

The logo for ProBioGen features the company name in a grey, sans-serif font. The letter 'o' in 'Bio' is replaced by a stylized orange graphic consisting of a curved line and two dots, resembling a cell or a molecular structure. The background of the slide features a large, light grey, curved shape that frames the logo.

ProBioGen

Intelligent Biopharmaceutical Solutions

GlymaxX<sup>®</sup> - Glycan-Modulation  
ADCC Enhanced Cell Killing Activity  
for Cancer and Infectious Disease Antibodies

2019



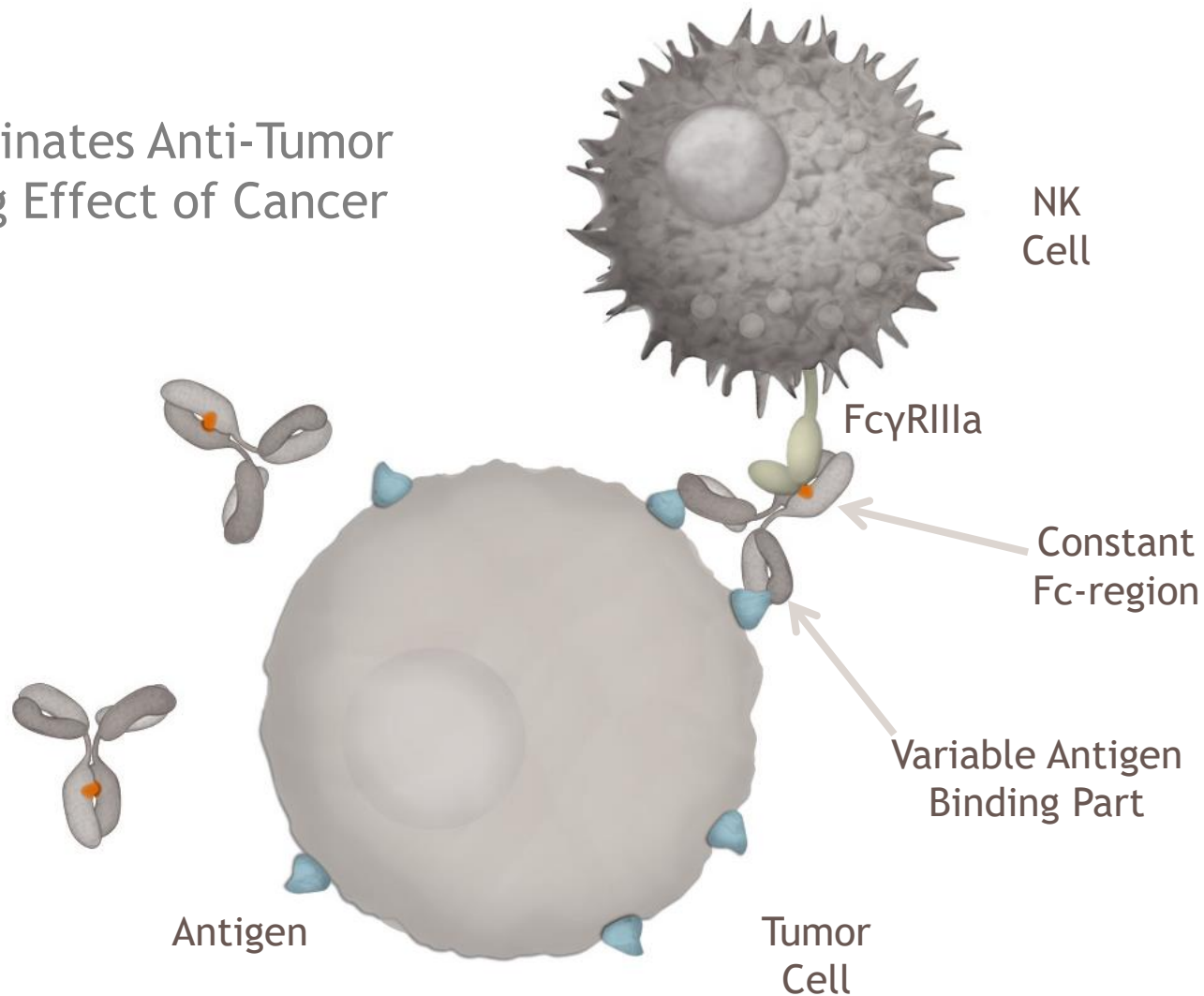
GlymaxX®  
Elegant Glyco-Engineering

## Glycan Modulation To Prevent Fucosylation

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

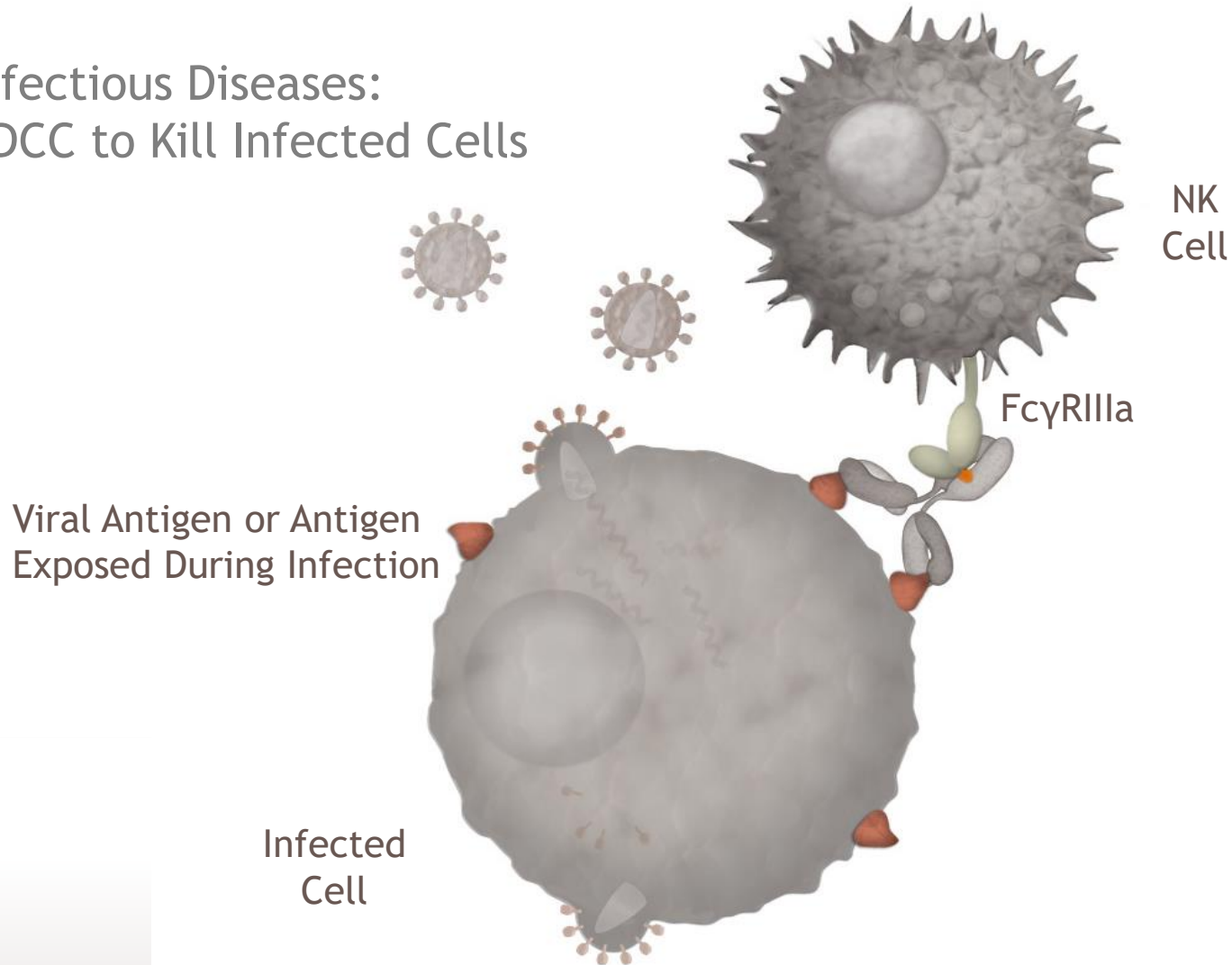
# Antibody-Dependent Cellular Cytotoxicity (ADCC)

