RUSH

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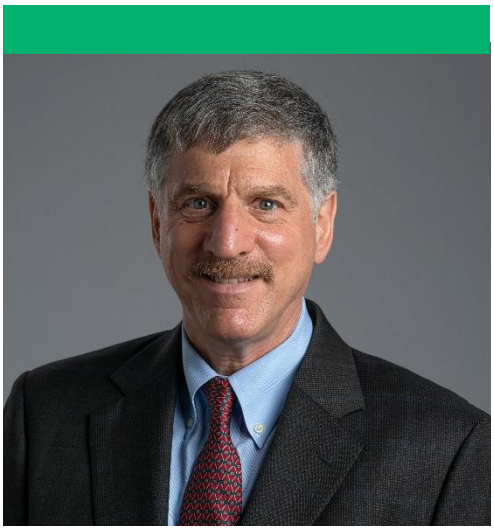
The Willard L. Wood, MD, Professor of Rheumatology



Advancement of Medicine

In 2024, we continued our work in osteoarthritis, also known as OA. This affliction overwhelmingly remains the most common form of arthritis, affecting more than 30 million Americans and representing one of the largest causes of work disability and overall societal medical expenses. Moreover, OA pain is poorly controlled despite a multitude of opiate and non-opiate treatment options. Notwithstanding OA's societal prevalence and morbidity, there are no clinical treatments that have been shown to slow disease progression.

This represents an urgent unmet medical need.

The Wood Professorship fund enables our Division of Rheumatology to focus efforts on evaluating the neurobiology and physiology of OA pain in preclinical and clinical settings and studying mechanically active interventions that may improve care for OA of the knee. The translational studies performed by the laboratories of **Anne-Marie Malfait, MD, PhD**, and **Rachel E. Miller, PhD**, partly supported by your generosity, provide important novel insights into possible therapeutic targets of OA pain.

There are currently no laboratory tests that permit assessment of OA pain or functional disability, yet these are the most prominent features that result in loss of work and poor quality of life. Assessment in a quantitative manner is possible through validated questionnaire-based instruments. One such instrument, the MD-HAQ/RAPID3 has become the standard tool for following rheumatoid arthritis and is mandated by the Medicare Physician Quality Reporting System. The inventor of that instrument, **Theodore P. Pincus, MD**, is a Rush rheumatologist. He has been collaborating with **Juan Schmukler, MD**, a recently hired assistant professor, to develop analogous information from OA patients. This work has already resulted in numerous publications and presentations internationally and will further the ability to track OA-related pain and disability in a validated, quantitative and

reproducible manner. Dr. Schmukler, partly supported through your generosity, is currently preparing several grants for early-career researchers to be submitted to national grantmaking organizations and the National Institutes of Health, or NIH.

OA is also associated with somatosensory dysfunction, as defined by work by the faculty of the Division of Rheumatology at Rush over the past two decades. Combination of the somatosensory assessment with the pain assessment tools at Rush provides new insights into the pathophysiology of pain in OA. All this work is unique to Rush and the environment fostered within the Division of Rheumatology and is supported by the funds provided by the Wood Professorship.

In addition, in 2024, the Wood Professorship helped us successfully recruit **Didem Saygin, MD**, from the University of Pittsburgh, who is establishing the only program for the research and care of the inflammatory myopathies in the Midwest. She came to Rush with research funding from the Rheumatology Research Foundation and as a co-investigator on an NIH-Intramural grant. She is applying for others grants to support her research, including two from the NIH.

Research

Wood Professorship funds provide support for the large OA research infrastructure within the Division of Rheumatology. This includes both basic science investigations related to the pathophysiology of OA as well as biomechanical and clinical investigations directly applicable to translating research findings into the clinic.

