

Size matters: Sugars regulate communication between plant cells

December 12 2011

Multicellular organisms must have a means for cells to communicate with one another. Past research has shown that plants possess the ability to directly transfer materials between adjacent cells, through holes in their cell walls called plasmodesmata (PD).

Now, a study published by Cell Press in the December issue of the journal *Developmental Cell* reveals one way to control the size of these PD channels, to prevent or allow the passage of important signals between cells, during plant development.

Although evidence suggests that plant cells have the ability to control the size of their PDs, and therefore regulate intercellular trafficking, it is not clear how this size control is orchestrated. "Previous research has suggested an important role for the plant sugar [polymer](#) callose in regulating the PD aperture or size exclusion limit," explains the senior author of the study, Professor Ykä Helariutta, from the University of Helsinki in Finland. "For example, callose degradation enhances cell-to-cell movement and increased callose accumulation at the PD has been linked with impaired trafficking."

In their study, Professor Helariutta and colleagues developed genetic tools to control the amount of callose at the PD, so that they could manipulate the flow through PD in specific tissues of the plant. The researchers went on to show that these changes affected the intercellular movement of key plant development signaling molecules and therefore strongly influenced root formation. "Our results indicate that spatial and

temporal control of callose production regulates the passage of signaling molecules through the PD during plant development," concludes Professor Helariutta.

Provided by Cell Press

Citation: Size matters: Sugars regulate communication between plant cells (2011, December 12) retrieved 25 April 2024 from <https://phys.org/news/2011-12-size-sugars-cells.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.