

Talk on 10th Sept 2015

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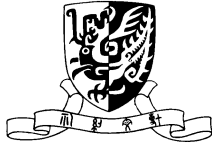


Talk Title:

Arabidopsis BPM Proteins Function as Substrate Adaptors to a CULLIN3-Based E3 Ligase to Affect Fatty Acid Metabolism in Plants

Abstract:

E3 ligases function as flexible and highly diverse key regulators within the pathway by targeting substrate proteins for ubiquitylation, and often proteolytic degradation via the 26S proteasome. The diversity of the E3 ligase pathway and its rapid reaction rate is a highly suitable mechanism for plants to respond to cellular and environmental changes. CULLIN 3 (CUL3) and MATH-BTB/POZ domain (BPM) proteins form CUL3-based E3 ligase complexes that facilitate ubiquitylation of proteins, which can lead to their substrates' degradation via the 26S proteasome. In this work, we show that CUL3-based E3 ligases have the potential interaction with a broad range of ETHYLENE RESPONSE FACTOR/APETALA2 (ERF/AP2) transcription factors, mediated by BPM proteins. We hypothesized that BPM proteins target a large number of these TFs, and that this interaction causes the ubiquitylation and proteolytic degradation of the assembled TFs. This hypothesis is supported by our finding that the assembly of WRINKLED1 (ERF/AP2 TF) with CUL3-based E3 ligase induces 26S proteasome-dependent degradation. We also demonstrated that loss of BPM proteins widely affects plant development and causes reduced fatty acid contents in mutant seeds. In summary, this work reveals a novel link between fatty acid metabolism and E3 ligase activities in plants and establishes CUL3-based E3 ligase as critical regulators in transcriptional processes via ERF/AP2 TFs.



THE CHINESE UNIVERSITY OF HONG KONG
SCHOOL OF LIFE SCIENCES

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Molecular and Cellular Function Focus Group

Arabidopsis BPM Proteins Function as Substrate
Adaptors to a CULLIN3-Based E3 Ligase to Affect
Fatty Acid Metabolism in Plants

by

Professor Liyuan Chen
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on

10 September 2015
(Thursday)

at

12:30 – 1:15 pm

at

Room 103
Y.C. Liang Hall
The Chinese University of Hong Kong

ALL ARE WELCOME