- It should be noted that during the past two decades, the Wood Professorship provided initial seed funding for many Rush faculty members who have become internationally prominent OA investigators, including **Richard Loeser, MD**, currently the director of the Thurston Arthritis Research Center at the University of North Carolina, Chapel Hill and **Carla Scanzello, MD, PhD**, currently co-director of the Translational Musculoskeletal Research Center at the University of Pennsylvania, as well as for Dr. Malfait, currently the **Klaus E. Kuettner, MD, Chair of Osteoarthritis Research** at Rush and **Meenakshi Jolly, MD, MS**, currently the **George W. Stuppy, MD, Chair of Arthritis** at Rush.
- The Wood Professorship currently provides support for the laboratories of both **Anna Plaas, PhD**, and Dr. Miller in their studies of the role of hyaluronans in wound healing and overuse OA models and in the neurobiology of OA pain, respectively. The Wood Professorship

provided initial funding to bring Dr. Plaas to Rush and for Dr. Miller to begin her work, which is now richly supported through R01 and NIH/HEAL funding. It also provided the initial seed funding for Dr. Malfait to begin accruing data, which has resulted in multiple R01, P30, HEAL, Department of Defense and Air Force Office of Scientific Research grants in the past decade.

- The Wood Professorship has provided material support for Dr. Schmukler to begin obtaining preliminary data critical for his submission for early-career funding.
- We continued to supply unique human chondrocyte cell lines to investigators worldwide, principally for studies of human chondrosarcoma physiology and human chondrocyte biology. In the last year, unique cell lines have been provided either through material transfer agreements or licensing agreements to:
    - National Cancer Institute, NIH, Bethesda, Maryland
    - BRIC, University of Copenhagen, Copenhagen, Denmark
    - Northwestern University, Chicago, IL
    - Brown University, Providence, RI

Clinical Trials

These clinical trials are directly related to the activities of the Wood Professorship:

- "A randomized, double-blind, placebo-controlled, multi-center, phase 3 study to determine the efficacy and safety of TG-C in subjects with Kellgren and Lawrence grade 2 or 3 osteoarthritis of the knee ACTiVION II study," TissueGene Inc.
- "A multicenter, randomized, double-blind, placebo-controlled study to evaluate the safety and efficacy of upadacitinib in subjects with giant cell arteritis: SELECT-GCA," Abbvie.
- "A multicenter, randomized, double-blind, placebo-controlled, phase III study to evaluate the efficacy and safety of BIIB059 in adult participants with active systemic lupus erythematosus (SLE) receiving background nonbiologic lupus standard of care," Biogen MA Inc.
- "A double-blind, placebo-controlled randomized, multicenter study to assess changes in omega-3 index in erythrocytes and health benefit after 24 weeks of daily consumption of AKBM-3031 followed by a 24 WK OPE in patients with systemic lupus erythematosus," Ample Biosolutions.

- "A multicenter, randomized, double-blind, placebo-controlled, parallel-group study to evaluate the efficacy and safety of dapirolizumab pegol in study participants with moderately to severely active systemic lupus erythematosus," UCB Inc.
- "Prospective observational cohort of patients with moderate-to-severe SLE to characterize cross-sectional and longitudinal disease activity, treatment patterns and effectiveness, outcomes and comorbidities, healthcare resource utilization, and the impact of SLE on quality of life by type I interferon gene expression," AstraZeneca LP.
- "A randomized, double-blind, placebo controlled, 2-arm multicenter phase 3 study to assess the efficacy and safety of ianalumab in patients with active Sjögren's syndrome (NEPTUNUS-1)," Novartis.
- "Phase III study of efficacy and safety of secukinumab versus placebo, in combination with glucocorticoid taper regimen, in patients with polymyalgia rheumatica (PMR). Protocol No. CAIN457C22301, Novartis Pharmaceuticals"
- Abnormalities in somatosensation in patients with rheumatoid arthritis with persistently elevated disease activity indices

Education

Importantly, the Wood Professorship provides funding for our Visiting Professor Series. This series has been ongoing for more than a decade and has exposed the Rush rheumatology faculty to the most prominent rheumatologists nationally and internationally. Several important collaborations have resulted from this series in the last several years, and the series itself is endangered. With fewer institutional dollars available to us, the Wood endowment is essential to ensuring these interactions are fostered at Rush.

