Cell wall polysaccharide immunodetection in the thallus of the liverwort *Marchantia polymorpha* L.

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The plant cell wall is a complicate structure which surrounds the protoplast and contains pectin, hemicelluloses, cellulose polysaccharides and proteins. During the evolution and transition from the aquatic to the terrestrial environments plant cell wall composition changed, so as to meet the new requirements that evolution has driven. We therefore studied, the cell wall polysaccharide composition of the thallus of *Marchantia polymorpha*, a model liverwort, and a representative of the first plant genera who inhabited terrestrial environments. Using a collection of specific antibodies raised against different cell wall polysaccharide epitopes -*via* immunofluresence- we detected in semithin sections of London Resin White emended thalli, low and high-methylesterified homogalacturonans, arabinans, mannans, xyloglucans and arabinogalactan proteins. These epitopes showed a tissue specific distribution, with the low- and high-methylesterified homogalacturonans to be unevenly distributed in the thallus, while the cell walls of smooth and pegged rhizoids, exhibited strong arabinogalactan protein signal. Xyloglucan and mannans were evenly present in the cell walls of every cell type of the thalli, except of the rhizoids. Moreover, cell walls of the idioblast cells also showed a differential cell wall composition. These results are discussed in the context of the transition from the aquatic environment towards terrestrial life. *M. polymorpha* cell walls depict the changes in cell wall composition that took place during evolution of the green linage, from charophytes to embryophytes, and towards flowering plants.

Keywords: cell wall matrix; evolution; liverworts