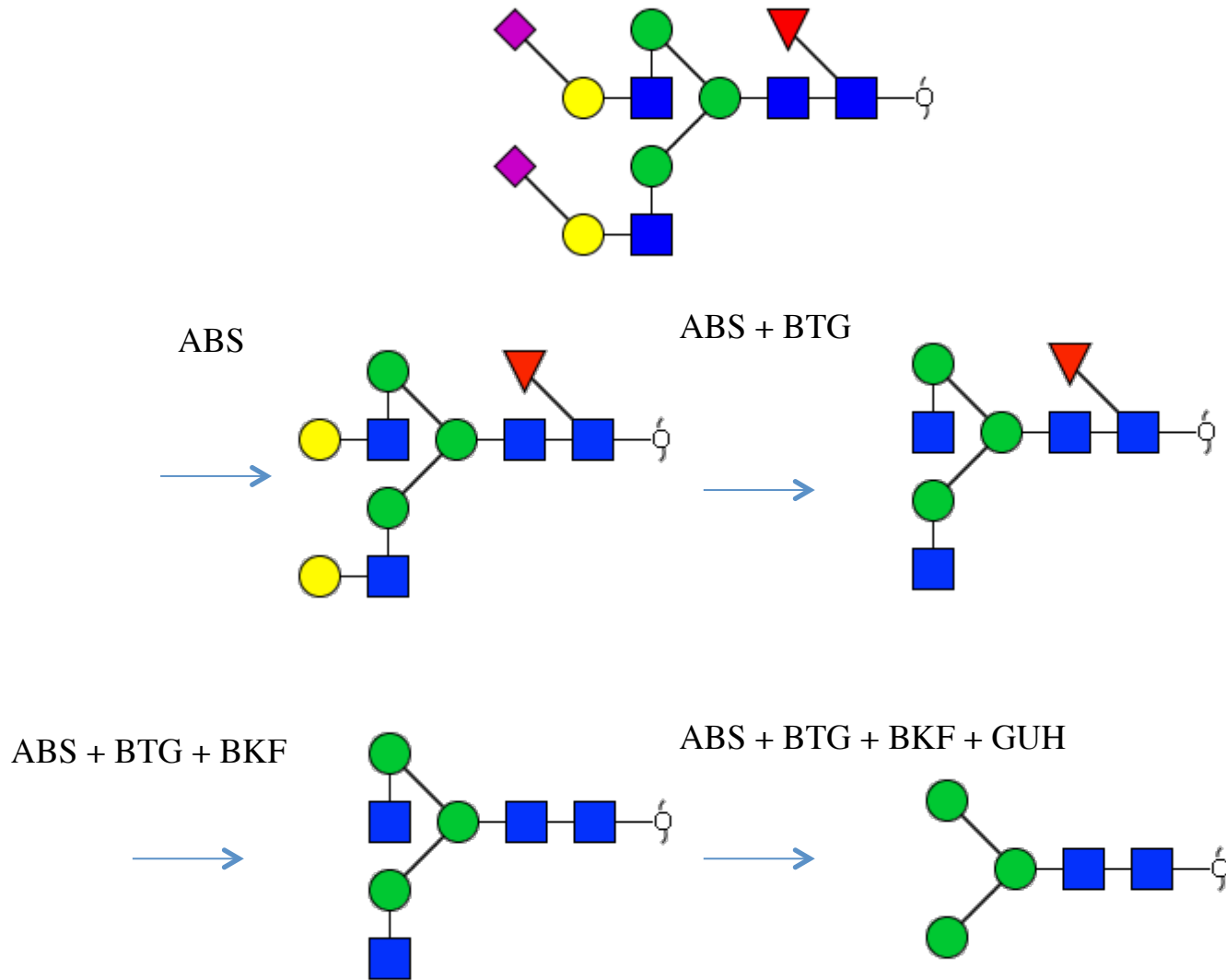


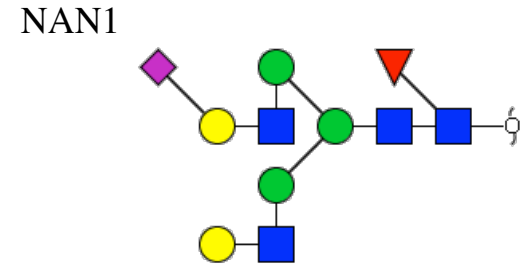
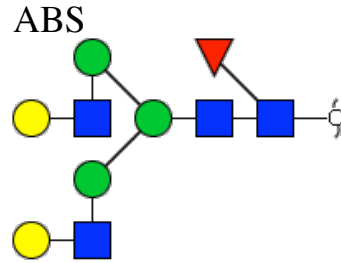
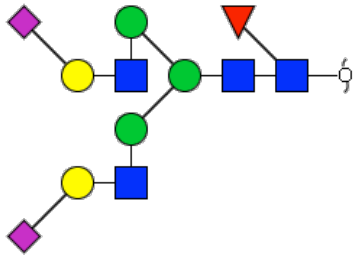
**Table 1.** Commonly Used Exoglycosidases for Oligosaccharide Sequencing

