

SEMINAR

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Hosted by Asst. Prof Long Yuchen

How transcriptional noise and mechanical conflicts contribute to organ shape reproducibility



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Multicellular organisms exhibit reproducible shapes, yet at the cell level, growth can be extremely heterogeneous and variable. What are the buffering mechanisms that filter such heterogeneity and variability? We and others showed that shape- and growth-derived forces act as signals that orient microtubules and cellulose microfibrils in plant cell walls. Such mechanical feedback contributes to organ shape reproducibility. Using a mutant in the Paf1 complex, we now investigate the role of transcriptional control in this response. In the *paf1c* mutant, we could observe increased gene expression variability between adjacent cells, and we could correlate this response to diffuse mechanical conflicts. In the end, mutant organ shapes become more variable, in part because regional conflicts are more local and weaker. This work opens many questions, notably on the essential role of fluctuations, and the scale at which associated growth conflicts emerge, in plant development.