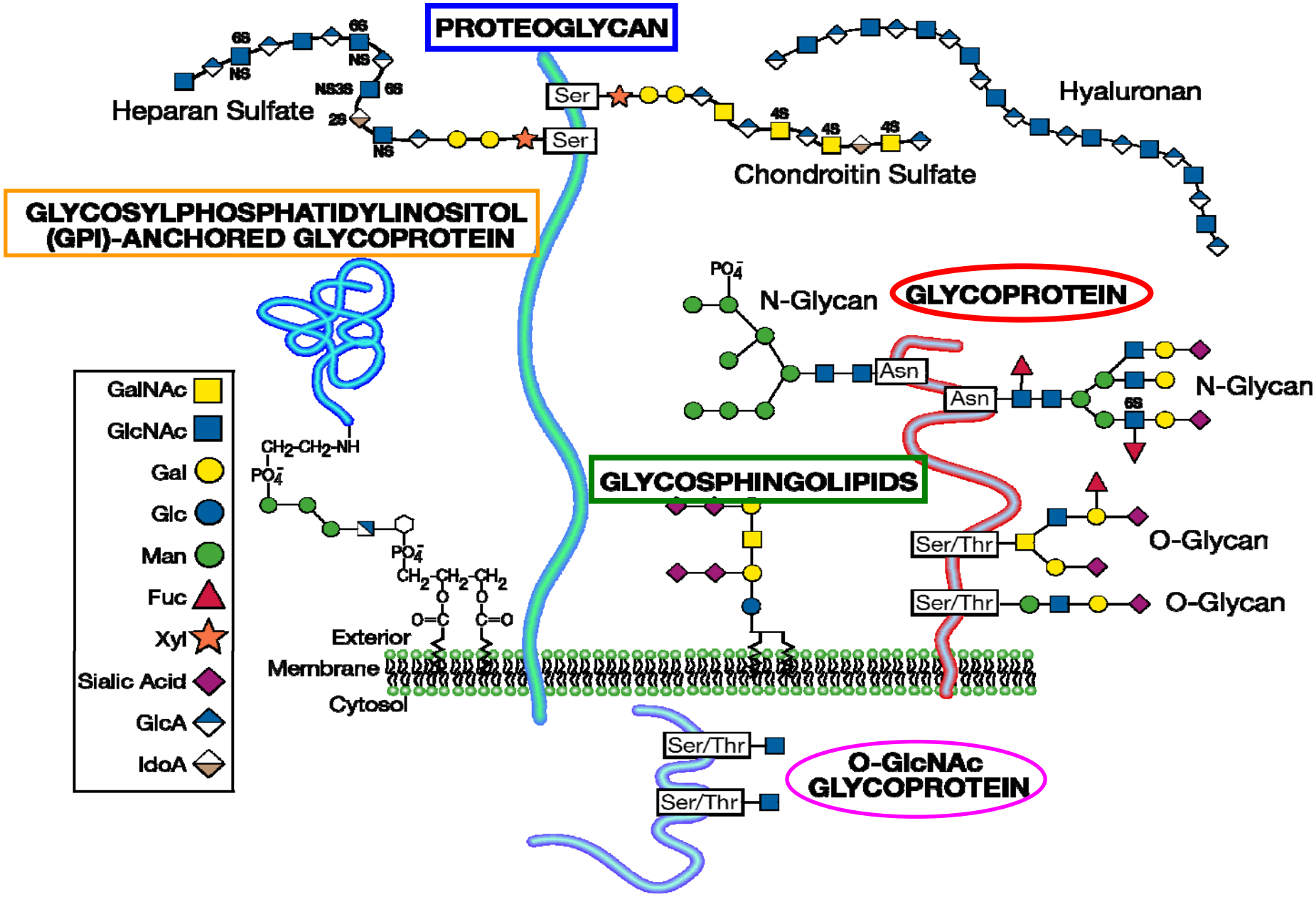
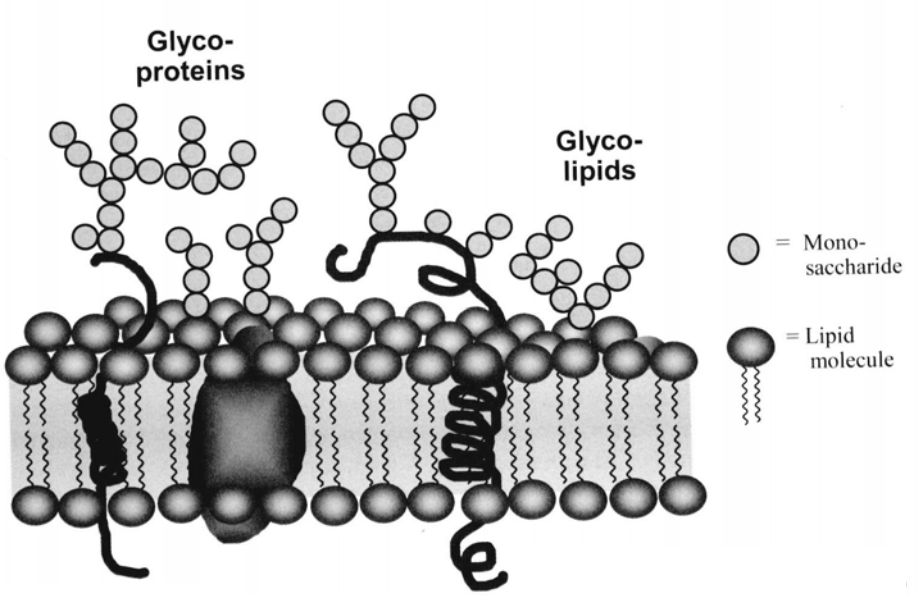
GLICOCONIUGATI



