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LIBRO DE ABSTRACTS/ABSTRACT BOOK



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P183 Characterization of novel developmental cues in Arabidopsis roots

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The root system and its functionality is essential for survival of terrestrial plants. Lateral root (LR) formation is a plastic process regulating root system architecture, although locations where LRs may form are pre-patterned by the Lateral Root Clock. Under standard growth conditions, LRs form as repeated units along the root primary axis^{1,2}. The Lateral Root Clock was first defined using the synthetic auxin-response promoter DR5, which pulses rhythmically about every 5 hours in a zone close from the root tip: the Oscillation Zone (OZ). Further analyses of this region showed changes in the expression of thousands of genes that fluctuated in or out of phase with DR5³. As cells exit the OZ, oscillations cease and maxima in auxin response (peak of oscillations) are followed by permanent expression of DR5 in specific sites, called Pre-Branch Sites (PBS). At these sites, LR initiation will eventually occur^{3,4}. The OZ arises as a key developmental zone for LR pre-patterning. It is unknown how this zone is positioned and delimited.

arf7arf19 mutants do not form LRs, however present constitutive non-oscillating expression of DR5 in the OZ³. Thus, DR5 can be used in *arf7arf19* mutant to define the OZ. A genetic screen using Ethyl Methanesulfonate (EMS) was performed in *arf7arf19* mutants carrying the DR5:Luciferase marker. Mutagenized F2 populations were searched for alterations in DR5 expression in the OZ. We aimed to find mutants with expanded marker expression, as expansion of the OZ would indicate the existence of a repressing signal, likely unknown, with an antagonistic role to auxin. Here we show the different phenotypes of mutants we have found. These were classified in three groups: A (expanded OZ), B (higher DR5 intensity in the OZ) and C (subtle changes in DR5 but increased LR formation). In addition, we crossed these mutants back to the wild type to remove *arf7* and *arf19* along with other undesired mutations. Segregating populations were analyzed to determine the effect of mutations in OZ positioning and PBS formation, which are indicative of their putative role as developmental cues. Based on these data, we will prioritize mutants and proceed to map them.

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