SUPPLEMENTARY INFORMATION

**Indaziflam herbicidal action: a potent cellulose biosynthesis inhibitor**

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Supplementary data

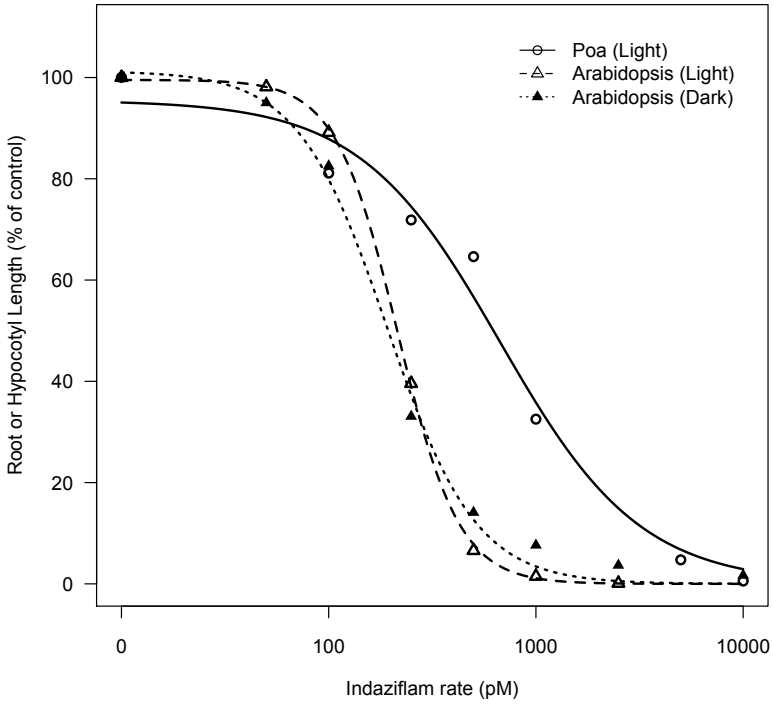


**Fig S1. Indaziflam dose response of *Poa annua* and *Arabidopsis*.** To establish dose responses, seedlings were germinated on agar plates in the light or dark containing indaziflam (rate refers to concentration and not based on area/planting density) ranging from 0 to 10,000 pM. Seedling root length (light) and hypocotyl (dark) were measured and standardized to percent of the untreated (N = 36).

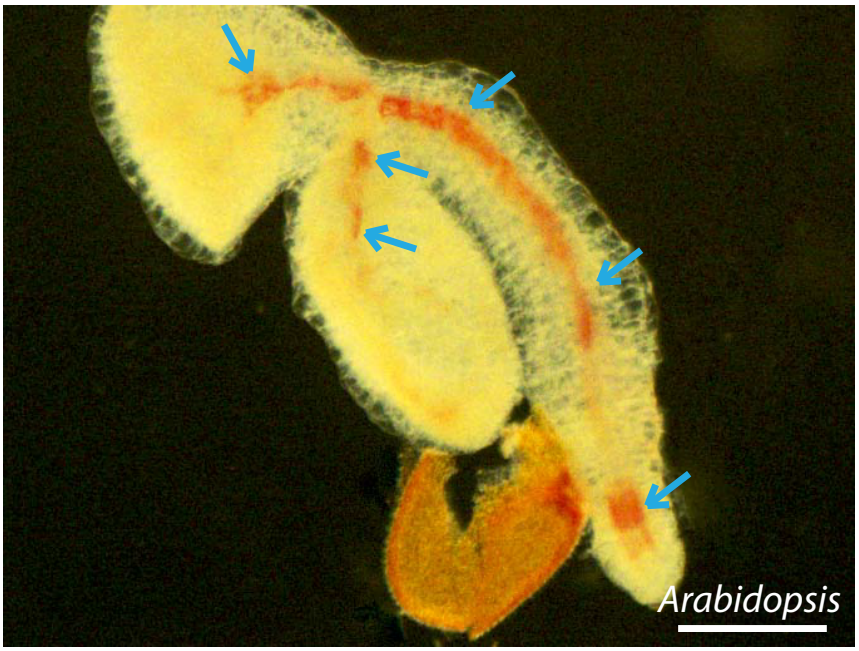


**Fig S2**. **Ectopic lignification was induced by indaziflam treatment.** Bright field stereomicroscopy image of a 7-day-old phloroglucinol stained *Arabidopsis* seedling treated with 500 pM indaziflam (Scale bar = 200 μm). Blue arrows illustrate patches of ectopic lignin, wild-type plants not treated with indaziflam display no red stained lignin (data not presented).

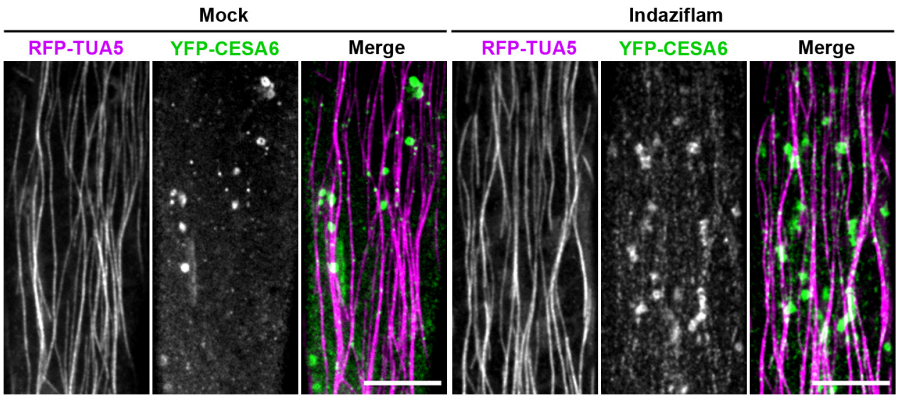


**Fig S3**. Indaziflam treatment increased density of PM CSCs even in the regions where CESA was less expressed. Representative single optical sections (monochrome) from epidermal cells of 0.01% DMSO mock and 500nM indaziflam treated *Arabidopsis* dark-grown seedlings are shown. Cortical microtubules were labeled by RFP-TUA5 (magenta in the merge) and CSCs were labeled by YFP-CESA6 (green in the merge). Bars = 10 μm.

