Master & Bachelor theses available in the Obermeyer Lab www.facebook.com/obermeyerLAB

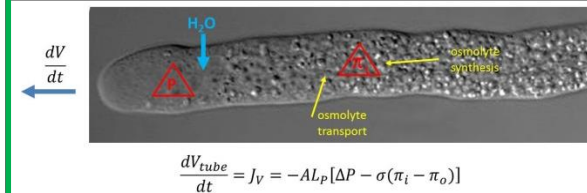Univ. Salzburg, Dept. Biosciences, Membrane Biophysics Group, Billrothstr. 11

Biophysics/Synthetic Biology: Reconstitution of cell-free synthesized membrane proteins in giant unilamellar vesicles (GUVs)

Biophysics/Systems Biology: Regulation of water transport across the plasma membrane

$$\frac{dV}{dt}$$

$$\frac{dV_{tube}}{dt} = J_V = -AL_P[\Delta P - \sigma(\pi_i - \pi_o)]$$

Biomedicine: Pollen NADPH oxidases in ROS signalling and allergenicity

Liu etal Plant J 2009

Cell-free in-vitro translation allows the synthesis of native membrane proteins into proteoliposome which can be incorporated into giant unilamellar vesicles (GUVs) to provide an excellent tool to characterize membrane proteins by means of patch-clamp analysis. Several membrane proteins including ion channels (K^+ channel) and pumps (H^+ ATPase) as well as ligand-operated receptors (glutamate receptor) are the next candidates waiting for Master students.

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Plants need water for the generation of seeds and fruits that are the basis of human nutrition. On the other hand, water uptake has to be well balanced by not yet known osmosensing receptors and regulation pathways to prevent an increased turgor pressure. Due to their high water uptake and corresponding high cell wall synthesis rates pollen tubes provide an ideal model system to reveal these new signalling pathways (FWF P29626).

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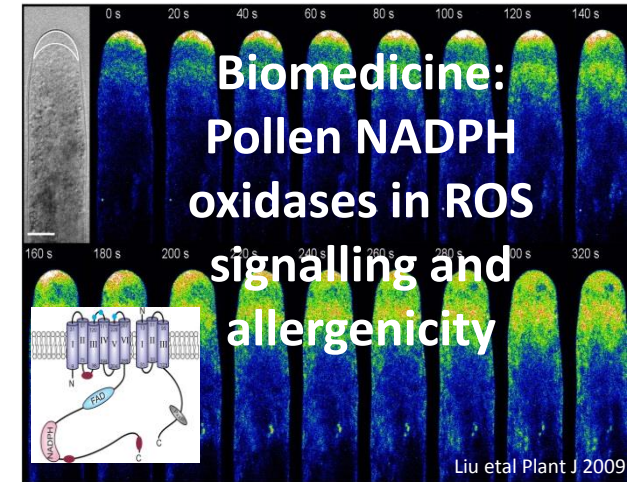
Usually, the ‚male' pollen grains landing on a stigma communicate with the ‚female' tissue by releasing chemicals responsible for the signalling between the two organisms. These communication signals involving metabolites, ions, peptides and ROS are also released when landing on human epithelial tissue where they cause alarm and defence signals instead of 'love whispering'. Using up-to-date techniques, Master student can listen to the errant communication.

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