GLICOCONIUGATI

✓ **GLICOLIPIDI**

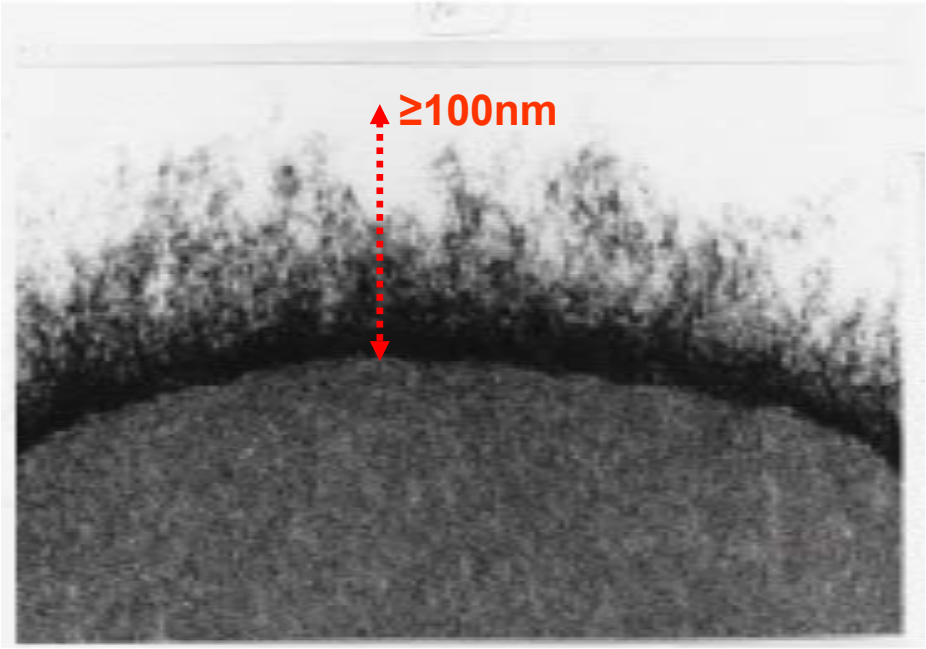
✓ **Lipooligo- e lipopolisaccaridi**



GLICOPROTEINE

Proteoglicani

Peptidoglicani



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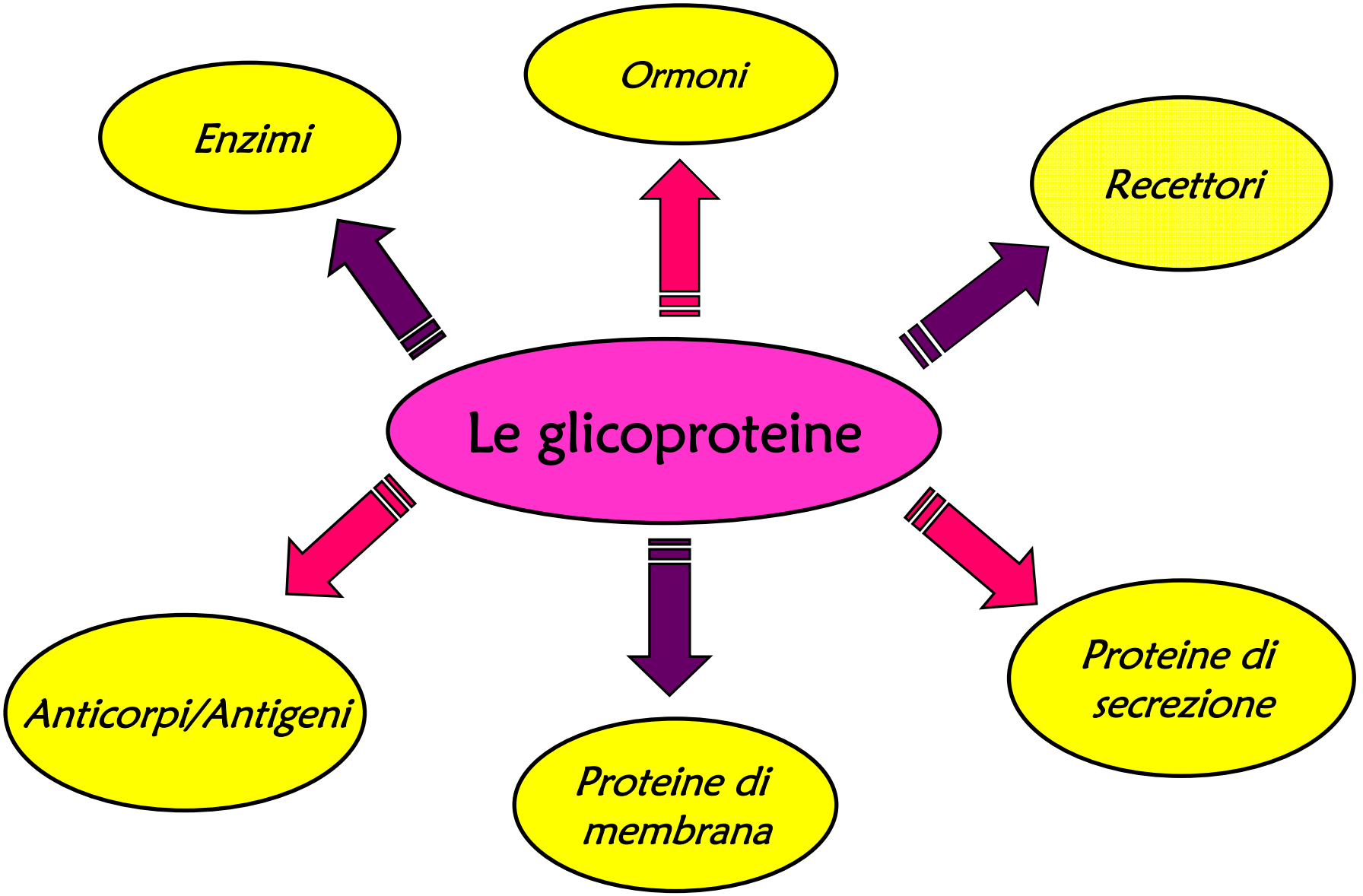


