Title: Transient efflux inhibition improves plant regeneration by natural auxins

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Efficient plant regeneration is fundamental for crop improvement, clonal propagation, and plant genome editing. Traditionally, somatic embryogenesis (SE) and de novo shoot regeneration rely on synthetic auxins such as 2,4-D, while natural auxins are often ineffective. Our recent work demonstrates that transient inhibition of auxin efflux converts natural auxins, such as indole-3-acetic acid (IAA) and 4-Cl-IAA, into highly effective inducers of plant regeneration across species, leading to more synchronized and homogeneous seedling development compared to 2,4-D. Building on these findings, our current research aims to unravel the molecular mechanisms by which auxin promotes the acquisition of embryonic identity in Arabidopsis thaliana. By integrating regeneration biology with mechanistic insights into auxin-driven cellular reprogramming, we seek to establish innovative and more sustainable strategies for plant propagation and crop biotechnology.

Biography

Omid Karami has completed his PhD in Plant Molecular Biology at Leiden University in 2017 and carried out postdoctoral studies at Leiden University, where he later served as Senior Researcher. He is currently Junior Group Leader at the University of Potsdam. His research focuses on the molecular mechanisms of plant regeneration, cellular reprogramming, and auxin signaling, with applications in crop improvement and plant biotechnology. He has published more than 18 papers in reputed journals.

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Session name/ number:Plant biotechnology and tissue culture
Category: (Oral presentation)