

Pollen Tip Growth

Gerhard Obermeyer • José Feijó
Editors

Pollen Tip Growth

From Biophysical Aspects to Systems
Biology

 Springer

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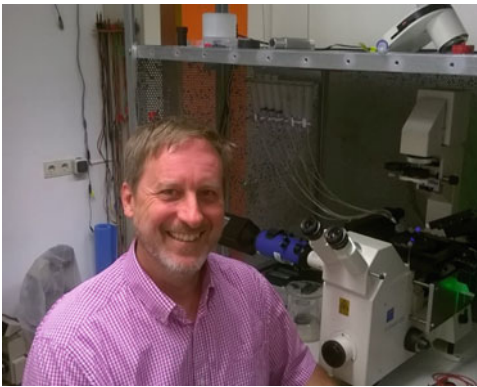
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Editors' Biographies



Gerhard Obermeyer born in 1961, studied biology at the University of Konstanz, Germany, with majors in membrane and cell biophysics. His Ph.D. thesis at the Karlsruhe Institute of Technology (Germany) included the imaging of tip-localized Ca^{2+} gradients in pollen tubes and first patch-clamp experiments to characterize pollen ion channels. As a postdoc, he worked at Wye College (now part of Imperial College,

London, UK) on ion channels from guard cells and pollen grains and continued pollen research at the Institute of Plant Physiology (University of Salzburg, Austria) with intermediate fellowships to visit labs at the University of Adelaide (South Australia), in Cuernavaca (Mexico), and in Oxford (UK) to work on symbiosome membranes and intracellular pH measurements. Finally, he became an associate professor at the University of Salzburg where he established molecular plant physiology in research and teaching.

Prof. Obermeyer's research focuses mainly on pollen physiology. The growth of pollen tubes through the style tissue is a prerequisite for a successful fertilization which guarantees high crop yields for human nutrition. Problems caused by global warming like drought and temperature stress, can disturb pollen function and are studied using several single-molecule/single-cell techniques in combination with -omics approaches to reveal functional protein complexes in the plasma membrane and their role in osmosensing and osmoregulation as well as in tip growth.



José Feijó studied biology at the University of Lisbon, Portugal, specializing in cell biology of orchid pollen, and obtained his master's in plant biotechnology. During his Ph.D. he enlarged his focus into development, progressively introducing electrophysiology and mathematical modelling as routine approaches to the study of pollen tubes. A Fulbright fellowship brought him to

Peter Hepler's lab at the University of Massachusetts in Amherst to further deepen his skills on ion imaging. His return to the University of Lisbon in 1996 marked the beginning of his professorship and independent research career; from 1999 to 2013, he ran in parallel with an independent lab at the Gulbenkian Institute for Science. Along this path, he has served as a director of the Imaging Unit, organized over a dozen EMBO practical courses on plant development and imaging, acted as a curator, and collaborated with numerous educational projects; he was also responsible for a number of initiatives to commemorate Darwin's bicentenary in 2009. In late 2013, he moved to the University of Maryland, College Park, and lives in Washington, DC.

The research of Feijó's group is focused on the development of integrated models of apical cell growth and morphogenesis, using the pollen tube as a biological model, ion dynamics as an experimental paradigm, and theoretical modeling as an integrative tool. The group uses *Arabidopsis*, lily, tobacco, and tomato as model species for higher plants and the moss *Physcomitrella* as an evolutionary correlate of apical growth evolution. On the path to develop models by which ion dynamics choreographies integrate spatial and temporal cues to coordinate cell biology, the group contributed to novel ion channels and sensors involved in pollen tube biology and their regulation mechanisms. Most results involve a combination of imaging, electrophysiology, genetics, and molecular biology. Feijó's group further pioneered transcriptomics of plant male gametes and its consequences for plant reproduction and improvement, namely, at the epigenetics level. These activities were routinely grounded in collaborations with groups in over 12 countries in the 4 continents.

The authors met at the Sexual Plant Reproduction meeting in Vienna, Austria, in 1998, and collaborated; they became good friends ever since.