

D. Rick Sumner, PhD

The Mary Lou Bell McGrew Presidential Chair of
Medical Research

Advancement of Medicine

In 2025, I continued to lead the Department of Anatomy & Cell Biology. Our department grew to 24 faculty members, with one-third having a research-focused mission, one-third having an education-focused mission, and one-third providing significant contributions to both research and education. Our research focuses on musculoskeletal biology, cancer biology, movement disorders and medical education.

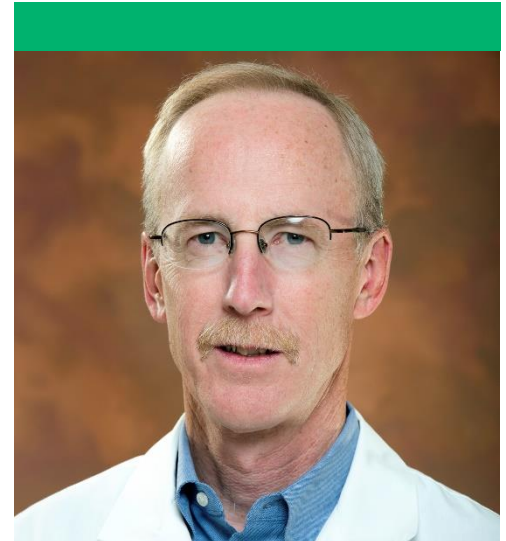
I also continued to serve as an elected fellow in several societies, including the American Association for the Advancement of Science, the Orthopaedic Research Society, the American Society for Bone and Mineral Research, and the American Association for Anatomy.

Research

In 2025, I advanced my research on genetic factors that affect bone regeneration. **This work uncovered a novel gene this year.** It will help discover new pathways that can be targeted to improve bone healing in many circumstances, including total joint replacement surgery and fracture repair. It is supported by an award from the National Institutes of Health, or NIH.

My team also continues to investigate the effects of preterm birth on bone growth after birth. We seek a better understanding of metabolic bone disease (osteoporosis) of prematurity and, in the longer term, to determine if there are lifelong consequences of preterm birth on the skeleton. An NIH award also supports this project.

I also continued to serve as principal investigator on a shared instrumentation grant from the NIH, which we used to acquire a laser-based instrument for making thin sections of tissues containing bone and teeth. Compared to traditional techniques, the images obtained from specimens prepared with this instrument are spectacular. The instrument was installed last fall. **Rush is one of three universities in the U.S. with this capability.** This novel equipment will enhance Rush's research on





bone growth and regeneration, osteoporosis, osteoarthritis, joint replacement, rare bone diseases, tissue engineering, and dental reconstruction. The instrument is accessible to more than 15 principal investigators and their labs and supports over 25 NIH research grants.

Education

Faculty in my department teach approximately 450 students across Rush University's three colleges and are ranked among the top 15% of educators in nationwide surveys. Several of the students taught by departmental faculty have also gained research experience.

Additionally, I continued to serve as the principal investigator on an NIH training grant that provides research opportunities for PhD graduate students, postdoctoral fellows and medical students in joint health. This program involves about 20 faculty at Rush and eight trainees, who receive stipend support from the grant. NIH training grants aim to prepare trainees for careers that significantly impact the health-related research needs of the U.S.

Publication Highlights – Abbreviated

Wilson BM, Wilson AB, Kraemer M, Bowker R, Patel AL, **Sumner DR**. Bone mineral density deficits in individuals born preterm persist through young adulthood: A systematic review and meta-analysis of DXA studies. *Bone*. 2025;198:117519.

The Year Ahead: 2026 and Beyond

Looking ahead, our main priority remains supporting researchers who will leverage resources for projects likely to gain extramural support. For example, a junior faculty recruit is developing a new, non-invasive assay for studying calcium balance in newborns, including premature babies. She also has a teaching portfolio. Your generosity supports her and others on our team.

With Gratitude

It is not possible for faculty members or trainees to have all of their research expenses funded by extramural sources. Your philanthropy is the difference-maker that helps us maintain continuity. Your support has fueled numerous federal grant submissions, propelling our musculoskeletal, cancer, movement disorders and medical education research. Thank you.