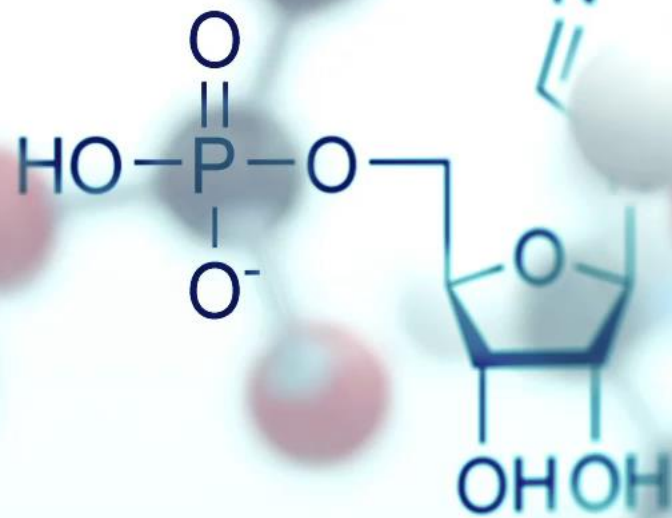


Chemical Biology & Drug Discovery Department



Who are we?



Where to find us?

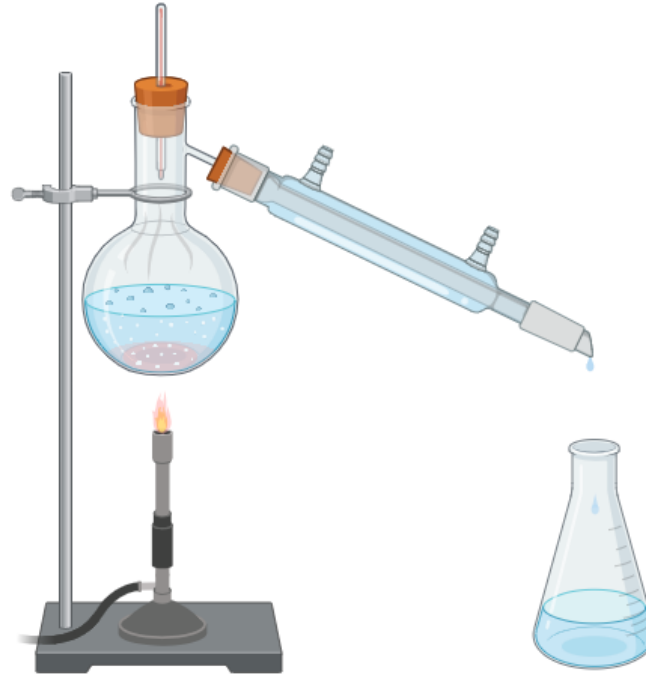
5th floor DDW building



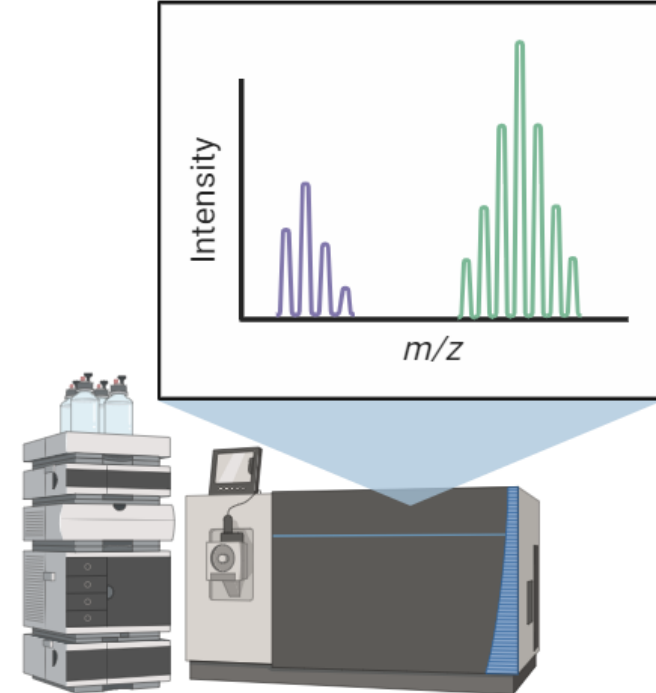
What do we do?



