



UNIVERSITÀ
di VERONA

Scuola di Dottorato
di SCIENZE NATURALI ED INGEGNERISTICHE

Corso di Dottorato in Biotecnologie

"Monitoring and enhancing biodegradation of pollutants in contaminated environments "

May 16th, 2019 - h. 15.00

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Abstract

During the seminar, the application of culture independent methods for monitoring microbial communities will be presented in two case studies.

1. Bioelectrochemical Systems (BES) have proven to be an innovative technology with multiple applications. BES have been recently studied to stimulate the anaerobic degradation of hydrocarbons at the anode. Understanding the microbial community structure and genetic potential of anode biofilms is of great interest to interpret the degradation mechanisms that take place in BES and how this technology can be improved. In this study, the removal of hydrocarbons (phenol, toluene and a mixture of BTEX) was assessed in a BES and the composition of the microbial communities on the anode, cathode and supporting material was characterized by high throughput sequencing of the 16S rRNA gene.

2. Plants have been suggested to effectively contribute to the enhancement of ecosystem services, including air pollution reduction and greenhouse gas emission offsetting. They host many microorganisms, especially bacteria, on leaf surface (the phyllosphere). Both plants and phyllosphere microorganisms may effectively contribute to reducing air pollution in cities through the adsorption and biodegradation of pollutants onto leaves. To investigate that, we assessed the temporal variability of bacterial and fungal communities hosted by leaves of southern magnolia *Magnolia grandiflora* and deodar cedar *Cedrus deodara*, two evergreen plant species widespread in Milan urban area. Bacterial and fungal communities were characterized by Illumina high throughput sequencing of V5-V6 regions of 16S rRNA gene and of the ITS1 region, respectively, and by shotgun metagenomics.

The lecture will take place **at 15.00 – Sala Verde – Cà Vignal – Strada Le Grazie, 15**

Local organization and contact:

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For each hour of seminar, 1 CFU (provided for the specific activities of PhD Program in Biotechnology) will be recognized to students attending the event.

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