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| **Glycan** | One or more covalently bonded monosaccharides |
| **Secreted Glycan** | A glycan secreted from the golgi apparatus, these are the glycan typically measured |
| **Intermediate Glycan** | A glycan internal to synthesis which is not typically observed, this is an intermediate state towards the production of a whole glycan which can be secreted |
| **Substructure** | A glycan core which appears in at least one glycan. Individual substructures are termed “X” followed by a number e.g. X10, X11. |
| **Intermediate Substructure** | A substructure whih is produced in the process of glycolsynthesis. |
| **Epitope substructure** | A terminal root substructure ( add to discussion |
| **Glycan level perspective** | Measurements which include only whole glycan |
| **Substructure level perspective** | Measurements which aggregate data over every occurance of a glycan core across a dataset |
| **Substructure Set** | **A**ll substructures occurring at least once |
| **Presence/Absence Matrix** | An integer matrix representing glycans in the columns and substructure in the rows. Members of the matrix indicate the number of occurrences of each substructure in each glycan |
| **Glycan abundance** | A glycan level measurement of the abundance of glycans, typically Mass Spec or related technology |
| **Substructure abundance** | Sum of abundances for all glycans containing a substructure. The substructure abundance also indicates the total amount of the substructure synthesized in the sample, this includes each time this intermediate was anabolized to a larger glycan |
| **Substructure Network** | *Explained in Result: Method.* The substructure network is a directed acyclic graph and each node denotes a glycan substructure. Given the substructure set S, the root node starts from the monosaccharides or a defined root core structure, and a child node is a substructure that has only one monosaccharide added to its parent node. The substructure network is build based on the substructure inclusion relationship (**Figure 1C**). Starting from the monosaccharides, each level has one more monosaccharide than the upper level, and the edge is the correlation of abundance of the substructure in glycoprofiles. |
| **Synthesis Network** | A subset of the substructure network containing only feasible or validated reactions |
| **Parent/Child Substructure** | A child substructure has only one monosaccharide added to its parent node, these relations are contained in the substructure network |
| **Reactant/Product Substructure** | A parent/child relation which is also contained in the glycan synthesis network |
| **Glyco Motif** | A meaningful substructure which, in a particular context, occurs frequently or distinctly from its parent in the substructure network |
| **Glycoprofile** | A vector or collection of glycan abundances for multiple glycans |
| **Substructure Profile / Glycoprofile vectors / Complete Substructure Abundance vectors** | A vector or collection of substructure abundances for all substructures in the substructure set |
| **Glyco-Motif Profile / Glyco-motif vectors / Reduced Substructure Abundance vectors** | A vector or collection of substructure abundances only including glycol-motifs |
| **Product Reactant Ratio** | An estimation of the percent of reactant substructure converted to a product substructure. The proportion of the substructure abundances of the product and reactant indicating the total product synthesized divided by the total reactant synthesized |
| **Representative substructure** | An abundant substructure in a glycol-motif cluster used to represent the cluster in calculations. Representative substructures are termed “R” followed by a number, e.g. R10, R11. |