

POLLEN TUBE ADHESION: THE KEY ROLE OF PECTINS

Juliette Cremer (France)¹; Olivier Perruchon (France)¹; Marc Ropitiaux (France)^{1 2}; Amelie Morin (France)¹; Arnaud Lehner (France)¹; Jean-Claude Mollet (France)¹;

1 - Univ Rouen Normandie, GLYCOMEV UR 4358, SFR NORVEGE, Fédération Internationale Normandie-Québec NORSEVE, Carnot I2C, RMT BESTIM, GDR Chémobiologie, IRIB, F-76000 Rouen, France; 2 - HeRacLeS (High-tech Research infrastructures for Life Sciences) CNRS UAR 2026, INSERM US 51, PRIMACEN, Univ Rouen Normandie, IBISA, IRIB, France-Biolmaging, F-76000 Rouen, France;

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Abstract text: In the context of climate change, improving crop reproductive efficiency is a major challenge for sustainable agriculture and food security. Sexual reproduction in plant is a key determinant of seed and fruit yield, cornerstone of human nutrition. During sexual reproduction, pollen grains land on the stigma, where they adhere, germinate, and generate a pollen tube. This polarized cell is characterized by tip-growth and transports the male gametes through the style and ovary toward the ovules. Pollen tube progression relies on several mechanisms, including adhesion to the cell walls of female tissues. Pollen tube adhesion is thought to be mediated by cell wall polysaccharides, particularly pectins, but the structures required for adhesion remain poorly defined.

To this aim, we adapted an *in vitro* pollen tube adhesion assay using an artificial matrix enriched in pectin-containing cell wall extracts from wild-type *Arabidopsis* plants and mutants impaired in pectin biosynthesis or remodelling. Enzymatic deconstruction of this pectin-enriched extracts followed by SEC has allowed the identification of distinct pectin motifs required for pollen tube adhesion. Together, these results provide new insights in the molecular determinant of pollen tube cell-wall interactions and thereby contributes to a better understanding of plant reproductive success.

