



## Practical course on Protein Expression and Purification 3 ECTS PhD course, 1-12 April 2019

at the Swedish University of Agricultural Sciences (SLU), Uppsala, Sweden

### Scope

The course aims to provide a comprehensive introduction to and hands-on training in protein expression and purification with focus on eukaryotic expression system -*Pichia pastoris*. You are encouraged to bring your own project to the course.

### Eligible participants

The course is intended for PhD students at SLU, and will also be open for PhD students from other Swedish universities, and other researchers at SLU, as space allows. It is expected that the student has basic biochemical knowledge about protein.

The course is free of charge.

### Application

You can apply the course by filling in the application form linked below

<https://goo.gl/forms/rpQKDq4I9rBU5DYw1>

We recommend you submit the application ASAP since the number of participants is limited to 8 students. OBS! If you plan to bring your-own project to the course, please contact the course leader at least 3 weeks before the course starts.

### Outline

The course consists of three elements:

- 1) Theory learning: lectures on recombinant expression of proteins in both prokaryotic (*E. coli*) and eukaryotic cells (*P. pastoris*); Introduction of basic knowledges and common techniques used for protein identification and purification; Literature self-learning about the development of recombinant protein expression.
- 2) Wet labs: Protein expression in *Pichia pastoris* including DNA and competent cells preparation, electroporate transformation, expression screening and scale up expression; Protein identification by SDS-PAGE and enzyme assay; large scale protein purification by chromatography (IEC, SEC, IMAC) under Unicorn control program in ÄKTA system.
- 3) Examination: students' group presentations (summarize the experiments' results and further discuss on gene construction, expression or purification strategy)

### Objectives

At the end of the course the student will be able to:

- Propose suitable strategies, e.g. recombinant expression system, and methods for preparation of proteins for function and structural studies.
- Use *Pichia pastoris* as host cells to do recombinant protein expression.

- Manipulate ÄKTA system for protein separation with various chromatography.
- Document and describe methods and results of protein preparation for scientific articles.

### **Course organisers and contact information**

Miao Wu <[miao.wu@slu.se](mailto:miao.wu@slu.se)> (course leader)

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