

## Publication

Role of the Nod Factor Hydrolase MtNFH1 in Regulating Nod Factor Levels during Rhizobial Infection and in Mature Nodules of *Medicago truncatula***JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)****ID** 4488868**Author(s)** Cai, Jie; Zhang, Lan-Yue; Liu, Wei; Tian, Ye; Xiong, Jin-Song; Wang, Yi-Han; Li, Ru-Jie; Li, Hao-Ming; Wen, Jiangqi; Mysore, Kirankumar S.; Boller, Thomas; Xie, Zhi-Ping; Staehelin, Christian**Author(s) at UniBasel** [Boller, Thomas](#) ;**Year** 2018**Title** Role of the Nod Factor Hydrolase MtNFH1 in Regulating Nod Factor Levels during Rhizobial Infection and in Mature Nodules of *Medicago truncatula***Journal** The Plant cell**Volume** 30**Number** 2**Pages / Article-Number** 397-414**Mesh terms** Chitin, metabolism; Gene Expression Regulation, Plant; Hydrolases, metabolism; *Medicago truncatula*, microbiology; Oligosaccharides, metabolism; Plant Proteins, metabolism; Root Nodules, Plant, microbiology; Signal Transduction; *Sinorhizobium meliloti*, physiology; Symbiosis

Establishment of symbiosis between legumes and nitrogen-fixing rhizobia depends on bacterial Nod factors (NFs) that trigger symbiosis-related NF signaling in host plants. NFs are modified oligosaccharides of chitin with a fatty acid moiety. NFs can be cleaved and inactivated by host enzymes, such as MtNFH1 (MEDICAGO TRUNCATULA NOD FACTOR HYDROLASE1). In contrast to related chitinases, MtNFH1 hydrolyzes neither chitin nor chitin fragments, indicating a high cleavage preference for NFs. Here, we provide evidence for a role of MtNFH1 in the symbiosis with *Sinorhizobium meliloti*. Upon rhizobial inoculation, MtNFH1 accumulated at the curled tip of root hairs, in the so-called infection chamber. Mutant analysis revealed that lack of MtNFH1 delayed rhizobial root hair infection, suggesting that excess amounts of NFs negatively affect the initiation of infection threads. MtNFH1 deficiency resulted in nodule hypertrophy and abnormal nodule branching of young nodules. Nodule branching was also stimulated in plants expressing MtNFH1; driven by a tandem CaMV 35S promoter and plants inoculated by a NF-overproducing *S. meliloti* strain. We suggest that fine-tuning of NF levels by MtNFH1 is necessary for optimal root hair infection as well as for NF-regulated growth of mature nodules.

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