Abstract Booklet

ENFC 2021

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The following material is organised by session and topic. Abstracts for talks from the plenary sessions (1–4) are listed first. The parallel sessions (5–8) include abstracts for talks by chairs/featured speakers, for flash-talks, and for posters without an associated talk.

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Key to symbols used in this booklet:

 Both a talk and a poster are associated with this abstract.

 Talk only—no associated poster.

 Poster only—no associated talk.

 Participants in the additional poster presentation session (Monday 18 October, 9.00 CEST).

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H18. Novel aspects of CLE peptide action in systemic control of nodulation in *Medicago truncatula*

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The number of symbiotic nodules on legume roots is controlled by a host plant via systemic mechanisms known as AON (autoregulation of nodulation). In addition to CLE peptides induced by rhizobia, nitrate-induced CLE peptide involved in systemic control of nodulation has been recently described in *Medicago truncatula* [1, 2]. We found that overexpression of the *MtCLE35* gene systemically inhibited nodulation on transgenic roots in *M. truncatula* [1]. Moreover, such inhibitory effect was absent in the *sunn* mutant defective in the gene encoding shoot-acting CLV1-like receptor kinase, which suggests that the SUNN kinase could be responsible for the recognition of the MtCLE35 peptide in the shoot. Next, we performed transcriptomic analysis of *MtCLE35*-overexpressing roots and found evidence suggesting feedback mechanisms in systemic control of nodulation.

In addition to *MtCLE35*, its close homologue *MtCLE34* is also activated in developing nodules and in response to nitrate treatment [1, 2]. However, our functional studies suggest that *MtCLE34* does not play an inhibitory role in nodulation. Therefore, closely related CLE peptides might play distinct developmental roles in plants.

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References

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2. Mens C, Hastwell AH, Su H, Gresshoff PM, Mathesius U, Ferguson BJ (2021). *New Phytol.,* **229**, 2525-2534.