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Craft materials to overcome ocular barriers

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While new therapeutics are being developed for treating ocular diseases, the use of these therapeutics is still hampered by the need for more effective method of delivery. The reason is that these therapeutics have short half-lives, do not or hardly cross the cornea, the blood retinal barrier (BRB) and other ocular barriers, and can cause toxicity and side effects at high dose. In our Biomaterials for Translational Research Laboratory, we are interested in engineering multi-functional polymeric systems for targeted and sustained delivery of desired amount of drugs across ocular barriers to treat anterior and posterior eye diseases. In this talk, I will discuss our collaborative researches in developing i) hydrogels as subconjunctivally implantable delivery systems for sustained release of insulin to treat diabetic retinopathy; and ii) polysaccharide based nanoparticles for enhanced drug permeability across the cornea and the BRB to treat diabetic retinopathy, retinoblastoma, and glaucoma, *etc.*

Biography

Tao Lowe is an Associate Professor of Pharmaceutical Sciences and Biomedical Engineering at University of Tennessee. Previously, she was an Assistant Professor of Surgery, Bioengineering, and Materials Science and Engineering, and Co-Director of the Integrated Graduate Degree Molecular Toxicology Program at Pennsylvania State University. She received her Ph.D. with an Eximia Cum Laude from the University of Helsinki, Finland, and conducted two years' postdoctoral research in the Chemical Engineering Department at University of Wisconsin, Madison. She has published more than two dozen papers in reputed journals, and has given more than 150 presentations and 60 invited talks. She has trained ca. 60 students, including Ph.D., MD, MD/Ph.D., PharmD, and PharmD/Ph.D. She is a peer reviewer for more than 30 refereed journals, and serves on the editorial boards of 6 international journals. She has chaired more than 40 sessions at international conferences.

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