BCM SOAR

RESEARCH NEWS

MARCH 2025 EDITION

Baylor College of Medicine | SCHOOL OF MEDICINE
STUDENT OPPORTUNITIES FOR ADVANCEMENT IN RESEARCH (SOAR)

IN THIS EDITION:

Art by Megan Benavides and Grace Anderson

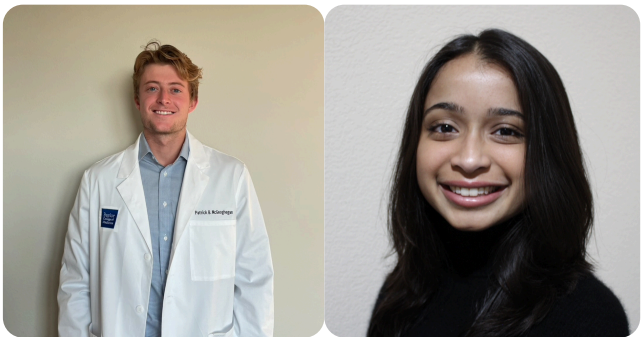
Medical Student Research Presentations

The Student Opportunities for Advancement in Research (SOAR) office recently hosted its monthly medical student research presentation session (MRSP), allowing students to present their research projects during a seven-minute talk in front of a panel of reviewers consisting of faculty, senior M.D./Ph.D. students and residents.

Patrick McGeoghegan, a second-year medical student, was one of the students who participated this month. His research focuses on liver transplant outcomes and the impact of donor graft size on post-transplant complications.

“Understanding these size-related complications is crucial for optimizing graft selection and improving transplant success,” said McGeoghegan

With an interest in general and cardiothoracic surgery, McGeoghegan utilized the SOAR database to find a project aligned with his interests and the opportunity to lead his own research. “SOAR made it very easy for me to connect with a great mentor,” said McGeoghegan.



Pictured above: Patrick McGeoghegan (left) and Shreya Tamma (right)

He noted that the panel at MSRP provided meaningful and valuable feedback which he plans to incorporate into his final presentation at the Academic Surgical Congress (ASC). "With their input, I was able to polish my final presentation and better anticipate the questions that would be asked at the conference," McGeoghegan said.

Other student presenters shared sentiments similar to McGeoghegan's, emphasizing how essential preparation and rehearsal were to the refinement of their presentations.

"I had a fantastic time sharing my research at the MSRP," said first-year medical student Shreya Tamma. "It was a great opportunity to practice my presentation and elicit feedback from peers and mentors alike, all from a wide variety of fields."

Through qualitative interviewing, Tamma is studying the care expectations of adults 65 and older who are hospitalized due to congestive heart failure exacerbations. She is drawn to this research because of the opportunity to listen to patient narratives and honor their stories by informing improvements in patient care and outcomes.

She became involved after seeing assistant professor Dr. Anita Chary's posting on the SOAR database last year and decided to reach out for an interview.

Since then, she has had to revisit and refine her research question to ensure her research is relevant to the patient population at hand and produces meaningful outcomes.

Tamma was not the only one who faced unexpected challenges throughout the research process. McGeoghegan's research journey also came with its fair share of setbacks, the biggest of which was learning to work independently and problem-solve without direct supervision.

"The coding and statistics were entirely up to me," said McGeoghegan. "Having to face these issues head-on was difficult, but I believe it greatly enhanced my learning."

In addition, McGeoghegan applied for and was granted the SOAR Travel Award to attend and present at the ASC conference. MSRP not only helped him prepare for his final presentation but also allowed him to save money.

"I recommend that any medical student who will be doing an oral presentation volunteer to speak at MSRP to prepare for their conference," McGeoghegan said. "It will teach you how to synthesize your findings into a format that is both understandable and visually appealing."

Tamma notes that MSRP has helped her learn which parts of her presentation stood out and which could be emphasized more in a low-stress environment.