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

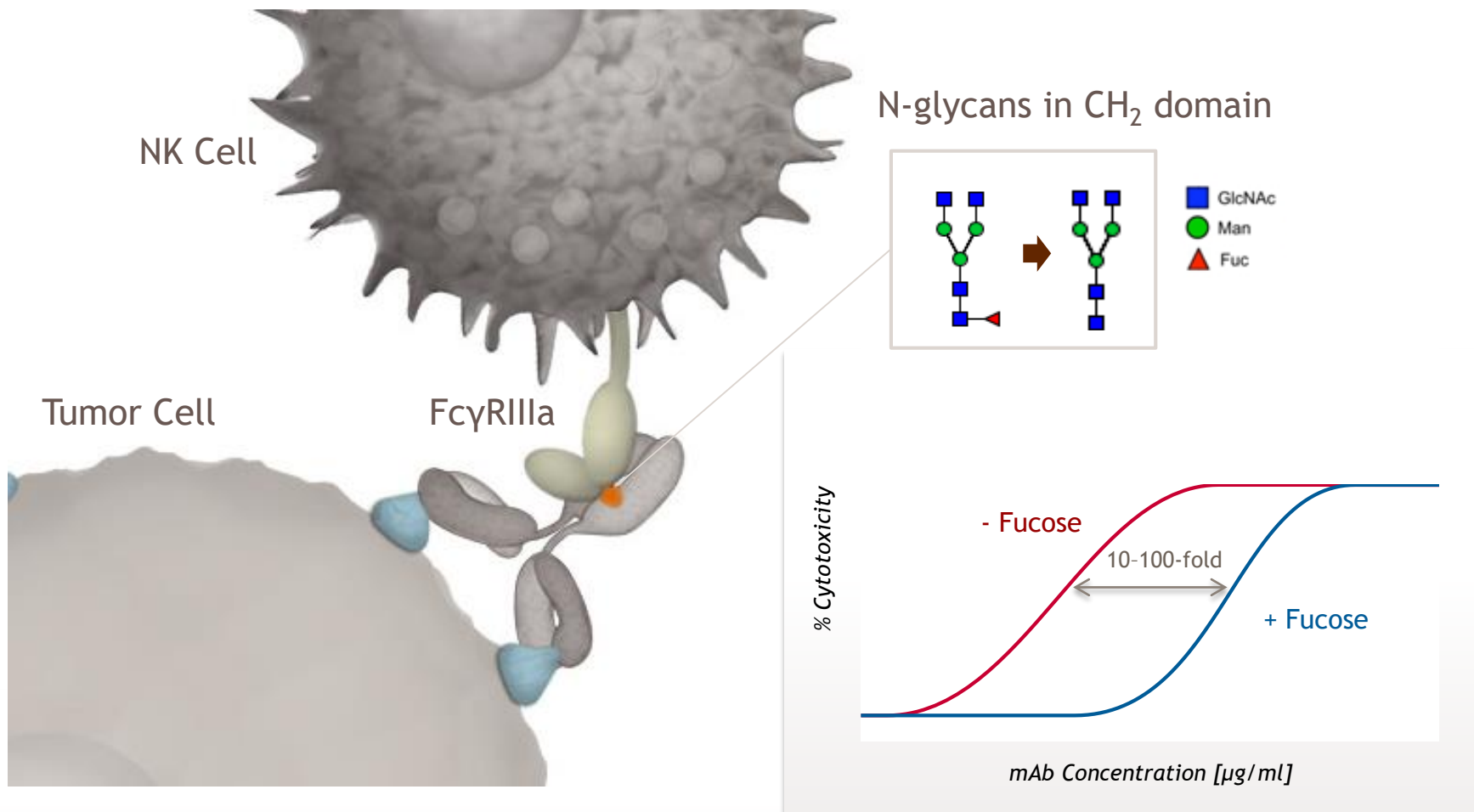
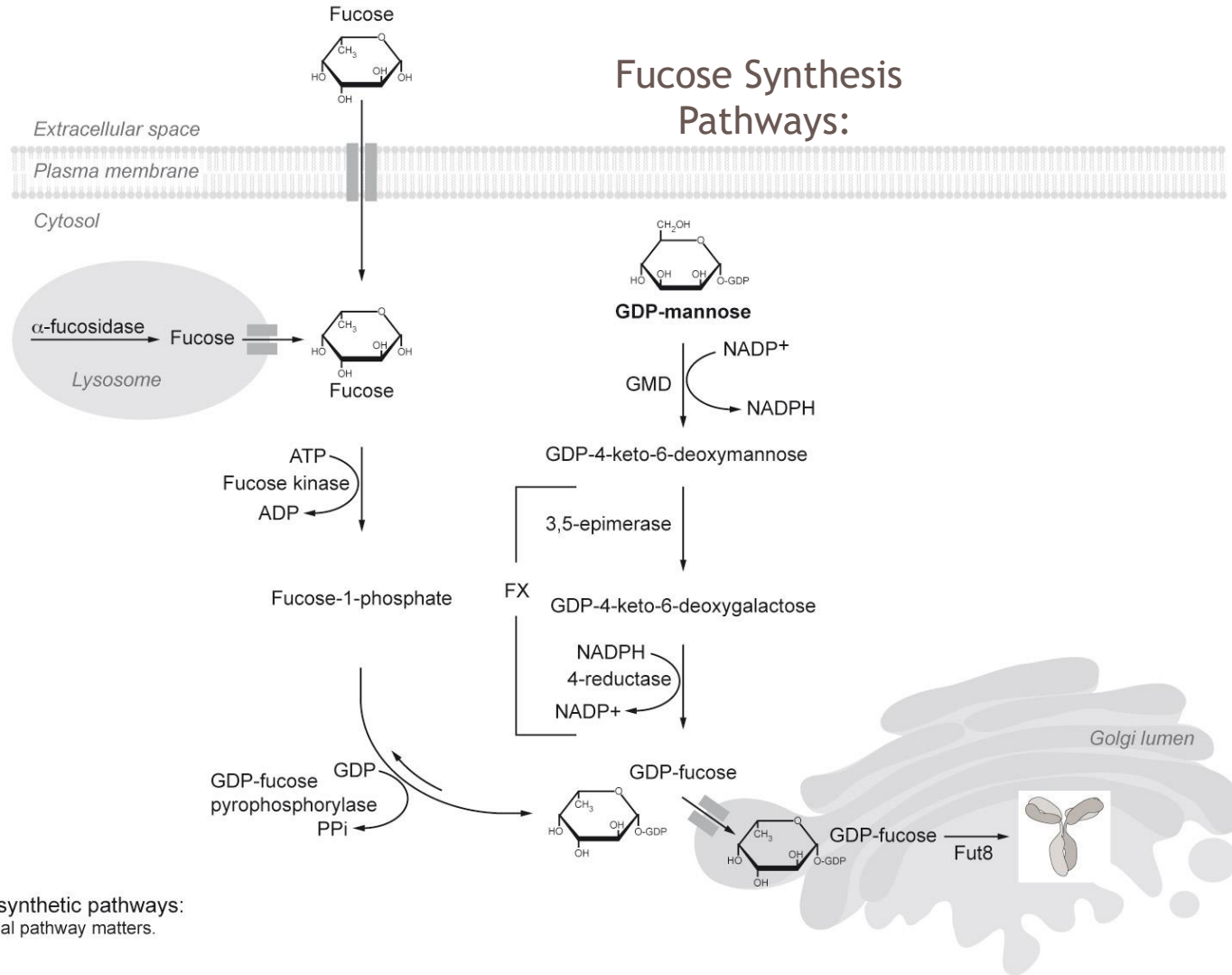
