Team Receives AHRQ Funding for Improving Pediatric Donor Heart Utilization with Predictive Analytics

**Congratulations to researchers** Michael McCulloch, MD (UVA Children’s Hospital, Pediatric Cardiology) and Michael Porter, PhD (UVA Schools of Data Science and Systems Engineering) who recently received notice of funding from the Agency for Healthcare Research and Quality (AHRQ) for \$1.03 million dollars through an R21/R33 award! The team was funded by an iTHRIV Clinical Translational Research Pilot award in 2021 which first helped them define donor characteristics for pediatric heart transplants through their project titled “Impact Quantification of Donor Echocardiographic Data on Pediatric Heart Transplantation Recipient Outcomes.” The investigators then successfully competed for a Jefferson Trust grant that helped further their work.

Over 10% of infants and children with end-stage heart failure or inoperable congenital heart defects die waiting for a life-saving heart transplant, yet 40% of potential donor hearts are unused. When one becomes available, clinicians have minutes to evaluate over 100 donor, candidate and offer-specific variables and decide whether the heart is a suitable match. Complicating this crucial decision is a paucity of data-driven guidelines, leaving clinicians without clear understanding of what impact these variables have on recipient outcomes and the risks tied to declining an offer, prolonging a candidate’s time on the waitlist. Without tools to help clinicians quickly and confidently assess all of the complex considerations involved in organ decision-making, many suitable hearts may be unnecessarily rejected. Research is needed to address this critical gap, and provide data-driven predictions and an enhanced offer interface to empower clinicians with timely and confident decision-making that will increase donor utilization and waitlist mortality.

In their iTHRIV pilot project, Dr. McCulloch, a Professor of Pediatrics/Pediatric Transplant Cardiologist at [UVA Children’s Hospital Heart Center](#), and Dr. Porter, an Associate Professor in the [UVA School of Data Science](#) and of systems engineering in [UVA’s School of Engineering and Applied Science](#), successfully cleaned and merged data from the United Network of Organ Sharing (UNOS), which was a herculean effort considering the extent of data within each database and the sheer number of separate and distinct databases that existed. The team also extracted the



*Michael Porter, PhD*

echocardiographic data for the 30,000+ donor offers provided to them from UNOS and entered the data into a REDCap database, which comprises the entirety of the pediatric donor data that the team elected to focus on in their initial work. Their recent analysis of UNOS data from 2010-2020 found prior donor offer refusals were the single strongest predictor of subsequent refusals, suggesting a potential decision cascade bias. Further, 60% of all discarded hearts were found to be completely normal on their final ultrasound. Together these findings underscore opportunities for improvement in pediatric donor heart acceptance practices.

The new AHRQ award will allow this experienced team of data scientists, engineers, behavioral scientists, and pediatric transplant cardiologists to produce the first predictive model capable of analyzing the vast amount of data and delivering real-time assessments of the likelihood of a successful transplant at the time a donor heart is offered. This research could shape future donor heart acceptance guidelines, optimize donor utilization, and save lives. The end result could advance the field of donor acceptance practices across all organ systems and demonstrate a proof-of-concept for predictive modeling research in transplant medicine.

## Meet a Mentor: Y. Michael Shim, MD

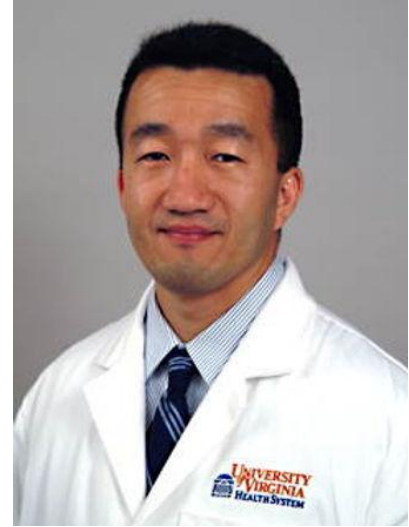
**University of Virginia**

**John L. Guerrant Associate Professor of Medicine and Radiology**

**School of Medicine**

“Dr. Mike Shim is an exceptional mentor! He is a leader in the field of advanced imaging with hyperpolarized gas MRI and its application to the detection of pulmonary pathophysiology. He is always approachable, collaborative and pushed me to think critically about my research goals and methods. I can pinpoint much of my growth and development from a post-doctoral fellow to clinician scientist as the by-product of his steadfast mentorship. Countless times he has offered unique perspectives and ideas to re-frame my own questions in a way that improves my project and career development. Dr. Shim works tirelessly in the service of those around him. He is deeply committed to his mentees, meeting them where they are, and guiding them to their highest potential.”

Jamie MacLeod, MD, iTHRIV Scholar (2023-2025 Cohort)



*Y. Michael Shim, MD*



## iTHRIV Under the Microscope



*Kristin Miller (Kris)*

Kristin Miller (Kris) is the dedicated Partnership Manager for iTHRIV. She serves as a critical link between iTHRIV researchers, teams, and community organizations. She coordinates the Community Engagement Studios and the Recruitment Enhancing Resource Program (RERP) while acting as a key resource for researchers interested in community engagement.

Working closely with Molly Roberts at Carilion Clinic, Kris serves as the administrative facilitator for the iTHRIV Community Advisory Board (CAB) ensuring that community voices are heard and reflected in health research initiatives. Her expertise in engaging with community members provides valuable insights that bridge the gap between academic research and real-world community needs.

Kris actively participates in several local community-based coalitions, staying attuned to the evolving priorities and challenges faced by

communities across the state. Her in-depth understanding of these needs helps ensure that iTHRIV's efforts remain aligned with community interests.

Additionally, Kris manages iTHRIV's social media presence and curates resources and events in the iTHRIV Portal, expanding our reach and impact. She also facilitates educational initiatives focused on health equity, inclusion, and belonging, sharing resources with her colleagues to promote a culture of understanding and collaboration.

Outside of her professional commitments, Kris enjoys a variety of hobbies that reflect her creative side and love for nature. Gardening allows her to connect with the environment, while cooking and crafting provide an outlet for her creativity. Walking serves as both a form of exercise and a way to unwind, giving her the balance she needs to thrive both personally and professionally. Kris' multifaceted role and her personal interests reflect her commitment to community well-being and holistic health.