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Biography

Carlo Unverzagt studied chemistry in Mainz at the Johannes-Gutenberg-University. In 1988 he received his doctorate with Professor Horst Kunz in Mainz. After postdoctoral training with Professor Jim Paulson at UCLA, Los Angeles he worked at TU München with Professor Horst Kessler to obtain his habilitation in 1997. He was appointed Professor of Organic Chemistry at the LMU München in 1997 and holds a chair in Bioorganic Chemistry at the University of Bayreuth since 1998. His research interests are focused on the chemistry and biochemistry of carbohydrates, glycoproteins and natural products. Particular activities comprise the modular chemoenzymatic synthesis of N-glycans, solid-phase synthesis of N-glycopeptides and N-glycoproteins, N-glycan conjugates for NMR studies and biophysical investigations and enzymatic elongations of glycopeptides.

Abstract title: Merging Chemistries for the Synthesis and Evaluation of Homogenous Glycoproteins.

Abstract = maximum 1500 characters

Glycans and glycoconjugates are essential components of cells. The glycan part of biomolecules influences their activity and thus the biological processes they are involved in. However, many of these interactions are poorly understood since the glycans can be variable, hence limiting access to pure glycan structures and glycoconjugates from natural sources. Frequently, these shortcomings can only be overcome by synthesis. Ideally, glycosylated biomolecules should be investigated as the natural entity for establishing structure-activity relationships. In the case of N-glycoproteins the synthetic challenges are manifold. By using native chemical ligation for the coupling of peptides and N-glycopeptides followed by refolding a number of N-glycoproteins can be accessed. Major obstacles may arise when multiple segments are employed due to the need of temporary protecting groups and desulfurization methods. Typically, overcoming this phase is

requiring the main effort. Once a synthesis is yielding the desired glycoprotein this blueprint can be used to generate additional glycoforms. In this respect we have developed modular syntheses for the main N-glycans present in mammalian glycoproteins, which can be incorporated into glycopeptides via N-glycan azides.

C. Unverzagt, Y. Kajihara, Recent advances in the chemical synthesis of N-linked glycoproteins *Curr. Opin. Chem. Biol.* **2018**, *46*, 130–137.