synthesis

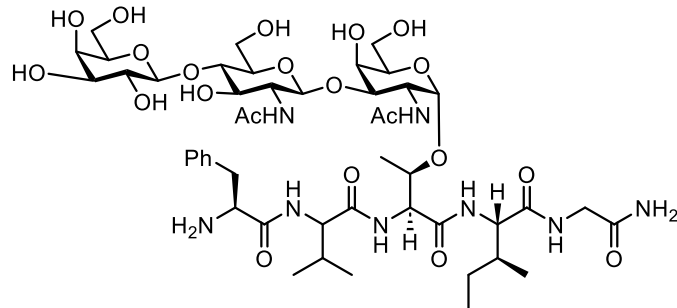
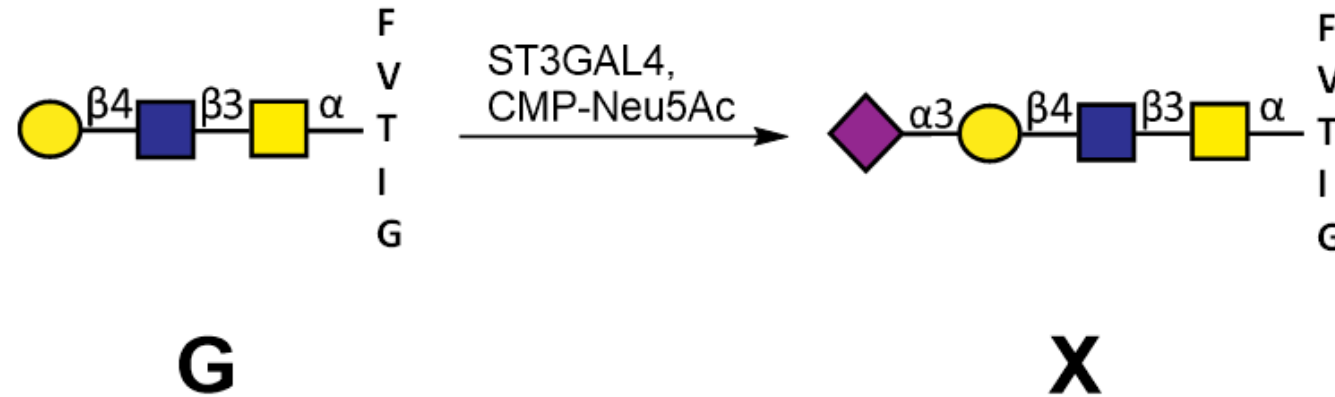


purification

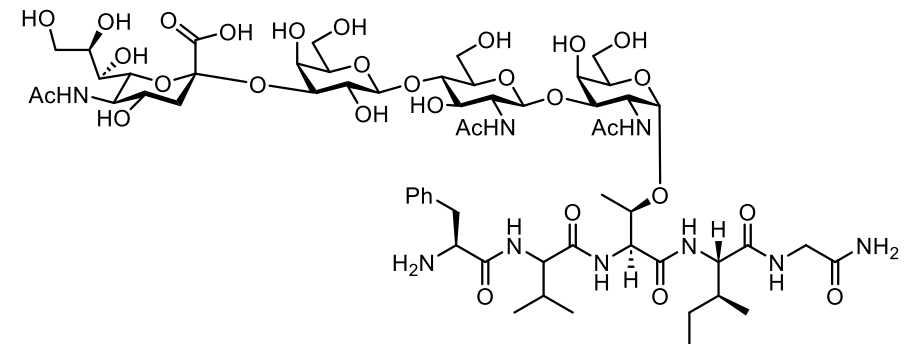
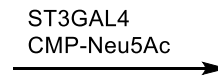


**analysis
(NMR, LC-MS)**

Enzymatic Synthesis



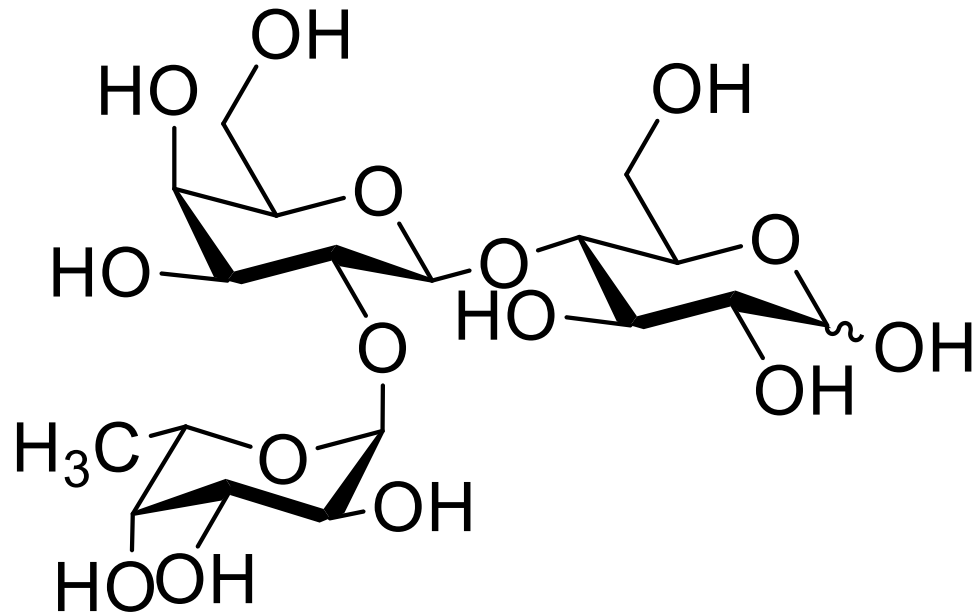
Chemical Formula: $C_{48}H_{78}N_8O_{21}$
 Exact Mass: 1102,5282
 Molecular Weight: 1103,1870



Chemical Formula: $C_{59}H_{95}N_9O_{29}$
 Exact Mass: 1393,6236
 Molecular Weight: 1394,4430

