Quantitative analysis of microtubule dynamics in *Arabidopsis thaliana* aerial organs using Light Sheet Fluorescence Microscopy

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LSFM is increasingly used in live imaging, as a good compromise between resolution, time of acquisition, photobleaching and phototoxicity. Indeed, only the focal plane of the LSFM samples are illuminated by a sheet of light, making the acquisition much faster and less phototoxic. Limitations of the techniques include the size of the sample (only one sample at a time) and embedding of the sample in agarose. For these reason, in plants, LSFM has been mainly used to image roots so far (1). Here we adapted a LSFM (Alpha3, Phaseview) to image aerial organs and were able to image up to 7 plant shoots with the same set-up. As a proof of concept, we focus our work on microtubule dynamics during tissue morphogenesis and cell division. We also combined this LSFM approach with quantitative image analysis using sofware like MorphographX (2) or Fibriltool (3). Altogether, this provides a competitive alternative to confocal microscopy for aerial organs.

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