"It was a good reminder that the big picture matters far more, especially to those unfamiliar with quality improvement or qualitative research," said Tamma. "I would definitely recommend the MSRP experience to others interested in presenting their research at poster sessions or conferences."

She will be applying for the SOAR travel award to attend the American Geriatrics Society conference in Chicago this May.

Written by Mawada Al Faisal
Edited by Annika Jyothi

The State of AI in Healthcare: TMC AI Summit '25

The Texas Medical Center (TMC) Artificial Intelligence (AI) Summit on Feb. 20–21, gathered experts to discuss advancements of AI in healthcare. The event highlighted developments already shaping research and clinical practice across TMC institutions.

From the incorporation of AI into various aspects of the healthcare pipeline to ensuring the safety and security of AI systems, the challenges of ethical oversight and implementation remain pervasive. Considering how AI will shape future patient-clinician interactions, outcomes and improvements has never been more critical.

While radiology was an early focus of AI, pathology is now seeing significant advancements. Dr. Guanghua "Andy" Xiao, a professor at UT Southwestern Medical Center, said, "Pathology images are significantly more complex than radiology scans," with some exceeding one gigabyte in size each.

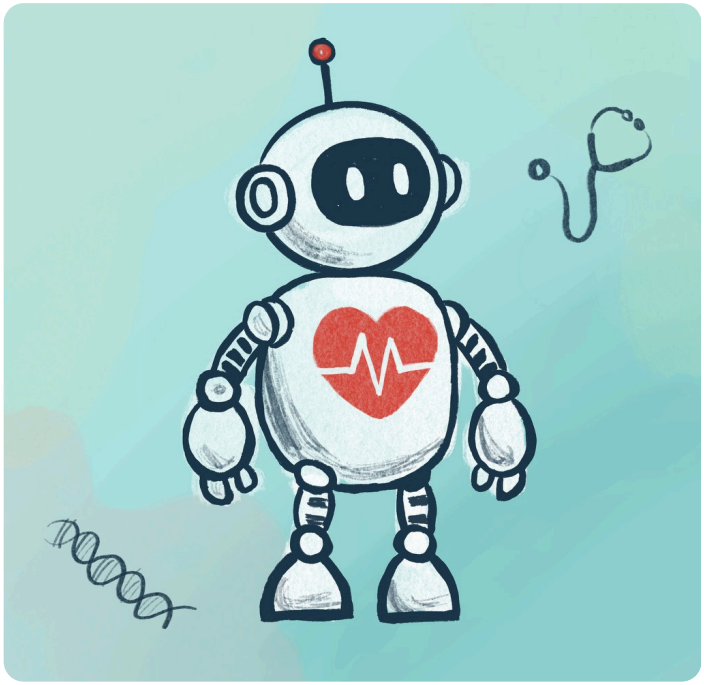
His team has developed AI models capable of classifying lung cancer subtypes using histopathological features with results comparable to those of pathologists.

His current research focuses on developing models that can predict cancer development by analyzing benign tissue for early risk indicators.

AI also shows promise in mitigating diagnostic errors. Dr. Shawn Stapleton, director of Data Impact and Governance at the University of Texas MD Anderson Cancer Center, discussed the program's use of large language models to detect and classify such errors.

"We use these models to classify events and help in root cause analysis to increase detection of diagnostic errors so hospitals can improve patient safety," said Dr. Stapleton.

He explained that a notable result has been AI-driven detection of handoff errors, with early trials showing low false-negative and false-positive rates.



Art by Zuena Karim

Ultimately, successful AI implementation depends on helping clinicians understand which aspects of AI are useful while emphasizing the technology's limitations.

"If it's a model that is specific for a disease cohort, with a small group of clinicians, you need to engage them early," said Ashok Kurian, Assistant Vice President of Data & Analytics at Texas Children's Hospital. "Get them comfortable with the algorithm and work with them [...] so that over time, they understand its use [...] and drawbacks [...] and can become advocates."