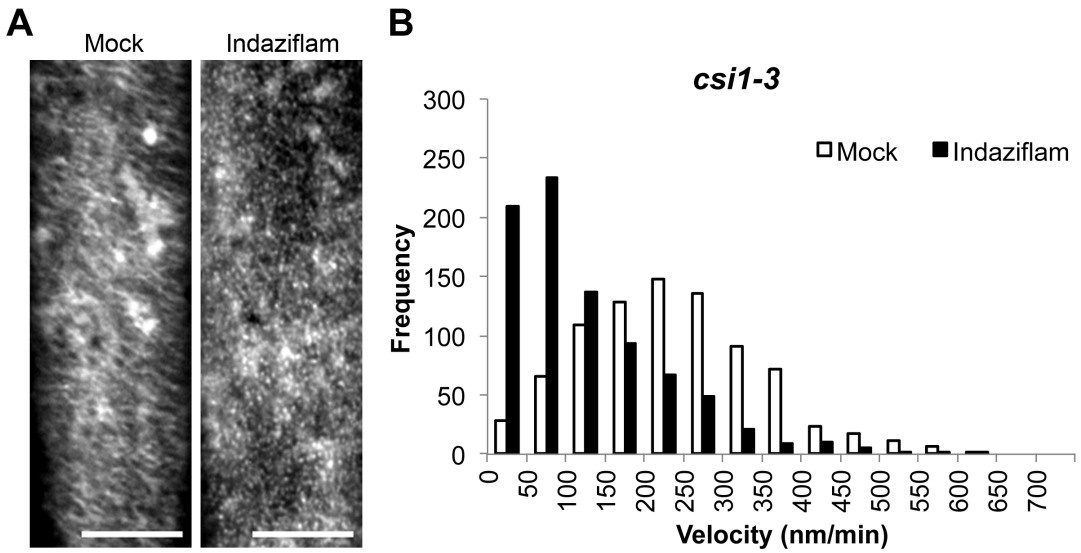


**Fig S4**. **Indaziflam reduced the velocity (particle movement rate) of YFP:CESA6 particles independent of *CSI1*.** (A) YFP::CESA6 expressed in *csi1-3* background visualized with and without indaziflam, scale bar = 5 μm (B) The histogram depicts the frequency of YFP:CESA6 particle velocities at the PM focal plane after a two hour treatment with indaziflam or the DMSO mock. Velocity was determined from images taken in the epidermal cells of 3-d-old dark-grown hypocotyls in the Arabidopsis mutant *csi1-3*. The white bars are the recorded velocity from the mock treatment and the black bars are of treatment with indaziflam and the YFP:CESA6 particles averaged a velocity of 236 and 125 nm $min^{-1}$ respectively. (mean ± 1 SE).

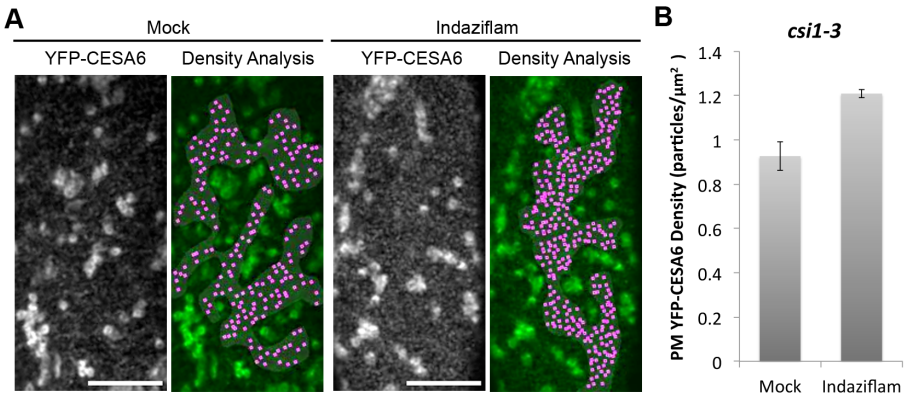


**Fig S5**. **Particle density analysis in *csi1* background.** Indaziflam treatment induced a higher density of CESAs at the PM. *Arabidopsis* seedlings expressing YFP-CESA6 were grown in the dark for three days before imaging. (**A**) Representative images and analysis of the PM-localized YFP-CESA6 particles in *prc1-1, csi1-3* background are shown. Single optical sections (monochrome) show the distribution of YFP-CESA6 labeled puncta upon 2h 0.01% DMSO mock treatment (left) or 500nM indaziflam treatment (right). The green/magenta overlay is a spatial count of the puncta that display morphology and motility consistent with PM YFP-CESA6 particles. A gray mask indicates the region of interest (ROI) lacking underlying intracellular compartments, and magenta dots indicate local maxima of the fluorescence signal. Bars = 10 μm. (**B**) Upon indaziflam treatment, average density of YFP-CESA6 puncta at the PM increased independent of *csi1-3*. Error bars are ± 1 SE from the mean.

**Supplementary online Movie S1.**

**Supplementary online Movie S2.**