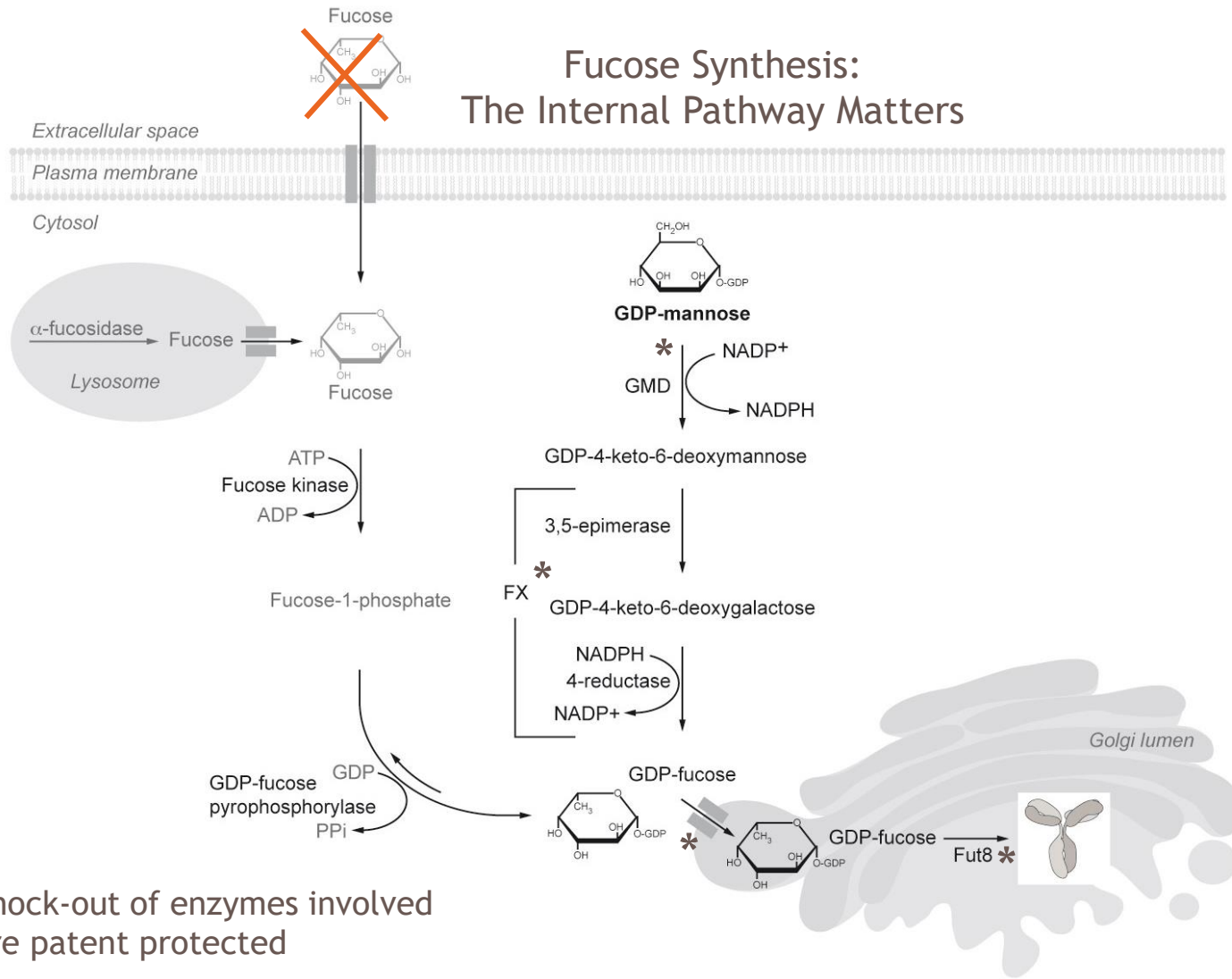


