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## **Use of RNAi silencing to explore gene function during soybean nodulation**

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The nodulation is a symbiotic event between bacteria within the family Rhizobiaceae and a specific legume host. The interaction between the plant host and the bacterium leads to the formation of a novel, highly efficient, nitrogen-fixing organ, the nodule. The symbiotic partners recognize one another through the exchange of chemical signals; such as, isoflavonoids secreted by the plant and the lipo-chitin Nod factors excreted by the bacterium. These chemical signals affect root hair morphology; a critical step in the infection process. Genes involved in both the early (3 hours post inoculation until 18 hours) and later stages (4 days post inoculation until 32 days) of nodule development were identified by DNA microarray analysis and then confirmed by quantitative RT-PCR. A large number of genes were found to respond to inoculation and, of these, 22 were chosen for more in depth analysis. One means to determine gene function is to silence expression using RNAi and then examine the resulting phenotypic changes. We are now applying this approach to all 22 genes under investigation.