GLICOPROTEINE

Funzioni della porzione glicosidica

Funzioni intrinseche

- ❖Componenti strutturali di membrana e della matrice extracellulare
- ❖Capacità di modificare la solubilità e la stabilità delle proteine

Funzioni estrinseche

- ➢ Capacità di dirigere la circolazione intracellulare ed extracellulare di glicoconiugati
- ➢ Mediazione e modulazione dell'adesione cellulare
- ➢ Mediazione e modulazione del signalling intracellulare ed extracellulare

Legame della porzione glicosidica

N-linked

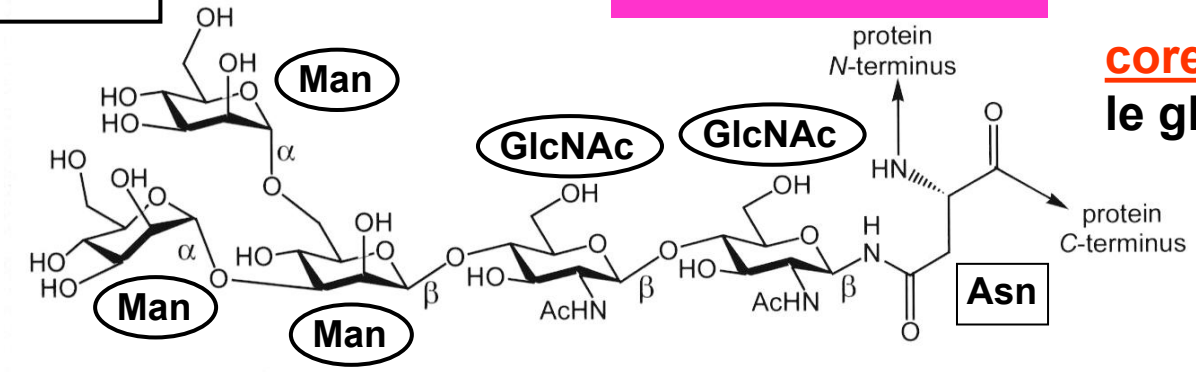
La porzione glicosidica è legata ad un residuo di Asn mediante un legame *N*-glicosidico.
In quasi tutti i casi il monosaccaride legato ad Asn è una β-GlcNAc

O-linked

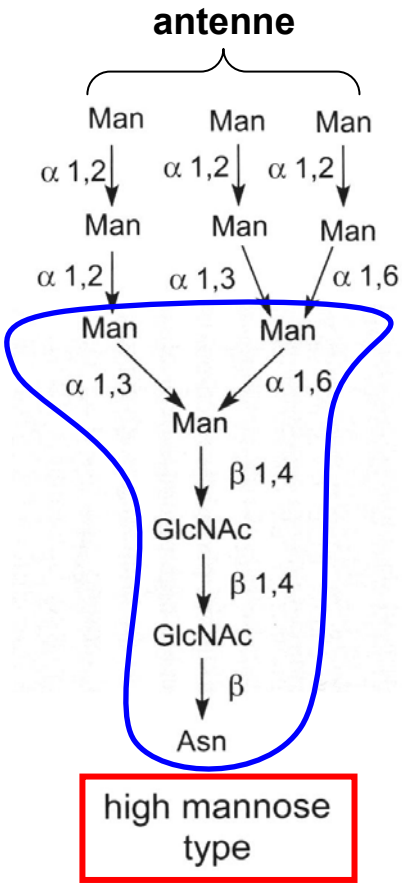
La porzione glicosidica è legata ad un residuo di Ser o Thr mediante un legame *O*-glicosidico.
Il monosaccaride legato a Ser/Thr è variabile, ma più comunemente è una α-GalNAc (mucine)

