Research project of stakeholders funded at LIPI

Name	Counterpart	Title
Atit Kanti, Siti Meliah (LIPI)	**B02**	Study on soil myxobacteria diversity in lowland rainforest and converted rainforest in Jambi, Indonesia

Myxobacteria are a group of deltaproteobacteria characterized by their fruiting bodies and gliding motility. They can be isolated from soil, plant materials, and marine samples. Many authors suggest that these bacteria are capable of producing secondary metabolites with anti-infective activities, such as myxovirescin, soraphen, and epothilone. Indonesian rain forests are suspected to be biodiversity rich habitats containing millions of bacteria, including myxobacteria. There is, however, little data on Indonesian myxobacteria even though it is possible that the widespread conversion in Sumatra, Indonesia, of rain forest into oil palm plantations and plantations on an industrial scale of other plant species will affect the existence of these soil bacteria. Therefore, we studied the diversity of soil myxobacteria in lowland rain forest and converted rain forest in Jambi, Sumatra, using culture dependent and culture independent approaches.

Figure 2. Research stay at the Department of Genomic and Applied Microbiology, University of Göttingen in 2018. Left: Siti Meliah (LIPI), right: Dirk Berkelmann (University of Göttingen)

We successfully identified from soil samples about 50 bacterial isolates phenotypically similar to myxobacteria. The soil samples were collected from rainforest and oil palm plantation in several EFForTS core plots located in Bukit Duabelas and Harapan area in Jambi. The isolation procedure for this myxobacteria group included baiting with Escherichia coli and using cellulose-containing membrane filters to obtain cellulolytic myxobacteria. We intend to confirm their identity using molecular identification based on 16S rRNA gene analysis.

We also analysed the diversity of soil myxobacteria using a specific primer to amplify organisms in the sub-Order Cystobacterineae and suborder Sorangiineae. The results indicated that the diversity of Cystobacterineae is probably highest in rubber plantation samples from Harapan but highest in rainforest and oil palm plantation samples from Bukit Duabelas (Figure 1). Of interest is that the most abundant family of Cystobacterineae is of uncultured myxobacteria on which there is minimal literature. Therefore, taxonomic study of soil myxobacteria is wide open.

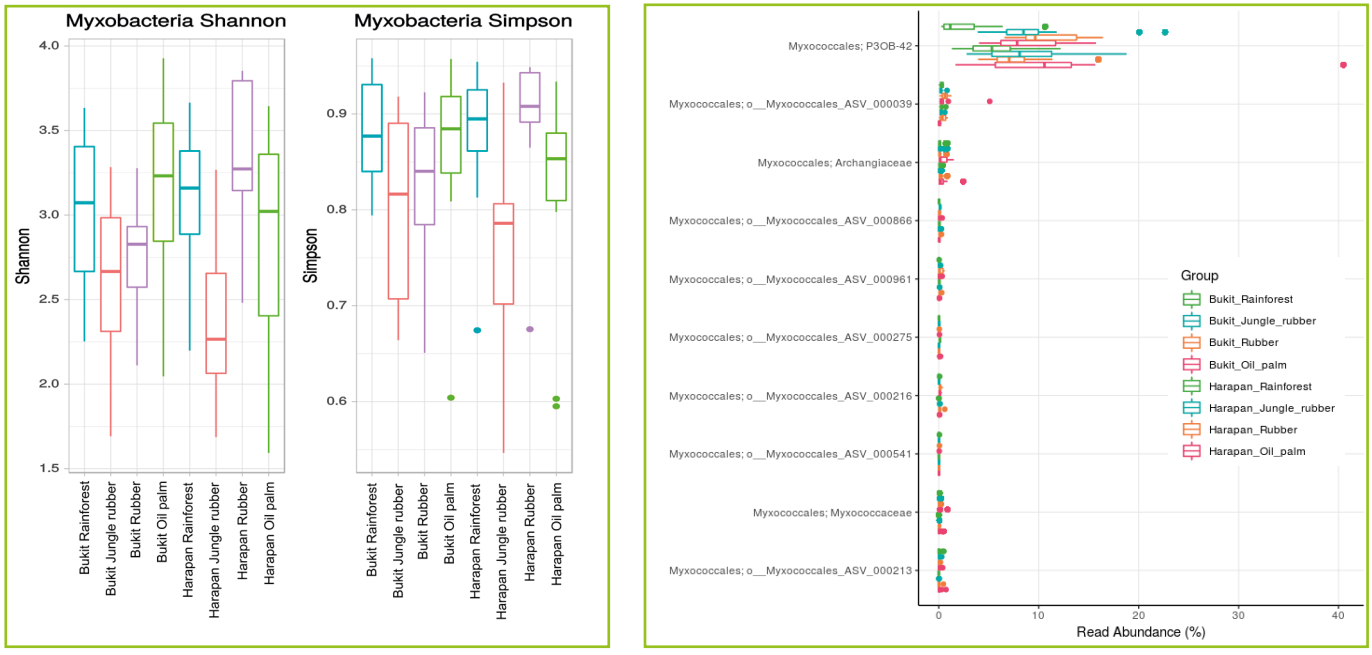

Figure 1. Diversity and abundance analysis of sub-Order Cystobacterineae in soil samples