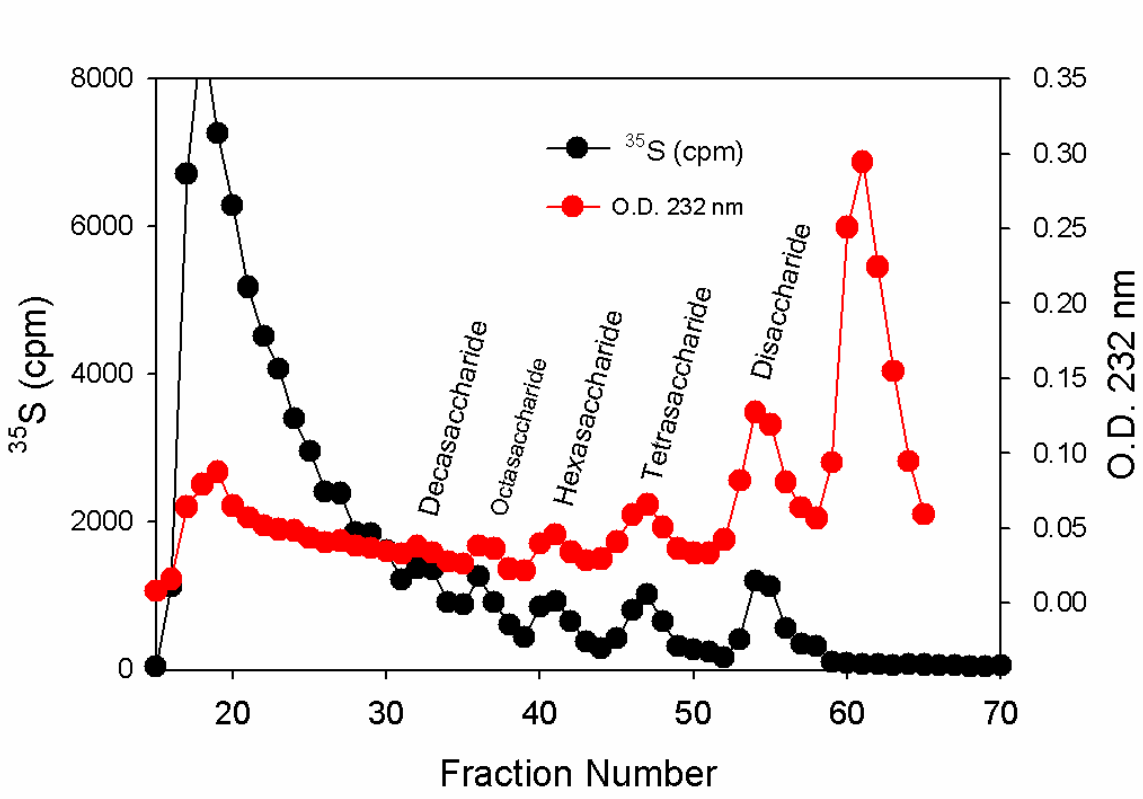
Supplementary Table 1. Summary of the disaccharide analysis of *N*-sulfo heparosan and *N*-sulfo heparosan 6-*O*-sulfate

