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RESEARCH ABSTRACT FORM

TITLE: PLATELET ADHESION STUDIES AT THE SURFACE OF NOS-BASED BIOCOMPATIBLE COATINGS

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Nitric oxide (NO), an important physiological player, is synthesized *in vivo* by nitric oxide synthases (NOSs). NO plays a critical role in vasodilation, neurotransmission, and in host-defense. Nitric Oxide releasing biopolymers have the potential to prolong vascular grafts and stent effectiveness without adverse systemic vasodilation. It was reported in literature that eNOS-overexpressing endothelial cell seeding of synthetic small diameter vascular grafts decreased human platelet aggregation by 46% and bovine aortic smooth muscle cell proliferation by 67.2% *in vitro*. Layer-by-layer (LBL) electrostatic adsorption allows for assembly of multi-component protein thin films. We have incorporated the enzyme Nitric Oxide Synthase into a polyethyleneimine film using a layer-by-layer electrostatic deposition to improve the thromboresistivity of this biocompatible polymer.

In our research, we examine the effect of NO released from our biocompatible films *in vitro*. Although this is still in the developmental stage, our preliminary results are exciting, and we anticipate that this novel approach of enzyme-driven NO/releasing biomaterials will exhibit greater thromboresistivity.