Grants

These grants directly emanated from Wood Professorship support to the investigators and/or their laboratories:

- "The role of mechanosensation pathways in osteoarthritis joint damage and pain," NIH/NIAMS PD/PI: Miller.

- "Elucidating how macrophages contribute to osteoarthritis pain," NIH/NIAMS - PD/PI: Geraghty.
- "Rush to Progress: Characterizing myositis-related pain in inflammatory myopathies (CRAMP-IM)." Protocol No. n/a, Rush Translational Sciences Consortium (RTSC),
- "Multiparametric muscle ultrasound imaging for assessment of muscle inflammation in idiopathic inflammatory myopathies." Protocol No. n/a, Rheumatology Research Foundation.
- "Characterizing myositis-related pain in inflammatory myopathies (CRAMP-IM)." Protocol No. n/a, NIH

Scholarly Service

- In 2024, I served on the following editorial boards: *Osteoarthritis and Cartilage*, *Osteoarthritis and Cartilage Open*, *Journal of Orthopaedic Research*, and the *Journal of Clinical Rheumatology*.
- I also served as chair of several NIAMS and NIH workshops and review boards.
- I served as chair of three NIH Data Safety Monitoring Boards, or DSMBs.
- For the American College of Rheumatology, I chaired the winter Rheumatology Symposium Planning Committee. I also was a subcommittee chair for the Committee on Education and served as Abstract Category Chair: Orthopedics, Low Back Pain, & Rehabilitation. In addition, I am a member of the Guidelines Committee for the treatment of osteoarthritis.
- I served as a Mentor for the Osteoarthritis Research Society International Early Career Investigators.
- I served as visiting professor at the Thurston Arthritis Center of the University of North Carolina, Chapel Hill and at Langone Medical School at New York University.

Publication Highlights – Abbreviated

- Yau MS, Filbay SR, Block JA, Lohmander LS: "Reflections on 30 years of publishing osteoarthritis research: Where we've been and where we're going." **Osteoarthritis Cartilage**, 2024, Epubh ahead of print, https://doi.org/10.1016/j.joca.2024.02.008. https://www.sciencedirect.com/science/article/pii/S1063458424000529
- Schmukler J, Malfait A-M, Block JA, and Pincus T: "36-40% of routine care osteoarthritis or

rheumatoid arthritis patients screen positive for anxiety, depression and/or fibromyalgia." **ACR Open Rheumatol**, 2024 Jul 16. doi: 10.1002/acr2.11711. Online ahead of print. PMID: 39011669.

- Schmukler J, Castrejon I, Li T, Block JA, Pincus T: "Interrater reliability of RheuMetric checklist scales for physician global assessment, inflammation, damage and patient distress." **Rheumatol Adv Pract**. 2024 Nov 6;8(4):rkae137. doi: 10.1093/rap/rkae137. PMID: 39660105.
- Schmukler J, Li T, Block JA, Pincus T: "RheuMetric Physician 0 to 10 Estimates of Inflammation, Damage, and Patient Distress at Initial Versus Follow-Up Visits in Contemporary Rheumatology Care." **ACR Open Rheumatol**, 2025 Mar;7(3):e70010. doi: 10.1002/acr2.70010. PMID: 40035323.
- "Clinical features of osteoarthritis," book chapter in *Rheumatology*, 9th Edition, Hochberg MC, Gravallese EM, Smolen JS, van der Heijde D, Weinblatt ME, Weisman MH, editors, Elsevier, Philadelphia 2025, in press.

The Year Ahead: 2025 and Beyond

We will continue to strengthen the research, clinical and educational infrastructure of the Division of Rheumatology and support early-career faculty members in the ongoing quest for funding.

Importantly, a new clinical investigator has been recruited from the University of Pittsburgh, who has launched a myositis clinic and has been funded to study inflammatory myopathy. She is partly supported by the Wood Professorship.

With Gratitude

The generous donors of this professorship passed away decades ago. However, the entire Division of Rheumatology remains deeply grateful for their foresight in endowing this fund, which advances the field of rheumatology at Rush and make a significant impact on the lives of people living with OA.