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The Klaus E. Kuettner, PhD, Professorship of
Osteoarthritis Research

Advancement of Medicine and Research

Pain in rheumatic and musculoskeletal diseases with special attention to osteoarthritis is the central theme in the Laboratory for Translational Research in Osteoarthritis and Rheumatic

Diseases. I lead the lab alongside **Rachel Miller, PhD**. Since 2011, multiple continuously renewed federal grant awards have laid the foundation for new endeavors such as a large UC2 consortium award from the National Institute of Arthritis and Musculoskeletal and Skin Diseases, or NIAMS, as well as several innovative high-risk projects.

At the heart of our program is the **Chicago Center on Musculoskeletal Pain, or C-COMP**, established in 2021 with funding from a competitive award from NIAMS. C-COMP is a resource-based center that fosters and supports research and training aimed at understanding the mechanisms underlying pain associated with musculoskeletal and rheumatic diseases, with the ultimate goal of better managing and preventing chronic pain. Since its inception, C-COMP has provided resources, training and education to more than 300 members worldwide. We offer a *Behavioral Core* and a *Neurobiology Core*, which offers state-of-the-art techniques for assessment and manipulation of neuronal circuitry involved in pain physiology. C-COMP also offers a dynamic platform for members across the U.S. and the world to interact and establish multidisciplinary networks, with outreach activities and initiatives for expanding the community and strengthening it through innovative translational research. We offer a robust hybrid seminar series, a virtual journal club and a pilot grant program. Over the past four years, C-COMP has administered 15 pilot grants of \$25K each to U.S.-based researchers, including three junior faculty at Rush from the musculoskeletal, pain and neuroscience fields to propel the field forward by creating a multidisciplinary collaborative environment.





In the past year, C-COMP has expanded its focus beyond osteoarthritis to pioneer pain studies in other rheumatic diseases such as Ehlers Danlos Syndrome, myositis and psoriatic arthritis.

Grants

The endowment allows me to allot time and resources to apply for new grants and grant renewals. In the past year, my team was awarded several new grants, including:

- A competitive renewal of an R01, one of the most selective federal grants, entitled “Osteoarthritis Progression and Sensory Pathway Alterations,” through 2030.
- A new, two-year R21 Exploratory/Developmental Grant entitled “The role of nerve-fibroblast communication in EDS pain.”
- An industry-sponsored award from Eli-Lilly, entitled “Effects of targeting NGF-TrkA signaling in a Surgical Murine Model of Osteoarthritis.”

In addition, I remain the principal investigator of the P30 grant from NIAMS, which funds the Chicago Center on Musculoskeletal Pain and of a Rejoin UC2 award, part of a HEAL Consortium that aims to map the sensory innervation of the knee.

Mentoring and Education

The endowment allows me to leverage federal and industry funding and expand educational and scholarly activities at Rush as well as outside Rush. These activities include:

- Serving on the advisory board of a National Institutes of Health T32 Institutional National Research Service Award that provides pre- and postdoctoral training in joint health.
- Mentoring young researchers to study osteoarthritis and joint pain, and I serve as faculty on the U.S. Bone and Joint Young Investigator Initiative, as well as on the Scientific Advisory Board of the Arthritis National Research Foundation.
- Participating in two NIH study sections in the past year.
- Serving as an Editor-in-Chief of *Osteoarthritis and Cartilage*, the premier multidisciplinary journal in the field of osteoarthritis.



- Serving as the elected, incoming secretary of the Orthopedic Research Society, which is part of the Executive Leadership team.

Speaking Engagements

I was an invited speaker or keynote speaker at conferences and universities around the world. Some examples include:

- “Osteoarthritis joint pain: The quest for new targets.” Johns Hopkins Blaustein Pain Grand Rounds, virtual, April 11, 2025.
- “Joint Pain Matters.” 4th Annual SUNY Upstate Department of Medicine Research Retreat, Syracuse NY, May 31, 2025.
- “Joint Neurobiology: Lessons learned from osteoarthritis.” University of Texas Health Science Center, Center for Pain Therapeutics and Addiction Research. San Antonio TX, Sept 10, 2025.
- Osteoarthritis: Old Thoughts and New Tricks.” Clinical Rheumatology Conference West, Huntington CA, Sept 21, 2025.
- “The neurobiology of joint pain.” 2nd Workshop on Translational Medicine in Rheumatic Diseases, Versailles, France, Oct 3-4, 2025.
- “Tissue crosstalk and cellular players in joint pain.” 20th ICRS World Congress, Boston, MA Oct 10-14, 2025.
- “Joint pain matters.” Hospital for Special Surgery Rheumatology Research Seminar, New York NY, Oct 21, 2025.
- “Cellular players and crosstalk in joint pain.” UCSF, Center for Regenerative Medicine, San Francisco CA, December 17, 2025.
- “Joint pain: Lessons learned from osteoarthritis.” UCSF Orthopedics Grand Rounds, Dec 17, 2025.

Publication Highlights — Abbreviated

- Otero M, Lorenzo I, Sakamoto T, Okuno Y, Kenvisay C, Olmer M, Swahn H, Orange D, Mehta B, Omi F, DiCarlo E, Ramirez D, Obeidat AM, **Malfait AM**, Kulkani P, Dalton T, Abbas M, Almeida-

Cruz Y, Allen K, Haelterman N, Lotz M. The Human Knee as An Organ: Joint Tissue Collection, Processing and Scoring for Multimodal Analyses. Lab Investigations 2025 (in press).

- Haelterman NA, Akopian AN, Allen KD, Cruz-Almeida Y, Donnelly C, Lee B, **Anne-Marie Malfait**, Maryann E Martone, Joost B Wagenaar, Kim C. Worley and RE-JOIN Consortium. Designing and Implementing solution-oriented team science initiatives – a chronic pain example. Frontiers in Pain Research, section Musculoskeletal Pain Research Topic: Advancing Scientific Teams: Models and Practices for Enhanced Collaboration 2025 (in press).
- Newton MD, Swahn H, Orange DE, Lesnak JB, Price TJ, **Malfait AM**, Miller RE, Lotz M, Maerz T. Cross-platform transcriptomic data integration identifies an overactive neuro-immune signature in human osteoarthritis synovium. Osteoarthritis and Cartilage 2025 (in press).
- Ishihara S, Miller RE, **Malfait AM**. Assessment of Knee Hyperalgesia in Mice using Pressure Application Measurement. Journal of Visual Experimentation (Jove) 2025, in press.
- Ko F, Fullam S, Lee H, Ishihara S, Adamczyk N, Obeidat AM, Soorya S, Miller RJ, **Malfait AM**, Miller RE. Clearing-enabled light sheet microscopy as a novel method for three-dimensional mapping of the sensory innervation of the mouse knee. J Orthopedic Res 2025; 43(3):632-639. doi: 10.1002/jor.26016. (on the cover)

The Year Ahead: 2026 and Beyond

We aim to submit a renewal application for the P30 award that funds C-COMP, with an increased focus on other diseases such as Ehlers Danlos Syndromes and spondyloarthritis (grant in preparation). We are also planning a pain symposium in May 2026 to be held at Rush.

With Gratitude

I am grateful for your generosity that continues to provide invaluable support in our ongoing quest to ease the pain for those suffering from musculoskeletal and rheumatic diseases.