

Advanced Functional Carbohydrate Biomaterials for Medical Applications

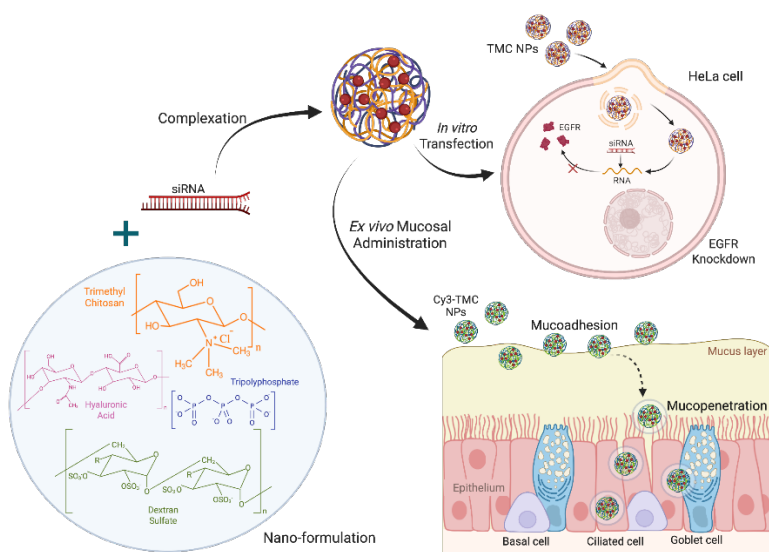
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Abstract

It is widely accepted that the participation of carbohydrates, from the simplest form such as monosaccharides or disaccharides to the more complex form such polysaccharides or glycans, is critical for many biological processes. For instance, cells have a dense and complex array of carbohydrates. These functional biomolecules play an important role in a number of cellular processes and modulate many cellular interactions. Pivotal participation of the carbohydrates in several cellular processes including cell growth regulation, differentiation, adhesion, cancer cell metastasis, cellular trafficking, inflammation by bacteria and viruses and immune response makes them the materials of choice in the development of nano-delivery systems. Carbohydrate-based biomaterials are unique and more beneficial over other synthetic materials for nanomedicine development as they can potentially fulfill most of the necessities for applications in biosystems such as easy aqueous dispersion, prolonged stability in the presence of other biomolecules, biocompatibility and biomolecular recognition. In the last two decades, Narain and his team have focused on the development of unique carbohydrate-based biomaterials for a range of applications such as in drug and gene delivery, as novel biomaterials, for biosensing, and for better understanding of the role of carbohydrate interactions with biologically relevant entities. This talk will highlight the recent work on using glycopolymers and biopolymers for nucleic acid delivery and other applications.



References

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