

# GATERSLEBEN LECTURE



**Speaker:** Prof. Dr. Thomas Dresselhaus  
Institute of Plant Sciences,  
Department of Cell Biology and Plant Biochemistry,  
University of Regensburg, Germany



**Title:** The plant egg cell

**Time:** Tuesday, July 11, 2023, 2 pm

**Place:** IPK Lecture Hall

<https://ipk-gatersleben->

[de.zoom.us/j/68666757098?pwd=akRodmN1VjFCMFpGSnNCaFU0NFZndz09](https://ipk-gatersleben-de.zoom.us/j/68666757098?pwd=akRodmN1VjFCMFpGSnNCaFU0NFZndz09)

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## **Abstract:**

From ultrastructural and cytoskeleton studies the egg cell of flowering plants was described as an unspecialized parenchyma cell being a partial protoplast that is embedded in thousands of ovary cells. It must, however, be a very special and valuable cell as the gene regulatory networks established to restrict its number to a single cell per ovule are tremendous and consist of multiple layers of controls involving among others various hormones, but also small non-coding RNA pathways. Thus, (i) how is egg cell specification determined, (ii) does it have similar and/or overlapping functions with its sister cells, the glandular synergid cells, (iii) how does it regulate fertilization and (iv) prevent polyspermy, (v) how does it suppress embryo development until fertilization occurs and (vi) how is this block modified in apomictic plants that reproduce via parthenogenesis? We address all these and other questions associated with plant egg cells since many years by comparing transcriptomes of sexual and parthenogenetic egg as well as sperm cells and zygotes of different plant species, and use reverse genetic approaches to elucidate the evolution and function(s) of egg cell-specific and -enriched genes. Among others I will report how egg cells acquire their specificity, act in concert with synergid cells in pollen tube reception, sperm cell activation and degradation of 'fertility factors', but also how the embryonic program is activated after gamete fusion and during parthenogenesis, respectively.

## **Education and Career**

Since 2006 Full Professor (W3) and Chairman (Cell Biology and Plant Biochemistry), University of Regensburg, Germany

2003 Habilitation in *Molecular Biology and Genetics*

2000 - 2006 Assistant Professor at the Biocenter Klein Flottbek, University of Hamburg

1999 Research coordinator at Agricultural Technologies and Genetics GmbH, Rastatt

1995 Visiting Scientist; Prof. Dr. Peter Langridge, Waite Institute, Adelaide, Australia

1994 - 1999 Group leader at the University of Hamburg with Prof. Dr. Horst Lörz

1994 Dr. rer. nat. at the University of Hamburg (Supervisor: Prof. Dr. Horst Lörz, Department *Developmental Biology and Plant Biotechnology*)

1990 Diploma in Biology

1984 - 1990 Studying Biology at the Westfälische-Wilhelms University in Münster and Eberhardt-Karls University in Tübingen, both Germany

1983 - 1984 Military Service in Berchtesgaden and Bad Reichenhall, Germany

1983 Abitur, Kopernikus Gymnasium in Rheine/NRW, Germany

**Prof. Dr. Nils Stein** (*Organizer Host*)