ProBioGen

Intelligent Biopharmaceutical Solutions

GlymaxX® – Glycan-Modulation ADCC Enhanced Cell Killing Activity for Cancer and Infectious Disease Antibodies

2019

GlymaxX®

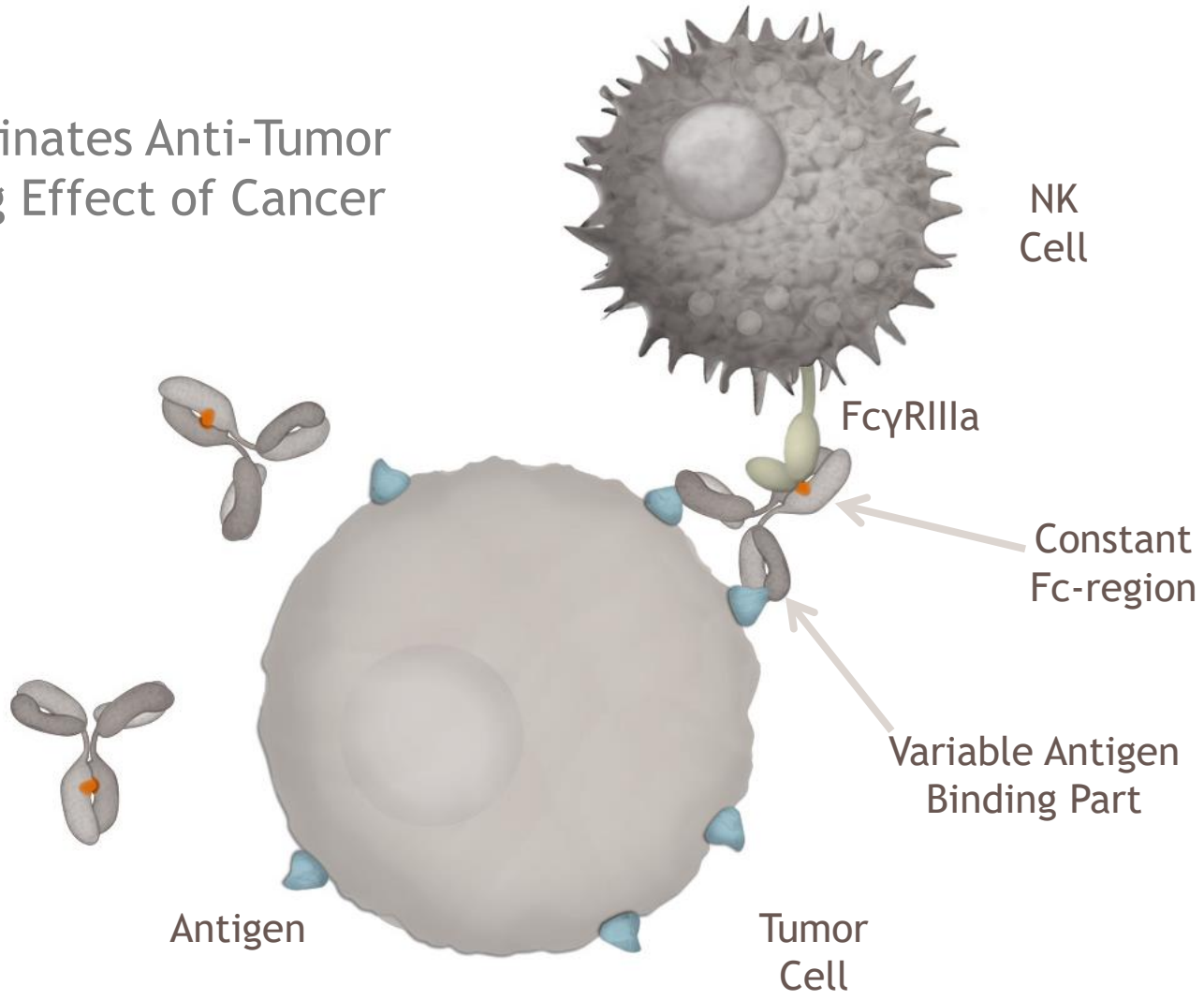
Elegant Glyco-Engineering

Glycan Modulation To Prevent Fucosylation

Technology and Cell Systems for Enhanced Antibody-Dependent Cellular Cytotoxicity (ADCC) Activity for Cancer and Anti-Infectious Disease Antibodies