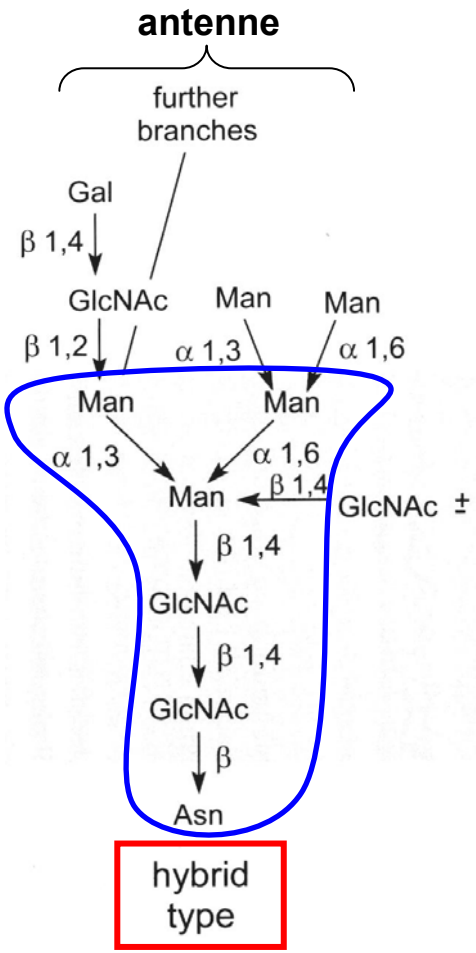
N-linked

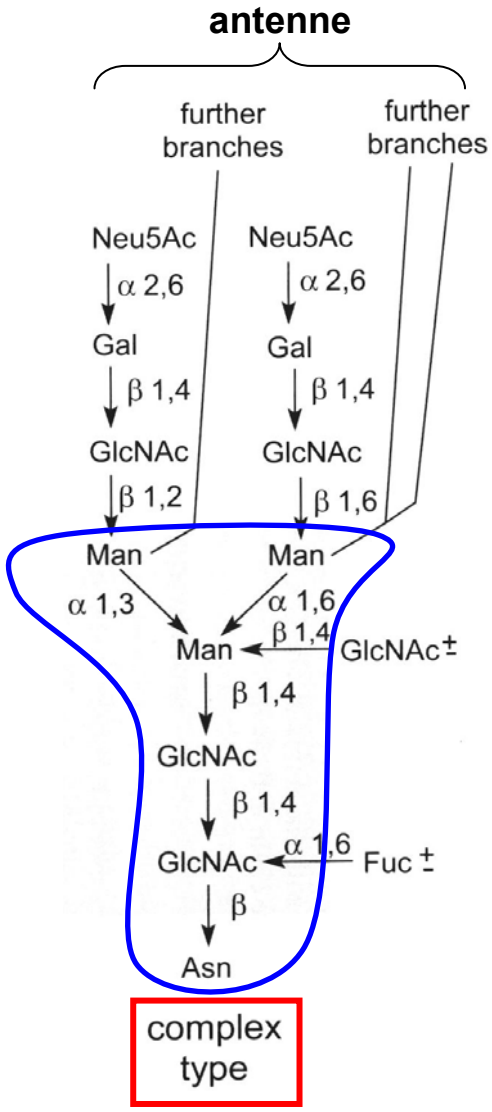
GLICOPROTEINE



core region comune a tutte le glicoproteine *N*-linked

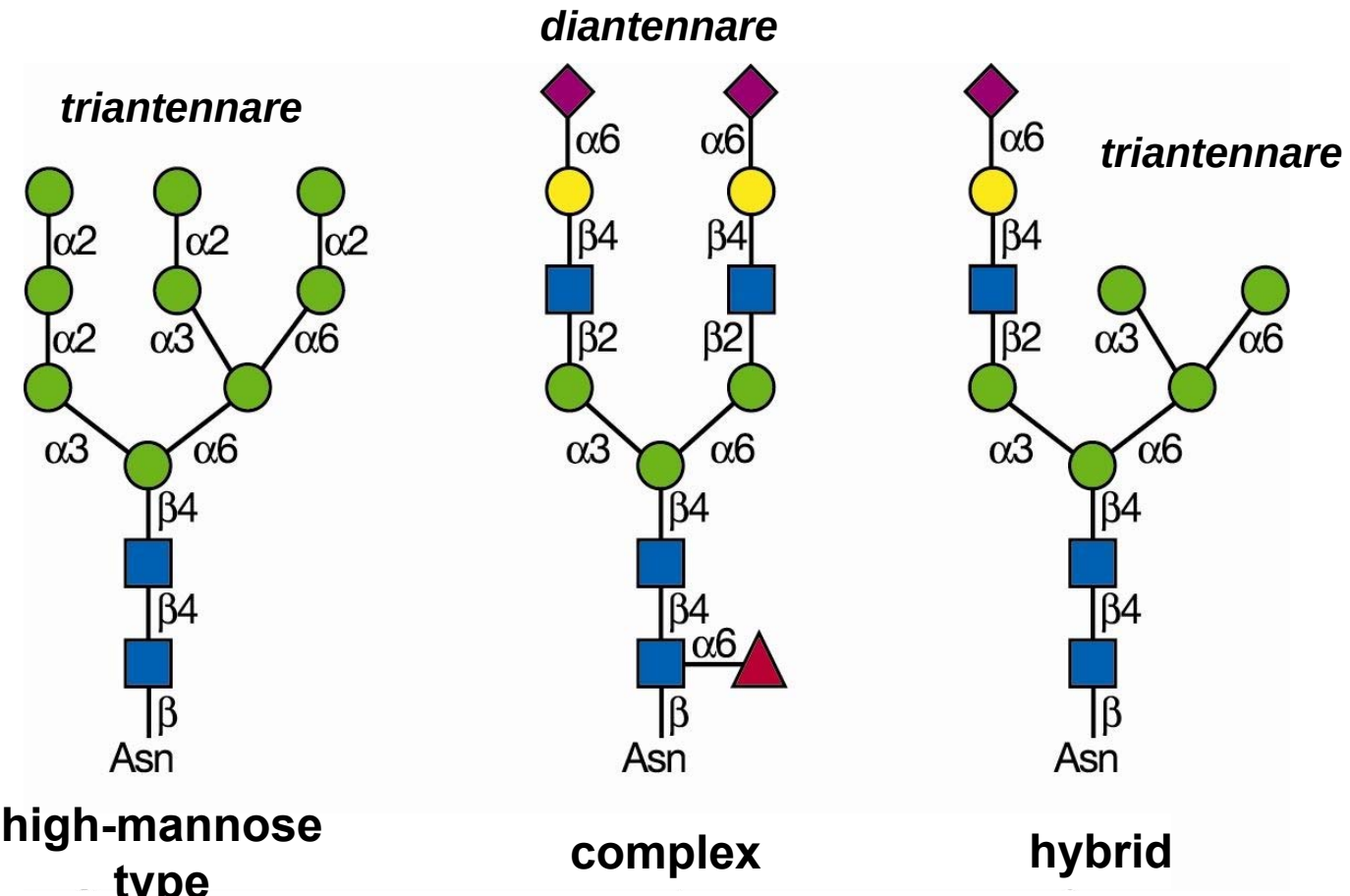






***N*-linked**

GLICOPROTEINE



