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Dr. Alyssa Panitch

Wallace H. Coulter
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Friday, January 26th | 9:00 AM | EC 2300

Promoting tissue healing and regeneration using peptide-modified glycosaminoglycans

ABSTRACT: Proteoglycans play an important role in extracellular matrix remodeling, homeostasis, and signaling. Due to their negatively charged glycosaminoglycan chains as well as distinct core protein structures, they interact with a variety of molecules, including matrix proteins, growth factors, cytokines and chemokines, pathogens, and enzymes. Here we focus on two bioconjugates that were designed to mimic features of existing proteoglycans. The first models the biological activity of the small leucine-rich proteoglycan, decorin. Like native decorin, our decorin mimetic plays a key role in collagen organization and wound healing. Recently, we have augmented the decorin mimetic with peptide ligands to the $\alpha v \beta 3$ integrin receptor found on endothelial and endothelial progenitor cells. The $\alpha v \beta 3$ ligand confers angiogenic activity to the decorin mimetic and supports wound healing in an ischemic environment in diabetic animals. The second mimetic is designed to target inflamed endothelium to restore physical barrier function of the endothelial glycocalyx. By restoring barrier function, the glycocalyx mimetic reduces intravascular thrombosis and inflammation thereby improving healing outcomes following ischemia reperfusion injury in animal models.



Through the generous support of the Wallace H. Coulter Foundation, the Department of Biomedical Engineering facilitates weekly lectures each year during academic terms. Experts in all areas of Biomedical Engineering are invited to provide a research seminar and to meet with faculty and students to discuss the latest developments and research in Biomedical Engineering.

Friday, January 26th, 2024 | 9:00AM - 10:00AM | EC 2300

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