

**“Promoting tissue healing and
regeneration using peptide-modified
glycosaminoglycans”**

Friday, March 3rd, 2023
12:00 – 1:00 p.m.

McDonnell Douglas Auditorium

Reception: 4:00 – 5:00pm
Natural Sciences II, 3rd Floor Lobby



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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.

Biography: Dr. Panitch received bachelor's degrees from Smith College in Biochemistry and from the University of Massachusetts-Amherst in Chemical Engineering. She completed her Ph.D. in Polymer Science and Engineering from the University of Massachusetts. After a postdoctoral fellowship at the Swiss Federal Institute of Technology (ETH) and University of Zurich. She started her first faculty position at Arizona State University in 1999 where she was awarded an NSF CAREER award. She is currently the chair of the Wallace H. Coulter Department of Biomedical Engineering at Emory University and Georgia Tech. She is a member and Fellow of the Biomedical Engineering Society, the American Institute for Medical and Biological Engineers (AIMBE) and the National Academy of Inventors. She also serves as an Editor for the Journal of Colloids and Surfaces B: Biointerfaces.