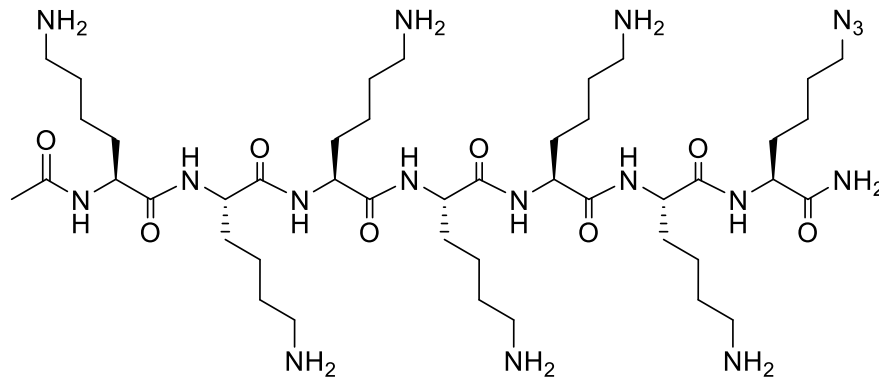
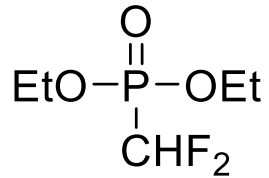
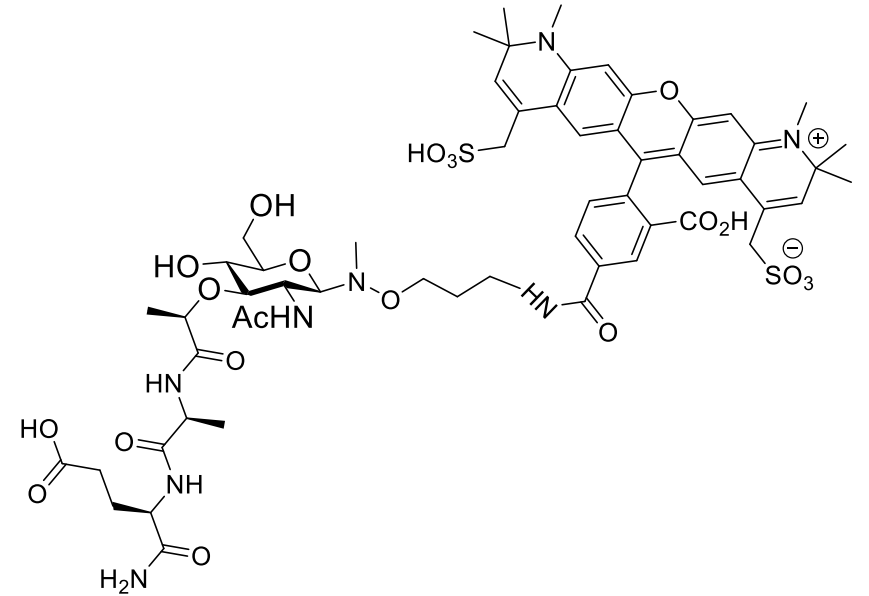
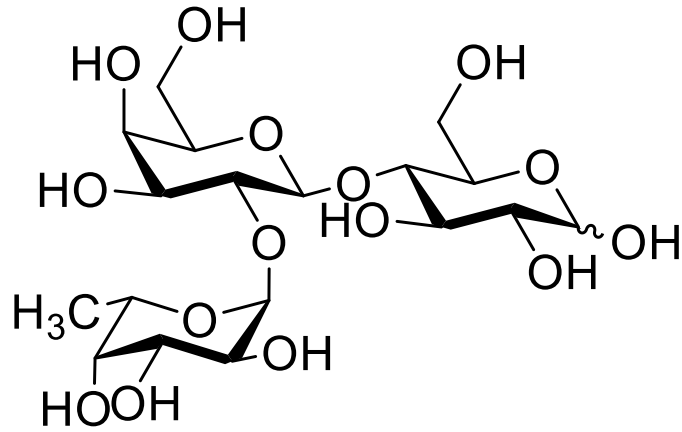
What kind of molecules do we make?

