

# Summer School in Natural Products Research

Program

**FUNDED BY:** 



Bundesministerium für Bildung und Forschung



**Participants registration** 

• 10:00 AM - 11:30 AM

Getting to know each other

• 11:30 AM - 01:00 PM

- Laboratory tour
- Preparing of the agar plates

• 01:00 PM - 02:00 PM

**Lunch Break** 

02:00 PM - 06:30 PM

- Actinobacteria isolation:
   Plating the soil samples
- Heterologous BGC expression: Intergeneric conjugation



# **26th August**

09:00 AM - 10:00 AM

Heterologous BGC expression:
 Conjugation antibiotics overlay

• 10:10 AM - 02:00 PM

Transfer to the hotel "Ozero Vita"

• 02:00 PM - 03:00 PM

**Lunch Break** 

• 03:00 PM - 06:00 PM

15:00-15:45 | Yuriy Rebets *(CENtR)* 

Classes of Bacterial Natural Products and Their Biosynthetic Logic

16:00-16:45 | Kai Blin (Novo Nordisk Foundation Center for Biosustainability)
Introduction to the antiSMASH Ecosystem

17:00-17:45 | Jake Haeckl (HIPS)

Introduction to Essentials for Natural Products Mass Spectrometry Analysis

• 06:00 PM - 06:30 PM

# Markiyan Samborskyy (CENtR)

 Tutorial: How to work with antiSMASH data

06:30 PM - 07:30 PM

## Stepan Tistechok (CENtR)

- Tutorial: How to work with LC-MS data
- Software installation



09:00 AM - 01:00 PM

9:00-9:45 | Bohdan Ostash (CENtR)

Breathing Life Into Moenomycin Skeleton

10:00-10:45 | Andriy Luzhetskyy (HIPS)

Biosynthetic Potential of Actinobacteria -Bridging *in silico* and *in vivo* 

11:00-11:30 | Ivan Roman (Microbial Culture Collection of Ivan Franko National University of Lviv)

From Rods to Complex Mycelial Forms - Diversity and Physiology of Actinomycetes

11:30-12:00 | Ronald Garcia (HIPS)

Myxobacteria: Biology and Current Research

12:00-12:30 | Sofiia Melnyk (CENtR)

Massive Cloning of Biosynthetic Gene Clusters

12:30-13:00 | Olena Kurylenko (CENtR)

Direct Cloning of Biosynthetic Gene Clusters

• 01:00 PM - 02:00 PM

**Lunch Break** 

• 02:00 PM - 04:00 PM

**Tasks** 

LC-MS data and genome datasets analysis, identification of the compounds using genome and LC-MS data

• 04:00 PM - 08:00 PM

Free time. Carpathians tour

• 08:00 PM

**Gala Dinner** 



9:00-9:45 | Bohdan Tokovenko (BASF)

The Academic and Industrial Science

10:00-10:45 | Pavlo Hrab (Wageningen

University & Research)

From deep sea to soil: hidden biosynthetic potential of Acidobacteriota

11:00-11:45 | Anne Osbourn *(John Innes* 

Centre)

A million shades of green: harnessing plant metabolic diversity for therapeutic applications

12:00-12:45 | Kira J Weissman (University of Lorraine)

Decision Making in Polyketide Biosynthesis

• 01:00 PM - 02:00 PM

**Lunch Break** 

• 02:00 PM - 04:30 PM

**Tasks** 

Presenting the results of the datasets analysis (PowerPoint)

• 04:30 PM - 08:00 PM

**Transfer to Lviv** 



- Strain characterization:
   Isolation of the total DNA from Actinobacteria
- Gene cloning: pUC57 vector preparation
- 01:00 PM 02:00 PM
- 02:00 PM 06:30 PM

### **Lunch Break**

- Gene cloning:
   Insert ligation into pUC57
   E. coli transformation
- Strain characterization:
   Antimicrobial activity test by agar plugs diffusion



- Strain characterization:
   Setting up PCR
   Analysis of the antimicrobial activity
- Heterologous BGC expression: Exconjugants replating
- Metabolite analysis: Extraction
- 01:00 PM 02:00 PM

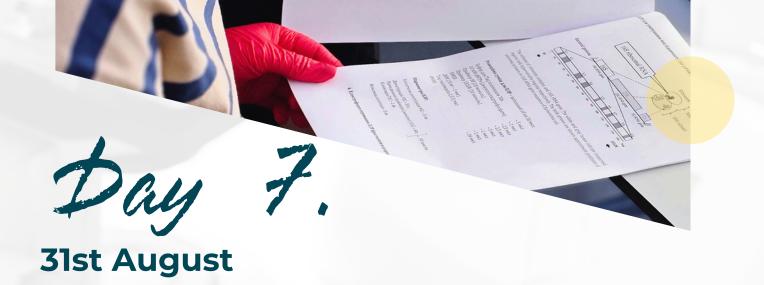
### **Lunch Break**

• 02:00 PM - 06:30 PM

- Strain characterization:
   Purification of PCR products
- Gene cloning: Inoculation of *E.coli*
- Metabolite analysis:

   Extracts evaporation

   Antimicrobial activity test by disc diffusion



Gene cloning:
 Isolation of plasmid DNA
 Restriction analysis

Actinobacteria isolation:
 Microbial biodiversity evaluation

Metabolite analysis:
 Antimicrobial activity assessment

01:00 PM - 02:00 PM

**Lunch Break** 

02:00 PM - 03:00 PM

Closing of the summer school.

Awarding of certificates.





- Ivan Franko National University of Lviv
- Saarland University

ekplocen

 Helmholtz Institute for Pharmaceutical Research Saarland (HIPS)



**WEBSITE** centr.org.ua



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