

This readme file was generated on 2024-12-18 by Luciano Di Fino and provides a list and description of each file included in the dataset.

DATASET GENERAL INFORMATION

Title of dataset: **Cellular Damage Triggers Mechano-Chemical Control of Cell Wall Dynamics and Patterned Cell Divisions in Plant Healing**

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Related publication for description of project, methods etc: Luciano Martín Di Fino, Muhamad Shahzad Anjam, Maarten Besten, Andriani Mentzelopoulou, Vassilis Papadakis, Nageena Zahid, Luis Alonso Baez, Nicola Trozzi, Mateusz Majda, Xuemin Ma, Thorsten Hamann, Joris Sprakel, Panagiotis N Moschou, Richard S. Smith, Peter Marhavý. Damage Triggers Mechano-Chemical Control of Cell Wall Dynamics and Patterned Cell Divisions in Plant Healing. Developmental Cell Journal. DOI: [10.1016/j.devcel.2024.12.032](https://doi.org/10.1016/j.devcel.2024.12.032)

FILE OVERVIEW

All data presented below correspond to raw data, analyzed in Di Fino et al., 2024. For further details of the methodology used to obtain data, quantification and statistical analysis, contact the author or read the article in Developmental cell Di Fino et al., 2024.

Atomi Force Microscopy

In this folder can find the values obtained from measuring the elasticity of the cell wall in roots of the Arabidopsis thaliana using an atomic force microscope. To carry out these measurements, cross sections of Arabidopsis roots embedded in agar were made.

N+BDP and CWP-BDP in arabidopsis root

This folder contains confocal microscopy images of Arabidopsis roots stained with mechanoprobes, previously published in Michels et al., 2019.

<https://doi.org/10.1073/pnas.1921374117>

Arabidopsis roots of 5 days were incubated for 30 minutes with mechanoprobes. Then, by FLIM using confocal microscopy, the variable fluorescence half-life time was measured to calculate the degree of viscosity of the cell wall and plasma membrane in different root cells.

Pericycle division after endodermis ablation

This folder contains confocal microscopy images of damaged Arabidopsis roots. Damage induces a regeneration response. Here, post-damage, we have had the roots in such a way that the cell walls can be seen and this allows us to see the degree of regeneration after damage. The study of regeneration has been done not only in wild type plants, but also in mutants generated by genetic engineering. Mutants related to genes involved in cell wall synthesis and in ethylene-mediated signaling pathways were also studied in order to understand molecular mechanisms that regulate regeneration.

Pericycle shrink

This folder contains confocal microscopy images showing the shrinkage of XPP cells in Arabidopsis roots due to the pressure exerted by a two-photon laser. This is to observe elastic properties of the cell wall. The shrinkage of XPP by a two-photon laser was done in wild type plants and in mutants.

TEM

This folder contains electron microscopy images, where can see cross sections of Arabidopsis roots. The images have been used to quantify the thickness of the cell wall of root cells.