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## Unraveling the auxin mechanism in 2,4-D induced somatic embryogenesis in *Arabidopsis thaliana*

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**Propositions accompanying the PhD thesis**  
**“Unraveling the auxin mechanism in 2,4-D induced somatic embryogenesis in**  
***Arabidopsis thaliana*”**

1. A comprehensive study on plant somatic embryogenesis requires the establishment of a standardized somatic embryogenesis induction system and solid definitions of the terms somatic embryogenesis productivity and -efficiency (this thesis, Chapter 2).
2. Many plant developmental processes are regulated by the hormone auxin, but polar auxin transport is not always crucial in these processes (this thesis, Chapter 2).
3. Embryogenic callus developing during somatic embryogenesis induction is actually differentiated rooty callus (this thesis, Chapter 4).
4. As the identification of embryogenic tissue solely based on its phenotype is often inaccurate, validated fluorescent reporters to mark cell identity are required in somatic embryogenesis research.
5. Somatic embryogenesis as an application in the plant breeding or -propagation industry is a complex challenge that has not yet been met.
6. Depending on the viewpoint on auxin biosynthesis and metabolism one can have different interpretations of the same dataset as displayed by Mano and Nemoto (2012): “The interpretation by Cheng et al. (2006) that the loss-of-function *yuc* mutants can be rescued by the *iaaM* gene does not make sense.” showing that we still do not fully understand the mechanism.
7. Surprisingly, the use of small molecules to alter molecular pathways is not yet widely appreciated, as it can facilitate and speed up genetic research tremendously (Simon et al., 2013; Nishimura et al., 2014; Hayashi et al., 2012).
8. In the agricultural industry, improving plant vigour to enhance the critical quality- and yield-defining stage of seed production is a primary objective. However, this is widely neglected in the vegetative propagation industry and is often forgotten in fundamental research (Finch-Savage and Bassel 2016).
9. One must always be cautious when interpreting microscopic observations, as signals perceived by our senses are always uncertain. (“Plato and a Platypus walk into a bar...” by Thomas Cathcart and Daniel Klein, Abrams Image 2007, p63)
10. Humans can learn from animals: they do not care about your heritage, your origin, your colour, the past or future, and they live today.

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