**2024 Rita Schaffer Young Investigator Award Winner**

**Dr. Marian Hettiaratchi**

Assistant Professor, Bioengineering

Phil and Penny Knight Campus for Accelerating Scientific Impact

University of Oregon

**Title**: Precision protein delivery: Engineering protein-material affinity interactions for tissue repair

**Abstract**: Recombinant protein delivery is a promising approach to stimulate tissue regeneration following traumatic injury or disease. However, localizing sufficient quantities of multiple, bioactive proteins at injury sites to kickstart repair mechanisms remains challenging. Biomaterials that leverage noncovalent affinity interactions between proteins and materials offer tunable control over protein localization and release in vitro and in vivo. The Hettiaratchi lab focuses on engineering unique affinity interactions between therapeutic proteins and biomaterials to create delivery vehicles capable of precise, independent control over the delivery of multiple proteins simultaneously. These affinity interactions can also be tailored to inhibit or enhance protein bioactivity, introducing a new avenue to modulate the healing cascade. In this presentation, I will showcase how novel approaches in protein engineering, computational modeling, and polymer chemistry can be used to address the longstanding challenges of controlling protein delivery, provide valuable insights into optimizing the extent and timing of protein delivery to enhance tissue healing, and advance clinically relevant treatment strategies for a variety of injuries.

**Bio**: Dr. Marian Hettiaratchi is an assistant professor of bioengineering at the Phil and Penny Knight Campus for Accelerating Scientific Impact at the University of Oregon. She received a B.Sc. in chemical engineering from the University of Calgary and Ph.D. in biomedical engineering from the Georgia Institute of Technology and Emory University prior to conducting post-doctoral research at the University of Toronto as a Natural Sciences and Engineering Research Council of Canada (NSERC) post-doctoral fellow. Dr. Hettiaratchi’s laboratory at the University of Oregon develops biomaterials for precise, tunable protein delivery using an interdisciplinary approach that combines expertise in bioengineering, chemical engineering, polymer chemistry, and molecular biology. She fosters an inclusive research group where students of different backgrounds and skill levels work together to learn new techniques and make new discoveries. She has received several awards, including the J.R. Neff Research Award from MTF Biologics, Early Career Outstanding Research Award from the University of Oregon, and Young Investigator Award from the Tissue Engineering Regenerative Medicine International Society – Americas Chapter (TERMIS-AM). Her mentoring efforts have also been recognized by a Faculty Research Mentor Award from the Center of Undergraduate Research and Engagement at the University of Oregon. The Hettiaratchi Lab's work is currently supported by an R21 Trailblazer Award and R35 Maximizing Investigators’ Research Award from the National Institutes of Health, a National Science Foundation CAREER Award, and a Department of Defense Discovery Award.