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Summer School in Natural Products Research

Program

FUNDED BY:



Bundesministerium
für Bildung
und Forschung



Day 1.

25th August

- 09:00 AM - 10:00 AM **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



Day 2.

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 Samborskyi (*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



Day 3.

27th August

- 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



Day 4.

28th August

- 09:00 AM - 01:00 PM

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



Day 5.

29th August

- 09:00 AM - 01:00 PM
 - **Strain characterization:**
Isolation of the total DNA from Actinobacteria
 - **Gene cloning:**
pUC57 vector preparation
- 01:00 PM - 02:00 PM
 - **Lunch Break**
- 02:00 PM - 06:30 PM
 - **Gene cloning:**
Insert ligation into pUC57
E. coli transformation
 - **Strain characterization:**
Antimicrobial activity test by agar plugs diffusion



Day 6.

30th August

- 09:00 AM - 01:00 PM

- **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



Day 7.

31st August

- 09:00 AM - 01:00 PM
 - **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.**



GERMAN-UKRAINIAN
CORE OF EXCELLENCE IN NATURAL
PRODUCTS RESEARCH

- Explogen LLC
- Ivan Franko National University of Lviv
- Saarland University
- Helmholtz Institute for Pharmaceutical Research Saarland (HIPS)



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