

Upcoming open PhD student position, Spring 2026

EU-funded Marie Skłodowska-Curie Doctoral Network “AGILE”



Title: Comparative chromatin analysis of supernumerary and standard chromosomes

Objectives: Compare the spatial distribution and chromatin composition of standard A chromosomes (As) and supernumerary B chromosomes (Bs) of the daisy *Brachyscome dichromosomatica*. To determine whether supernumerary chromosomes exhibit a preferential or nonrandom distribution, we will analyse the relative nuclear localization of As and Bs in intact root nuclei from tissue sections labelled with chromosome painting and imaged using 3D structured illumination microscopy (SIM) and Imaris-based image analysis. To determine whether B chromosomes have a different epigenetic setup than As, we will quantify the levels of different histone modifications marking euchromatin and heterochromatin states on Bs

versus As (SIM) and the number of RNA Pol II molecules by utilizing Single-Molecule Localization Microscopy (SMLM). To determine the transcriptional status of As versus Bs, we will quantify the amount of nascent RNA from four A- and B-encoded paralogous genes using allele-specific 3D smRNA-FISH and SMLM. This quantitative cytogenetic work will complement ongoing molecular profiling of the epigenetic and transcriptional states of A versus B chromosomes. Are you ready to enter the world of B chromosomes?

Training benefits:

- educated in the field of chromosome biology and genetics
- advanced super-resolution microscopy including single-molecule localization analysis

Requirements: having a Master's degree in the field of biology, biochemistry, or a related discipline; experience with chromosome, molecular and cell biological techniques; be fascinated by the biology of chromosomes and have a strong interest in microscopy; highly motivated with team spirit; having solid oral and written English skills. Important: the applicant must be non-German and should come from outside Germany.

Environment: The IPK in Gatersleben (Germany, www.ipk-gatersleben.de) is one of the world's leading international institutions in the field of plant genetics and crop science; it offers state-of-the-art facilities and a friendly, multicultural working environment.

Responsible: Andreas Houben (ORCID: 0000-0003-3419-239X) and Maria Cuacos (ORCID: 0000-0003-4910-7311)

Contact: houben@ipk-gatersleben.de or cuacos@ipk-gatersleben.de

<https://www.ipk-gatersleben.de/en/research/breeding-research/chromosome-structure-and-function>