

Synthesis for Biomimesis: Modified Cyclodextrins as capsid proteins or molecular motors

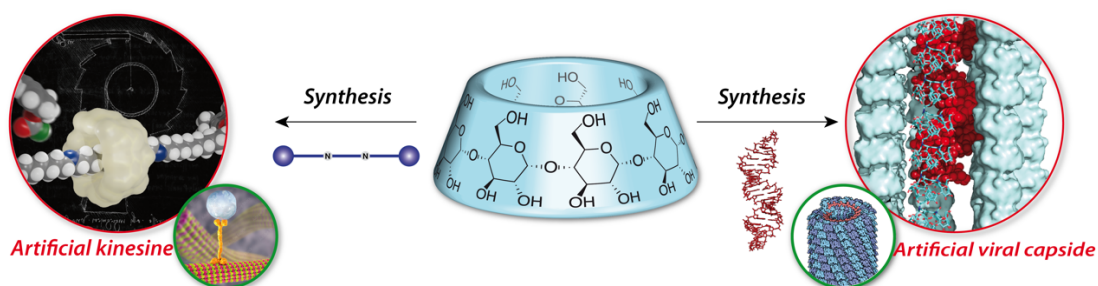
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Cyclodextrins are cyclic oligosaccharides possessing a cavity used in our daily life as deodorants, excipients or in chiral stationary phases. In these applications, they are unfunctionalized or randomly functionalized. The concept of "artificial enzyme" has been proposed by Breslow using these cavitated molecules^[1] assimilating their cavity to the active site of an enzyme.

However, a bottle-neck for their development was the lack of efficient functionalization. Over the years, we delineated several strategies to access poly-hetero-functionalized cyclodextrins.^[2] The ability to place a function anywhere on a complex cavitated allowed us to mimic proteins. Hence we could add reactive center to imitate metallo-enzymes.^[3] We also conferred the ability to self-assemble around DNA as capsid proteins^[4] and we designed a kinesin-like molecular motor^[5]...



Bibliographic references:

- [1] R. Breslow, L. E. Overman (1970), *J. Am. Chem. Soc.* (92) 1075.
- [2] M. Sollogoub, et al. (2014), *Nature Commun.* (5) 5354; M. Sollogoub, et al. (2021), *Angew. Chem. Int. Ed.* (60) 12090.
- [3] M. Sollogoub, et al. (2017), *Chem* (3) 174.
- [4] M. Sollogoub, et al. (2018), *Angew. Chem. Int. Ed.* (57) 7753.
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