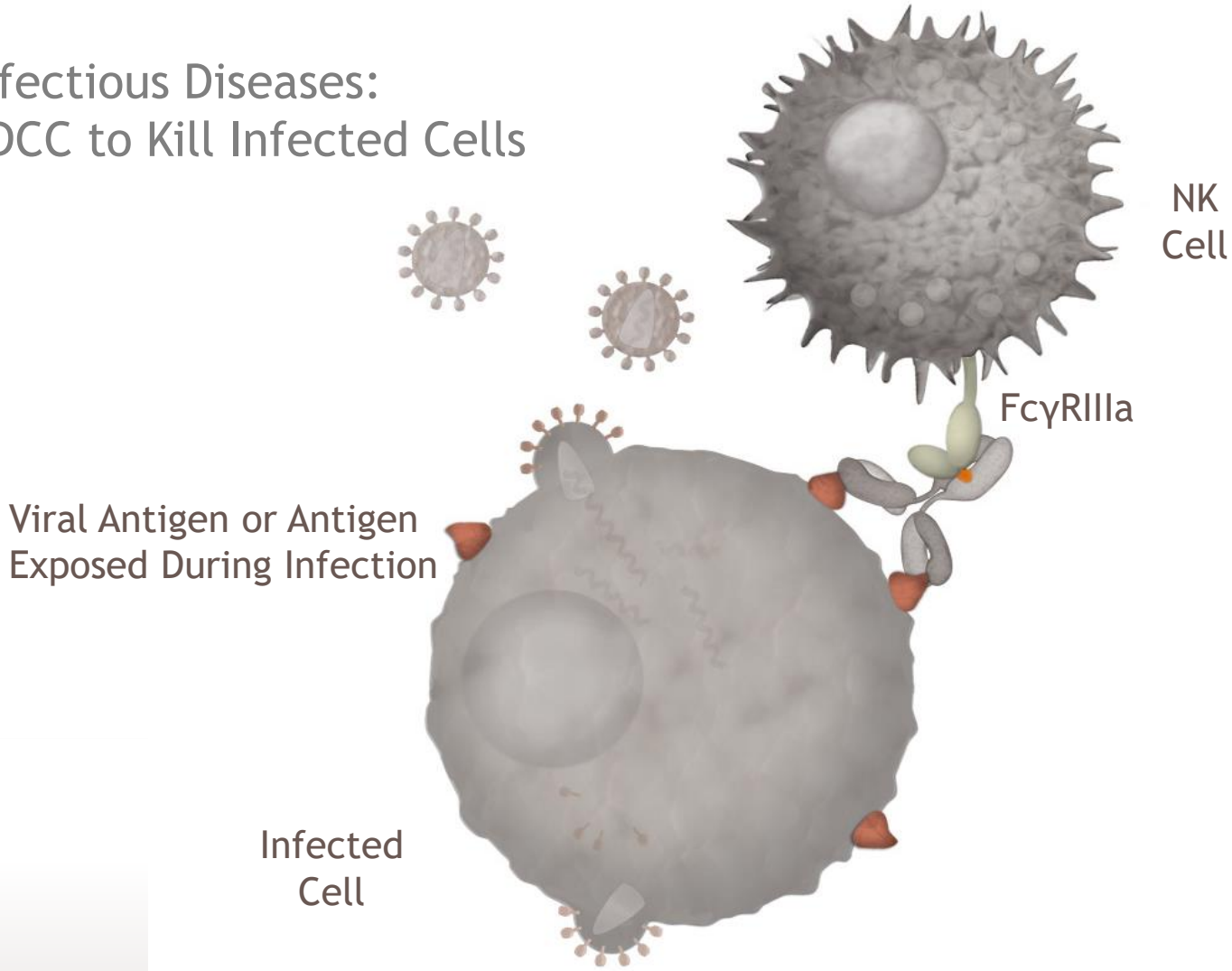
Antibody-Dependent Cellular Cytotoxicity (ADCC)

