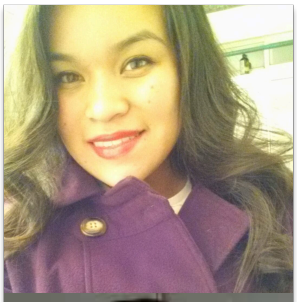

## SYNTHESIS OF 2-*O*-SULFATED HEPARIN-LIKE POLYMER AS NOVEL ANTI-COAGULANT

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Heparin is a highly sulfated glycosaminoglycan which binds to Antithrombin III (ATIII) inducing an anticoagulant effect. Heparin is currently derived from porcine mucosa which creates the possibility of biological contamination. It has been observed that 2-*O*-sulfated Heparan Sulfate ($HS_{2S2S}$) could have high affinity for ATIII, a key component in the development of a fibrin clot. The production of $HS_{2S2S}$ is performed using 2-*O*-sulfotransferase (2OST), which is currently produced using a baculovirus system that generates enzymes with low activity; possibly due to the difference in glycosylation patterns, and proteases released during the lytic phase of the baculovirus. We hypothesize that expressing 2OST using a yeast system yield higher levels of expression and possibly increased activity. 2OST was cloned and transformed in the yeast *Pichia Pastoris*. Protein expression of several transformants was confirmed by SDS Page Gel analysis. Individual clones were then selected for scaled-up expression and enzyme was isolated using affinity chromatography (Toyopearl AF-Heparin HC-650M). The purified enzyme was then used to modify N-Sulfated Heparosan to produce $HS_{2S2S}$, a heparin-like polymer with anti-coagulant properties.