Glycans

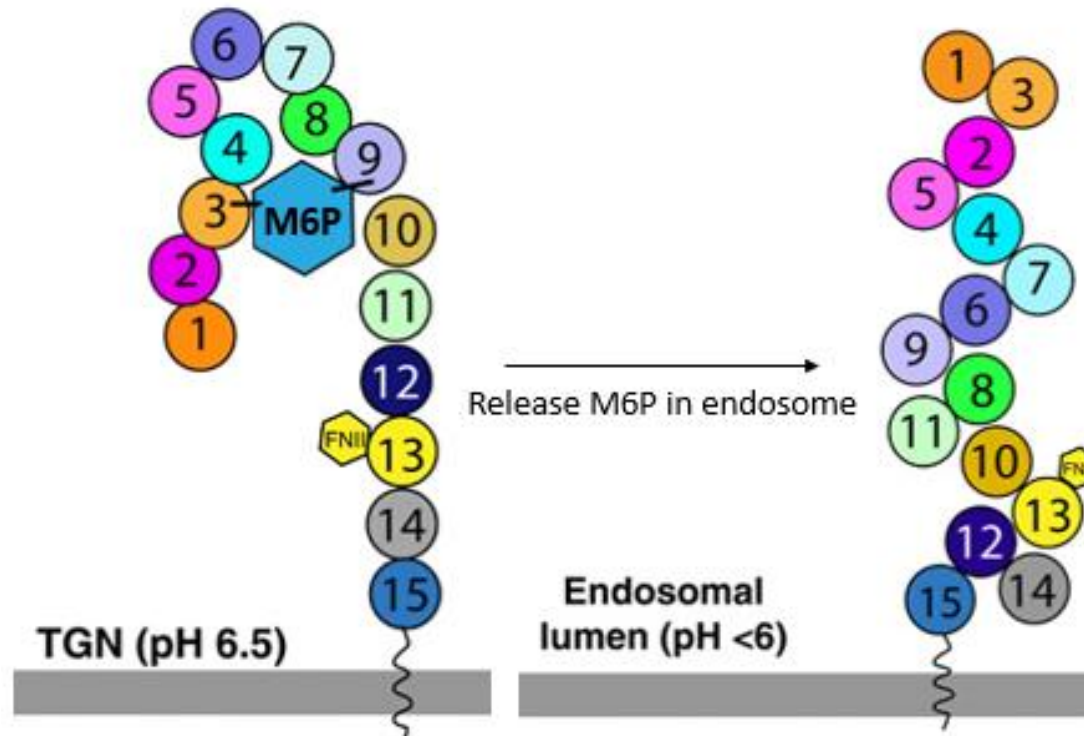


What kind of molecules do we make?

Glycans

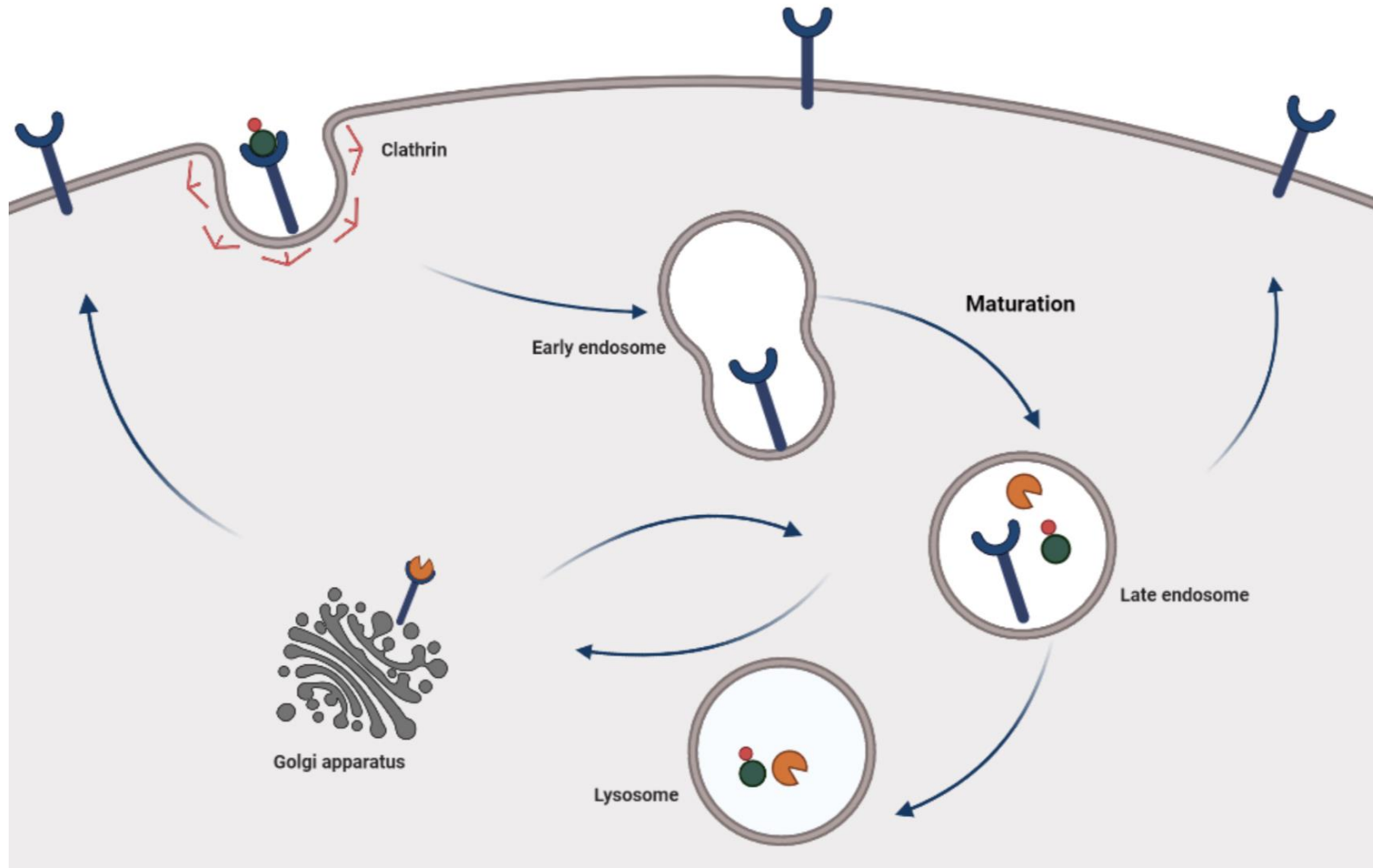


Mannose-6-Phosphate Receptor (M6PR)



Main function:
transporting newly
synthesised enzymes
from the Golgi
apparatus to the
lysosome

