

Summer school programme

Wednesday 20 July

Morning Arrival of participants

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| 12:30 -14:00 | Registration and welcome with food and drinks |
| 14:00 -15:15 | Keynote lecture 1 (remotely): "Phytoremediation of contaminated soils: from lab to brownfield". Prof. Michel Labrecque, Institut de recherche en biologie végétale, Jardin botanique de Montréal |
| 15:15 -15:30 | Coffee break |
| 15:30 - 18:30 | -Introduction to the Lab experience
-Hands-on learning (Lab experience) – DNA Extraction from rhizosphere samples.
DNA from rhizosphere samples will be extracted and purified using a commercial kit for direct extraction of nucleic acid from soil based on mechanical cell lysis and matrix purification. The presence of inhibitors and the optimal dilution for downstream analysis will be assessed by PCR. |
| 18:30 - 19:45 | Keynote lecture 2: "Plants and soil microbes a quid pro quo relationship: implications for phytoremediation" Prof José M. Becerril, Dpt. of Plant Biology and Ecology, Faculty of Science and Technology, University of the Basque Country, Bilbao, Spain
Fishbowl conversations by inviting speakers |

Thursday 21 July

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| 9:00 – 10:30 | Hands-on learning (Lab experience) – PCR amplification of marker genes, according with Illumina sequencing protocol.
Using the extracted DNA as a template, two taxonomic and phylogenetic markers for the study of bacterial and fungal community, respectively, will be amplified by PCR. The amplicons size and quality will be assessed by electrophoresis. |
| 10:30 - 10:45 | Coffee break |

- 10:45 – 12:00 Keynote lecture 3: "How to make better use of plant-microbe interactions for phytoremediation" dr Sofie Thijs, Dpt. of Biology Center for Environmental Sciences Hasselt University Belgium
Fishbowl conversations by inviting speakers
- 12:00 – 13:00 Lunch at the UNIMIB
- 13:00-16:30 Hands-on learning (Lab experience) – Sequencing library preparation and overview of sequencing platform (Illumina MiSeq).
The obtained amplicon will be used to prepare the DNA libraries for the Illumina sequencing. Adaptors and index will be added to the amplicons and the quality of the libraries will be assessed by DNA fragment analyser.
- 16:30 – 16:45 Coffee break
- 16:45-19:30 Hands-on learning (Data analysis experience) – Amplicon data elaboration. The amplicons reads obtained by Illumina MiSeq instrument will be analysed in a bioinformatic laboratory. A linux-based bioinformatics pipeline will be applied to obtain the structure of the bacterial and fungal community of the analysed samples.

Friday 22 July

- 8:30– 13:00 Visit to sites under phytoremediation (in collaboration with HPC and ENI Companies)
- 13:00 Farewell with food and drinks