Faculty
of Science

Palacký University
Olomouc

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# Ph.D. position in Experimental Botany at the Faculty of Science

Land plants strongly depend on intact root systems. They are not only responsible for soil anchoring and water uptake but are also needed for interacting with the soil microbiome.
It was found that progestogens and androgens, steroids produced by mammals and plants (Shiko *et al.*, 2023), disrupt root development and final root length in many plant species (Körber *et al.*, 2026).

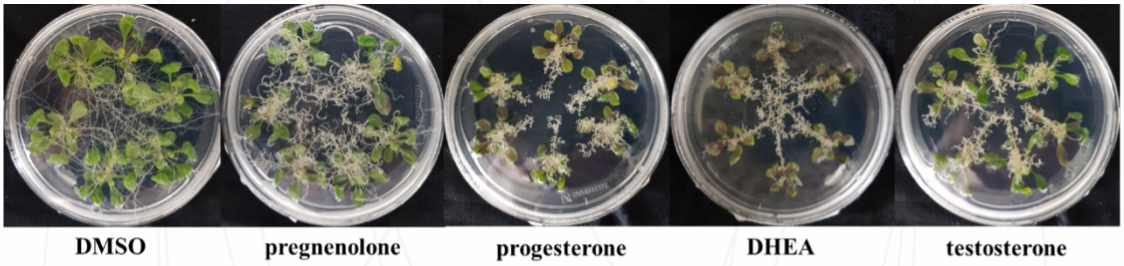


Figure 1: Root morphology of progestogen (pregnenolone)- and androgen (DHEA and teso)-treated *Arabidopsis thaliana*.

This endangers sufficient water uptake and resilience to physical stresses. Moreover, it reduces the ability to communicate with microbial soil communities.
Anthropogenic contamination by progestogens and androgens was detected in surface waters across all inhabited regions worldwide. In combination with a changing environment (global change), this poses a major threat not only to food security but also to land-based plant ecosystems.

**The Faculty of Science of the Palacký University Olomouc (Czech Republic) offers a position for a highly motivated Ph.D. student to analyze the molecular mechanisms underlying reduced and disrupted root development caused by progestogens within the group of Jan Klein.**

**The successful candidate will learn and apply state-of-the-art methods in cell biology, molecular biology, and biochemistry to answer the questions described here, using Arabidopsis thaliana. Additionally, he/she will apply the knowledge gained to crop plants.**

**We offer a welcoming, international work environment, an excellent research environment at a historic, internationally connected university, and attractive living conditions in a vibrant student city.**

**If you are interested but need further information, please, contact Dr. Jan Klein (jan.klein@uni-jena.de; 015779768194).**

**Literature:**

Körber, K. L. *et al.* Progestogens and androgens influence root morphology of angiosperms in a brassinosteroid-independent manner. The Plant Journal 123, e70459; doi.org/10.1111/tpj.70459 (2025).

Shiko, G. et al. Occurrence and conversion of progestogens and androgens are conserved in land plants. New Phytologist 240, 318–337; doi.org/10.1111/nph.19163 (2023).

For the application process, please, use the QR code.