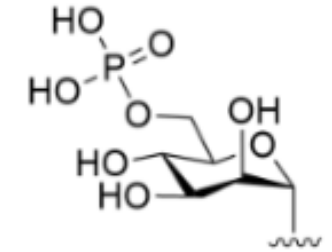
The endo-lysosomal trafficking system



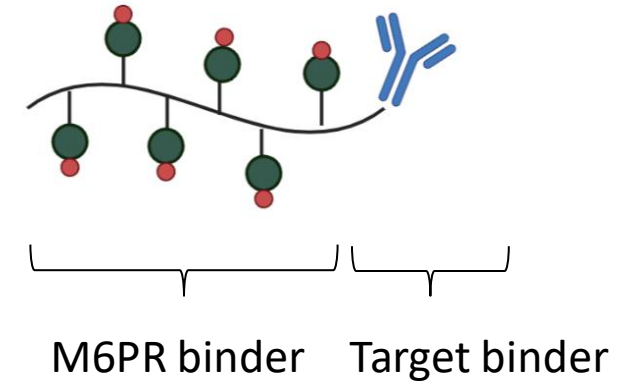
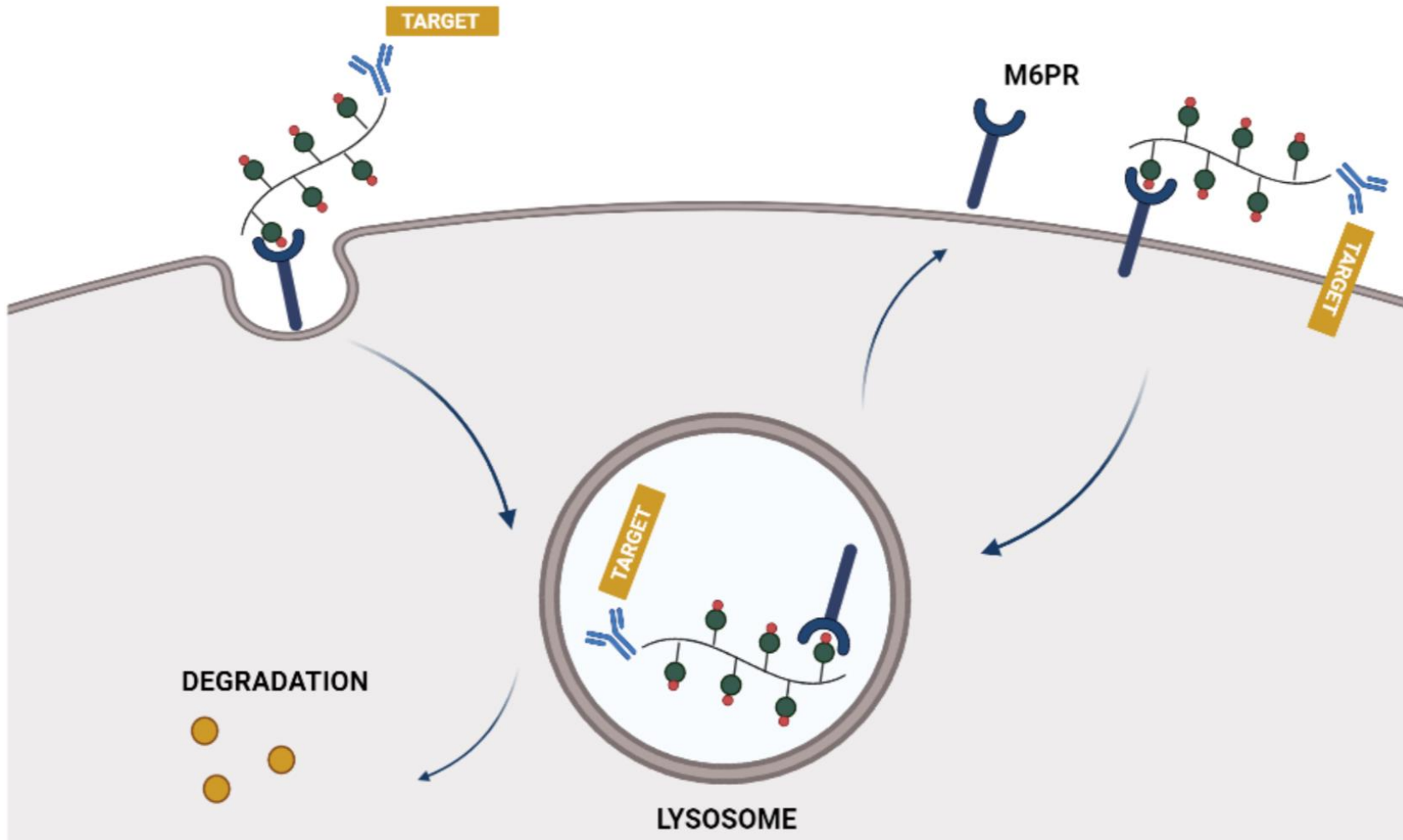
M6PR



