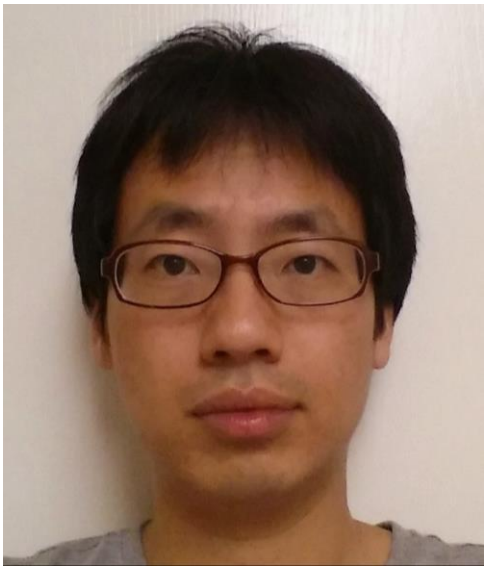
NUS National University of Singapore | Department of Biological Sciences, Faculty of Science

SEMINAR

Thurs, 21 May 2015 | 10am | DBS Conference Room 1

Hosted by Professor Prakash Kumar

A molecular network that integrates multiple hormonal and environmental signals for growth regulation in plants



By **Eunkyoo Oh**

Department of Plant Biology, Carnegie Institution for Science, USA

In plants, cell elongation and seedling morphogenesis are controlled by multiple environmental factors and endogenous hormones. How these signals regulate largely overlapping cellular and physiological responses through distinct signalling pathways remains an outstanding question in plant biology. I will illustrate a molecular network that integrates all major growth-regulating signals, including auxin, Brassinosteroid (BR), gibberellin (GA), light, and temperature. Analyses of genome-wide targets, genetic and biochemical interactions demonstrate that the auxin-response factor ARF6, the light/temperature-regulated transcription factor PIF4, and the BR-signaling transcription factor BZR1, interact with each other, and cooperatively regulate large numbers of common target genes and hypocotyl elongation. However, their DNA-binding activities are blocked by the GA-inactivated repressor RGA and GA-promoted hypocotyl elongation requires these transcription factors activities. In the downstream of the ARF6-PIF4-BZR1 module, the PRE family helix-loop-helix factors promote hypocotyl elongation. These results demonstrate a central molecular network that integrates multiple hormonal and environmental signals for regulating cell elongation in the Arabidopsis hypocotyl.

Eunkyoo Oh is a Faculty Search Candidate

Artwork by Ann Nee, DBS, NUS