Cancer:
ADCC Dominates Anti-Tumor Cell-Killing Effect of Cancer Antibodies



ADCC: Also Important for Removal of Infected Cells

Infectious Diseases:
ADCC to Kill Infected Cells



The Fc Glycan Determines ADCC Activity

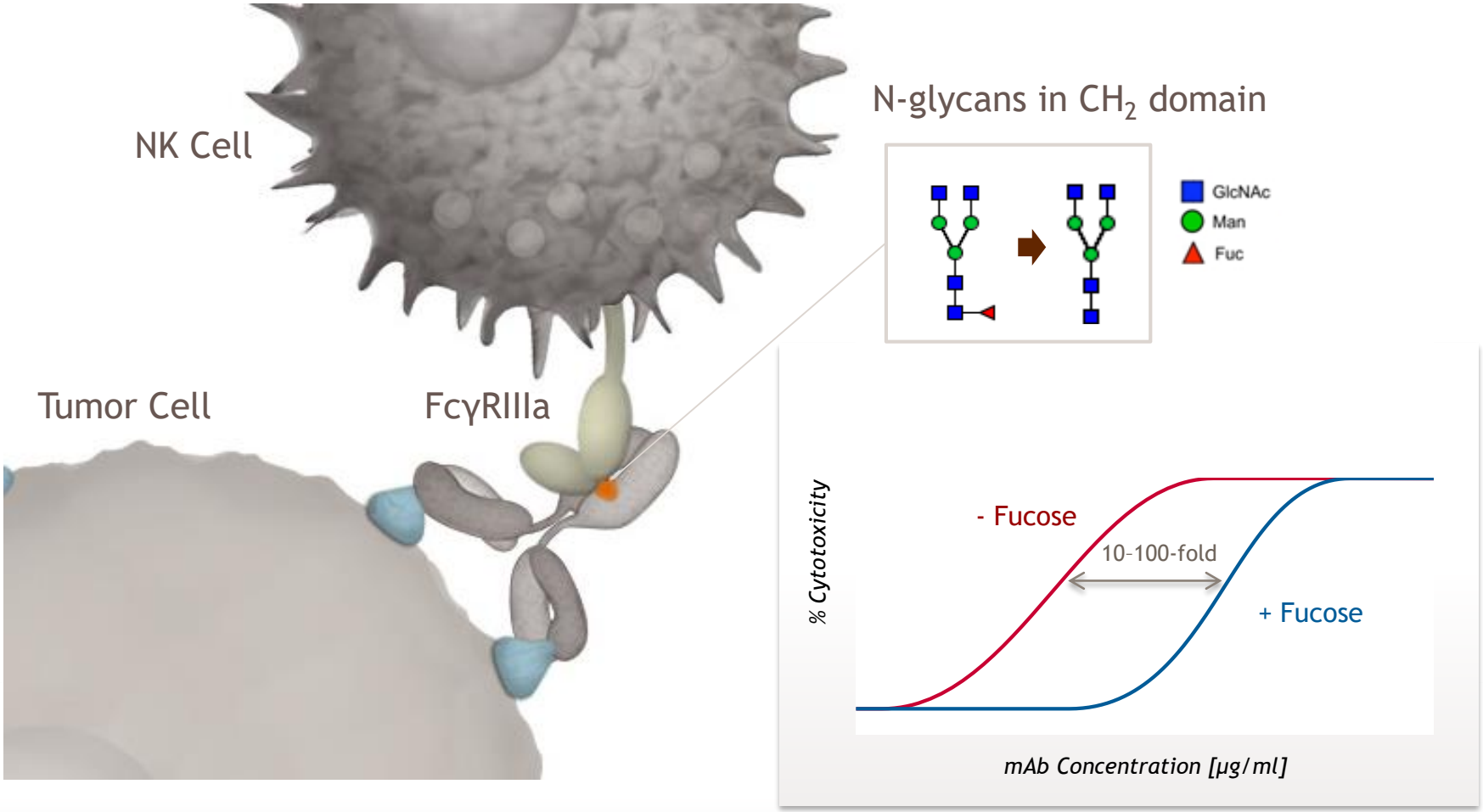
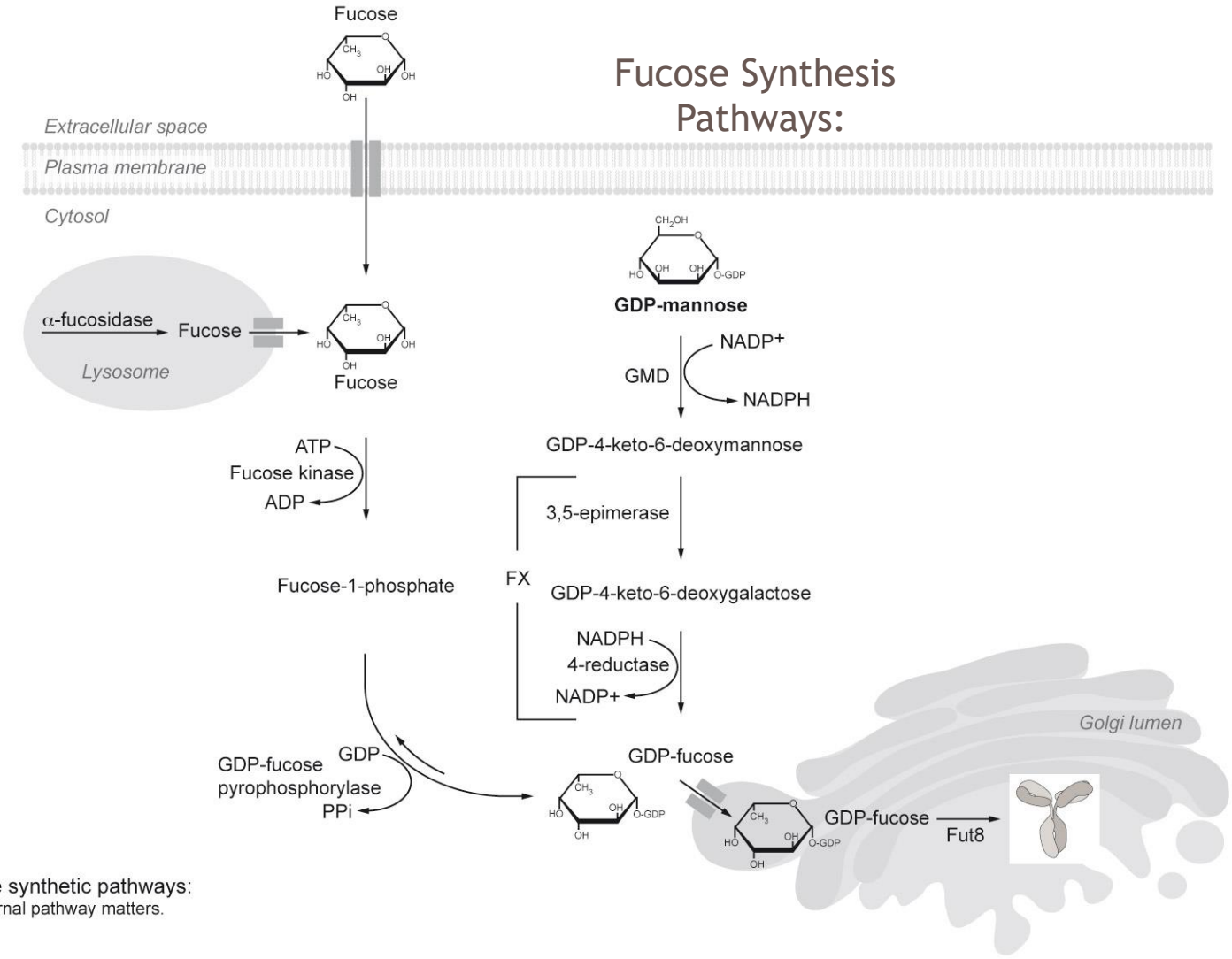


