

## Training course SUS-MIRRI.IT

Isolation, cultivation, preservation and characterization of bacteria, fungi, viruses: microbial-based biotechnological solutions (MBBS) in agri-food, environmental, cultural heritage, energy and pharmaceutical fields.

Organisers: ENEA, Casaccia and Brindisi Research Centers

November 27-28, 2023

Hybrid Course



### Modality: hybrid format

c/o ENEA Centro Ricerche Casaccia (U010), via Anguillarese 301 S. Maria di Galeria – 00123 ROMA in collaboration with ENEA Centro Ricerche Brindisi (U009)

Link Monday 27 November:

[Fai clic qui per partecipare alla riunione](#)

ID riunione: 396 387 501 980

Passcode: nrgTqR

Link Tuesday 28 November:

[Fai clic qui per partecipare alla riunione](#)

ID riunione: 374 864 329 182

Passcode: uc2U2M

**Coordinator and lecturers:** Prof. Annamaria Bevivino – Head of the ENEA Laboratory for AgriFood Sustainability, Quality and Safety.

C. Alisi; E. Clagnan; M. Costanzo; D. Cuna; A. Del Fiore; L. Di Gregorio; C. Lico; G. Massini; V. Mazzurco; V. Miceli; V. Poscente; S. Tabacchioni; F. Tasso; A. Visca.

**Practical lessons:** C. Alisi; B. Aracri; E. Clagnan; A. Del Fiore; L. Di Gregorio; G. Migliore; P. Paganin; V. Poscente; F. Sbarra; F. Sevi; S. Tabacchioni; F. Tasso.

### COURSE CONTENT

How can microorganisms and the microbiome be utilised for application in the agri-food, environmental, cultural heritage, energy and pharmaceutical fields? Following the ENEA

training course, you will learn about the microorganisms and microbiome, and methods to isolate, detect, characterize and apply microorganisms and microbial consortia in agri-food, environmental, cultural heritage, energy and pharmaceutical fields.

The training course will cover four modules:

Module 1: Microorganisms' isolation, cultivation, and preservation approaches

Module 2: Genotypic and phenotypic characterization

Module 3: Applications of microorganisms in agri-food, environmental, cultural heritage and pharmaceutical fields

Module 4: Cases study related to EU and national projects

The course is organised in theoretical lessons, practical lectures and laboratory activities. The main aim of the training course is to provide updated concepts and methodologies on the microbial applications in different fields. A number of senior and young ENEA researchers, participating in the SUS-MIRRI.IT project, have kindly agreed to act as trainers for this school.

### **Day 1: 27/11/2023**

#### **Theoretical session - Sala Blu - 9:00-13:00**

9:00-9:30 Welcome address and programme overview - A. Bevivino

9:30-10:00 The new age of soil microbiome A. Bevivino

10:00-10:30 Isolation, cultivation and preservation of microorganisms - S. Tabacchioni, A. Del Fiore

10:30-11:00 Biofilms and microscopic observations - L. Di Gregorio, E. Clagnan

11.00 - 11:30 Coffee break

11:30-12:00 DNA analysis, targeted and untargeted methods in metagenomics - M. Costanzo and A. Bevivino

12:00-12:30 Pipelines for NGS data (Illumina/Nanopore) - A. Visca

12:30-13:00 Bioaugmentation strategies to improve the energy valorization of organic waste -G. Massini and V. Mazzurco

#### **Practical lessons - 14:00-17:00**

- Microbial consortia set-up for sustainable agriculture and biotechnological applications
- Assays of plant-growth promoting and biocontrol activity
- Microbial biofilms: methods of detection

### **Day 2: 27/11/2023**

#### **Theoretical session - Sala Blu - 9:00-13:00**

9:00-9:30 The two-faced plant viruses: from plant pathogen to smart nanoparticles - C. Lico

9:30-10:00 Prebiotics and probiotics for biopackaging: a case study - L. Di Gregorio and M. Costanzo

10:00-10:30 Combination of membrane filtration and fermentation to produce polyhydroxyalkanoates (PHA): the BIOCOSI' project - V. Miceli and D. Cuna

10:30-11:00 The flow cytometry and implication in food safety: V. Poscente

11.00 - 11:30 Coffee break



11:30-12:00 Antibiotics and antibiotic resistance genes in anaerobic digesters and agroecosystems – A. Visca

12:00-12:30 Use of microorganisms for the bioremediation of contaminated environments/cultural heritage – F. Tasso and C. Alisi

12:30-13.00 Training course wrap-up, discussion and conclusion – A. Bevivino

### **Practical lessons – 14:00-17:00**

- Metabolic fingerprinting: The BILOG system
- The Flow Cytometry: the VBNC state
- Microbial application for cultural heritage

### **Participation**

Who can attend? MSc and PhD students or Early Career Investigators. Due to space limitations, the training school is limited to **15** participants belonging to the institutions of the Operating Units (OUs) of the SUS-MIRRI.IT project. If the number of applications for attendance in presence is more than 15 a selection will be made based on:

- Motivation letter (max 1 page) with an expression of interest and a paragraph describing the relevant scientific activities related to this Training School
- Curriculum Vitae (max 1 page).

The course will be also taken online for any additional participants.  
All the lessons will be held in English.

**For in presence course registration:** <https://forms.gle/Qcc6DjfcneZy8Aq77>

**For remote course registration:** <https://forms.gle/i1ETBTheWaj3mRheA>

**Information:** [ombretta.presenti@enea.it](mailto:ombretta.presenti@enea.it); [giovanna.marcciani@enea.it](mailto:giovanna.marcciani@enea.it)