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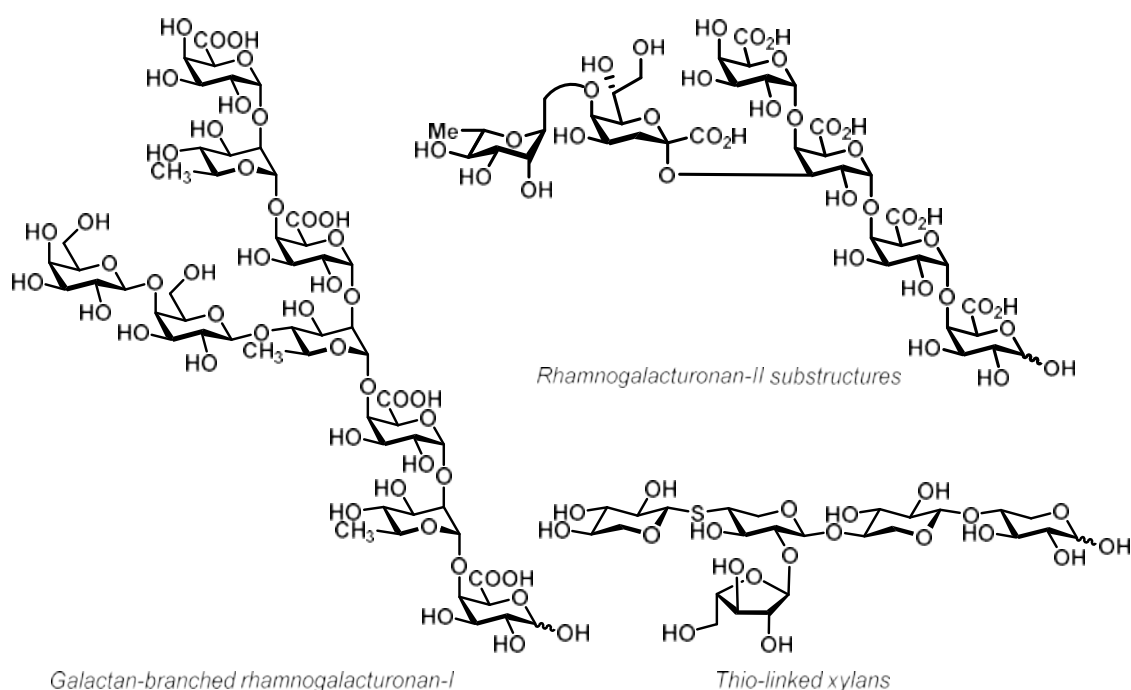


## SYNTHESIS OF PLANT CELL WALL OLIGOSACCHARIDES

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Plant cell walls are structurally complex and contain a large number of diverse carbohydrate polymers. These plant fibers are a highly valuable bio-resource and the focus of food, energy and health research. We are interested in studying the interplay of plant cell wall carbohydrates with proteins such as enzymes [1-2], cell surface lectins, and antibodies [3-4]. However, detailed molecular level investigations of such interactions are hampered by the heterogeneity and diversity of the polymers of interest. To circumvent this, we target well-defined oligosaccharides with representative structures [5-6] that can be used for characterizing protein-carbohydrate binding. The presentation will highlight chemical syntheses of plant cell wall oligosaccharides from the group and provide examples from studies of their interactions with proteins.



**Figure 1.** Examples of synthetic targets.

- [1] Seyedarabi, A.; To, T. T.; Ali, S.; Hussain, S.; Fries, M.; Madsen, R.; Clausen, M. H.; Teixeira, S.; Brocklehurst, K.; Pickersgill, R. *Biochemistry* **2010**, *49*, 539-546.
- [2] Liwanag, A. J. M.; Ebert, B.; Verhertbruggen, Y.; Rennie, E. A.; Rautengarten, C.; Oikawa, A.; Andersen, M. C. F.; Clausen, M. H.; Scheller, H. *Plant Cell*, **2012**, *24*, 5024-5036.
- [3] Pedersen, H. L.; Fangel, J. U.; McCleary, B.; Ruzanski, C.; Ralet, M.-C.; Farkas, V.; von Schantz, L.; Marcus, S. E.; Andersen, M. C. F.; Field, R.; Ohlin, M.; Knox, J. P.; Clausen, M. H.; Willats, W. G. T. *J. Biol. Chem.* **2012**, *287*, 39429-39438.
- [4] Andersen, M. C. F.; Boos, I.; Marcus, S. E.; Kracun, S. K.; Rydahl, M. G.; Willats, W. G. T.; Knox J.P.; Clausen, M. H. *Carbohydr. Res.* **2016**, *426*, 36-40.
- [5] Zakharova, A. K.; Madsen, R.; Clausen, M. H. *Org. Lett.* **2013**, *15*, 1826-1829.
- [6] Andersen, M. C. F.; Kracun, S. K.; Rydahl, M. G.; Willats, W. G. T.; Clausen, M. H. *Chem. Eur. J.* **2016**, *22*, 11543-11548.