

Improvement of plant optical clearing reagent ClearSee

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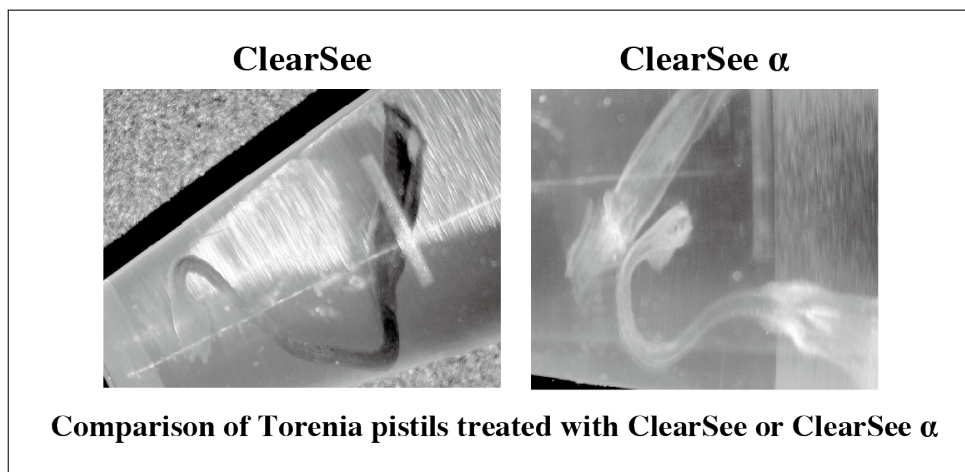
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To understand how the plant body is made, it is essential to observe the morphology, structure, and arrangement of the cells within the plant body. However, the opaque nature of the plant's body made it difficult to observe the inner structure directly under a microscope. To overcome this problem, we developed a reagent to make plants transparent "ClearSee" (Kurihara et al., 2015). By making the plant transparent, the inside of the plant body can be directly observed without damaging the plant body, such as physically cutting the plant body. However, because ClearSee could not make transparent some plant species and tissues, we further improved the composition and developed ClearSee α , which can be applied to a broader range of plant species and tissues. By using ClearSee α , it has become possible to make clear chrysanthemum leaves, tobacco and torenia pistils, and fertilized *Arabidopsis thaliana* fruits, which have been challenging to make clear. When we measured the fluorescence intensity of many different colors of purified fluorescent proteins in the ClearSee α solution, most of the fluorescent proteins were unaffected. Still, only TagRFP attenuated the fluorescence intensity by about half. In this presentation, we would like to introduce the deep imaging observed by ClearSee α .



References

Kurihara, D., Mizuta, Y., Sato, Y., and Higashiyama, T. (2015). ClearSee: A rapid optical clearing reagent for whole-plant fluorescence imaging. *Development*, 142:4168–4179.