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Bacterial glycomimetics: synthesis and applications

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Stellingen

Behorende bij het proefschrift

Bacterial glycomimetics: synthesis and applications

1. In the generation of synthetic oligosaccharide conjugate vaccines, the conjugation step should not be underestimated as it may thwart the overall immunogenicity of the glycoconjugate.
(This thesis, Chapter 1)
2. The development of large oligosaccharide mimics, having the desired activity takes small, but progressive steps.
(This thesis, Chapter 6)
3. There is no optimal universal carrier protein for all glycoconjugate vaccines.
(This thesis, Chapter 1, MacCalman, T. E., Phillips-Jones, M. K., & Harding, S. E., Glycoconjugate vaccines: some observations on carrier and production methods, Biotechnology and Genetic Engineering Reviews, 2019 35:2, 93-125.)
4. Solid phase synthesizers enable the production of molecules that have been considered beyond reach.
(This thesis, Chapter 5)
5. Conducting *in vivo* experiments without a proper statistical planning up front leads to biased and inconclusive answers to research questions.
Hanfelt, J. J., Statistical approaches to experimental design and data analysis of in vivo studies, Breast Cancer Res Treat. 1997, 46(2-3), 279–302.
6. Bureaucracy hampers new antibiotics reaching the clinic.
Ventola, C. L., The Antibiotic Resistance Crisis: Part 1—Causes and Threats. Pharmacy and Therapeutics, 2015, 40, 277-283.
7. The most effective assembly strategy, be it via a one-pot synthesis, automated synthesis or orthogonal glycosylation strategy, differs for each oligosaccharide.
Wu, Y., Xiong, D. C., Chen, S. C., Wang, Y., Ye, X., Total synthesis of mycobacterial arabinogalactan containing 92 monosaccharide units. Nat Commun 8, 14851 2017.
8. Challenges in generation of carbasugar building blocks has limited their wider application as carbohydrate mimetics.
Seok-Ho, Y., & Sung-Kee, C., Divergent syntheses of all 16 carbasugar stereoisomers via stereoconversion of carba- β -D-altropyranose derivatives. Tetrahedron-asymmetry, 2005, 790-784.
9. In science, new discoveries are always achieved by building on previous discoveries.

Jacopo Enotarpi

Leiden, 19 oktober 2023