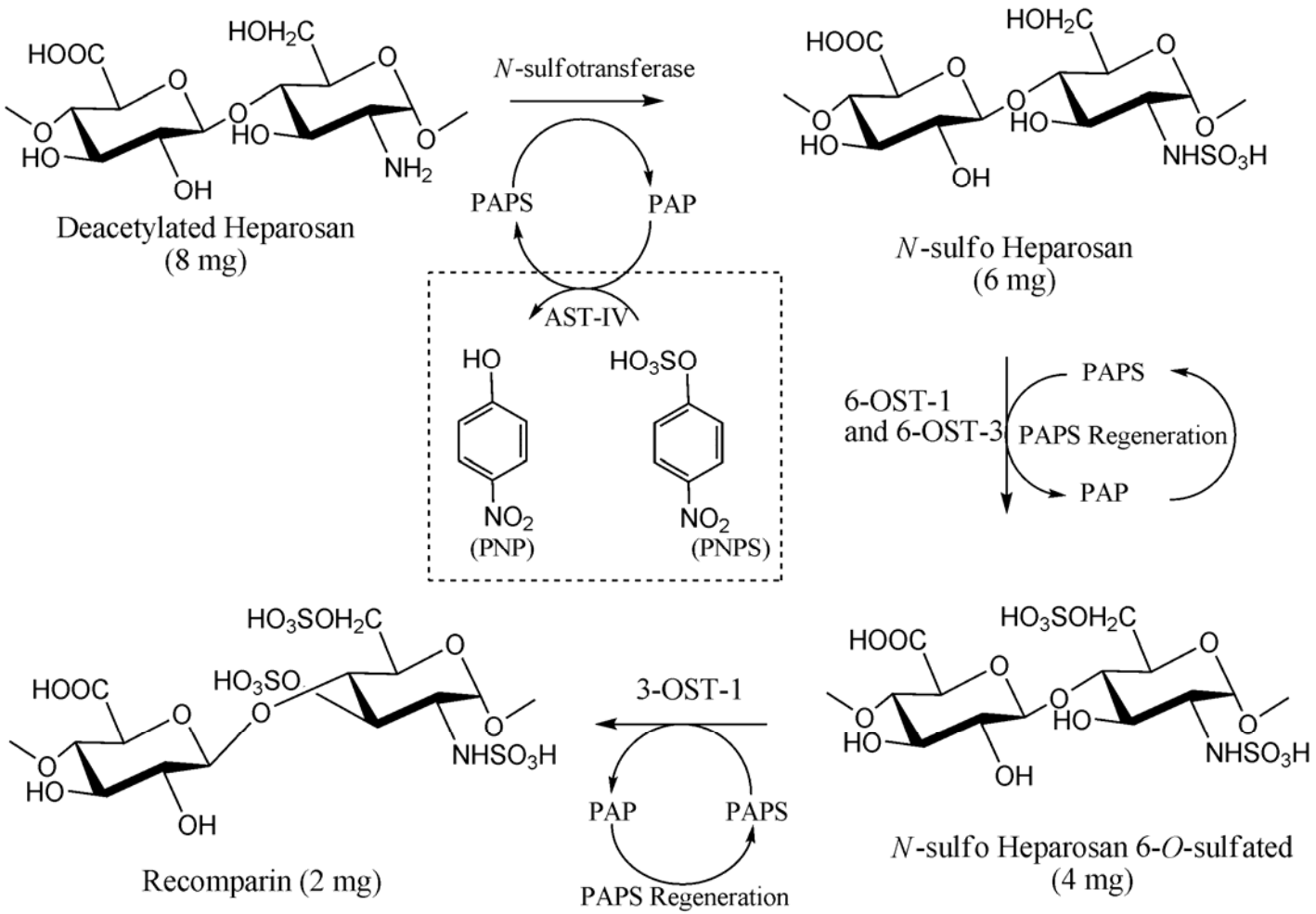
Disaccharides	*N*-sulfo heparosan (*mol/mol* %)	*N*-sulfo heparosan 6-*O*-sulfate (*mol/mol* %)
ΔUA-GlcNAc	24.4%	4.6%
ΔUA-GlcNS	75.6%	10.4%
ΔUA-GlcNAc6S	N.D.	14.6%
ΔUA-GlcNS6S	N.D.	70.4%

