

## **Supplementary material**

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Heparin: Role in Protein Purification and Substitution with Animal-Component Free Material

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## Tables

**Table S1** Analysis of the heparin mimic (hexa-saccharide) involved in the interactions with FGF-1 (DiGabriele *et al.* 1998)

Monosaccharide	Monosaccharide residue	Protein residue
GlcNSO <sub>3</sub> -(6OSO <sub>3</sub> )	2-NHSO <sub>3</sub> <sup>-</sup>	Asn18, Lys118, Gln127, Lys128
	6-OSO <sub>3</sub> <sup>-</sup>	Asn18, Asn114, Arg122,
IdoA-(2OSO <sub>3</sub> )	2-OSO <sub>3</sub> <sup>-</sup>	Asn18, Lys118, Gln127,
	3-OH	Asn18
	6-COO <sup>-</sup>	Lys112, Lys113, Lys128

**Table S2** Analysis of the heparin mimic (hexa-saccharide) involved in the interactions with FGF-2 (Faham *et al.* 1996)

Monosaccharide	Monosaccharide residue	Protein residue
GlcNSO <sub>3</sub> -(6OSO <sub>3</sub> )	2-NHSO <sub>3</sub> <sup>-</sup>	Lys27, Asn28, Asn102, Arg121, Lys126
	3-OH	Lys27
IdoA-(2OSO <sub>3</sub> )	2-OSO <sub>3</sub> <sup>-</sup>	Gln135, Lys136, Ala137
	6-COO <sup>-</sup>	Arg121, Lys136

**Table S3** Analysis of the heparin mimic (hexa-saccharide) involved in the interactions with thrombin (Carter *et al.* 2005)

Monosaccharide	Monosaccharide residue	Protein residue
GlcNSO <sub>3</sub> -(6OSO <sub>3</sub> )	2-NHSO <sub>3</sub> <sup>-</sup>	Arg91, Arg93, Arg101, Lys236, Trp237, Lys240
	3-OH	Arg233
	6-OSO <sub>3</sub> <sup>-</sup>	His91, Arg93, Arg101, Arg165, His230, Lys240
IdoA-(2OSO <sub>3</sub> )	2-OSO <sub>3</sub> <sup>-</sup>	His91, His93, Arg101, Arg126, Lys236, Lys240
	6-COO <sup>-</sup>	Lys236

**Table S4** Analysis of the interaction of glucose covered with sulphates with thrombin (Li *et al.* 2004)

Monosaccharide	Monosaccharide residue	Protein residue
Fully sulphated glucose	2-OSO <sub>3</sub>	Lys236, Lys240
	3-OSO <sub>3</sub>	Arg93
	6-OSO <sub>3</sub>	Arg93, Arg101, Arg233

**Table S5** Analysis of the interaction of glucose covered with sulphates with antithrombin (Li *et al.* 2004)

Monosaccharid residue	Protein residue
2-OSO <sub>3</sub> <sup>-</sup>	Arg13, Arg47, Glu113, Lys114
3-OSO <sub>3</sub> <sup>-</sup>	Asn45, Lys114, Lys125
OMe	Arg47
6-OSO <sub>3</sub> <sup>-</sup>	Asn45, Lys125, Arg129
6-COO <sup>-</sup>	Lys11, Asn45, Arg46, Arg47