Dataset of confocal microscopy from plant samples - High-throughput characterization of cortical microtubule arrays response to anisotropic tensile stress

SND-ID: 2022-252-1. **Version**: 2. **DOI**: https://doi.org/10.5878/17te-jg54

Download data

bot1-7_GFP-MBD.zip *(6.1 GB)*

GFP-MBD.zip *(6.2 GB)*

GFP-TUA6.zip *(7.91 GB)*

mCit-MBD.zip *(5.84 GB)*

Pavement cells.zip *(834.86 MB)*

Associated documentation

Example_2D_Image.tif *(512.22 KB)*

Read Me.txt *(1.67 KB)*

ReadMe_Experimental settings.txt *(1.12 KB)*

Download all files

2022-252-1-2.zip *(~26.86 GB)*

Citation

Demes, E., & Verger, S. (2023) Dataset of confocal microscopy from plant samples - High-throughput characterization of cortical microtubule arrays response to anisotropic tensile stress (Version 2) [Data set]. Swedish University of Agricultural Sciences. Available at: https://doi.org/10.5878/17te-jg54

Creator/Principal investigator(s)

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Principal's reference number

SLU.genfys.2023.4.4.IÄ-2

Description

The data set contains Tiff Z-stacks from light-grown hypocotyls and cotyledons of cortical microtubule (CMT) reporter lines either with few or no ablated cells from a time series experiment. This data set was analyzed with a new semi-automated image analysis workflow we have developed to quantify CMTs reorganization in individual cells following an ablation (https://github.com/VergerLab/MT_Angle2Ablation_Workflow).

The dataset in the zip file was analyzed using the scripts on GitHub (https://github.com/VergerLab/MT_Angle2Ablation_Workflow). A step by step describes and explains all the scripts of the image analysis procedure. The intermediate data generated by the analysis method can be found on zenodo (https://doi.org/10.5281/zenodo.7436075).

The documentation file Example_2D_Image.tif gives a visual representation from a typical z-stack.

Data contains personal data

No

Language

English

Data format / data structure

Still image

3D

Species and taxons

Arabidopsis thaliana

Data collection 1

- Mode of collection: Recording
- Description of the mode of collection: Confocal microscope time series images of hypocotyls (every 20 minutes during 4 hours) were taken on microtubules reporter lines
- Instrument: confocal microscope Zeiss LSM800 - Upright confocal microscope from Zeiss
- Sample: GFP-MBD
  Fluorophore fused to a microtubule binding domain from the Microtubule Associated Protein 4 (MAP4). (Marc et al., 1998) DOI: 10.1105/tpc.10.11.1927
- Sample: bot1-7 GFP-MBD
  GFP-MBD line crossed with bot1-7 a katanin mutant with impaired rearrangement of microtubules. (Uyttewaal et al., 2012) DOI: 10.1016/j.cell.2012.02.048
- Sample: GFP-TUA6
  GFP fused to a tubulin subunit. (Ueda et al., 1999) https://doi.org/10.1007/BF01279267
- Sample: mCit-MBD
  Fluorophore fused to a microtubule binding domain from the Microtubule Associated Protein 4 (MAP4). (Armezzani et al., 2018) DOI: 10.1242/dev.162255
- Source of the data: Research data, Biological samples
- Temporal resolution: 20 minute

Responsible department/unit

Department of Forest Genetics and Plant Physiology

Funding 1

- Funding agency: Swedish Research Council
- Funding agency's reference number: 2020-03974
- Project name on the application: Mechanics and dynamics of cell-to-cell adhesion in plants
- Funding information: Mekanik och dynamik av cell till cell adhesion i växter

Funding 2

- Funding agency: Bio4Energy

Funding 3

- Funding agency: Knut and Alice Wallenberg Foundation
- Funding agency's reference number: KAW 2016.0352

Funding 4

- Funding agency: Knut and Alice Wallenberg Foundation
- Funding agency's reference number: KAW 2016.0341

Funding 5

- Funding agency: VINNOVA
- Funding agency's reference number: 2016-00504
- Project name on the application: UPSC Centre for Forest Biotechnology
- Funding information: UPSC Centrum för Skogsbioteknik (UPSC)

Research area

Cell biology (Standard för svensk indelning av forskningsämnen 2011)

Developmental biology (Standard för svensk indelning av forskningsämnen 2011)

Plant biotechnology (Standard för svensk indelning av forskningsämnen 2011)

Keywords

Ablation, Arabidopsis thaliana, Microtubule, Hypocotyl

Accessibility level

Access to data through SND
Data are freely accessible

Use of data

Things to consider when using data shared through SND

License

CC BY 4.0

Versions

Version 2. 2023-05-10
Version 1. 2023-02-24

Contact for questions about the data

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This resource has the following relations

Is derived from Link to all the scripts required for the image analysis used on the raw .tif images available in the zip folder.

Is referenced by Link to all intermediate data generated by the image analysis from the raw .tif images available in the zip folder.

Is derived from Dataset containing intermediary images processed at each step of the image analysis workflow in imageJ

Download metadata

DataCite

DDI 2.5

DDI 3.3

DCAT-AP-SE 2.0

JSON-LD

PDF

Citation (CSL)

File overview (CSV)

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