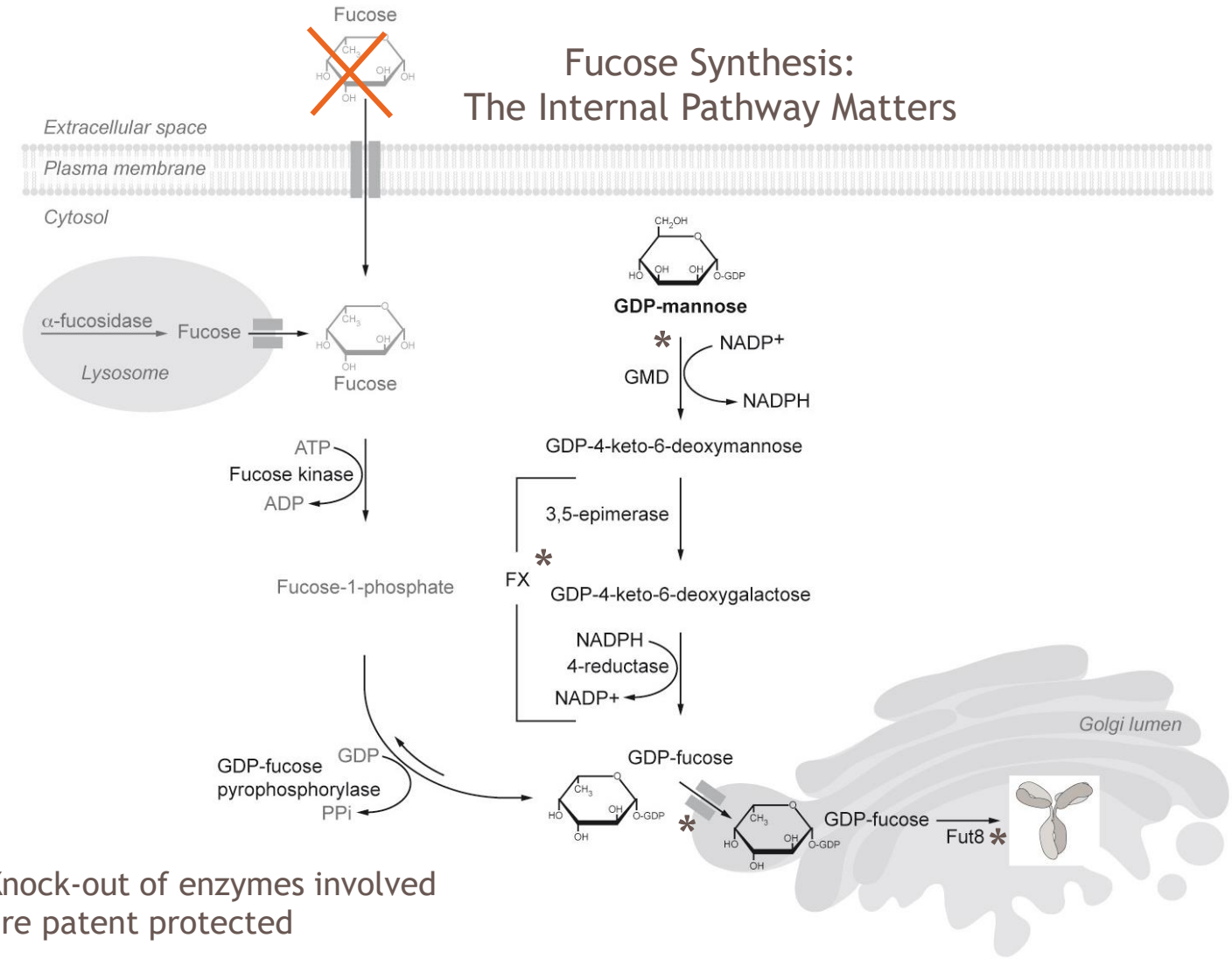
Figure: GlymaxX® enzyme deflects fucose biosynthesis pathway which results in a 10-100-fold decrease in mAb concentration