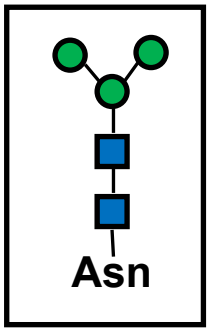
high-mannose type

complex

hybrid

Legenda

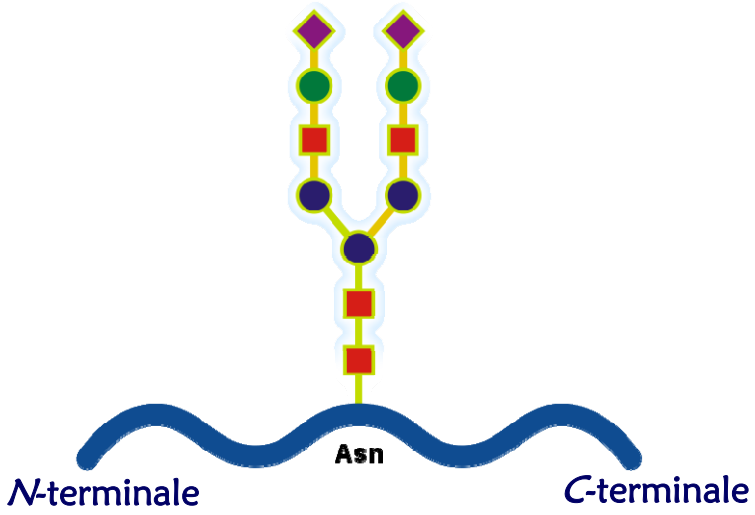
- ***N*-acetyl glucosamine**
- **Fucose**
- **Galactose**
- **Mannose**
- **Sialic acid**

