|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Supplemental Table 1. List of enzymes used for generation of N-glycosylation pathway in CHO cell lines | | | | | | | | |
| Enzyme | EC NO | resfuncgroup  & LinkFG | resAtt2FG  & linkAtt2FG | isTarget-  Terminal | substNA-  Residue | targetBranch | substMinStruct  (MaxStruct) | substNABranch |
| Man I | 3.2.1.113 | Man-α1,3 | Man | Yes |  |  | (min)  (Max) |  |
| Man II | 3.2.1.114 | Man-α1,3/α1,6 | Man | Yes | Gal | - | (Max) | **C:\Users\gangliu\Dropbox\UBProject\GEAT\submission\glycanspec5.tif** |
| GnT II | 2.4.1.143 | GlcNAc-β1,2 | Man-α1,6 | Yes | - |  |  | **C:\Users\gangliu\Dropbox\UBProject\GEAT\submission\glycanspec6.tifC:\Users\gangliu\Dropbox\UBProject\GEAT\submission\glycanspec5.tif** |
| GnT I | 2.4.1.101 | GlcNAc-β1,2 | Man-α1,3 | - | Gal |  | (Min & Max) |  |
| GnT IV | 2.4.1.145 | GlcNAc-β1,3 | Man-α1,3 | - | Gal |  |  | **C:\Users\gangliu\Dropbox\UBProject\GEAT\submission\glycanspec5.tif** |
| GnT V | 2.4.1.155 | GlcNAc-β1,6 | Man-α1,6 | - | Gal |  |  | **C:\Users\gangliu\Dropbox\UBProject\GEAT\submission\glycanspec5.tif**  **C:\Users\gangliu\Dropbox\UBProject\GEAT\submission\glycanspec7.tif** |
| GalT | 2.4.1.38 | Gal-β1,4 | Man-α1,3 | Yes | - | **C:\Users\gangliu\Dropbox\UBProject\GEAT\submission\glycanspec4.tif** | - | - |
| SiaT | 2.4.99.6 | Sia-α2,3 | Gal-β1,4 | Yes | - |  | - | **C:\Users\gangliu\Dropbox\UBProject\GEAT\submission\glycanspec5.tif** |
| FUT8 | 2.4.1.68 | Fuc-α1,6 | GlcNAc-β?,? | No | Gal |  | - |  |

**\*: *resfuncgroup*** refers to the functional group that glycosyltransferase transfers from donor to acceptor or the residue that glycosidase removes from the substrate**. *LinkFG*** refers to the linkage information between the ***resfuncgroup*** and its linking residue**.  *resAtt2FG*** refers to the sugar residue on the acceptor where the ***resfuncgroup*** is added to in the case of glycosyltransferase. In the case of glycosidase, it is the residue from which **r*esfuncgroup*** is removed. **linkAtt2FG** contains the linkage information between ***resAtt2FG*** and its preceding residue. **isTargetTerminal**: logical value indicating if the enzyme acts on the terminal ***residuesubstNAresidue***/**substNABranch** describing the residue or the branch that prevent enzyme activity. ***targetBranch*** describing the substrate target branch where the enzyme acts. ***substMinStruct***/***substMaxStruct*** describing the minimal or maximal structure that enzyme can act on. **“-“**in the table indicates that no information is available in literature.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Supplemental Table 3. Top 10 glycans from a number of CHO cell lines | | | | | | | | |
| Top 10 Glycans | CHO WT | MUT |  |  |  |  |  |  |
| 1 |  |  |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |  |  |
| 5 |  |  |  |  |  |  |  |  |
|  | 7 |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |

Enzyme kinetic table:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Enzyme | EC NO | *K*eq\_nc | *K*eq\_glycan | *Vm* | *Keq* | Reference |
| Man I | 3.2.1.113 |  |  |  |  |  |
| Man II | 3.2.1.114 |  |  |  |  |  |
| GnT II | 2.4.1.143 |  |  |  |  |  |
| GnT I | 2.4.1.101 |  |  |  |  |  |
| GnT IV | 2.4.1.145 |  |  |  |  |  |
| GnT V | 2.4.1.155 |  |  |  |  |  |
| GalT | 2.4.1.38 |  |  |  |  |  |
| SiaT | 2.4.99.6 |  |  |  |  |  |
| FUT8 | 2.4.1.68 |  |  |  |  |  |