**Experimental set-up**

Plant culture

Seeds are surface sterilized with 10% calcium chloride during 20min. After five washings with sterile water, the seeds are put at 4 °C overnight. Seeds are put on plates and let for germination during 5 days at 21 °C. The seedling are transferred (10/pot) to plastic pot containing an autoclaved substrate composed of vermiculite, sand and small leca. After inoculation, the pots are placed into autoclaved big plastic boxes and a plastic cover is used to keep high humidity during the firsts two days. The plastic boxes are placed into growth chamber with the following conditions : 16/8 for the day-night cycle, 75% Rh and 22°C/18°C in temperature (Day-night). After 21 days of growth, the plants are harvested.

Bacterial culture

Bacterial strains are grown in liquid culture depending on their growing time and preferred media (TSB or YMB) during 2, 4, 6 or 8 days at 24°C. When the culture reach a sufficient concentration, they are centrifuged and washed 3 times with liquid SLA media. The OD600 of each individual strains (288) is measured and all strains are pooled together to reach an equal quantity. The measured OD600 of the final pool was 0.143 and we diluted it to 0.02. For inoculation, 5mL of Synthetic Community liquid culture is spread from the top in each pots.

Harvesting for microbiome profiling

For this experiment, we used 8 *Lotus japonicus* accessions (Gifu, MG11, MG20, MG46, MG56, MG63, MG67 and MG68) and 1 accession of *L. burttii* inoculated with a Synthetic Community containing 288 bacterial strains. There are 3 inoculant conditions : SC (SynCom inoculated plants), R7A (*M. loti* strain R7A inoculated plants) and NI (Non-Inoculated plants) and non-plant controls correspond to woodsticks (SC or NI). Three different soil compartments are harvested to evaluate the bacterial community structure after 21 days of growth : Rhizosphere (RZ), Endosphere (ES) and Nodules (Nod). In parallel, the lowest part of the root without nodules is harvested and keep into liquid nitrogen for subsequent RNA extraction for expression analysis. To harvest samples for Rhizosphere, the roots are placed into 50mL falcon tube filled with 30mL of sterile water and strongly washed to detach the soil particles from the roots. The tubes are centrifuged and the majority of the water is removed to concentrate the sample. The tube is vortexed and 300uL of solution is transferred into 2mL tubes for DNA extraction. For Endosphere, the roots are washed 4 more times in sterile water and the nodules are manually removed. Finally, the root are cut into pieces, dried with sterile filter paper and put into 2mL tubes for DNA extraction. For the nodule samples, the previously removed nodules are collected and put into 2mL tubes for DNA extraction. For all these samples, the DNA is extracted and a 16S (v5-v7 region) library is prepared for sequencing.