Supplementary Figure 1



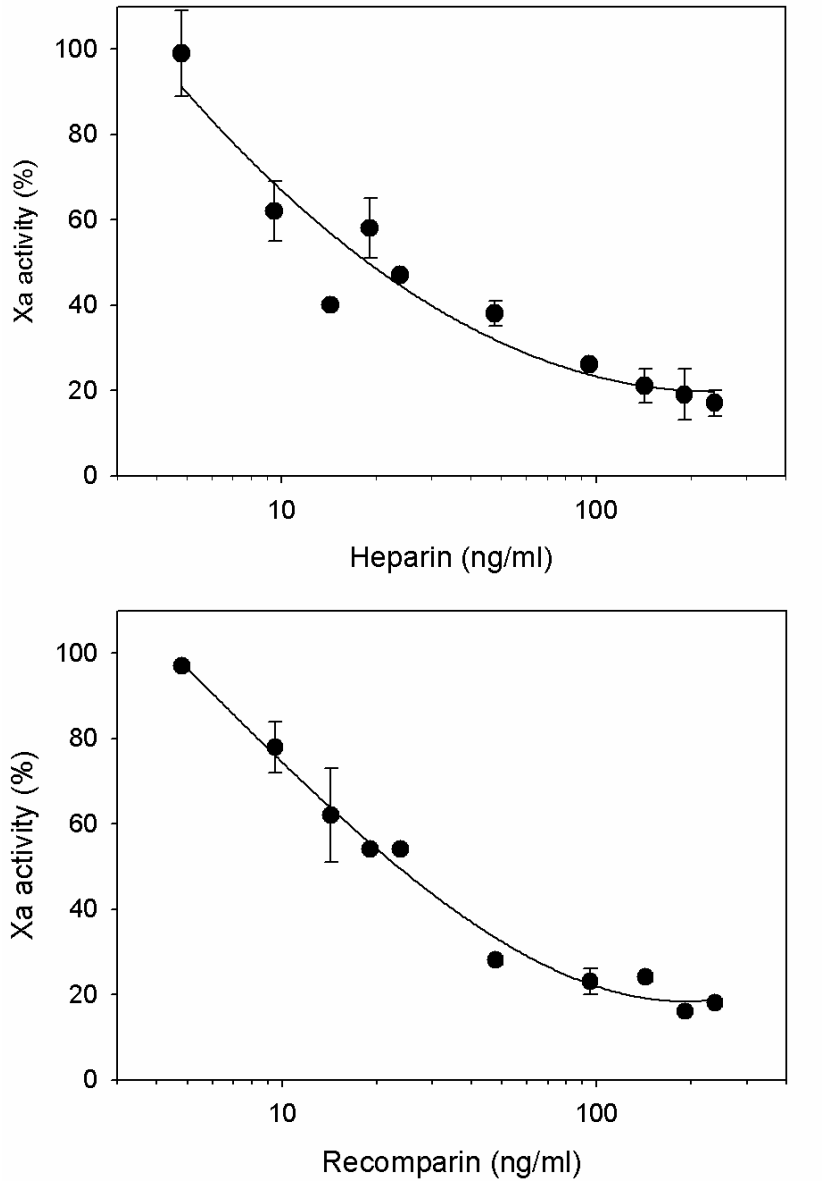
Supplementary Figure 1. Elution profiles of *N*-[^{35}S]sulfo heparosan oligosaccharides on BioGel P-10. Low specific [^{35}S]radioactively labeled *N*-[^{35}S]sulfo heparosan (1.5×10^6 cpm/mg) was prepared by incubating deacetylated heparosan with purified NST and [^{35}S]PAPS. The polysaccharide (1 mg) was digested with 20 ng of purified heparin lyase III. The products were fractionated on a BioGel P-10 column, which was eluted with a buffer containing 25 mM Tris, 1000 mM NaCl, pH 7.4. The fractions were monitored by both [^{35}S]radioactivity and UV 232 nm. The fractions containing the oligosaccharides with the desired size were pooled for further analysis.

Supplementary Figure 2



Supplementary Figure 2. Synthetic scheme of recomparin. The components involved in PAPS regeneration system are boxed. AST-IV represents arylsulfotransferase IV, and PAP represents 3'-phosphoadenosine 5'-phosphate.

Supplementary Figure 3



Supplementary Figure 3. Inhibitory effects of heparin and recomparin on Xa activity. Heparin and recomparin were incubated with AT (20 μg/ml), factor Xa (10 U/ml) and bovine serum albumin (100 μg/ml) in 20 mM sodium phosphate and 150 mM NaCl pH 7.2, and 1 mM S-2765 chromogenic Xa substrate. The activity of Xa was determined by the rate of the increase of the absorbance at 405 nm. The activity without polysaccharide was defined as 100%. Each data point represents the average of two determinations. Error bars indicate the range.