

Speaker: Prof. Dr. Gwyneth Ingram
CNRS, ENS de Lyon, France



Title: Embryo-Endosperm dialogues in developing seeds: Distinguishing in from out, and up from down

Time: Tuesday, February 11, 2025, 2 pm

<https://ipk-gatersleben-de.zoom-join.com/j/64461069570?pwd=zkiCYbbDnBkSE0qzRjuCviHm7VKa.1>

Meeting-ID: 644 6106 9570

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Place: IPK Lecture Hall, Corrensstr. 3, 06466 Seeland OT Gatersleben

Abstract:

In angiosperms, the double fertilization of ovules gives rise to two distinct organisms; the embryo and the endosperm. Although genetically similar, their developmental trajectories within the seed are dramatically different. The embryo develops into a “baby plant”, differentiating tissues and meristems that will permit its ultimate germination and growth into a new individual. In contrast the endosperm appears to play a “nursing” role, transferring nutrients from the mother plant to the embryo, and ultimately dying. To what extent the development of these two organisms is interdependent remains controversial. I will focus on peptide mediated dialogues between the embryo and the endosperm. I will discuss advances in our research showing that the endosperm, in addition to its nursing role, provides developmental cues to the embryo. I will then go on to show new data suggesting that, contrary to the currently accepted view, endosperm development is also profoundly influenced by the embryo. Our findings shed light on the importance of molecular dialogues between these two “sibling” organisms, and raise interesting questions about the control of molecular diffusion in the apoplasts of reproductive structures.

Short CV

After obtaining a Natural Sciences degree at the University of Cambridge I carried out a Gatsby-funded PhD at the John Innes Centre supervised by Enrico Coen, using deletions generated by imprecise transposon excision to understand the function of a gene controlling flower architecture in snapdragons. A side project, characterising an embryo-lethal mutation, triggered an interest in plant embryogenesis, which I pursued in an EMBO-funded postdoc in Lyon, during which I characterised a family of epidermis-regulating transcription factors in maize embryos. The plant epidermis, and particularly its establishment and maintenance during embryogenesis, became the focus of Royal Society Fellowship at the University of Edinburgh, allowing me not only to identify several novel regulators of epidermal specification in Arabidopsis, but also to think more about the embryo within the seed context, and how chemical and mechanical cues acting between seed compartments might influence embryo and seed development. In 2010 I moved back to France where I have developed several projects addressing these questions, and have broadened my research to ask similar questions in other plant reproductive organs. In January 2021 I became the director of the multidisciplinary Plant Reproduction and Development Institute at the Ecole Normale Supérieure de Lyon.