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Evolution and development of flowers, fruits and inflorescences of Phalaenopsis and other orchid species

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PROPOSITIONS

Accompanying the PhD thesis

Evolution and development of flowers, fruits and inflorescences
of *Phalaenopsis* and other orchid species

1. Different copies of MADS-box *SEP* genes are required for the development of the mentum, callus and stelidia of the flowers of *Phalaenopsis* (this thesis, chapter 3).
2. The current *A. thaliana* fruit dehiscence model should be adapted for orchids (this thesis, chapter 4).
3. Unlike the flowers, orchid roots independently resupinate during all stages of development with no fixed final position (this thesis, chapter 5).
4. Lignin deposition in the sclerenchyma layer and fibre caps determines the degree of lignification of *Phalaenopsis* inflorescences (this thesis, chapter 6).
5. Identifying lipid and lignin biosynthesis genes will shed more light on orchid fruit dehiscence.
6. Advanced long-read sequencing and efficient genome editing are exciting tools for the next generation of orchid breeders.
7. 3D CT scanning offers many new opportunities to better understand the development of floral organs.
8. To enhance our comprehension of the specific adaptations and mechanisms of orchid-pollinator relationships, evodevo studies need to move forward to the inner floral whorls.
9. Interdisciplinary approaches enrich the scholar's toolkit (Anava et al., 2020).
10. Possessing personal curiosity is essential for exploring uncharted passions, daring to venture into unexplored avenues, and demonstrating perseverance to overcome the numerous challenges encountered in daily laboratory life (Chomzynski and Sacchi, 2006).
11. A specific endowment fund is called for to ensure the sustainability of research on biodiversity in Indonesia.

Dewi Pramanik

Leiden, September 13, 2023