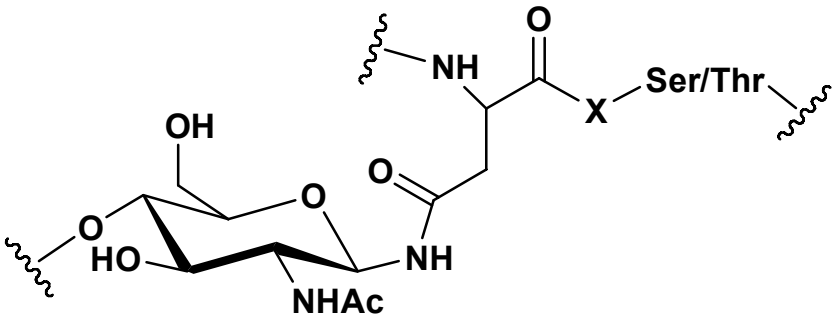


Core region

N-linked

GLICOPROTEINE

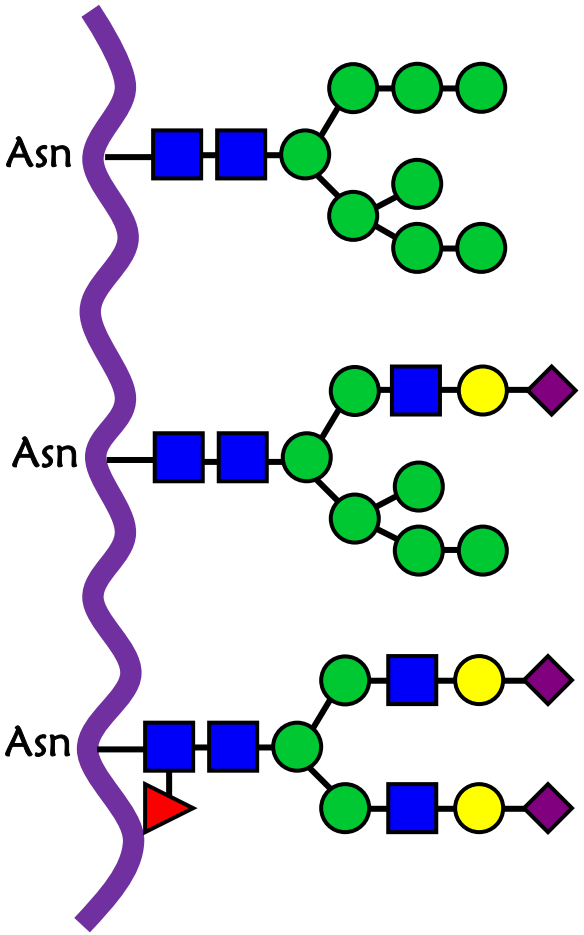




Sequenza consenso: **Asn-X-Ser/Thr**

X = tutti gli amminoacidi eccetto la prolina

Glycoforms



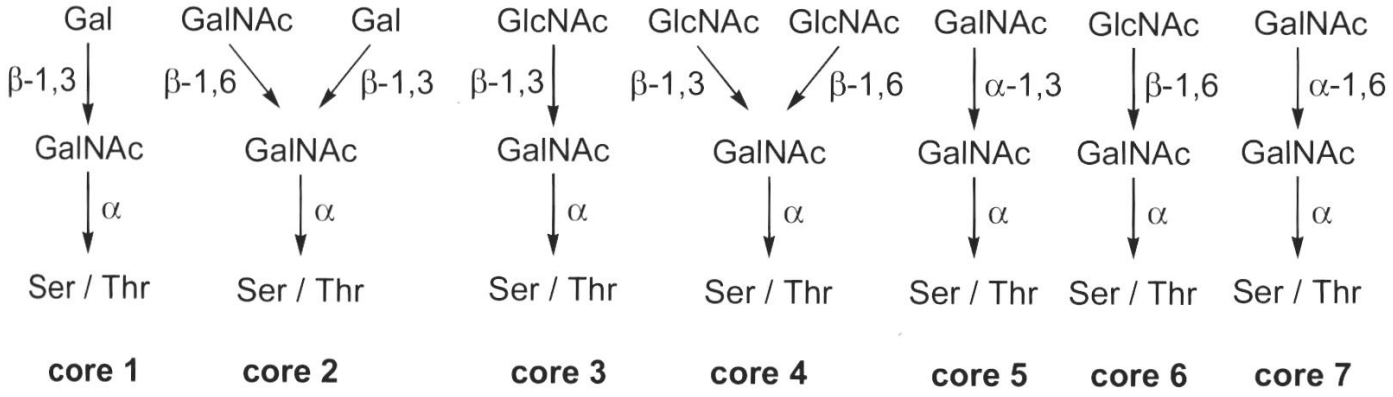
- ✓ **Vari siti di *N*-glicosilazione**
- ✓ **N-glicani differenti per uno o più siti di *N*-glicosilazione**

