



ON-SITE BIOLOGY COLLOQUIUM

Friday, 10 Apr 2026 | 4 pm | S3 05-02 Conference Room 1

Hosted by Assistant Prof Lin Jieshun

Map to Block S3



Sending the Right Signals: The Molecular Basis of Flavonoid Specificity in the Legume-Rhizobia Symbiosis



By **Jeremy D. Murray**

Center for Excellence in Molecular Plant Science (CEMPS)

About the Speaker

J. Murray has studied legumes for over 25 years. He received his PhD at the University of Guelph in Canada and after post-docs in Canada and the US, he joined the John Innes Centre in the UK as a David Phillips fellow. He is currently a professor at the CAS Center for Excellence in Molecular Plant Science (CEMPS) in Shanghai, China. The aim of his research is to understand how beneficial microbes, particularly rhizobia and arbuscular mycorrhiza, interact with legumes, including the topics of plant-host communication, mechanisms of intracellular infection, the role of nitrate in nodulation, and the how the host establishes the conditions for nitrogen fixation in nodules.

The specificity of legume interactions with N₂-fixing rhizobia is largely determined by rhizobial signaling molecules (Nod factors) and host flavonoids, which induce Nod factor production by rhizobia through binding to NodD LysR transcription factors. Crystal structure analysis of the NodD of the *Pisum sativum* symbiont, *Rhizobium leguminosarum* provided detailed insight into the basis of specificity. Moreover, comparison with NodD1 of the *Medicago truncatula* symbiont *Sinorhizobium meliloti*, which has a contrasting response to flavonoids, revealed the specific residues that contribute to flavonoid-specific activation, and these could be interchanged to modify specificity. These findings allow prediction of NodD specificities and highlight NodD polymorphism as part of the diversifying selection that occurred to enhance partner selection by *R. leguminosarum* and *S. meliloti*.