

Synthesis meets Biology

**Synthetic Model Compounds
for a better Understanding of
Glycobiology**

C | A | U

Lindhorst GROUP



Synthesis
meets
Biology



**Glycoprotein and
Glycolipid Mimetics**

Glycocalyx Mimetics

Modification of Surfaces

Photoactive Compounds

Multivalent Glycomimetics

Synthetic Methodology

Assays & Analytical Methods

Molecular Modeling

Glycocalyx Function

Bacterial Adhesion

Conformational Control

**SPR, AFM
ITC**

**Carbohydrate-
Water
Interactions**

Multivalency Effects

**Glycoprotein and
Glycolipid Mimetics**

Glycocalyx Mimetics

Modification of Surfaces

Photoactive Compounds

Multivalent Glycomimetics

Synthetic Methodology

Assays & Analytical Methods

Molecular Modeling

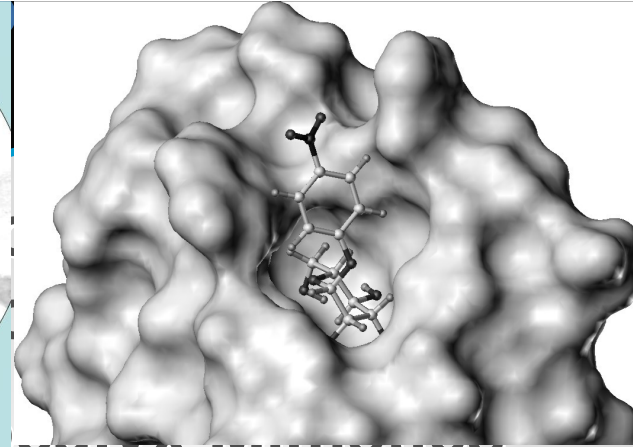
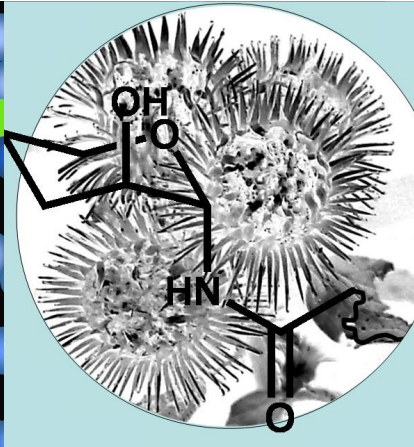
**Structural
Diversity**

**Weak
Inter-
actions**

**Ligand-
Receptor
Interactions**

Glycocalyx Fun

Bacterial
Adhesion

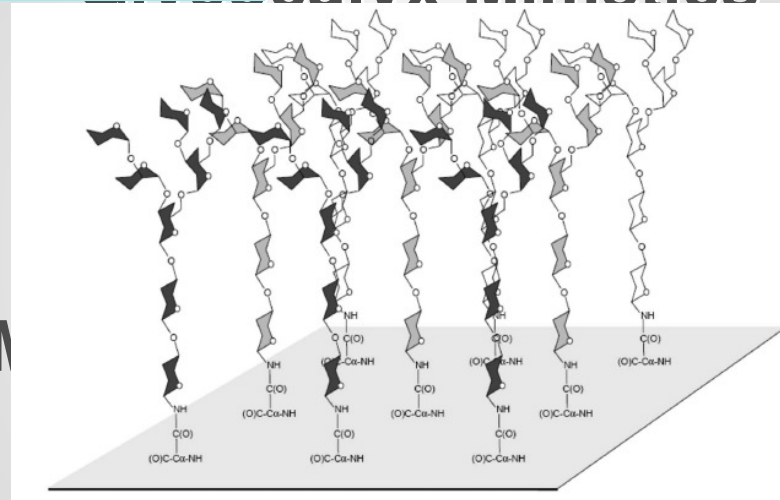


ts
Structural
iversity

Conformational
Control

Weak
Inter-
actions

SPR, AFM
ITC



Carbohydrate-
Water
Interactions

Assay



Methods

Ligand-
Receptor
Interactions

Glycocalyx Function

Multivalency Effects

Bacterial Adhesion

Glycoprotein and Glycolipid Mimetics

Structural Diversity

Conformational Control

Glycocalyx Mimetics

Weak Interactions

**SPR, AFM
ITC**

Molecules, Models

Methods

Interactions

Functions

Carbohydrate-Water Interactions

Assays & Analytical Methods

Molecular Modeling

Ligand-Receptor Interactions

Glycocalyx Function – Structural Diversity – Weak Interactions

Bacterial Adhesion

Mirja Hartmann et al.

Conformational Control

Kirsten Schwekendiek
Lena Daumlechner
Vijay Anand

Multivalency and Ligand-Receptor Interactions

Alexander Schierholt
Johannes Wehner
Michelle Fernandez-Bieber

Photoactive Compounds

SPR, AFM, ITC

Alexander Thrun
Carsten Grabosch
Mirja Hartmann
Kirsten Schwekendiek

Photolabeling

Bianca Kunz

Synthetic Methodology

Tobias Keller et al.

Carbohydrate-Water Interactions

Alexander Schierholt
Jörn Schmidt-Lassen

Cell Surface Carbohydrates in Concert



The **Glycocode** Model ?!



Glycocalyx Function

Bacterial Adhesion

Conformational Control

**SPR, AFM
ITC**

**Carbohydrate-
Water
Interactions**

Tool Box

Multivalency Effects

Peptide Synthesis,
Glycoamino acids,
SPPS

Dendrimers, Clusters
Multivalent Glycomimetics

Photoactive Compounds

Glycosylation
Glycoside Synthesis

Nucleosides, Oligonucleotides

Assays, ELISA, ITC, SPR, NMR
Molecular Modeling

Structural Diversity

Weak Interactions

**Ligand-
Receptor
Interactions**

Glycocalyx Function

Bacterial Adhesion

Conformational Control

**SPR, AFM
ITC**

**Carbohydrate-
Water
Interactions**

Collaborations

Multivalency Effects

Bernd Hartke

Andreas Terfort

Stefan Knight

Tanja Wroddnig

Martin Beyer

Thomas Gutschmann

A. Frey, Niels Röckendorf

Anke Krüger

**Structural
Diversity**

**Weak
Inter-
actions**

**Ligand-
Receptor
Interactions**