The TMC AI Summit 2025 reinforced that AI's role in healthcare is not just theoretical; rather, it is actively shaping patient care. As technology continues to evolve, interdisciplinary collaboration and ethical oversight will be crucial in ensuring its responsible and ethical use.

Written by Geoffrey Zhang
Edited by Laasya Achanta

Student Spotlight: JEREMY BIRKMIRE

Pictured above: Jeremy Birkmire, MS1

Jeremy Birkmire, a first-year medical student at BCM, is excelling in his rigorous medical school coursework while making meaningful research contributions.

Birkmire's research interest began during his undergraduate years at the University of Florida, where he co-led a study on hoarding disorder in a neuropsychology lab.

He explained that the experiences taught him how to read literature efficiently and critically, skills that served him well in college and are currently being built upon in medical school.

Birkmire's current research is refining these skills through meaningful projects outside his primary interest in psychiatry. He is conducting meta-research on optimal oncological treatment durations with a laboratory at the University of California, San Francisco.

"The goal of this research is to draw attention to this understudied yet ubiquitous topic," said Birkmire.

Additionally, he joined Introduction to Statistical Methods in Surgical Clinical Research (MESUR 566), an elective led by Dr. Abbas Rana, associate professor of surgery. Using machine learning, they have developed an interpretable and predictive risk index aimed at increasing graft utilization in pediatric heart transplantation.

These experiences have allowed Birkmire to build a comprehensive toolkit of research skills, including scientific inquiry and critical analysis. "I definitely want research to play a role in my future career," he said. "But I want to be a clinician first and foremost."

Currently, he hopes to become an interventional psychiatrist. "Psychiatry is the last frontier of medicine. There is so much unknown and so much to be improved upon," said Birkmire.

Birkmire is also passionate about the critical appraisal of medical evidence. His commitment to promoting conversations around this topic led him to start an organization at BCM called Averting Groupthink: Union for Evidence-based Medicine.

The group invites experts to debate controversial and challenging topics in medicine live on Zoom with recordings posted on various social media platforms for public education.

For those on their research journey, Birkmire emphasizes the ethical responsibility researchers have to contribute quality work, not just quantity.

"I highly recommend everyone read John Ioannidis' widely cited paper 'Why Most Published Research Findings Are False,'" said Brikmire. "Medical students are increasingly pressured by competitive residencies to pump out research. As much as you're able, refuse to be part of this problem [...] Do quality research."

Through his past and current work, Birkmire has demonstrated a strong grasp of research, setting the stage for impactful clinical and research contributions to psychiatry and beyond.

Written by Malay Shah and Justin Hu
Edited by Maheen Kara and Laura Valderrábano

Time Management When Doing Research

Mastering time management is key to success when balancing research with classes, work and personal life. Students must set clear priorities, create intentional schedules, and communicate effectively with mentors to stay organized and avoid burnout.

Planners, digital calendars, or task management apps such as Notion, Things 3, and Google Calendar can help students stay on top of deadlines. “Using a structured system like a calendar or to-do list helps me balance research and coursework,” said first-year medical student Eric Choi.

The director of Student Opportunities for Advancement in Research (SOAR) at BCM, Dr. Mabel Perez-Oquendo, emphasized the importance of a structured approach.

