

CLAIMS

1. A host cell that comprises a nucleic acid encoding a modified enzyme of the fucosylation pathway, wherein the modified enzyme is derived from GDP-mannose 4,6-dehydratase (GMD) and α -1,6-fucosyltransferase (FUT8), the nucleic acid is selected from the group consisting of SEQ ID NOs: 3, 5, 7, 9, 11, 15 and any combination thereof, the modified enzyme reduces or inhibits the activity of the wild-type enzyme, from which the modified enzyme is derived, in the host cell.
2. The host cell according to claim 1, wherein the modified enzyme has an amino acid sequence selected from the group consisting of SEQ ID NOs: 4, 6, 8, 10, 12, 16, and any combination thereof.
3. The host cell according to claim 1, wherein the modified enzyme inhibits or reduces fucosylation in the host cell.
4. The host cell according to claim 1, wherein less than 10% of the proteins produced in the cell are fucosylated.
5. The host cell according to claim 1 further comprising a nucleic acid encoding an antibody.
6. The host cell according to claim 5, wherein the antibody is expressed in the cell as an afucosylated antibody.
7. An afucosylated antibody produced in the host cell of claim 6.
8. The afucosylated antibody according to claim 7 that is at least 90% afucosylated.
9. The afucosylated antibody according to claim 7, wherein the afucosylated antibody has increased antibody-dependent cellular cytotoxicity (ADCC) activity compared to its fucosylated counterpart.
10. The afucosylated antibody according to claim 7, wherein the complement dependent

cytotoxicity (CDC) activity of the afucosylated antibody is not reduced or suppressed compared to its fucosylated counterpart.

11. A use of a host cell according to claim 1 for the manufacture of an afucosylated antibody.
12. A method for using a host cell according to claim 1, comprising transfecting a nucleic acid encoding a protein to be produced to the host cell.
13. The method according to claim 12, wherein the protein to be produced is an antibody.
14. The method according to claim 13, wherein the antibody is an afucosylated antibody.
15. The method according to claim 14, wherein the afucosylated antibody is 90% afucosylated.
16. The method of claim 14, wherein the afucosylated antibody has increased antibody-dependent cellular cytotoxicity (ADCC) activity compared to its fucosylated counterpart.
17. The method of claim 14, wherein the complement dependent cytotoxicity (CDC) activity of the afucosylated antibody is not reduced or suppressed compared to its fucosylated counterpart.