

Dendritic Heparin and Heparan Sulfate Mimetics for Therapeutic applications

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Heparan sulfate (HS) and heparin are structurally related sulfated glycosaminoglycans produced within the human body, with HS expressed by virtually every human cell. The structural intricacy, negative charge and multivalent nature of HS facilitate its interaction with hundreds of naturally occurring proteins. These interactions and its ubiquitous presence mean that HS plays numerous roles in physiological processes. Consequently, HS–protein interactions have been implicated in a number of pathologies, including viral infection, neurodegenerative diseases and numerous types of cancer.

Many of these pathologies have been linked to aberrant expression of HS and HS binding proteins, alongside the dysregulation of HS biosynthesis. As such, protein–HS interactions have come to be considered valid and interesting therapeutic targets for a range of pathologies. Our work focuses on the synthesis and design of novel dendritic glycosaminoglycan mimetics for application towards cancer and multiple-sclerosis treatment.

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