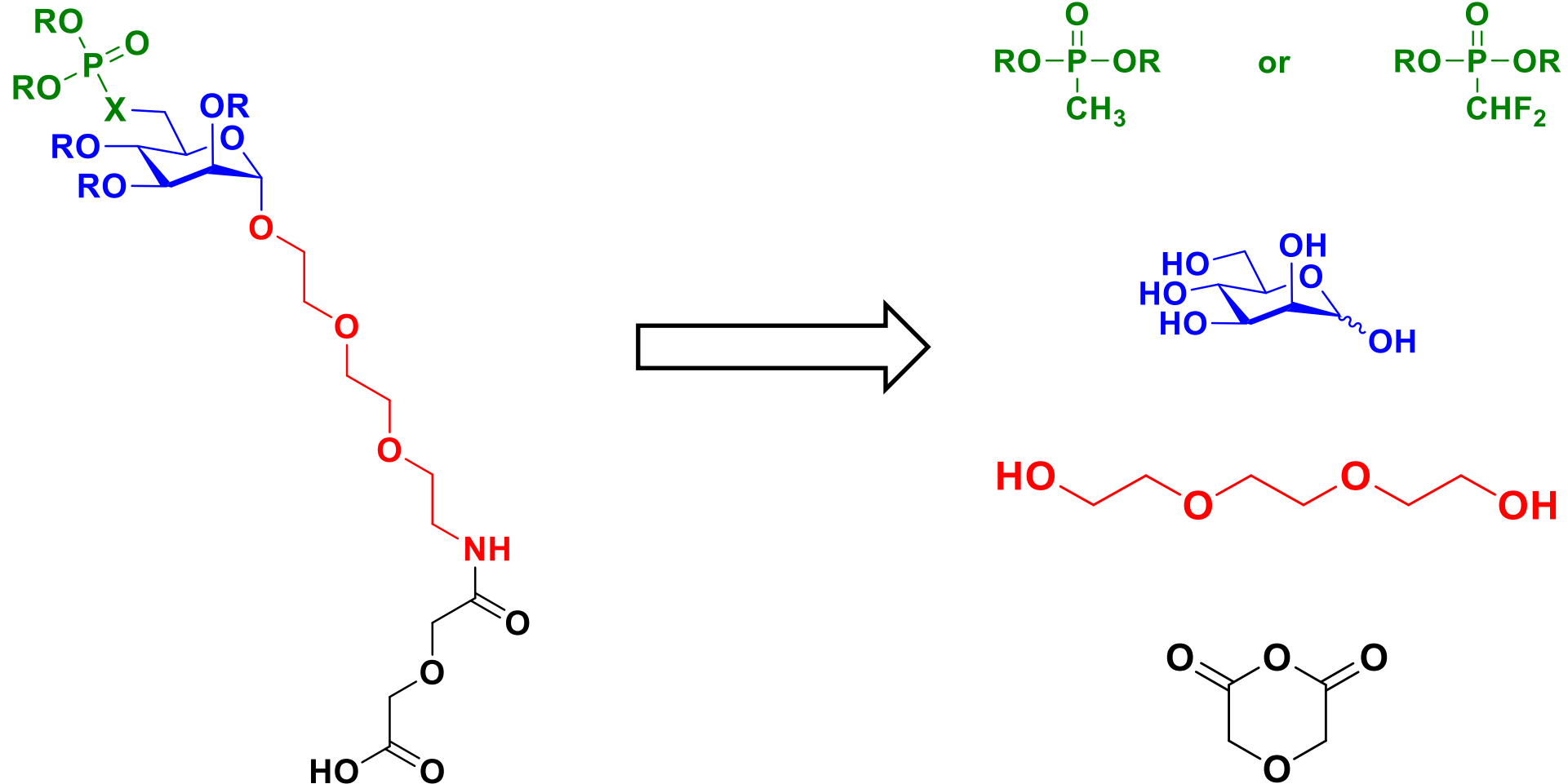
protein of interest (POI)



Lysosome targeting chimeras (LYTACs)