Figure: GlymaxX<sup>®</sup> enzyme deflects fucose biosynthesis pathway which results in a 10-100-fold decrease in mAb concentration

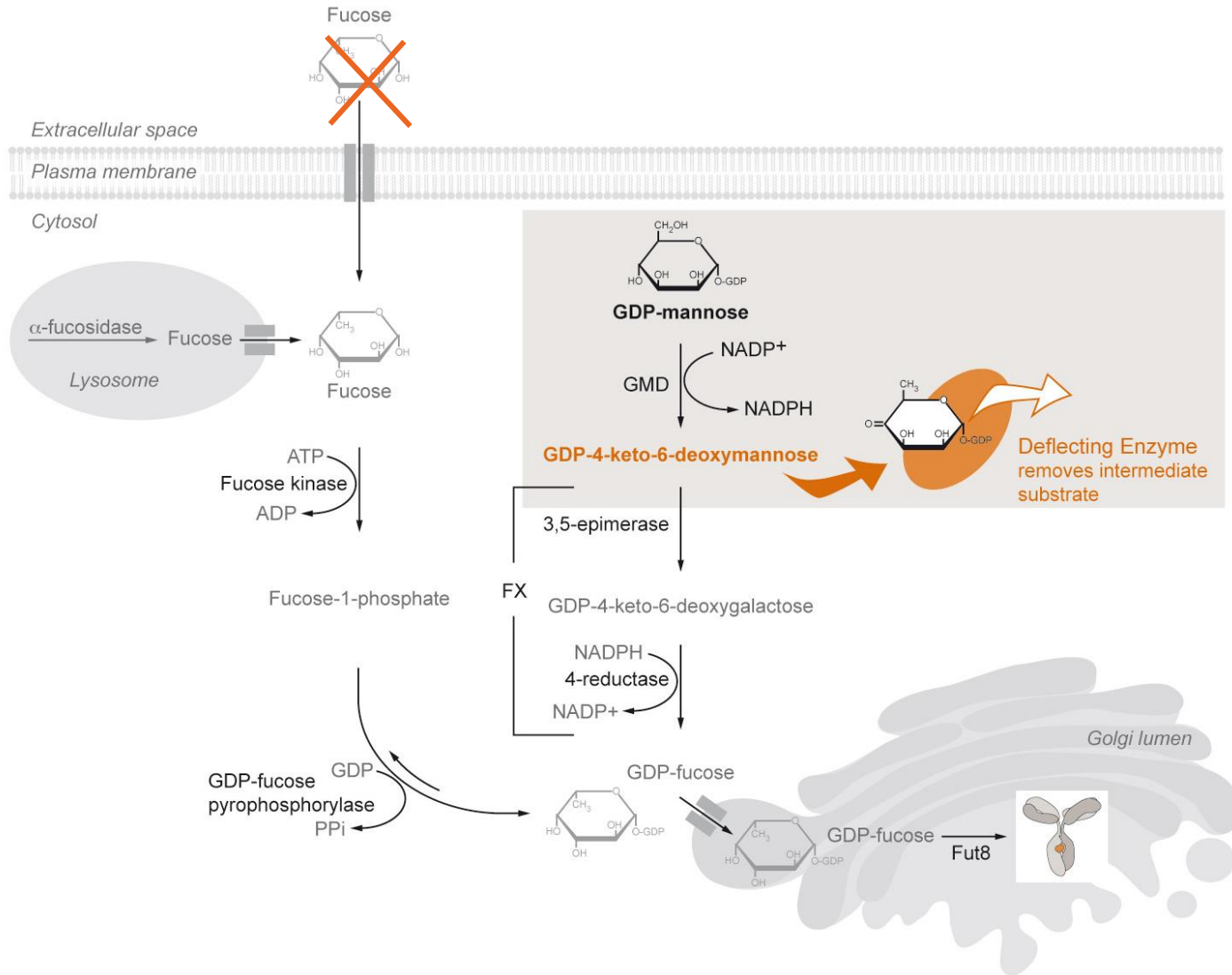
# A New Concept for Metabolic Intervention: Pathway Deflection



