N-GLYCAN BIOSYNTHESIS

Cytosol

ALG7 → ALG13 / ALG14 → ALG1 → ALG2 → ALG2 → ALG11

Amino sugar and nucleotide sugar metabolism

Fructose and mannose metabolism

Man-GDP

Glycosylphosphatidyl-inositol (GPI) -anchor biosynthesis

ALG11

flippase RFT1

DPM1 / DPM2 / DPM3

Manβ-P-Dol

ALG3

ER lumen

Dol ⇄ 2.7.1.108 / 3.1.3.51 ⇄ P-Dol

3.1.4.48 / ALG5 → Glcβ-P-Dol

ALG9 ← ALG12 ← ALG9

ALG6

3.6.1.43

ALG10 ← ALG8

Asn-X-Ser/Thr

STT / OST

PP-Dol

Various types of N-glycan biosynthesis

GCS1 → GANAB → GANAB → MAN1 → MGAT1 → MAN2 → MGAT2 → MGAT3 → Keratan sulfate biosynthesis

Terpenoid backbone biosynthesis

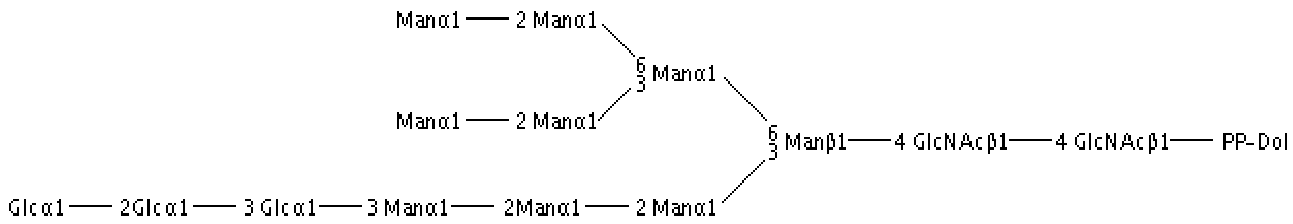
Golgi apparatus

N-glycan degradation

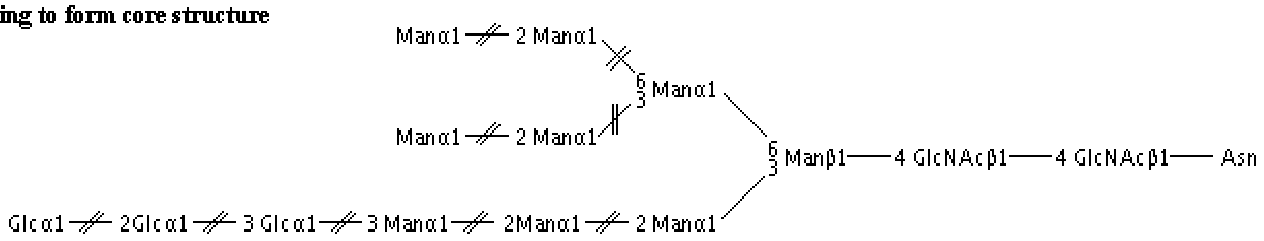
MGAT3 → MGAT4 / MGAT5 / MGAT4

MGAT3 → 2.4.99.1 → 2.4.1.38 → FUT8

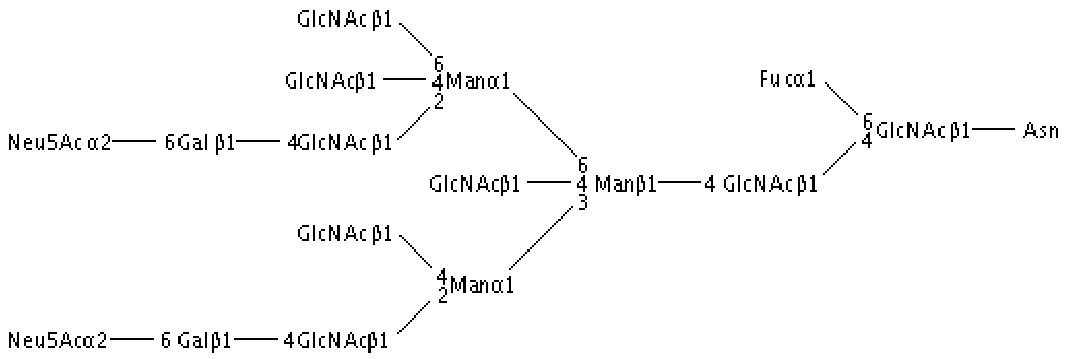
N-glycan precursor biosynthesis



Trimming to form core structure



Glycan extension from core structure



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