Fall 2016 Bioengineering Seminar Series

Prevention of Deep Vein Thrombosis Through the Development of a Peptide Conjugate Molecule

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Deep vein thrombosis, a condition where blood clots form in large veins, affects about 300,000 – 600,000 people annually, with an increase in 1 per 100 people for those over 80. These blood clots can break free and enter the arteries of the lungs forming a pulmonary embolism, an event that is commonly fatal. The causes of deep vein thrombosis are not completely understood, but the venous endothelium has been shown to play a role in propagating the thrombotic process. Endothelial cell surface adhesion receptors, especially P-selectin, E-selectin and VCAM, have illustrated a link between deep vein thrombosis through the effect of leukocyte accumulation and rolling on the vessel wall. To prevent leukocyte adhesion and platelet binding to the endothelium, an initial selectin-binding molecule has been designed and optimized in the laboratory. Using this selectin binding molecule, a murine model of deep vein thrombosis was utilized to evaluate the ability of the conjugate to prevent thrombus in the infrarenal vena cava (IVC) over 24 hours. Based off of the data from the initial mouse model studies, a new peptide molecule that binds to both selectin and VCAM is currently being developed to improve upon the intial molecule.

Where: NI 1027 SSOE Seminar Room
When: Friday, November 18, 2016
Time: 12:00 – 1:00 pm

Andrea Chambers completed her B.S. at Rensselaer Polytechnic Institute in Biomedical Engineering and her M.S. at the University of Dayton in Bioengineering. Her Masters work at the University of Dayton focused on the development of a bench-top bioreactor to evaluate saphenous vein graft failure and cells under shear stress. Before pursuing her graduate degrees, she spent a a few years working in the immunology and pathology department at Johns Hopkins University studying the microbiota in germ-free gnotobiotic mice. Currently, she is developing treatments for preventing deep vein thrombosis and abdominal aortic anyerusms at Purdue University under the guidance of Dr. Craig Goergen and Dr. Alyssa Panitch.