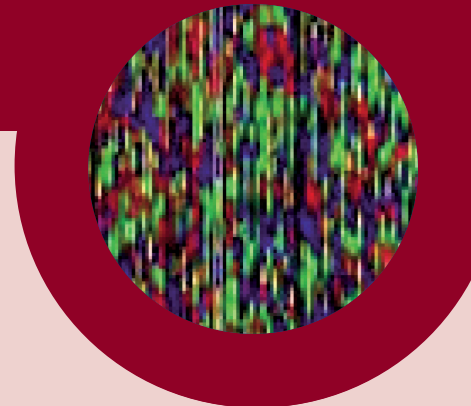




# Glycoproteomics and glycoprotein quality

## Biotechnology and analysis of biologically active oligosaccharides



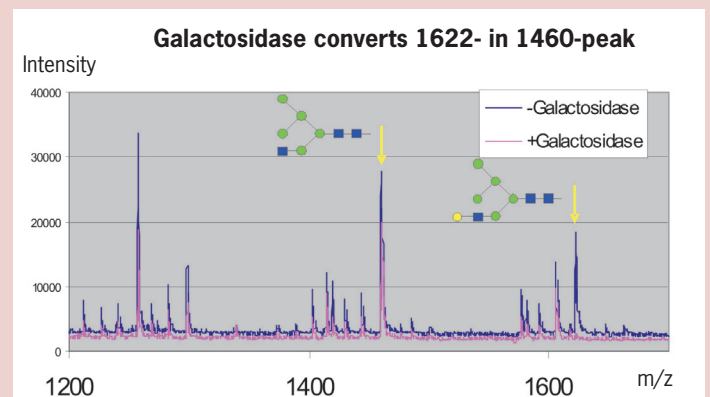
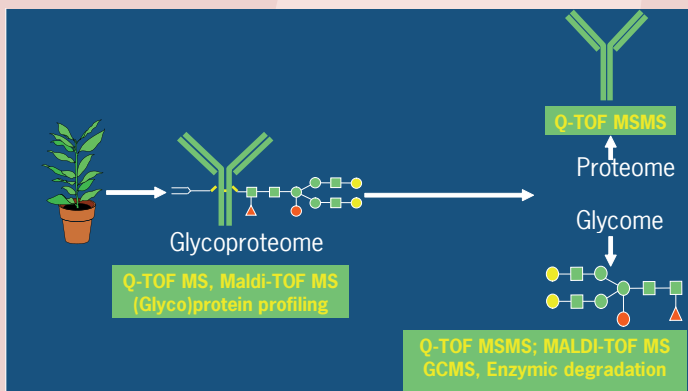
Glycoproteins and glycans are crucial bioactive components in humans, animals, plants and microorganisms. Their chemical structure determines processes as cell division, tissue differentiation, membrane permeability, intercellular communication and cell architecture. Protein glycosylation and other forms of post-translational modifications, such as phosphorylation, often determine their biological activity, e.g. allergenicity and immunomodulatory, and other properties, e.g. stability in the bloodstream. Glycoproteomics and glycan analysis is part of a broader PRI research theme focussing on glycoengineering in recombinant production platforms

### Technology

- Biosynthesis of glycoproteins via genes controlling the glycosylation pattern
- Analyses of post-translational modifications, e.g. glycosylation phosphorylation, sulfatation, N-terminal acetylation
- Qualitative and quantitative analyses of glycan and glycopeptide profiles
- Bead-mediated enrichment of glycopeptides from peptide mixtures to achieve more sensitive and accurate glycopeptide profiling
- Glycosidic linkage analysis via GCMS of partially methylated alditol acetates
- Multidimensional LC-MS<sup>E</sup> for glycoprotein analysis of complex mixtures
- Amino acid sequencing for protein identification

### Instrumentation

- MALDI-TOF mass spectrometry of glycans and glycopeptides
- Synapt Q-TOF MS<sup>E</sup>, equipped with Acquity nanoLC, and Orbitrap MS<sup>E</sup> with Advion nanoLC, for analysis of glycopeptides, glycoproteins and proteins
- Multi-dimensional LC-MS<sup>E</sup> for profiling of complex protein mixtures
- GCMS and GCTOF for glycosidic linkage analysis
- Bioinformatics for MS and MS<sup>E</sup> spectra analysis
- Bioinformatics for comparative LC-MS analyses and database searching



### What's in it for you?

- Access to genes for targeted glycoprotein biosynthesis, e.g. human-type glycoproteins in plant production platforms
- Quantitative profiling of complex glycoprotein mixtures, including the non-glycosylated fraction
- Identification of marker proteins for quality and other traits
- Analysis of post-translational modifications and glycosidic linkages
- Determine the presence of specified proteins (e.g. allergens) in food

### Network

The glycobiology group at Plant Research International is operative within the framework of various projects, financed by NGI (Netherlands Genomic Initiative), STW, EU and various national and international biotechnology companies. PRI networks include the Centrum for Biosystems Genomics (CBSG), Netherlands Proteomics Centre (NPC), the Coeliac Disease Consortium (CDC), "Nederlandse Vereniging voor Glycobiologie".

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### Relevant recent publications:

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