

# DISCOVERY & SCREENING OF BIOACTIVE PEPTIDES FROM MUSHROOMS



LFP UFA  
DEPARTMENT OF PHARMACOLOGY  
AND TOXICOLOGY  
FACULTY OF MEDICINE IN PILSEN  
CHARLES UNIVERSITY



Università  
di Catania

## A RESEARCH-BASED TEACHING COURSE ONLINE CLASSES 20 - 29 MAY 24, UFA LFP

- Drug discovery and development
- Importance of pre-clinical research
- Pharmacokinetics, toxicokinetics & metabolism
- Basics of pharmacology
- Brief understanding of human physiology related to bioactive peptides
- Pharmacology of central nervous system drugs
- Cutting-edge research on peptides
- Role of peptides in pharmacological research, stages of drug development
- Early phase of drug discovery, discovery of bioactive peptides
- 3D in vivo tumor model
- Gel based proteomics (theory and lab tour)
- Non- gel based proteomics (theory and lab tour)
- Basics of mass spectrometry (theory and lab tour)
- Surface plasmon resonance (theory and lab tour)
- NMR analysis (theory and lab tour)

### Point of Contact:

Dr. Shashank Pandey (Ph.D.)

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## 5-DAYS HANDS ON TRAINING PHYSICAL ACTIVITIES 24 - 28 JUNE 24, UFA LFP

**Mushroom hunting program (1- day)** for collection of **edible/non-edible mushrooms**: In this program, mycologist or scientific researchers will introduce the participants to various wild mushroom species including edible, medicinal & toxic varieties and educate them about their culinary and medicinal uses. Collected species of mushrooms will be washed, lyophilized and stored.

**Extraction of peptides (1- day)**: Using a standardized protocol from the lab, protein/peptide extraction will be done. Peptides will be isolated by ultrafiltration of the mushroom homogenate using spin columns and subsequent purification with solid phase extraction columns.

**Bio-activity on cell culture (2-day)**: Cell culture analysis will be performed and effect of extracted peptides will be assessed.

**Analysis of peptides by MALDI/mass spectrometry (1-day)**: Peptide fingerprinting will be analyzed by MALDI. Data analysis will be performed and matched with previous data. The peptide sequence will be identified.

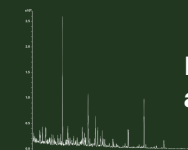
**Data analysis and interpretation of results**



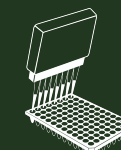
Mushroom



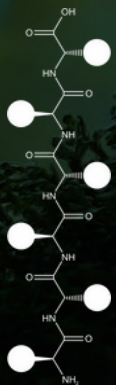
Hands on  
experience



MALDI  
analysis



Cell culture  
analysis



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## THEORY CLASSES (10:30 - 17:00) (VIRTUAL TEACHING AND RESEARCH ACTIVITY)

**Day 1** - S. Pandey | R. Kučera

10:30 - 13:00 | Introduction

14:30 - 17:00 | Basics of Pharmacology

**Day 2** - S. Pandey + S. Härteis | R. Kučera

10:30 - 13:00 | Importance of Preclinical Research and 3D in vivo tumor model

14:30 - 17:00 | Pharmacokinetics, toxicokinetics, and metabolism

**Day 3** - S. Pandey | M. Chottová

10:30 - 13:00 | Stages of drug development

14:30 - 17:00 | Brief understanding of human physiology related to bioactive peptides

**Day 4** - S. Pandey | R. Kučera

10:30 - 13:00 | Early phase of drug discovery

14:30 - 17:00 | Pharmacology of CNS Drugs

**Day 5** - S. Pandey + Z. Tůma | M. Jirásko

10:30 - 13:00 | Discovery of Bioactive Peptides from Mushroom

14:30 - 17:00 | Pharmacological Potential of Mushroom

**Day 6** - S. Pandey + Z. Tůma + R. Viták | E. Peroni

10:30 - 13:00 | Gel based proteomics + Lab tour

14:30 - 17:00 | Peptide Synthesis, Purification + Lab tour

**Day 7** - S. Pandey + Z. Tůma | G. Grasso

10:30 - 13:00 | Non-gel based proteomics + Lab tour

14:30 - 17:00 | Surface plasmon resonance+ Lab tour

**Day 8** - S. Pandey + Z. Tůma | M. Larregola

10:30 - 13:00 | Basics of Mass spectrometry + Lab tour

14:30 - 17:00 | NMR analysis + Lab tour

## PHYSICAL MOBILITY (9:00 - 17:30)

### HANDS ON EXPERIENCE S. Pandey | R. Viták | Z. Tůma | E. Fousková

**Day - 1**

09:00 - 17:30 - Mushroom Hunting Program

**Day - 2**

09:00 - 13:00 - Protein/peptide extraction from mushroom

13:30 - 17:30 - Protein quantification and Gel-based proteomics

**Day - 3**

09:00 - 13:00 - Cell culture

13:30 - 17:30 - Sample preparation for MALDI

**Day - 4**

09:00 - 13:00 - MALDI analysis

13:30 - 17:30 - Cell culture analysis of extracted peptides

**Day - 5**

09:00 - 17:30 - Data analysis and interpretation of results

## FOR REGISTRATION PLEASE CONTACT YOUR LOCAL COORDINATOR

**Prof. PharmDr. R. Kučera, Ph.D.**, Head at Dept. of LFP UFA

**Dr. S. Pandey, Ph.D.**, Researcher at Dept. of LFP UFA

**MUDr. M. Jirásko**, Assistant Prof. at Dept. of LFP UFA

**Mgr. Bc. R. Viták**, Researcher at Dept. of LFP UFA

**Ing. E. Fousková**, Researcher at Dept. of LFP UFA

**doc. MUDr. M. Chottová-Dvořáková, Ph.D.**,

Associate Prof. at Dept. of LFP UFA

**Ing. Z. Tůma, Ph.D.**, Researcher at Biomedical Center

**Dr. E. Peroni, Ph.D.** | [elisa.peroni@cyu.fr](mailto:elisa.peroni@cyu.fr)

Associate Prof. at CY Cergy Paris University, France

**Dr. G. Grasso, Ph.D.** | [grassog@unict.it](mailto:grassog@unict.it)

Associate Prof. at University of Catania, Italy

**Prof. S. Härteis, Ph.D.** | [silke.haerteis@ur.de](mailto:silke.haerteis@ur.de)

Professor at University of Regensburg, Germany

**Dr. M. Larregola, Ph.D.**

Associate Prof. at CY Cergy Paris University, France