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Cell surface and in vivo interaction of dendrimeric N-glycoclusters

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Abstract

© 2015 Springer Science+Business Media New York. While many examples have been reported that glycoclusters interact with target lectins more strongly than single molecules of glycans, through multivalency effects, literature examples to support lectin interactions/modulations on cell surface and in live animals is quite rare. Our N-glycoclusters, which were efficiently prepared by immobilizing 16 molecules of the asparagine-linked glycans (N-glycans) onto a lysine-based dendron template through histidine-mediated Huisgen cycloaddition, were shown to efficiently detect platelet endothelial cell adhesion molecule (PECAM) on human umbilical vein endothelial cells (HUVEC) as a α(2-6)-sialylated oligosaccharides recognizing lectin. Furthermore, the identity of the N-glycans on our N-glycoclusters allowed control over organ-selective accumulation and serum clearance properties when intravenously injected into mice.

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Keywords

Asparagine-linked glycans (N-Glycan), Dendrimer, Glycocluster, In vivo imaging, Lectin, Platelet endothelial cell adhesion molecule (PECAM)