

# Symposium 19th May 2014

INRA headquarters  
147, rue de l'Université  
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## WallTraC

A Marie Curie Initial Training Network

### What is WallTraC ?

WallTraC is a Marie Curie Initial Training Network (ITN) with two interlinked objectives:

- To develop new molecular tools and techniques for the analysis of plant cell walls and their component polymers with direct applicability to industrial end-users;
- To provide high quality, intersectorial, multidisciplinary and trans-national training in plant cell wall analysis and complementary skills.

### Who are WallTraC partners ?

The consortium gathers nine leading researchers on plant cell walls from the private sector, universities and research centres and two associated partners.



UNIVERSITY OF LEEDS



### Symposium topics

Three years after the project kick-off, WallTraC fellows have generated valuable results in a wide range of research fields going from enzymology to food polymer processing, through biochemistry, immunolabeling, bioinformatics, textile processing and crystallography. The symposium programme consists of six sessions covering these main results. Each session will be introduced by renown researchers and followed by WallTraC fellows' presentations.

### Register for free

To participate in this event, send an email to Alexandre Thébaud (alexandre.thebaud@nantes.inra.fr) detailing your full name and your organization. Registration is free of charge (lunch included) and open until 18<sup>th</sup> April 2014.

For more information about the WallTraC project, visit our website:

[www.walltrac-itn.eu](http://www.walltrac-itn.eu)

### Research & Training on plant cell walls



3 years of research results,  
6 sessions, 20 presentations.



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## Production and fine characterization of new antibodies against rhamnogalacturonan I

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The functional role of the complex rhamnogalacturonan I (RGI) in the context of cell biology is still unclear. The pectic RGI is mainly composed of a repeating disaccharide unit  $[\rightarrow 2)\text{-}\alpha\text{-L-rhamnosep-(1}\rightarrow 4)\text{-}\alpha\text{-D-galacturonic acidp-(1}\rightarrow ]_n$  (RU)<sub>n</sub>] decorated primarily with arabinan and (arabino)-galactan side-chains. Monoclonal Antibodies (mAbs) are useful to probe pectin structural domains *in situ*. Several mAbs to the RGI backbone<sup>1</sup> and to arabinan and (arabino)-galactan side-chains<sup>2-4</sup> have been developed but up to now, only few antibodies are available against the various RGI side chains. Here, we report on fine characterization of the complex RGI side chains from potato<sup>5</sup> and the generation of a new antibody, which recognizes pectin galactan rich hairy region.

RGI was extracted from potato (RGI galactan-rich) and was used for the preparation of RU oligosaccharides with reduced side chains. Mice immunisation was performed with RU oligosaccharides conjugated to ovalbumin for the generation of new mAbs. Promising clones producing mAbs were selected by ELISA using RU oligosaccharides. Subsequent characterization of these clones was achieved using a glycan microarray of cell wall polymers. One clone secreting monoclonal antibody was selected for further characterization. In order to confirm the glycan microarray results and to determine the structural features required for binding, competition inhibition ELISA using characterized oligosaccharide fractions isolated from the RU oligosaccharide pool was carried out. The selected clone recognized low branched RU oligosaccharides but reacted with neither unbranched RU oligosaccharides nor galactan oligosaccharides. Finally, the binding of antibody to plant cell walls was explored in *Arabidopsis* root and in sections of potato tuber tissue. Immunofluorescent labelling confirmed the epitope occurrence in potato tuber tissue. The labelling was intensified by pre-treatment of sections with an endogalactanase. In *Arabidopsis* root, the epitope was restricted to the elongation zone. A more detailed comparative analysis of the distribution of the new antibody, INRA RU1 and LM5 epitopes is expected to give a better understanding of the regulation pattern of RGI occurrence in plant tissues.

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