## 3<sup>rd</sup> Glycobiology World Congress

June 26-28, 2017 London, UK

## Antimicrobial peptides, glycopeptides and peptidoglycans

Xue-Wei Liu Nanyang Technological University, Singapore

Glycopeptides and glycoproteins play vital roles in a wide array of biological activities including cell-cell adhesion, cell differentiation, Gcell growth and tumor metastasis. In addition, a host of major illnesses such as autoimmune diseases, infectious diseases and cancer are caused by aberrant protein glycosylation. Consequently, the development of new glycopeptides-based vaccines, diagnostics and therapeutics has gained significant interests, stimulating the study of glycopeptide synthesis. Here, a practical approach towards N-glycopeptide synthesis using an auxiliary-mediated dual native chemical ligation (NCL) is presented. The first NCL connects an N-linked glycosyl auxiliary to the thioester side chain of an N-terminal aspartate oligopeptide. This intermediate undergoes a second NCL with a C-terminal thioester peptide. Mild deprotection provides the desired N-glycopeptide. The flexibility and systematic control of our method clearly have significant advantages over preceding ones and present a major step forward in glycoscience. Taking into consideration of the previous approaches, our method offers an attractive and practical procedure to N-glycopeptide that does not require cysteine residue, allowing for straightforward glycosylation and ligation at aspartic acid terminal. The auxiliarylinked glycosyl donor can be obtained from readily available glycosyl azide. Our method can leverage modern techniques such as intein-mediated ligation or recombinant expression to gain access to peptides of virtually any length and order. In addition, quick access to polymeric peptidoglycans will also be presented.

## Biography

Xue-Wei Liu has completed his BSc and MSc degrees from China Agricultural University and PhD in 2000 from University of Southern California. He has worked as a Research Scientist at Procter & Gamble (2000-2002), Senior Research Scientist at Chugai Pharma, USA (2002-2003) and was a Post-doctorate at Caltech (2003-2005). He is currently an Associate Professor at Nanyang Technological University, Singapore. His research field is carbohydrate chemistry, natural products and glycoproteins in addressing problems of medicinal and biochemical significance.

xuewei@ntu.edu.sg

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