IMCB Invited Speaker

Speaker : **Prof. Vittorio Venturi**

Group Leader, Bacteriology Group,
International Centre for Genetic Engineering and Biotechnology (ICGEB),
Trieste, Italy

Date : 25 November 2013, Monday

Time : 11:00AM - 12:00PM

Venue : IMCB Seminar Room 3-46, Level 3, Proteos, Biopolis

Host : Prof. Lianhui Zhang

Seminar :

Inter-kingdom and interspecies signaling in plant-associated bacteria

Bacterial interspecies and inter-kingdom signaling are fields of research which will most probably increase of importance in the future. In order to study these aspects, we are using plant-bacteria interactions as these provide excellent models to study these types of signaling.

To study interspecies communication we used a model based on an incoming plant pathogen interacting with a harmless resident endophytes. *Pseudomonas savastanoi* pv. *savastanoi* (PSV) is a pathogen of olive trees causing tumors; PSV and a harmless resident endophytic bacteria undergo in interspecies signaling that result in mutualism; to our knowledge this is the first major example of such an interaction in plants. PSV in the presence of the endophytic bacterium *Erwinia* toletana induces a significantly bigger tumor; importantly both bacteria proliferated much more (10-fold). The mechanism (s) of this interaction is currently unknown; interestingly, both bacteria produce the same quorum sensing (QS) N-acyl homoserine lactone (AHL) signal molecule; our results demonstrate that this AHL is shared in the interspecies community.

The other emerging communication network that we are interested is inter-kingdom signaling between plants and bacteria; if and how most bacteria and plant communicate still remains at large unknown. We have discovered a family of bacterial regulators (closely related to the quorum LuxR-family proteins) which bind low molecular compound (s) produced by plants and regulate gene expression. We are studying the role of this protein in plant beneficial and plant pathogenic bacteria. The presence of this protein is widespread in plant associated bacteria making it a new inter-kingdom signal system.

About the Speaker :

Dr. Vittorio Venturi graduated from Edinburgh University, UK, and received his Ph.D. degree from the University of Utrecht, The Netherlands, working under the supervision of Prof. Weisbeek. During his PhD research he focused in the regulation of iron-transport processes of beneficial plant associated bacteria which promote plant growth; the monopolization of iron nearby plant roots is an important trait which keeps microbial pathogens away. He then moved as a postdoctoral fellow to the International Centre for Genetic Engineering & Biotechnology (ICGEB), Trieste, Italy, where he started investigating intercellular signaling among bacteria. He then went on to become Group Leader at ICGEB continuing his studies on intercellular signaling. He is now particularly interested in how plant associated bacteria undergo interspecies communication and interkingdom signaling with plants.

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