Synthesis of M6P analogues



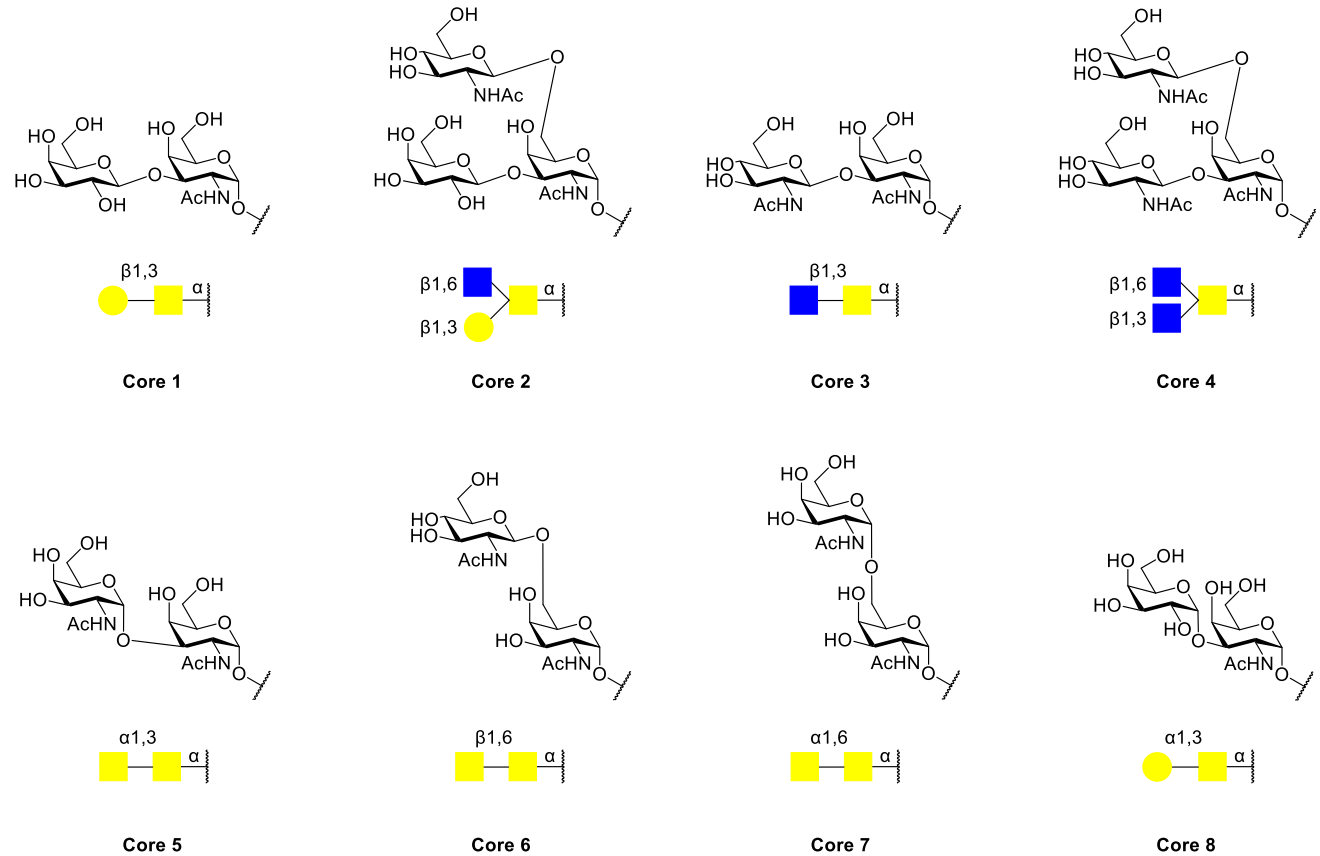
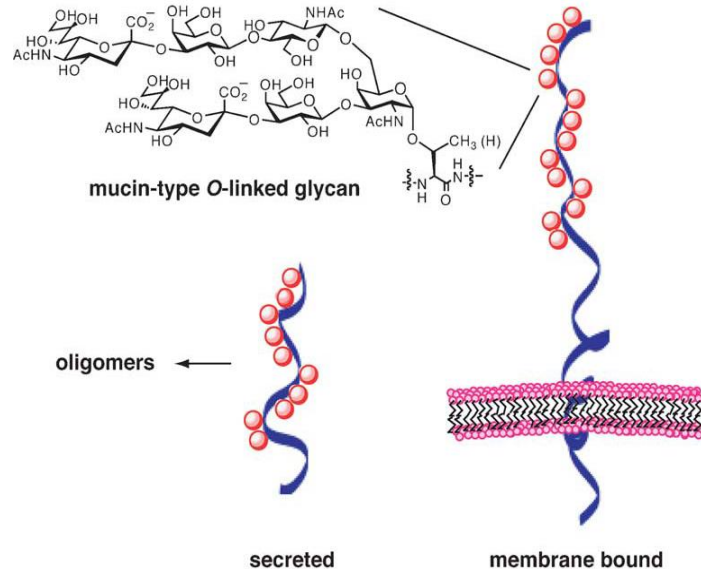
O-glycans

High coverage on cells → play a role in the immune system

Present as a “bottle brush”

Signaling pathways

A total of 8 different core structures



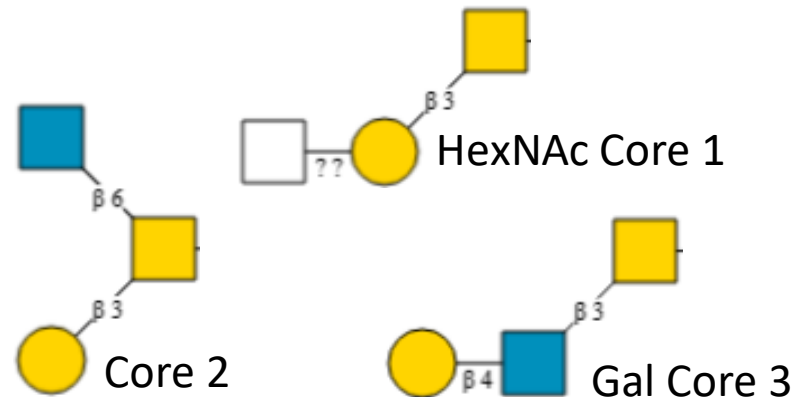
O-glycan standard synthesis

Synthetic glycolic-/lactic acid O-glycans to discern isomeric structures

Ion mobility to elucidate the exact structure of common isobaric O-glycans

Example

Composition Hex₁HexNAc₂ could be:



and more...

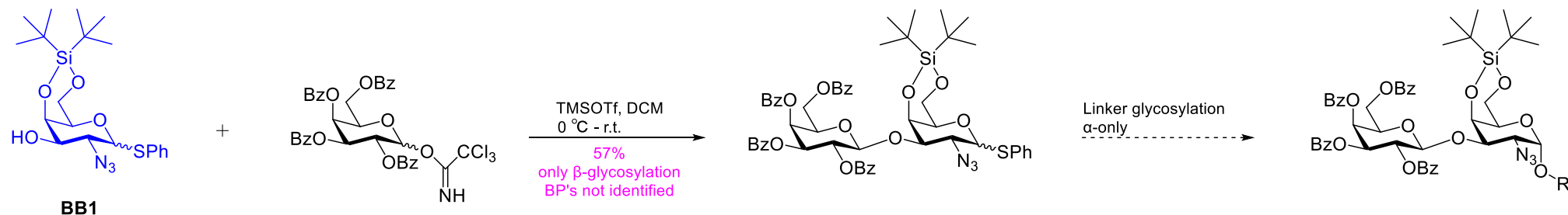
We want to create a library of glycolic-/lactic acid O-glycan derivatives

