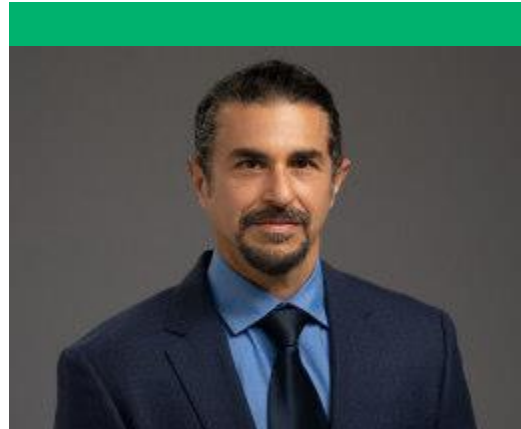


## Nadim J Hallab, PhD

The Crown Family Professor of  
Orthopedic Surgery



### Advancement of Medicine

As national leaders in adverse immune responses to orthopedic implants and metal sensitivity research, we provide leading-edge testing that empowers patients and clinicians to select the most appropriate implant materials for superior outcomes.

At the upcoming 2026 international meeting of the Orthopedic Research Society, or ORS, we will present our novel research, “Glucagon-Like Peptide-1 Receptor Agonists (GLP-1RA) Suppresses Adaptive Lymphocyte Responses in Total Joint Replacement Patients.” This study indicated, for the first time, that GLP-1RA can directly induce significant attenuation of adaptive immune responses to mitogens, orthopedic metal haptens and bacterial antigens in vitro, raising the possibility of increased risk of infection or, alternatively, may be useful as a treatment for metal hypersensitivity responses in symptomatic patients with a total joint arthroplasty. More importantly, it demonstrates spillover effects of GLP-1 drugs that ultimately affect other organ systems including that of the immune system. We will also present “A Comparison of Titanium Particulate Implant Debris with Titanium Particulate in Select Food Products.” This novel research showed that there are several orders of magnitude greater exposure of titanium particulate in a single serving of some common food products compared to a whole year of implant use, highlighting that all sources of metal-based particulate should be incorporated into any assessment of pathology or deleterious outcomes attributed to systemic distribution of implant metals, including ions and particles.

Through this pioneering work, the Rush Department of Orthopaedic Surgery strengthens patient safety while advancing orthopedic innovation on a global scale.



## Research

My endowed faculty position provides critical funding that drives my research forward. This financial support covers publication costs in prestigious peer-reviewed journals and facilitates our engagement in immunology and orthopedics through national conference attendance. These opportunities allow us to disseminate our findings, exchange knowledge with colleagues and advance scholarly conversations in our field. Such resources are essential for promoting innovation and amplifying the reach of our scientific contributions.

## Grants

In 2025, we received the Rush to Progress: Accelerating Research through Pilot Awards for our project “Developing Diagnostic Functional Testing of Innate Immune Reactivity to Orthopedic Implant Debris.” Additionally, we continue to utilize support from the endowment to submit grants to the National Institutes of Health, aiming to advance patient-centered care for orthopedic patients and ensure the ongoing success and ranking of the Department of Orthopaedic Surgery.

## Achievements

- Dr. Hallab was ranked on Stanford University Top 2% Scientists List.

## Publication Manuscripts

- **Hallab NJ**, Hallab SR, Alexander A, Pourzal R, Samelko, L. Determining Acceptable Levels of Residual Metal Particulate Debris on New Total Hip Arthroplasty Components Using Historically Well Performing Implants. *Rush Orthopedic Journal*. 2025.
- Kurtz MA, **Hallab NJ**, Rainey JP, Pelt CE, Mihalko WM, Piuizzi NS, Mont MA, Spece H, Kurtz SM. Metal Release in Total Knee Arthroplasty: A Review of Mechanisms, Adverse Local Tissue Reactions, and Biological Effects. *J Arthroplasty*. 2026 Jan;41(1):201-215. doi: 10.1016/j.arth.2025.03.025. Epub 2025 Mar 14. PMID: 40090503.
- Sutter L, Hall DJ, Bischoff L, Dommann-Scherrer C, Schläppi M, Pourzal R, **Hallab N**, Meier C, Wahl P. How In Vivo Alteration of Hip Replacement Wear Mode Can Cause a Voluminous Inflammatory Reaction and an Excessive Titanium Exposure. *J Clin Med*. 2025 Jan 2;14(1):210. doi: 10.3390/jcm14-010210. PMID: 39797293; PMCID: PMC11722162.



## **The Year Ahead: 2026 and Beyond**

We will continue translational and clinical research in the orthopedic-immunology therapeutic area and mentor students.

## **With Gratitude**

I am grateful to the donors of the Crown Family Professorship of Orthopedic Surgery at Rush. Your generosity is essential to our research and our commitment to delivering impactful solutions for clinicians and patients with orthopedic conditions. The continued funding enables our leadership position in orthopedic immunology and supports research that is widely cited in the field.