A New Concept for Metabolic Intervention: Pathway Deflection



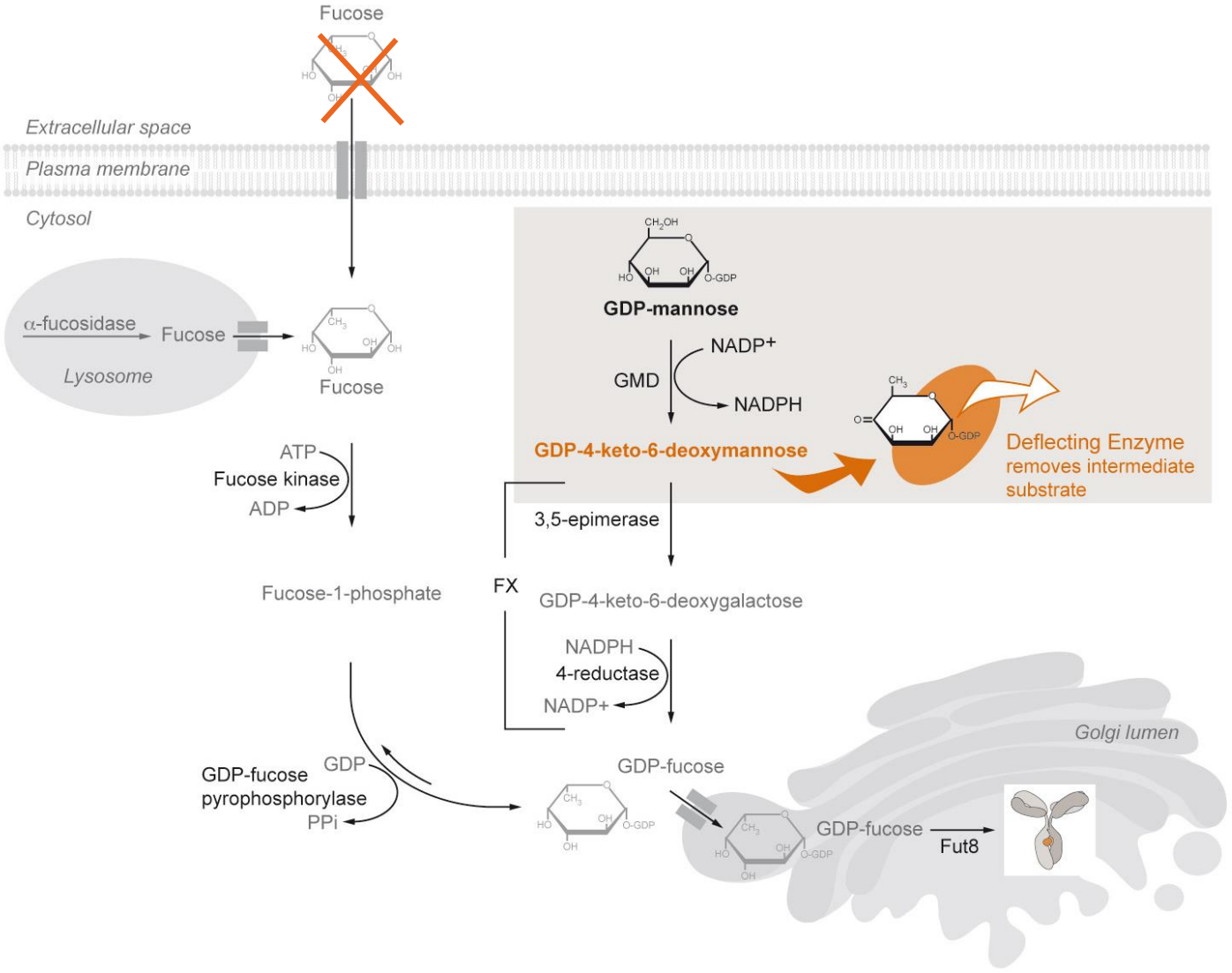
Fucose synthetic pathways:
The internal pathway matters.

