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TEMASEK LIFESCIENCES LABORATORY

9 November 2015 (Monday), 11am
The Auditorium (Level 1)

Hosted by: Dr Sarojam Rajani

Host-microbiome interactions: Connections in the plant underworld

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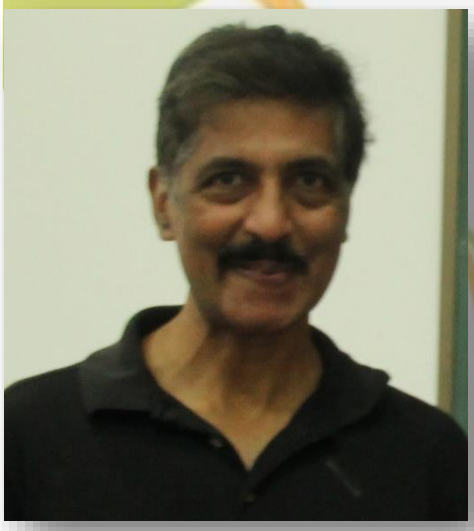

Prof. Sundaresan received his Ph.D. at Harvard University, and postdoctoral training at the University of California-Berkeley. He joined the faculty of Cold Spring Harbor Laboratory before moving to the Institute of Molecular Agrobiology (Singapore) as Director from 1996-2001. He has since been at the University of California-Davis, previously as department Chair, and currently Professor of Plant Biology. His research interests cover plant genetics and genomics.

Plants grow in association with large communities of harmless microbes, called “microbiomes”, that can increase nutrient availability, mitigate environmental stresses and repress pathogens. Deep-sequencing studies of the microbiomes that associate with roots of field-grown rice reveal a huge diversity of microbes, with over a quarter million different taxa forming distinct communities that inhabit the soil near the roots, the root surface and the root interior. These microbial communities vary with the geographical location of the field, as well as several other factors, such as the cultivation practice (organic or conventional). The dynamics of assembly of root microbiomes show that soil microbes are attracted to the root vicinity, but that the root surface acts as a “gate” for selective entry to the root interior. The different effects that root-associated microbes confer to host plants are now being studied, with the aim of exploiting these natural associations to breed higher yielding crops that are more resistant to stresses and disease.

Recent Publications:

1. Edwards, J., Johnson, C., Santos-Medellin, C., Lurie, E., Podishetty, N.K., Bhatnagar, S., Eisen, J.A., **Sundaresan, V**., 2015. Structure, variation and assembly of the root-associated microbiomes of rice. *Proceedings of the National Academy of Sciences, doi: 10.1073/pnas.1414592112*.
2. Spence, C., Alff, E., Johnson, C., Ramos, C., Donofrio, N., **Sundaresan,V**., Bais, H., 2014. Natural rice rhizospheric microbes suppress rice blast infections. BMC Plant Biology, 14:130.
3. Yang S-Y, Gronlund M, Jakobsen I, Grotemeyer MS, Rentsch D, Miyao A, Hirochika H, Kumar CS, **Sundaresan V**, Salamin N, Catausan S, Mattes N, Heuer S, Paszkowski U. 2013. Nonredundant Regulation of Rice Arbuscular Mycorrhizal Symbiosis by Two Members of the PHOSPHATE TRANSPORTER1 Gene Family. The Plant Cell, 24:4236-4251