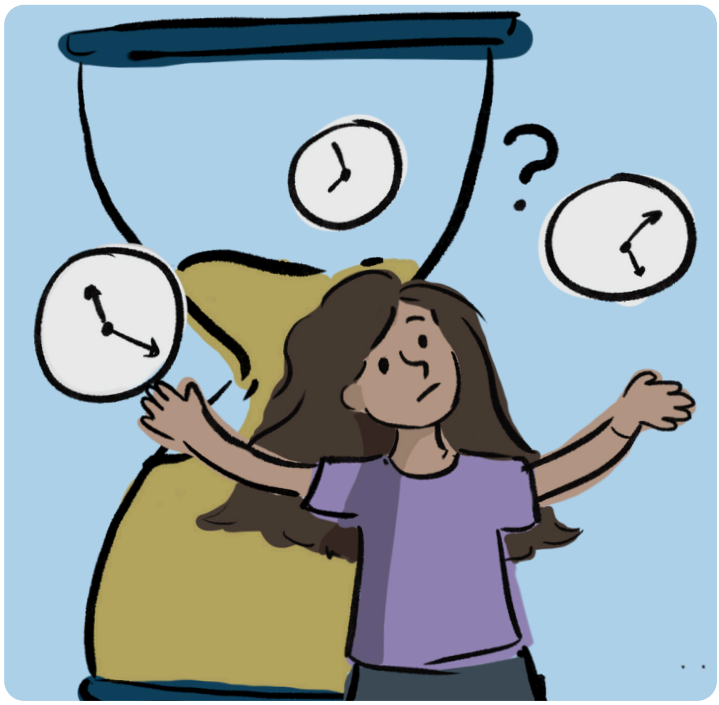
“Approach research with structure, just as you would with coursework or clinical responsibilities,” said Dr. Perez-Oquendo. “Setting clear milestones and dedicating specific time each week helps you maintain steady progress without feeling overwhelmed.”

In addition, a well-thought-out routine can help students stay on track. Andreas Weyland, a first-year medical student, finds that physically going into the lab enhances his focus.

“When I’m in the lab, I can fully dedicate my attention to research without distractions,” said Weyland. This strategy helps him allocate specific time blocks exclusively for research, ensuring he does not need to juggle multiple tasks simultaneously.

Managing stress and prioritizing self-care are also essential. Dr. Rosa Michelle Schmidt, an associate professor at BCM, reminds students that perfection is not always attainable.

“Recognizing when to take a break is crucial,” said Dr. Schmidt. “If something doesn’t get done perfectly or on time, it’s not the end of the world.”



Art by Megan Benavides and Grace Anderson

Taking breaks, exercising and nurturing important relationships can help students stay productive by recharging their bodies and minds.

Finally, maintaining clear and consistent communication with research mentors is key. “I meet weekly with my PI to discuss progress, goals and ways to improve efficiency,” said first-year medical student Carl Suerte. Regular check-ins help set expectations and create a supportive research environment.

Overall, time management in research requires both discipline and flexibility. By prioritizing tasks, structuring intentional schedules and practicing self-care, students can balance their responsibilities effectively while ensuring long-term success.

Written by Austin Hien Tran
Edited by Matthew Darmadi

Art by Megan Benavides and Grace Anderson

Upcoming Events

March 11, 5:30 pm
Research Talk Essentials Workshop

March 13, 5:30 pm
SOAR Database Hands-on Workshop

I was going to show you our chair selection, but thought you may prefer a stool sample.

Art by Megan Benavides and Grace Anderson

Research Projects

Development of a Precision Oncology Algorithm for Oropharyngeal Cancer
Otolaryngology | Translational Research
Dr. Vlad Sandulache | Vlad.sandulache@bcm.edu

Cellular and Molecular Aspects of Obesity
Endocrinology | Basic Research
Dr. Sean Hartig | hartig@bcm.edu

Colorectal Surgery Clinical Outcomes Database
Surgery | Clinical Research
Dr. Atif Iqbal | hector.garcia-chavez@bcm.edu*

Utilizing Social Media as an Educational Tool in Pediatric Rheumatology
Pediatrics | Medical Education
Dr. Miriah Gillispie Taylor | miriah.gillispie-taylor@bcm.edu

Supporting Emergency Department Patients with Heart Failure
Medicine | Quality Improvement/Patient Safety
Dr. Anita Chary | Anita.Chary@bcm.edu

Understanding and Addressing Racial/Ethnic Disparities in Leg Amputations
Vascular Surgery | Health Services Research
Dr. Neal R. Barshes | nbarshes@bcm.edu

*the contact may not be the same as the faculty mentor but is the one to reach out to for project information.