A New Concept for Metabolic Intervention: Pathway Deflection

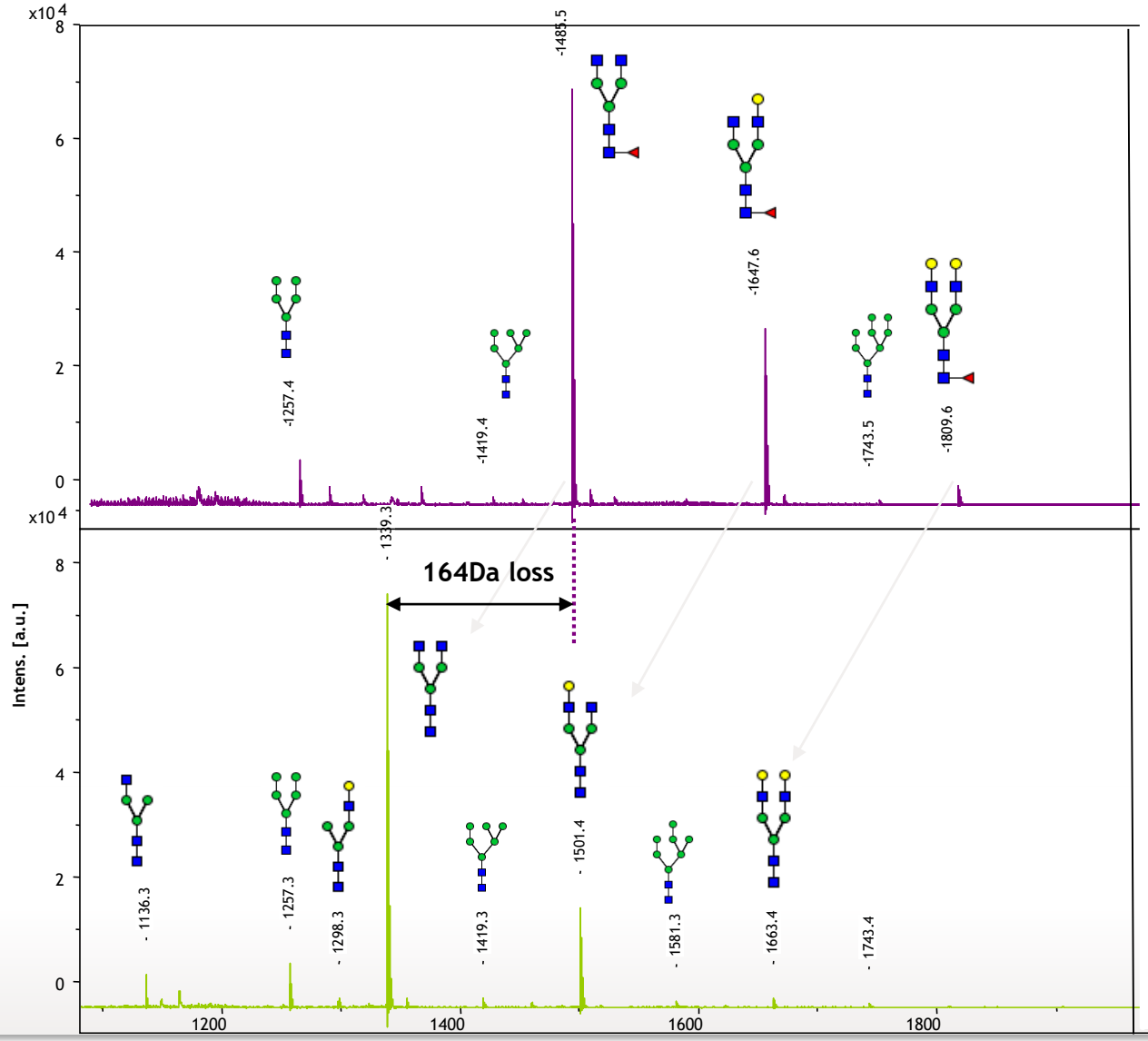


* Knock-out of enzymes involved are patent protected

A New Concept for Metabolic Intervention: Pathway Deflection



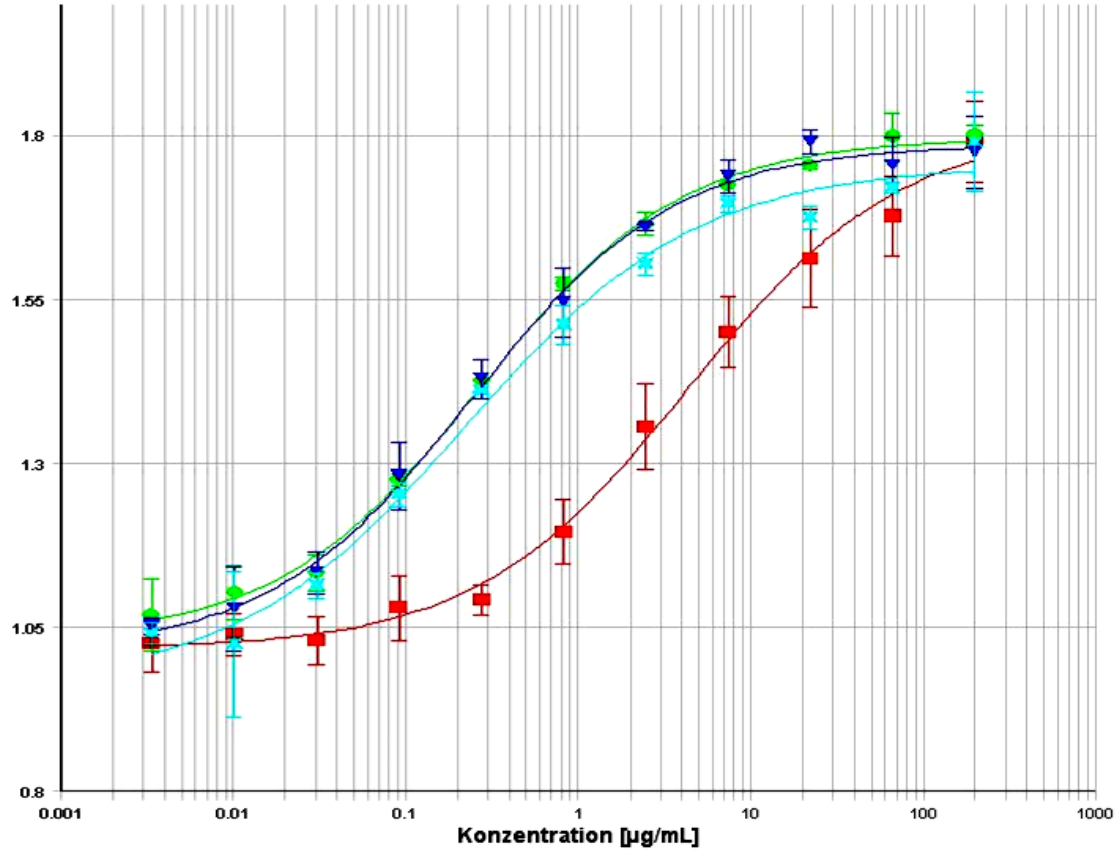
GlymaxX® Depletes Fucose as Efficient as Knock-out Strategies



Introducing the GlymaxX® Enzyme into an Existing Trastuzumab Clone Removes Fucose from G0/G1 and G2 Structures, Without Changing Their Relative Abundance

Case Study: GlymaxX®-Modified Trastuzumab

Afucosylated Fc Glycan Shows Increased FcγRIIIa Binding



Receptor Binding Assays:

Samples	Factor vs WT
WT	---
Clone 1	16-fold
Clone 2	18-fold
Clone 3	20-fold

Assay Performed in the Absence of Plasma IgG!
(Which will compete with rec. antibody for receptor binding.
In vivo the different ADCC activities (fucosylated vs afucosylated)
will be even greater)
Outcome:
About 20-fold increased ADCC Activity in vitro
(in this assay setting)

GlymaxX® Glycan Modulation…

- …is a stable and permanent cell modification
- …boosts ADCC-Mediated Cell Killing Activity in cancer & infectious diseases
- …induces cell-killing at lower antibody concentrations (much lower doses!)
- …can be applied to new & existing cell lines, and entire expression platforms
- …can be accessed via ProBioGen‘s existing GlymaxX® CHO cell lines
- …can be applied in less than 10 weeks to existing cells or platforms
- …and does not negatively affect cell productivity & product quality
- …is simple, stable and robust
- …works by preventing fucose biosynthesis and minimized fucose content
- …is well-known to increase FcγRIIIa binding to boost ADCC cell-killing
- …is royalty-free
- …is licensed to many biotechs and big pharmas world-wide

Contact ProBioGen

ProBioGen AG
Herbert-Bayer-Str. 8
13086 Berlin, Germany
www.probiogen.de

Business Development:
Dr. Gabriele Schneider
Phone: +49 30 3229 35 100
Fax: + 49 30 3229 35 400
E-mail: cmo@probiogen.de