PhD DEFENSE

TEMASEK LIFESCIENCES LABORATORY



Mr Cheng Le Hung

Prof Chua Nam Hai Group

7 Jan 2022, Fri
4pm

Join Zoom Meeting
https://us02web.zoom.us/j/87649833536
Meeting ID: 876 4983 3536
Passcode: 268930

All Are Welcome!

Arabidopsis ORE1, MED19a, and ELENA1 Regulate Nitrogen Deficiency Induced Senescence

Transcription factors are necessary for plants to respond and adapt to their physical environment. ORESARA1 (ORE1), a master regulator of senescence in Arabidopsis, was characterized to be an essential component for nitrogen deficiency (-N) induced senescence. Our research identified MEDIATOR SUBUNIT 19a (MED19a) to be required for ORE1 function under -N. MED19a interacts with ORE1 through the MED19a carboxyl terminus mixed-charged intrinsically disordered region (MC-IDR). The MC-IDR promotes the formation of MED19a nuclear condensates under -N. We also discovered that lncRNA ELENA1, an interactor of MED19a, is a negative regulator of -N induced senescence. ELENA1 is transcribed in the roots and is root-to-shoot mobile under -N, suggesting that ELENA1 is a systemic root-to-shoot signalling molecule. Mechanistically, ELENA1 likely dissociates the MED19a-ORE1 complex thereby suppresses the expression of ORE1 target genes. Hence, our research has elucidated two novel molecular factors of -N induced senescence and also raises the possibility of systemic coordination of -N intensity with leaf senescence to optimise nitrogen use efficiency under -N.