

## Abstract of Presentation

Presentation Title(Should be no more than 20 words):

Carbon fixation and bioremediation by fusion of microbial and plant functions

Abstract :

Plants and microorganisms are major players in the global carbon cycle. “Methane cycle” is a carbon cycle between two major green house gases, i.e., methane and CO<sub>2</sub>. Recently, plants were reported to emit methane and an intermediate of methane cycle, i.e., methanol. A group of microorganisms that can utilize these reduced C1-compounds as a sole carbon and energy source was shown by recent genomic, metabolic and ecological characterization of methylotrophs (methanol-utilizers) and methanotrophs (methane-utilizers) to have tremendous contribution to methane cycle, especially to carbon fixation, through symbiotic relationship with plants and other microorganisms. Here, I will introduce possible application of these biological functions to improve plant growth, and for mitigation of methane and for phytoremediation of formaldehyde.

Subjects to be presented:

- 1) Promotion of rice growth by a symbiotic methylotroph *Methylobacterium oryzae* RS1
- 2) Strategies for activation of methanotrophs on plant surfaces by methylotrophic and symbiotic microorganisms
- 3) Phytoremediation of formaldehyde through microbial carbon fixation pathway