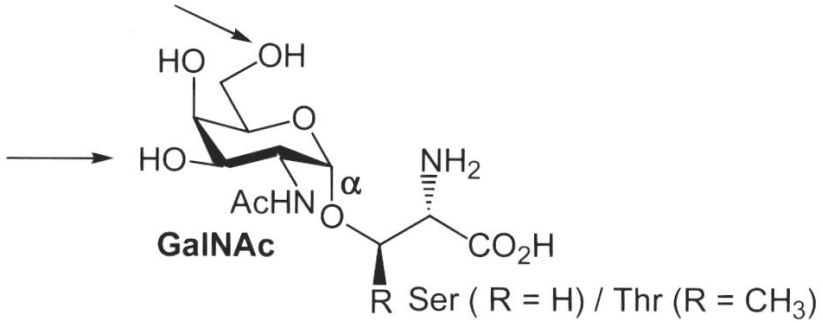
O-linked

GLICOPROTEINE

Mucine

- **glicoproteine altamente glicosilate (parte glicosidica da 50% a 85% della massa totale)**
- **costituenti principali dei biofilm di protezione delle cellule epiteliali**
- **implicate nello sviluppo fetale (a partire dall'interazione spermatozoo-ovocita nei mammiferi), differenziazione delle cellule epiteliali, carcinogenesi, metastasi**
- ***O*-glicano legato a Ser/Thr sempre tramite α-GalNAc**
- **non esiste sequenza consenso per la *O*-glicosilazione**

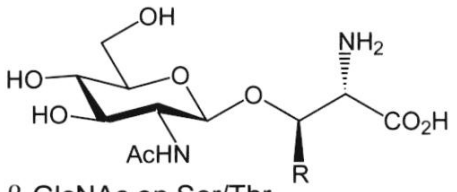




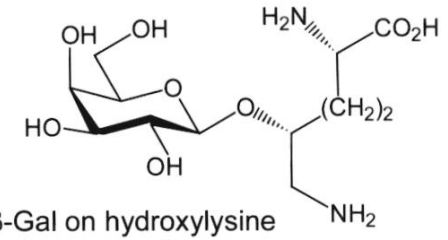
O-linked

GLICOPROTEINE

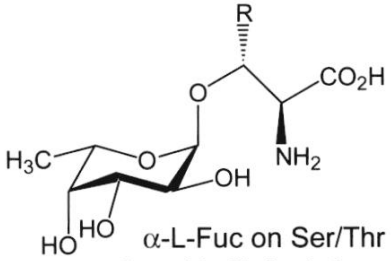
I legami *O*-glicosidici tra carboidrati e proteine non si ritrovano solo nelle mucine, e non avvengono sempre tramite α-GalNAc



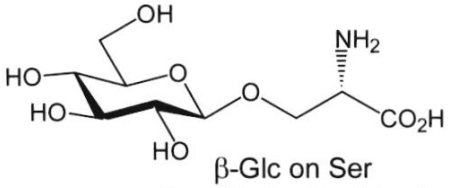
β-GlcNAc on Ser/Thr
found in cytoplasm and
nucleus glycoproteins



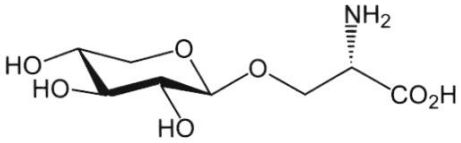
β-Gal on hydroxylysine
found in collagen



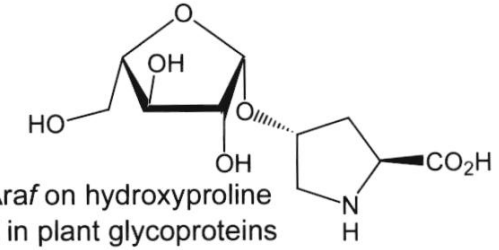
α-L-Fuc on Ser/Thr
found in fibrinolytic and
coagulation proteins



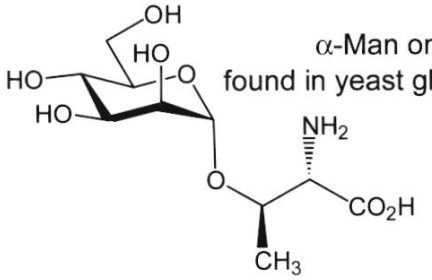
β-Glc on Ser
found in bovine blood
clotting factor IX