# A New Concept for Metabolic Intervention: Pathway Deflection

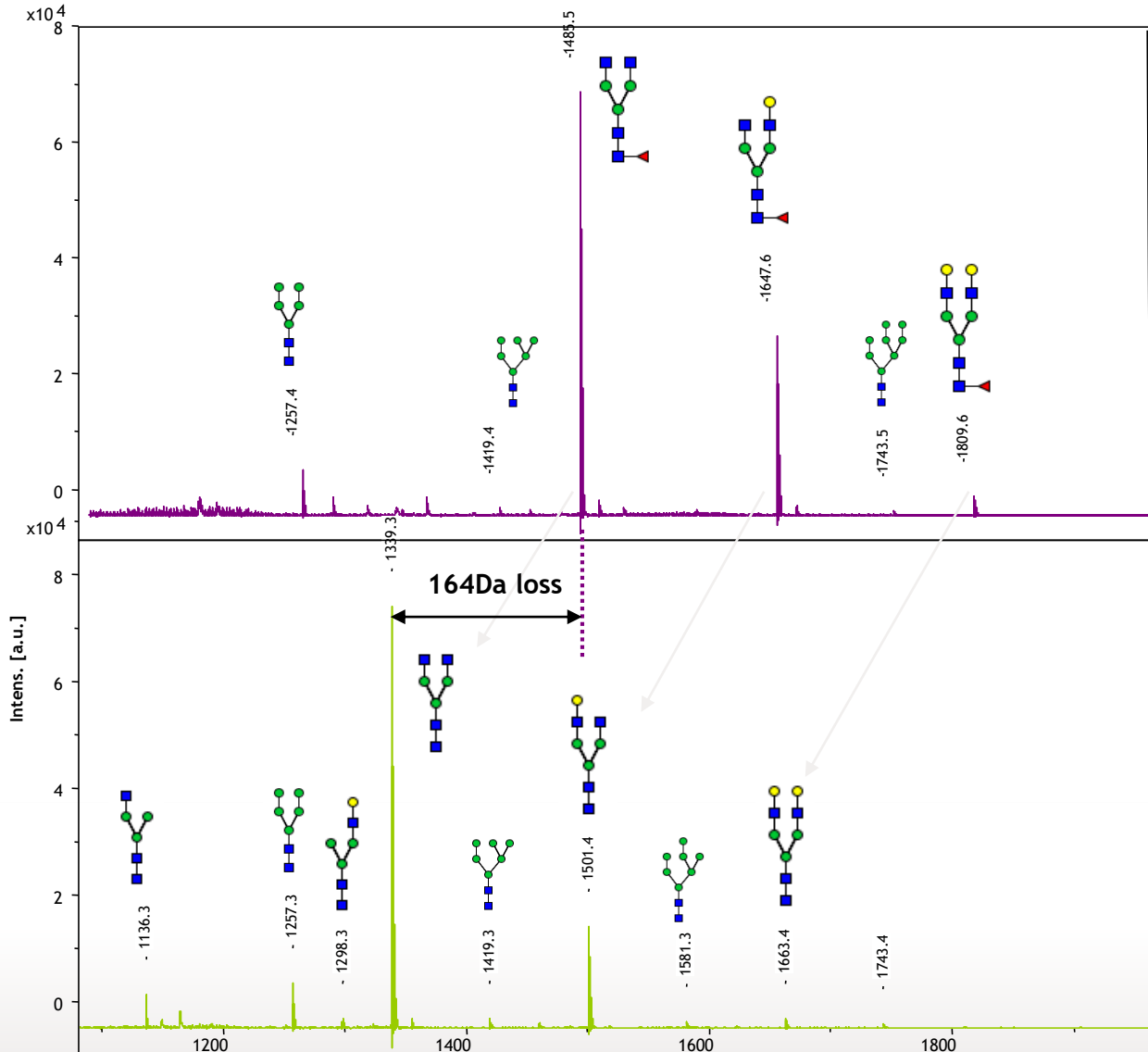


# A New Concept for Metabolic Intervention: Pathway Deflection





# GlymaxX® Depletes Fucose as Efficient as Knock-out Strategies

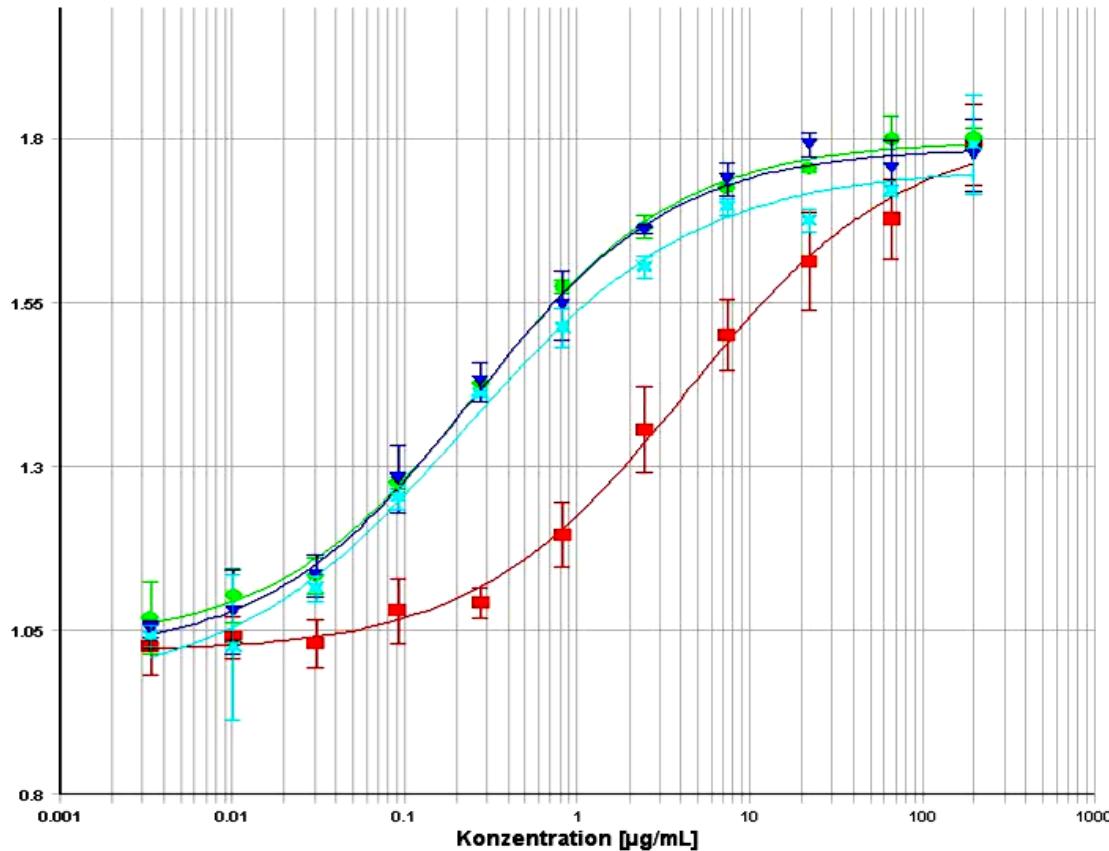


Introducing the GlymaxX® Enzyme into an Existing Trastuzumab Clone Removes Fucose from G0/G1 and G2 Structures, Without Changing Their Relative Abundance

# Case Study: GlymaxX®-Modified Trastuzumab

Afucosylated Fc Glycan Shows Increased FcγRIIIa Binding

Receptor Binding Assays:



■ WT: A=1.0165 B=0.70444 C=4.3338 D=1.8108 d=0.018136 r=0.99784  
 ▲ H1: A=1.032 B=0.74026 C=0.26793 D=1.7956 d=0.01283 r=0.99894  
 ▼ H2: A=1.012 B=0.73694 C=0.24056 D=1.785 d=0.015053 r=0.99856  
 \* H3: A=0.95968 B=0.64593 C=0.22293 D=1.7541 d=0.025862 r=0.9956

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

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