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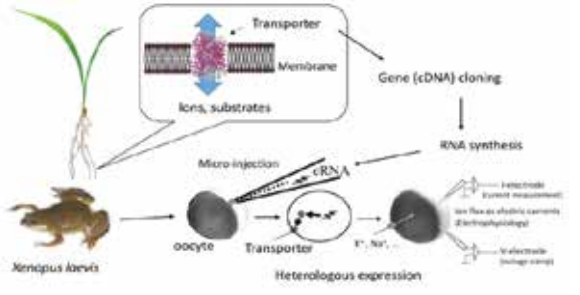
Water and ion transport in plants under salinity stress

Salinity stress is one of major abiotic stress that limit plant productivity in global agriculture. Salinity, usually high concentration of Na^+, reduces water and mineral uptake in plant. I study root hydraulic conductivity (Lp_r) using the root pressure chamber method, because regulation of Lp_r is important to prevent dehydration and to cope with osmotic imbalance in initial phase of salinity stress. As for plant ion transporters, cRNAs are injected into a frog *Xenopus* oocytes and their properties (ion selectivity and activation mechanism) are investigated electrophysiologicaly to reveal what and how transporters regulate ion flux under salinity stress.



Aquaporins transporting water and low-molecular weight compounds

Aquaporins was first identified as a membrane protein exhibiting permeability for water when faced with an osmotic gradient. Now it is reported that several aquaporins facilitate the transport of not only water but also other low-molecular weight substrates such as glycerol, ammonia, silicic acid, arsenite, boric acid, and carbon dioxide. I study rice and barely aquaporins to improve plant growth and stress tolerance via aquaporin functions.