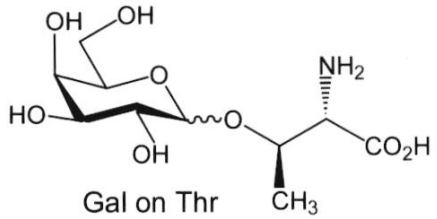
β-Xyl on Ser
found in proteoglycans



β-L-Ara*f* on hydroxyproline
found in plant glycoproteins



α-Man on Thr
found in yeast glycoproteins

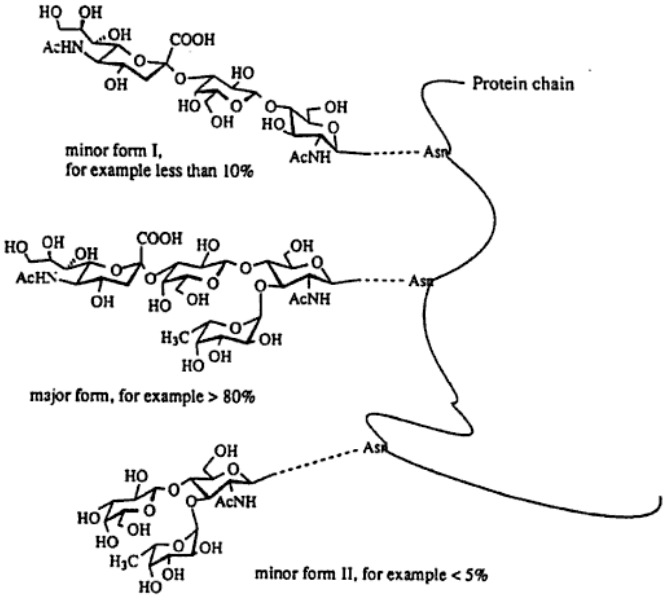


Gal on Thr
found in bacterial surface
glycoproteins

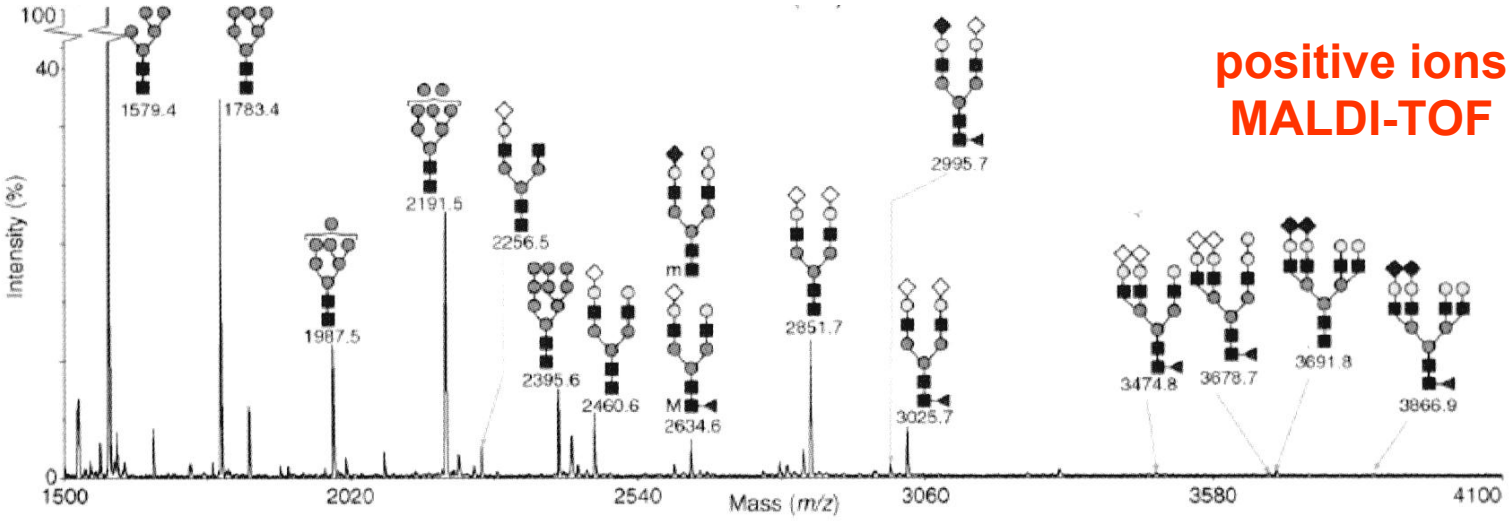
GLICOPROTEINE

Analisi strutturale

proteasi	sito di idrolisi
tripsina	Lys(K) Arg(R)
chimotripsina	Tyr (Y), Phe (F), Trp(W), Met(M)
termolisina	Amminoacidi idrofobici
papaina	Non specifica
protease K	Amminoacidi alifatici e aromatici
CNBr	Met (M)



positive ions
MALDI-TOF

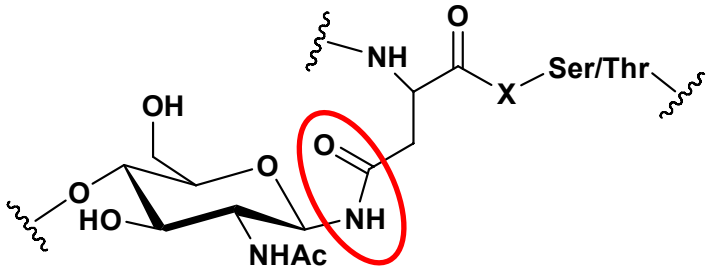


Distacco degli O-/N-glicani dalla proteina/peptide ed analisi classica degli oligosaccaridi

N-glycans

✓Idrolisi enzimatica mediante peptide-*N*-glicosidasi (PNGase F o PNGase A)

✓Idrolisi chimica mediante idrazinolisi



O-glycans

Idrolisi alcalina in condizioni riducenti (β-eliminazione)