



Keith W. Millikan, MD

The Steven G. Economou, MD, Professor
of General Surgery

Advancement of Medicine

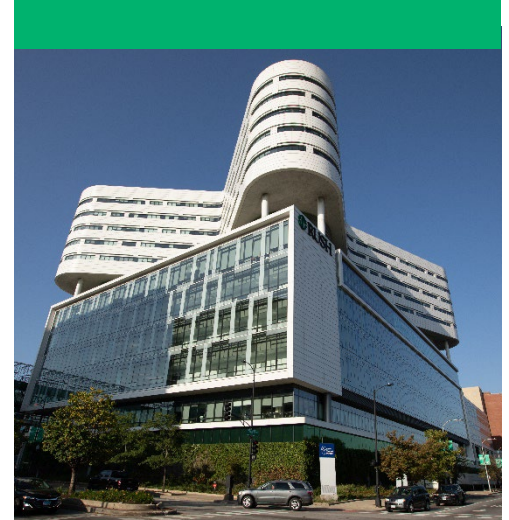
In 2023, we focused on three missions: research, education and clinical practice outcomes. We published research results, supported research lab technicians and awaited the outcomes of our national trial. I continued important educational missions while concurrently collecting data and expanding clinical efforts in several areas.

Research

The results of our Phase I clinical trial using cold atmospheric plasma (a device that kills cancer cells but preserves normal cells) were published in *Cancers*. We are now waiting for approval by the FDA to start a Phase II trial using this new technology. Thea P. Price, MD, whose research is enabled by your generosity, had two papers published in *Wounds*. One covered squamous cell cancer appearing in hidradenitis, and another explored the use of a synthetic fiber matrix to treat chronically infected and complex wounds. We also supported Dr. Price's lab tech, who is working on a mouse ossification model. Finally, we are awaiting the three-year results of our national trial comparing the clinical outcomes between laparoscopic, robotic and open hernia surgeries.

Clinical Trials

I continued to collect data on an innovative abdominal wall reconstructive technique I learned about in Spain. I also continued to collect data on my robotic hernia surgery curriculum for resident trainees. We expanded our clinical trials infrastructure within the Department of Cardiothoracic Surgery and the Rush Lung Center by hiring a director to oversee regulation, Institutional Review Board processes, budgets and industry collaborations. Our lung cancer translational and clinical research program investigators continued work in early detection, combining blood biomarkers and CT scans.





Education

In December 2023, I presented the Grand Rounds on advanced complex hernia repair at the Department of Surgery conference. I continue to coordinate educational efforts for faculty resident trainees and medical students in my role as vice chair of education. Also, I supervised a new American Board of Surgery-mandated evaluation tool, Entrusted Profession Activities. Finally, along with Jacob Greenberg, MD, of Duke University, I set up an education day seminar for Rush faculty and residents in August 2024.

Grants

We obtained funding from the U.S. Food and Drug Administration for our Phase I clinical trial using cold plasma treatment to control solid tumor cancer cells at surgical margins. We also received funding from Intuitive Surgical for a prospective multicenter pairwise analysis of robotic, laparoscopic and open hernia repair.

Honors

- Top Doctor, Surgery as recognized by peers published by *Castle Connolly*, 2023.
- Top Doctor, Surgery as recognized by peers and published in *Chicago Magazine*, January 2024.
- Executive Council Member, Chicago Surgical Society, 2023-2024.
- American Board of Surgery Oral Boards Examiner for General Surgery Certification. March and October 2023.

Publication and Presentation Highlights

- “The First Cold Atmospheric Plasma Phase I Clinical Trial for the Treatment of Advanced Solid Tumors: A Novel Treatment Arm for Cancer.” *Cancers*.
- “Squamous Cell Carcinoma in the Setting of Hidradenitis Suppurativa: A Retrospective Review of the Literature.” *Wounds*.
- “Use of a Synthetic Hybrid-Scale Fiber Matrix in the Management of Chronic and Complex Wounds: A Retrospective Case Series.” *Wounds*.



- “Complex Abdominal Wall Reconstruction for Complicated Ventral Hernias.” Grand Rounds: Department of Surgery. Rush University.

The Year Ahead: 2024 and Beyond

I will continue to collect research data on abdominal wall reconstruction and will possibly start a ROI collaborative clinical trial studying the effects of a long-lasting post-operative, non-narcotic pain medication after surgery once National Institutes of Health approval for the grant is completed. I will continue an American Board of Surgery simulation study evaluating fundamental surgical techniques of surgical residents. I will continue to support Dr. Price’s research in wound healing and her lab efforts to create a wound research model.

From an education perspective, I continue to develop the robotic curriculum, establish the robotic curriculum and integrate the new Entrustable Professional Activities mandated by the American Board of Surgery into the evaluation tool for trainees. I will also continue to monitor the education programs relating to faculty, residents and students through their respective division chiefs, residency program directors and student clerkship directors.

Also, I will continue to monitor junior surgical faculty, surgical residents and students with surgery as a career interest. I will support the work of our diversity, equity and inclusion programs to enhance the future of the Department of Surgery. I was instrumental in the establishment of the Alexander Doolas Society, which supports housing and expenses for the Department of Surgery’s visiting medical students in need of financial assistance. Finally, we are actively recruiting another scientist to complement our lung cancer early detection and drug discovery translational research. This will allow us to exponentially increase our contributions to the field with novel techniques using single cell studies and organoids grown from patient tumors.

With Gratitude

I thank you for funding The Steven G. Economou, MD, Professorship of General Surgery. Your generosity has greatly bolstered our education and research efforts within the Department of



Surgery. The fund allows me to direct education of both residents and students, while also participating in research with junior faculty members, residents and students. Thank you for your support over the years.