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TEMASEK LIFESCIENCES LABORATORY

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The Auditorium (Level 1)

Plant sensing and response to environmental temperature increase

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Renhou Wang received his Bachelor's and Master's degrees from Northeast Normal University in 2000 and 2003, respectively. He then joined George Coupland's lab at the Max-Planck Institute for Plant Breeding Research in Germany as a Ph. D. student to develop Arabis alpina into a perennial model and study flowering time control and perennialism using this model. After receiving his Ph. D. from University of Cologne, he decided to stay in the same lab to continue some exciting projects that he developed during his Ph. D. study. In 2010, he joined Mark Estelle's lab at University of California San Diego to investigate the crosstalk between plant hormone auxin and environmental factors.

As sessile organisms, plants are particularly sensitive to climate change. Alterations in environmental temperature impact most aspects of plant development and their adaptation to local environments. Although temperature is such a key environmental cue, the molecular basis of plant response to temperature increase remains largely elusive. By combining genetic, genomic and cell biological approaches, we have revealed novel links between temperature sensing and plant hormone signalling. Our data also demonstrate that when ambient growth temperature increases, plants re-allocate energy for growth and defense responses through extensive crosstalk between different signalling pathways in a tissue-specific way. Our studies have revealed important insights into molecular mechanisms of how plants sense and respond to temperature changes, thus providing valuable information for genetically engineering crops to improve their agronomic traits to adapt to global climate change.

Recent Publications:

1. Renhou Wang and Mark Estelle. Diversity and specificity: auxin perception and signaling through the TIR1/AFB pathway. Current Opinion in Plant Biology. 2014, 21: 51-58.
2. Sara Bergonzi, Maria C. Albani, Emiel Ver Loren van Themaat, Karl Nordström, Renhou Wang, Korbinian Schneeberger, Perry D. Moerland and George Coupland. Mechanisms of age-dependent response to winter temperature in perennial flowering of Arabis alpina. Science 2013, 340: 1094-1097.
3. Renhou Wang, Sara Farrona, Coral Vincent, Anika Joecker, Heiko Schoof, Franziska Turck, Carlos Alonso-Blanco, George Coupland and Maria C. Albani. PEP1 regulates perennial flowering in Arabis alpina. Nature 459: 423-427 (2009).