Common core structures 1 through 4

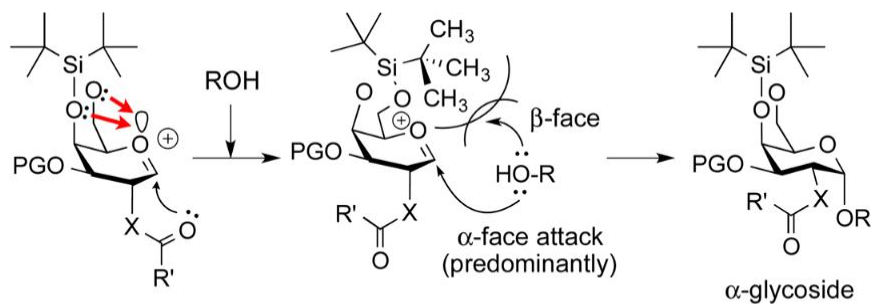
Biosynthetically-reasoned plausible and common extended structures

Modifications: sialic acids, fucosylation, sulfation, ...

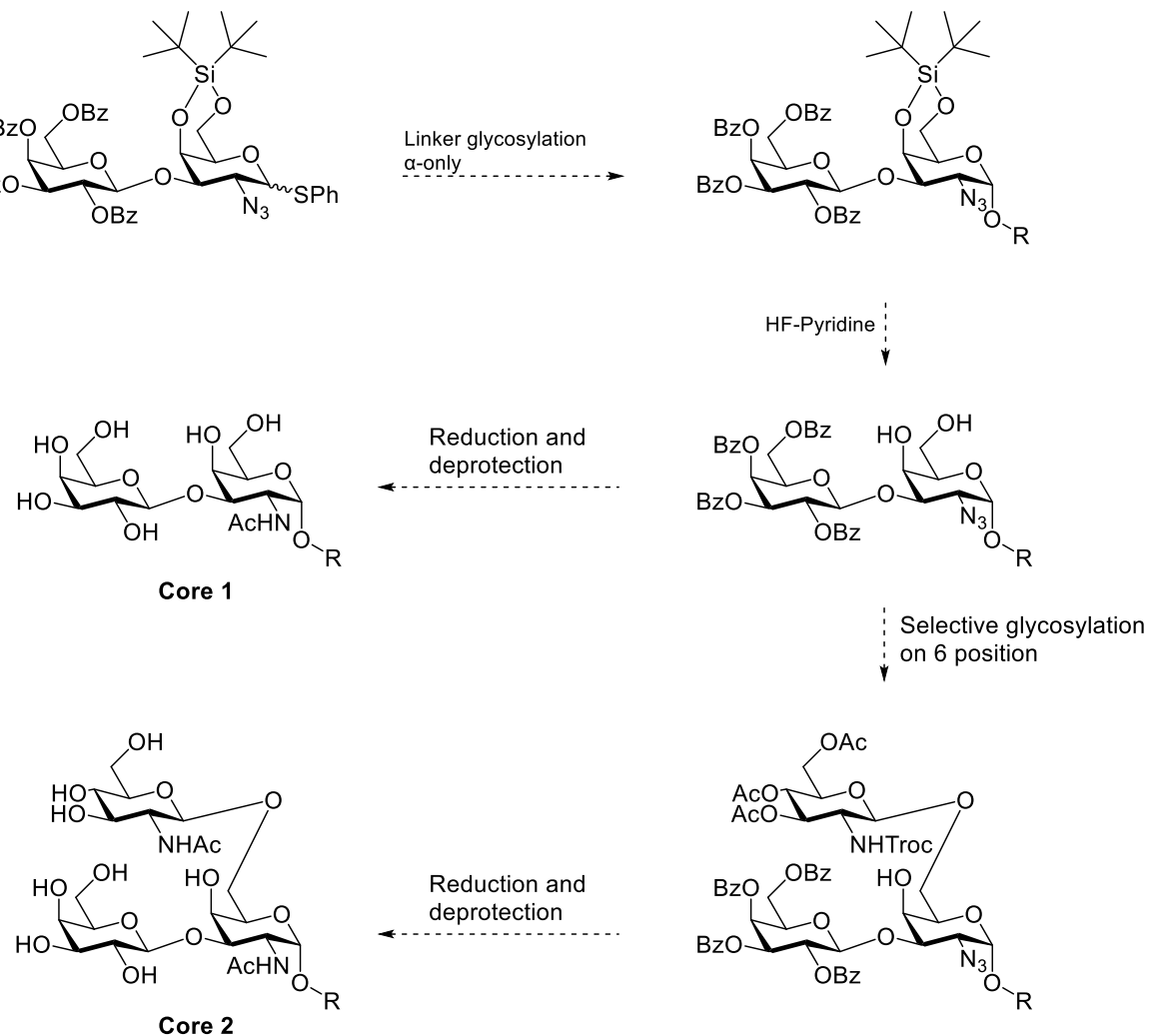
Synthesis example towards core 1 and 2



Directing the glycosylation towards α -product formation



DOI: 10.1021/acs.joc.6b01685
J. Org. Chem. 2016, 81, 9086–9104



Interested? Contact us!

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