

## 2<sup>nd</sup> International Summit on **Integrative Biology**

August 04-05, 2014 Hilton-Chicago/Northbrook, Chicago, USA

### Metagenomics in molecular microbial ecology

Frans J de Bruijn

INRA/CNRS Laboratory of Plant-Microbe Interactions, France

Metagenomics and complementary omics methods have revolutionized molecular biology in general and molecular microbial ecology in particular. Metagenomics is an emerging field that has changed the way microbiologists study microorganisms. It involves the genomic analysis of microorganisms by extraction and cloning of DNA from a group of microorganisms, or the direct use of the purified DNA or RNA for sequencing, which allows scientists to bypass the usual protocol of isolating and culturing individual microbial species. This method is now used in laboratories across the globe to study microorganism diversity and for isolating novel medical and industrial compounds. This presentation would review Metagenomics analyses and their application in different habitats with an emphasis on soil. One Gram of soil is reported to contain up to 10 billion microorganisms and thousands of different species. Microorganisms can be considered to be the fundamental driving force of the biosphere and have dominated life on earth for over 3 billion years. The genetic resources in a single gram of soil possesses 3 million times more sequences than in the human genome and only 3 grams of soil contain more bacteria than the earth does humans. It has been estimated that the human body contains more prokaryotic- than human cells. The challenge is to evaluate the distribution and function of  $10^{30}$  prokaryotes on earth.

### Biography

Frans J de Bruijn obtained his PhD degree from Harvard University in 1983 and after postdoctoral studies at the Max Planck Institute for Plant Breeding in Cologne, FRG, he accepted a Professor position at Michigan State University carrying out research on Plant-Microbe Interactions. In 2000, became the Director of the Laboratory for Plant-Microbe Interactions, a mixed INRA/CNRS research facility in Toulouse, France, where he now continues his research work as Director of Research DR1, and took four years off to edit the "Handbooks of Molecular Microbial Ecology and Metagenomics", "The Molecular Microbial Ecology of the Rhizosphere", and "Biological Nitrogen Fixation". He has authored more than 100 articles in reviewed Journals and edited 8 Books.

Frans.Debruijn@toulouse.inra.fr