

Dissecting the zinc-regulated Fixation Under Nitrate (FUN) pathway in legumes

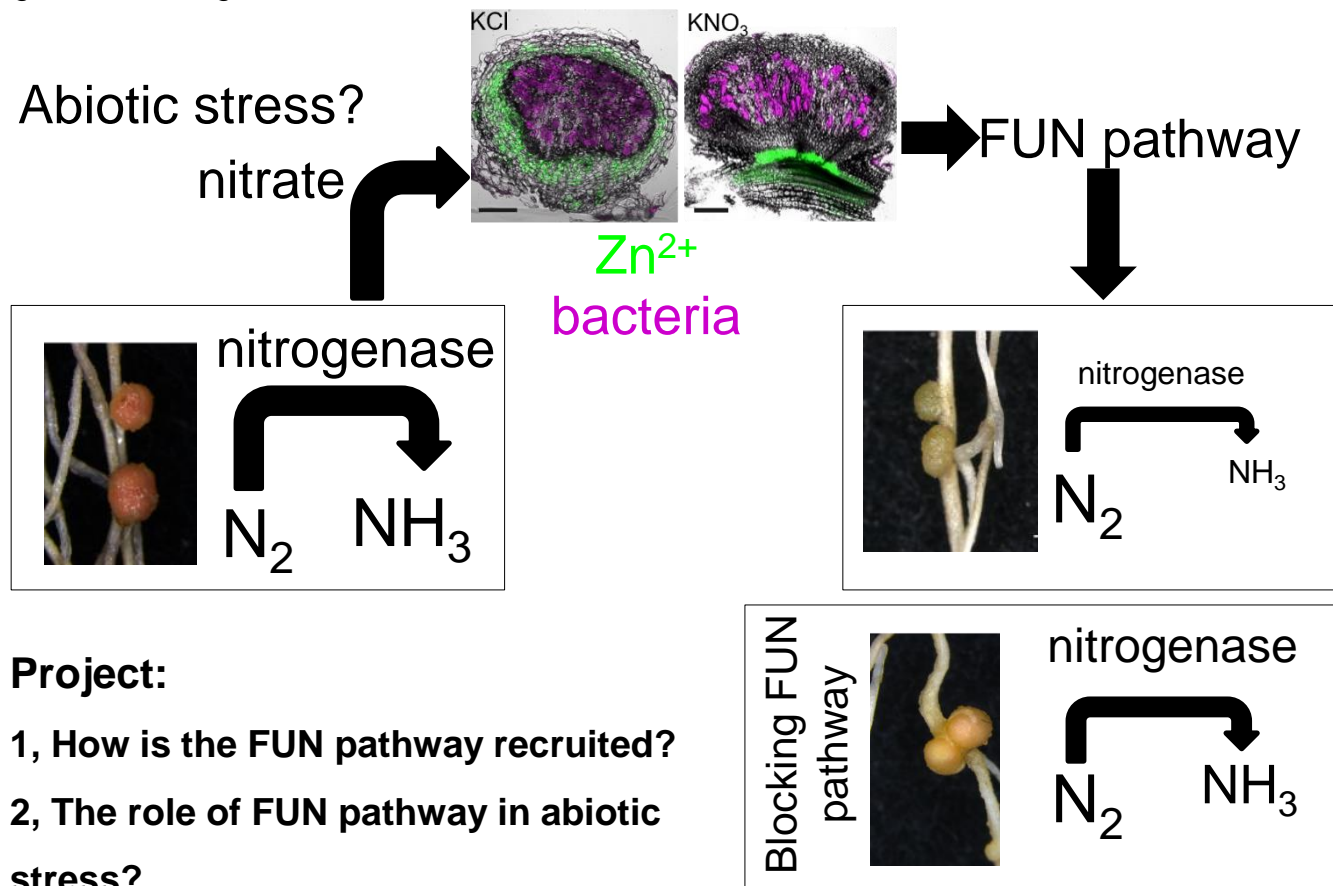
Jieshun Lin

jslin@mbg.au.dk

building 1872 room 572



Legumes can fix nitrogen in root nodules via symbiosis with rhizobial bacteria. When legumes are under nitrate sufficient or abiotic stress environments, they stop fixing nitrogen. I have found that nitrate triggers zinc reallocation in nodules. Surprisingly, the micronutrient zinc turned out to act as a signal to recruit the Fixation Under Nitrate (FUN) pathway, a novel mechanism to suppress nitrogen fixation. However, it is completely unknown how the FUN pathway is recruited by nitrate to regulate nitrogen fixation. In this project, I will use molecular and cellular biological methods to investigate how nitrate controls zinc reallocation in nodules and whether the FUN pathway is involved in the regulation of nitrogen fixation by abiotic stresses. This project will provide new possibilities to improve nitrogen-fixation efficiency, leading to reduction of nitrogen fertilizer application, which will further benefit the sustainable agriculture and green transition.



Project:

- 1, How is the FUN pathway recruited?
- 2, The role of FUN pathway in abiotic stress?

Techniques:

Genetics, cellular biology (microscopy and confocal microscopy), molecular biology (DNA/RNA isolation, qPCR, enzyme activities, etc.