| Short name | Full name                        | Source  | Specificity   |
|------------|----------------------------------|---|---|
| ABS        | $\alpha(2-3,6,8,9)$ -Sialidase   | Recombinant <i>Arthrobacter ureafaciens</i> gene, expressed in <i>E. coli</i> | $\alpha(2-3,6,8,9)$ -specific, cleaves all non-reducing terminal branched and unbranched sialic acids.  |
| NAN1       | $\alpha(2-3)$ -Sialidase         | Recombinant <i>Streptococcus pneumoniae</i> gene, expressed in <i>E. coli</i> | Releases $\alpha(2-3)$ -linked sialic acid.   |
| BKF        | $\alpha(1-2,3,4,6)$ -Fucosidase  | Bovine Kidney   | Releases non-reducing terminal $\alpha(1-6)$ core-linked fucose more efficiently than other $\alpha$ -fucose linkages. Frequently used for release of core fucose residues. |
| XMF        | $\alpha(1-2)$ -Fucosidase        | <i>Xanthomonas manihotis</i>  | Releases non-reducing terminal $\alpha(1-2)$ -linked fucose.  |
| AMF        | $\alpha(1-3,4)$ -Fucosidase      | Almond Meal   | Releases non-reducing terminal $\alpha(1-3,4)$ -linked fucose. Does not release core linked fucose in $\alpha(1-3,6)$ configuration.  |
| BTG        | $\beta(1-3,4)$ -Galactosidase    | Bovine testis   | Releases non-reducing terminal $\beta(1-3,4)$ -linked galactose residues.   |
| SPG        | $\beta(1-4)$ -Galactosidase      | <i>Streptococcus pneumoniae</i>   | $\beta(1-4)$ specific galactosidase removes galactose residues from non-reducing terminal.  |
| CBG        | $\alpha(1-3,4,6)$ -Galactosidase | Coffee Bean   | Hydrolyses $\alpha(1-3,4,6)$ -linked terminal galactose residues.   |
| JBM        | $\alpha(1-2,3,6)$ -Mannosidase   | Jack Bean   | Releases non-reducing terminal $\alpha(1-2,6)$ -linked mannose residues more efficiently than $\alpha(1-3)$ .   |
| GUH        | $\beta$ -N-Acetylhexosaminidase  | Recombinant <i>Streptococcus pneumoniae</i> gene, expressed in <i>E. coli</i> | Releases all non-reducing terminal $\beta$ -linked N-acetylglucosamine but not bisecting GlcNAc $\beta(1-4)$ Man residues.  |
| JBH        | $\beta$ -N-Acetylhexosaminidase  | Jack Bean   | Specific to all non-reducing terminal $\beta(1-2,3,4,6)$ -linked N-acetylglucosamine and N-acetylgalactosamine residues.  |

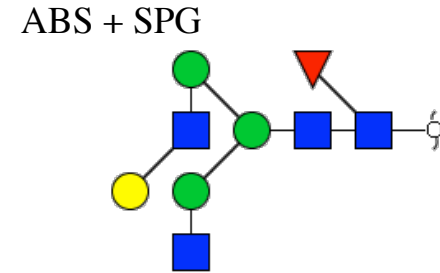
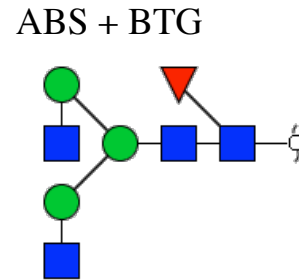
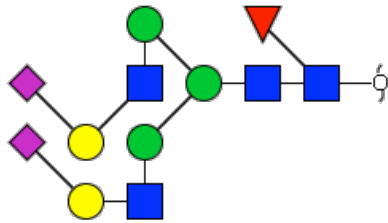


**Fig. 2.** An exoglycosidase array for the complete sequencing of a bi-antennary doubly sialylated and core fucosylated N-link glycan. The enzyme panel sequentially digests the glycan from the non-reducing end to the chitobiose core.

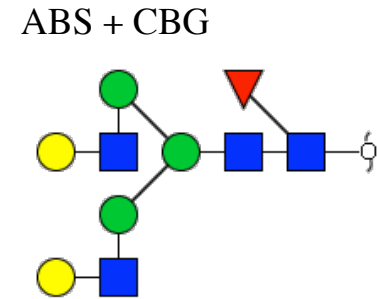
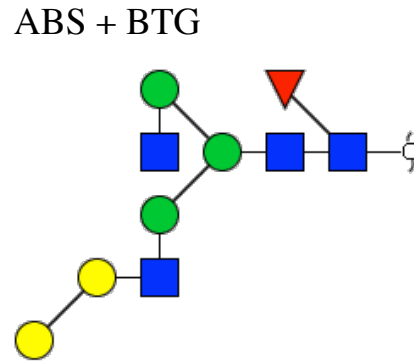
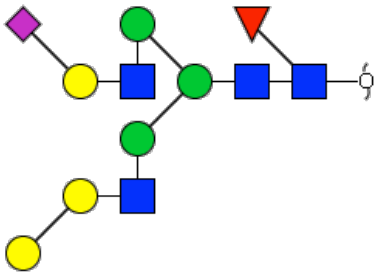
### (a) Determination of Sialic Acid Linkage Type



### (b) Confirmation of Beta Galactose



### (c) Enzyme Specificity for Alpha Galactose



**Fig. 1.** Example enzyme combinations that can be used for oligosaccharide sequencing: (a) Typically, to confirm the presence of  $\alpha(1-3)$  or  $\alpha(1-6)$  terminal sialic acids the released glycans are treated with ABS or NAN1; (b) the  $\beta(1-4)$  specific galactosidase SPG can be used to distinguish between  $\beta(1-3,4)$  galactose residues, which can be cleaved by BTG; (c) the anomeric configuration of galactose residue can be determined by the introduction of SPG that cleaves  $\alpha$ -galactose residues only.