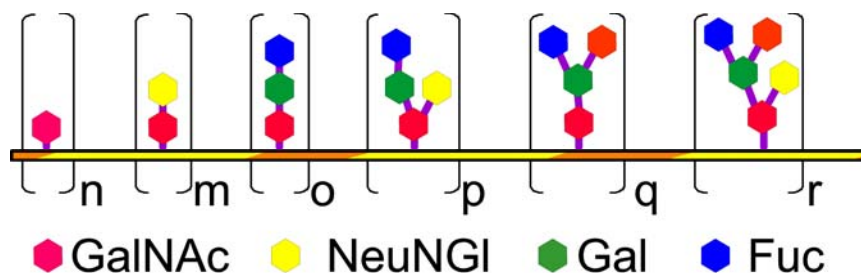


Mucin self-interactions at the nanoscale

Determination of macromolecular interactions at the single-molecule level offer novel insight in their structure – function relationships. We reported on the mucins self-interactions and how these properties depend on their saccharide decoration patterns. Mucins, being linear O-glycosylated glycoproteins involved in inflammation, cell adhesion, and tumorigenesis were investigated with emphasis on mucins expressing T and Tn cancer antigen. Using AFM and maintaining the mucins under near physiological conditions, distributions of unbinding forces and corresponding force loading rates were determined for force loading rates from 0.18 nN/s to 39 nN/s, All mucin samples investigated showed self-interaction, but mucins with only the Tn-antigen or a mixture of Tn-, T-antigen, and another trisaccharide showed the largest tendency. These carbohydrate cancer antigens may, thus, play an active role in the disease by constitutively activating mucin and mucin-type receptors by self-association on cells.



"Enhanced Self-Association of Mucins Possessing the T and Tn Carbohydrate Cancer Antigens at the Single-Molecule Level", K.E. Haugstad, T.A. Gerken, B.T. Stokke, T.K. Dam, C.F. Brewer and M. Sletmoen, Biomacromolecules, 13 (2012)1400.