Tjerk Sminia

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Project	Synthesis of Microbial Sialic Acids for Study of Glycobiology of Microbes in the Human Gut
Fields of interest	Synthetic carbohydrate chemistry, medicinal chemistry and chemical biology
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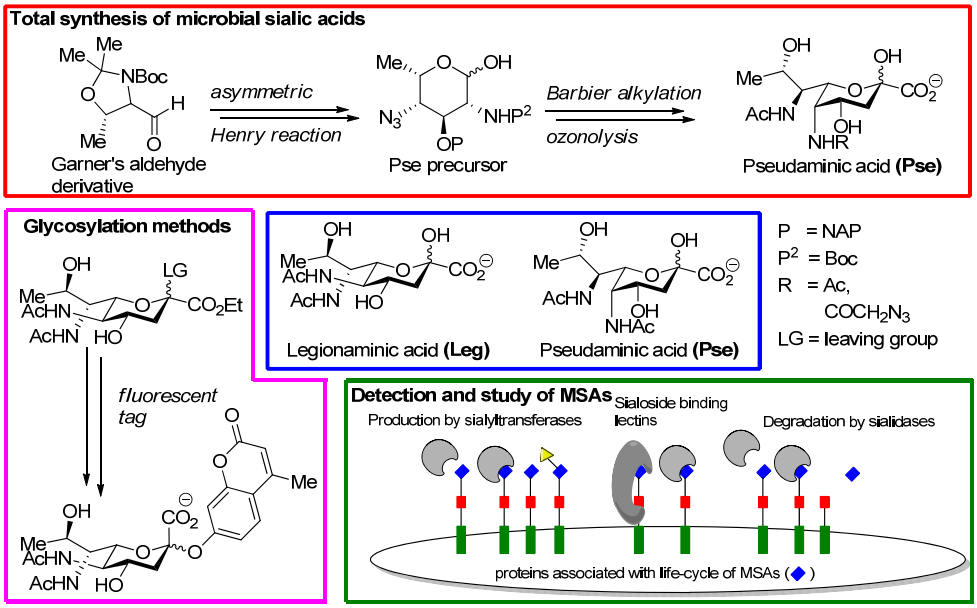
Introduction

Sialic acids are nine-carbon α-ketoacid sugars typically found on the surfaces of glycoconjugates. The occurrence of sialic acids on the surfaces suggest that sialic acids play a major role in cell cell interactions. It was long thought that sialic acids were only present in vertebrates. However, recent research have shown that there are at least two types of sialic acid present in non-vertebrates like microbes (blue box). Microsomes are present in the human gut. The fact that a misbalance of microbes in the human gut is associated with several diseases like diarrhea, ulcerative colitis and Crohn's disease makes microbial sialic acids (MSAs) an interesting study area. The role of sialic acids in microbial tissues is at this moment not understood. Moreover, the enzymes associated with these sialic acids are not known.

Goal

To study the role of MSAs, we have to synthesise microbial sialic acids. (red box). After the total synthesis we can modify sialidase inhibitors (**Error! Reference source not found.**purple box), attach the MSAs to organic surfaces, and start to identify enzyme activity towards MSAs (green box).



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References

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