COLLEGE OF PHARMACY
**PHARMACEUTICAL SCIENCES**
UNIVERSITY OF MICHIGAN

**Pharmaceutical Sciences Seminar Series**

Wednesday, June 21, 2023
4:00pm
NCRC Building 10 South Atrium
Zoom

**"Antigen-Specific Tolerogenic Nanodiscs
for the Treatment of Autoimmune Diseases"**

Presented by:



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Abstract: Autoimmune diseases, like multiple sclerosis (MS), affect three to five percent of the world's population, but there is no cure available for these diseases yet. Patients can receive treatments that help slow disease progression or improve quality of life, but they require life-long treatment and chronic administration of broadly immunosuppressive agents that may lead to toxicities and various side effects. Regulatory T cell (Treg)-based immunotherapies aim to overcome these problems by restoring immune tolerance with long-term protection using Tregs. Among those, antigen-specific immunotherapy for autoimmune diseases generates antigen-specific Tregs and works to eliminate or inactivate autoantigen-specific Th1 and Th17 cells, allowing the patient to develop immune tolerance towards the problematic autoantigen while maintaining immune reactivity to other antigens. Our lab has engineered synthetic high-density lipoprotein (sHDL) nanodiscs (NDs) as a platform for peptide delivery and has demonstrated efficacious delivery of antigens and adjuvants to antigen-presenting cells (APCs) in draining lymph nodes. We will utilize this platform for the development of immune-tolerizing NDs that can induce antigen-specific tolerogenic effects. We will evaluate if the administration of nanodiscs loaded with immunomodulatory agents can expand antigen-specific Tregs and exert a tolerogenic immune response in murine models of MS and other autoimmune diseases.