GLYCAN EDITING *vs* GLYCAN-MOTIF EDITING: CHEMICAL TOOLS FOR THE PRECISION REMODELLING OF THE GLYCOCALYX

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The design of glycan-based therapeutics that aim to remodel the glycosylation pattern of the glycocalyx requires an in-depth understanding of the processes that regulate the biosynthesis of glycans [1-2]. For the case of cancer, the precision editing of cancer-associated glycan motifs has the immense potential to target the 'heart' of cancer, thus providing highly effective therapeutic interventions that will profoundly improve outcomes for cancer patients [3-4].
In this presentation, strategies to disrupt the expression of glycan motifs within the glycocalyx will be discussed, comparing and contrasting the broad "glycan editing" approach with the more discriminatory "glycan-motif editing" approach [5]. These strategies profoundly differ in the scope, investigative goals, applications, and precision.
With a specific focus on the prevention of cellular expression of sialyl Lewis X (sLe^X), a driver of carcinogenesis and metastasis, the presentation will focus on how agents that selectively disrupt the activity of specific fucosyltransferases [6-7] yield precision "glycan-motif editing", ensuring the achievement of the preferred custom-modification of the glycocalyx and of the intended therapeutic aim.

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